PUBLIC DRAFT

Initial Study/Mitigated Negative Declaration

Anadromous Salmonid Habitat Conservation Plan

AUGUST 2023

Prepared for:

CITY OF SANTA CRUZ
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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
3CE	Central Coast Community Energy
AB	Assembly Bill
Air Basin	North Central Coast Air Basin
AMBAG	Association of Monterey Bay Area Governments
AMM	avoidance and minimization measure
AQMP	Air Quality Management Plan
ASHCP	Anadromous Salmonid Habitat Conservation Plan
BMPs	best management practices
CAL FIRE	California Department of Forestry and Fire Protection
CALGreen	California Green Building Standards
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCC	California Coastal Commission
CCE	Community Choice Energy
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
Cfs	cubic feet per second
CGS	California Geological Survey
CH_4	methane
CHRIS	California Historical Resources Information System
City	City of Santa Cruz
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
coho	Central California Coast coho salmon
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
dbh	diameter at breast height
DOC	California Department of Conservation
DPM	diesel particulate matter
DPS	Distinct Population Segment
DTSC	Department of Toxic Substances Control

Acronym/Abbreviation	Definition
EA	environmental assessment
EIA	U.S. Energy Information Administration
EIR	environmental impact report
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
EV	electric vehicle
FCC	flood control channel
FHSZ	fire hazard severity zone
FMMP	Farmland Mapping and Monitoring Program
GHG	greenhouse gas
GHWTP	Graham Hill Water Treatment Plant
GIS	Geographic Information System
GWP	global warming potential
HMCP	Hazardous Materials Contingency Plan
IPaC	Information for Planning and Consultation
IS	initial study
ITP	Incidental Take Permit
kWh	kilowatt-hours
LCP	Local Coastal Program
LEHCP	Low-Effect Habitat Conservation Plan
LWD	large woody debris
MBARD	Monterey Bay Air Resources District
MCV	Manual of California Vegetation
MHJB	Mount Hermon June beetle
MM	Mitigation Measure
MMRP	Mitigation Monitoring and Reporting Program
MMT	million metric tons
MND	mitigated negative declaration
MOA	Memorandum of Agreement
mph	miles per hour
MT	metric ton
MTP/SCS	Metropolitan Transportation Plan/Sustainable Communities Strategy
N_2O	nitrous oxide
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NFCF	Non-Flow Conservation Fund
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOA	Notice of Availability
NOAA	National Oceanographic and Atmospheric Administration
NOI	Notice of Intent

Acronym/Abbreviation	Definition
NO_x	nitrogen oxides
NPPA	California Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NVCS	National Vegetation Classification Standard
O_3	ozone
OMHCP	Operations & Maintenance Habitat Conservation Plan
OTB	Ohlone tiger beetle
PG&E	Pacific Gas and Electric Company
$PM_{2.5}$	fine particulate matter
PM_{10}	coarse particulate matter
PRIMP	Paleontological Resources Impact Mitigation Program
Proposed Project	Anadromous Salmonid Habitat Conservation Plan
RCD	Resource Conservation District of Santa Cruz County
ROG	reactive organic gas
RRF	Resource Recovery Facility
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SLF	Sacred Lands File
SLURP	San Lorenzo Urban River Plan
SO_2	sulfur dioxide
SO_x	sulfur oxides
SSC	California Species of Special Concern
steelhead	Central California Coast steelhead
SVP	Society of Vertebrate Paleontology
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TMDL	total maximum daily load
UCSC	University of California, Santa Cruz
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VegCAMP	Vegetation Classification and Mapping Program
VMT	vehicle miles traveled
WUA	weighted usable area

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1 Introduction

1.1 Project Overview

The City of Santa Cruz (City) has developed the proposed Anadromous Salmonid Habitat Conservation Plan (ASHCP or Proposed Project) in support of applications for federal and state incidental take permits (ITPs) for state- and federally endangered Central California Coast coho salmon (*Oncorhynchus kisutch*) (coho) and federally threatened Central California Coast steelhead (*O. mykiss*) (steelhead). The state ITP would be granted by the California Department of Fish and Wildlife (CDFW) pursuant to Section 2081 of the California Fish and Game Code (CFGC) (the California Endangered Species Act [CESA] of 1984). The federal ITP would be granted by the National Marine Fisheries Service (NMFS) pursuant to Section 10(a)(1)(B) of the Endangered Species Act (ESA) of 1973.

1.2 California Environmental Quality Act Compliance

The California Environmental Quality Act (CEQA) (California Public Resources Code Section 21000 et seq.) serves as the main framework of environmental law and policy in California. There are also regulations implementing CEQA, known as the CEQA Guidelines (14 California Code of Regulations [CCR] Section 15000 et seq.). CEQA emphasizes the need for public disclosure and identifying and preventing environmental damage associated with proposed projects. Unless a proposed project is deemed statutorily or categorically exempt or is subject to the so-called "common sense" exemption, CEQA is applicable to any project that must be approved by a public agency in order to be processed and established. The Proposed Project does not fall under any of these exemptions and, therefore, must meet CEQA requirements.

The City of Santa Cruz (City) is the lead agency pursuant to CEQA and is responsible for preparing, considering, and as appropriate, adopting the CEQA document for the Proposed Project. The City has determined that a mitigated negative declaration (MND) is the appropriate environmental document to be prepared for the Proposed Project in compliance with CEQA. This finding is based on the Initial Study Checklist (Chapter 3 of this document). Per the CEQA Guidelines, a MND may be prepared for a project subject to CEQA if an initial study (IS) has identified potentially significant effects on the environment, but (1) revisions in the project plans or proposals made by, or agreed to by, the project proponent before the proposed MND and IS are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur; and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment (California Public Resources Code Section 21064.5).

This IS/MND has been prepared by the City as the lead agency and in conformance with Section 15070 of the CEQA Guidelines. The purpose of the IS/MND is to determine the potential significant impacts associated with the implementation of the Proposed Project, and to incorporate mitigation measures, as necessary, to reduce or eliminate the significant or potentially significant effects of the Proposed Project. As the proponent of the Proposed Project, the City has agreed to all of the mitigation measures identified in the Initial Study Checklist. The mitigation measures identified herein do not apply to individual activities that are statutorily or categorically exempt from CEQA (categorically exempt projects do not have significant effects requiring mitigation). Furthermore, the mitigation measures identified herein for the Proposed Project may be superseded by mitigation measures formulated based on more refined and specific information developed during subsequent project-specific CEQA analyses, as required, at the time specific projects are pursued.

In addition to lead agencies, responsible and trustee agencies have roles in the environmental review process. A responsible agency under CEQA is a state, regional, or local public agency other than the CEQA lead agency that has discretionary approval over at least some portion of a project. A CEQA responsible agency's obligations are more limited than those of the lead agency, in that the responsible agency is responsible for considering only the effects of those project activities it is required by law to carry out or approve. A CEQA trustee agency is a state agency that has jurisdiction by law over natural resources affected by a project that are held in trust for the people of California. Because the Proposed Project is expected to result in take of species listed under the CESA, CDFW is a responsible agency under CEQA with respect to the proposed ITP (CFGC Section 2081[b]) for those state-listed species that could be subject to take under the Proposed Project. CDFW is also a trustee agency under CEQA because it has jurisdiction by law over fish and wildlife species that could be affected by the Proposed Project.

While not a state or local agency, NMFS is preparing an environmental assessment (EA) to analyze the effects of the Proposed Project pursuant to the federal National Environmental Policy Act (NEPA) and as such may use the information in this IS/MND to inform its NEPA analysis and its permitting decisions and actions.

1.3 Public Review Process

In reviewing the IS/MND, affected public agencies and the interested public are encouraged to focus on the sufficiency of the identification, analysis, and mitigation of possible impacts on the environment in the document.

The City has issued a Notice of Intent (NOI) to Adopt a MND for the Proposed Project. Comments may be made on the IS/MND in writing before the end of the public review period. A 30-day review and comment period from August 25, 2023 to September 25, 2023 has been established in accordance with CEQA Guidelines Section 15072(a). Following the close of the public comment period, the City Council will consider this IS/MND and its comments in determining whether to adopt the MND, adopt the Mitigation Monitoring and Reporting Program (MMRP), and approve the Proposed Project.

Written comments on the IS/MND must be received by 5:00 p.m. on September 25, 2023. All written comments should be sent by email or mail to the contact listed below. Please include a return address and contact name:

Zeke Bean
Water Resources Planner, Watershed Section
City of Santa Cruz Water Department
212 Locust Street, Suite A
Santa Cruz, California 95060
ebean@santacruzca.gov

2 Project Description

The City of Santa Cruz (City) provides a range of essential public services for its citizens and visitors, including diversion, treatment, and distribution of water; construction, operation, and maintenance of water diversion and treatment facilities; construction and maintenance of roads; waste management activities; flood and stormwater management; and operation and maintenance of recreation and open space areas. The City has determined that some of the activities it undertakes to provide these services may adversely affect the life history and habitat of federally threatened steelhead and state- and federally endangered coho. As such, the City is proposing to implement the Anadromous Salmonid Habitat Conservation Plan (ASHCP or Proposed Project), which provides a strategy for avoiding, minimizing, and mitigating potential impacts from these activities on steelhead and coho.[1]

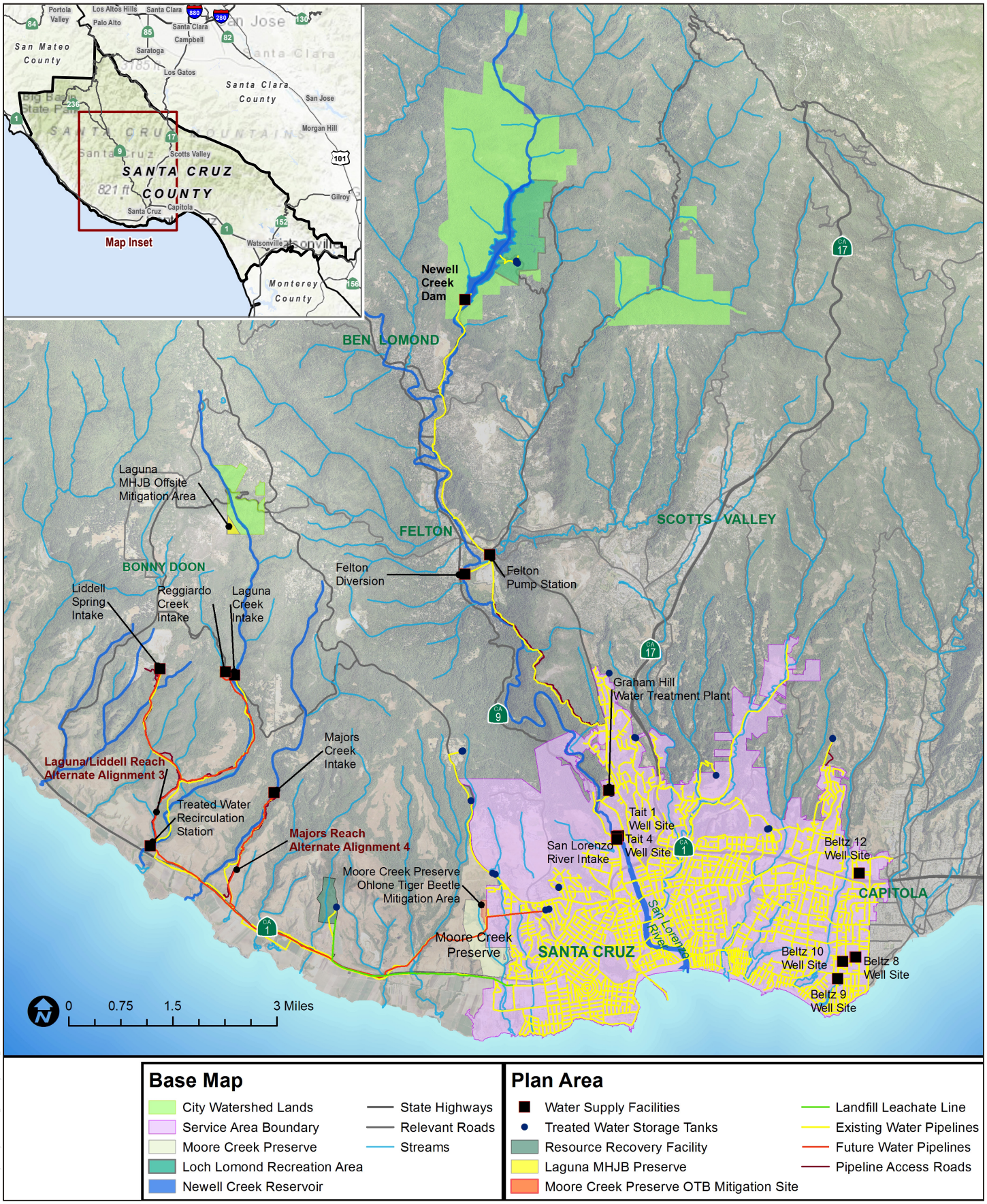
2.1 Project Location and Setting

The boundaries of the Proposed Project are shown on Figure 1 (ASHCP Plan Area). The Plan Area includes watershed and water service/urban areas that total approximately 176 square miles in Santa Cruz County across three geographically distinct areas: (1) the 18-square-mile North Coast watersheds (Liddell, Laguna, and Majors Creek watersheds); (2) portions of the 138-square-mile San Lorenzo River watershed; and (3) the City Urban Center, which encompasses approximately 12 square miles centered around the mouth of the San Lorenzo River, as well as the approximately 8 square miles of water service areas outside of the City limits. Steelhead within the Plan Area are part of the Central California Coast Distinct Population Segment (DPS), listed as threatened under the ESA, consisting entirely of winter-run steelhead and extending from the Russian River south to Aptos Creek in the southern end of Santa Cruz County (NMFS 2021). Streams in the Plan Area are included in the critical habitat designation for this DPS (70 FR 52487, September 2, 2005). Coho in the Plan Area are part of the Central California Coast Evolutionarily Significant Unit (ESU), listed as endangered under the CESA and ESA, extending from Punta Gorda in Humboldt County south to and including Aptos Creek (NMFS 2022b). Critical habitat has been designated for the Central California Coast ESU and includes the accessible portions of the streams in the Plan Area (64 FR 24049, May 5, 1999).

2.2 Regulatory Background

The CESA (CFGC Section 2050 et seq.) generally prohibits the "take" of plant, fish, and wildlife species that are listed or candidates for listing by the State of California. Unlike the ESA (see description below), the CESA does not have its own definition of "take," thus the generic definition found in Section 86 of the CFGC applies to CESA. Under Section 86 of the CFGC, "take" is defined as "hunt, pursue, catch, capture, kill, or attempt to hunt, pursue, catch, capture, or kill." Take authorization may be obtained by project applicants from CDFW under CESA Sections 2080.1 or 2081(b). Under Section 2080.1, if a species is listed by both the ESA and CESA and the applicant has obtained a federal ITP, CDFW can issue a consistency determination that finds the federal documents consistent with the CESA. Alternatively, CDFW can issue an ITP under CFGC Section 2081(b), which allows take that is incidental to an otherwise lawful activity. Permittees must implement species-specific avoidance and minimization measures and fully mitigate the impacts of the project. The ASHCP is not a required component of the CESA ITP application (as it is for the federal ITP application process). However, the ASHCP serves as a tool for describing and analyzing project effects to meet the CESA permit issuance criteria.

[1] The Draft ASHCP is on the City's website at: https://www.cityofsantacruz.com/government/city-departments/water/habitat-conservation-plan.



SOURCE: City of Santa Cruz 2023a

NOTES: MHJB = Mount Hermon June beetle; OTB = Ohlone tiger beetle.

FIGURE 1

Project Location and Plan Area

Anadromous Salmonid Habitat Conservation Plan

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The ESA (16 U.S.C. § 1531 et seq., as amended) prohibits the unauthorized "take" of a fish or wildlife species that is listed as threatened or endangered. "Take" includes a range of activities that could result in death or injury to a species, including harm that foreseeably results from substantial adverse habitat modification. Under the ESA, "take" is defined as "pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 Code of Federal Regulations [CFR] § 10.12). Under federal regulations, "take" is further defined to include habitat modification or degradation that results, or is reasonably expected to result, in death or injury by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR § 17.3). Section 10 of the ESA allows NMFS to authorize the taking of species that is incidental to an otherwise lawful activity by a non-federal entity, if the entity first prepares and agrees to implement a conservation plan that meets permit issuance criteria. Among other issuance criteria, a habitat conservation plan must minimize and mitigate to the maximum extent practicable the potential impacts of such incidental take.

The City has developed the proposed ASHCP in coordination with CDFW and NMFS for CESA and ESA compliance for City operation and maintenance activities that may adversely affect special-status anadromous salmonids (City of Santa Cruz 2023a). The City has submitted a draft application for an ITP from CDFW pursuant to CFGC Section 2081(b) for a 30-year period authorizing the incidental take of state-endangered coho. Likewise, the City has applied for an ITP from NMFS pursuant to ESA Section 10(a)(1)(B) for a 30-year period authorizing the incidental take of federally threatened steelhead and federally endangered coho (referred to collectively as Covered Species). The two ITPs would require implementation of the ASHCP, which contains the City's conservation strategies to avoid, minimize, and/or fully mitigate the effects of the City's Covered Activities (described below) on steelhead and coho and their habitat in support of the long-term viability of these populations within streams and habitats affected by the Covered Activities.

2.3 Project History and Context

Since 2001, City staff have been developing the ASHCP in coordination with CDFW and NMFS staff for CESA and ESA compliance for City operation and maintenance activities that may adversely affect listed anadromous salmonids. This process has been lengthy due to the nature of the data required for long-term permitting, the inherent challenges of balancing water supply with anadromous instream flows, agency staff changes, the drought of 2012 through 2015, and other related factors.

The ASHCP Conservation Strategy is designed to avoid, minimize, and fully mitigate the effects of the City's Covered Activities on Covered Species (steelhead and coho) and their habitat in support of the long-term viability of these populations within streams and habitats affected by the ASHCP Covered Activities.[2] The ultimate fate of these populations depends on the actions of many entities and natural processes in areas both within and beyond the City's control. The Conservation Strategy recognizes that the City's efforts will support and coordinate with overarching efforts to contribute to the conservation of these species within Santa Cruz County and the larger habitat boundaries for these species. The ASHCP biological goals and objectives address key limiting conditions in the Santa Cruz Mountains diversity stratum, particularly effects of surface water diversions, as identified in the recovery plans for steelhead and coho (NMFS 2012, 2016b).

[2] The ASHCP Covered Activities include operation, maintenance, and rehabilitation of the City's water supply and water system facilities, including surface water diversions; operation and maintenance of the City's municipal facilities; and management of City lands.

2.3.1 Relationship to Operations and Maintenance Habitat Conservation Plan

The City's Operations and Maintenance HCP (OMHCP), developed with the U.S. Fish and Wildlife Service (USFWS), was completed and the associated USFWS ITP was issued in January 2021 (City of Santa Cruz 2021a). The OMHCP covers six wildlife and four plant species including: Ohlone tiger beetle (federally endangered), Mount Hermon June beetle (federally endangered), tidewater goby (federally endangered), Pacific lamprey (state species of concern not listed under ESA), California red-legged frog (federally threatened), western pond turtle (state species of concern not listed under ESA), Ben Lomond spineflower (federally endangered), robust spineflower (federally endangered), Santa Cruz tarplant (federally threatened), and San Francisco popcorn flower (state endangered). The biological goals and objectives and conservation measures include restoring habitat temporarily disturbed, contributing to protected and managed lands that support covered populations, implementing bypass flows consistent with the ASHCP, pursuing other conservation actions that will result in conservation benefits, and implementing general and species-specific minimization and best management practices.

Covered Activities in the OMHCP include upgrades to the North Coast Pipeline and rehabilitation of diversion structures, operation of existing City facilities, and operations and maintenance of existing water diversions and transmission lines and their associated features. The Covered Activities of the OMHCP are equivalent to the Covered Activities of the ASHCP, where relevant to the ASHCP Covered Species. Common measures are included in both the OMHCP and the ASHCP to provide for consistency, where applicable.

2.3.2 Relationship to Santa Cruz Water Rights Project

The City's water system obtains all its water supply from local sources; the system relies entirely on rainfall, surface runoff, and groundwater infiltration occurring within watersheds located in the County. Surface water sources comprise approximately 95% of the City's total annual water production; groundwater and stored water from Loch Lomond Reservoir are used primarily in the summer and fall when flows in the North Coast Streams and San Lorenzo River decline (City of Santa Cruz 2021a). The City's dependence on local surface water flows and limited storage (i.e., Loch Lomond Reservoir) within the supply system make the system vulnerable to multi-year droughts. To allow better use of limited water resources, the City is undertaking a water rights project (the Santa Cruz Water Rights Project) that includes proposed modifications to the City's existing water rights and associated infrastructure improvements. The City has petitioned the State Water Resources Control Board (SWRCB) to revise its decades-old permitted and licensed water rights in the San Lorenzo River watershed to allow more options for where and how those water rights can be used. In addition, minimum instream bypass flows (also called Conservation Flows or Agreed Flows[3]) that are described in the ASHCP's Conservation Strategy were included in the water-rights petitions. The City previously analyzed the environmental effects of implementation of the proposed Santa Cruz Water Rights Project in an environmental impact report (EIR) (City of Santa Cruz 2021d) that was certified by the City Council in December 2021. If the petitions to modify the City's water rights are approved by the SWRCB, the City will then take steps to incorporate the Agreed Flows into the pre-1914 water rights in the North Coast Streams as well. It should be noted that the long-term implementation of minimum instream bypass flows is contingent upon SWRCB approval of the City's petitions and the City's implementation of associated infrastructure improvements that will allow for better use of limited water resources.

[3] In the City's petitions for changes to water rights, the minimum instream bypass flows, or Conservation Flows, are called "Agreed Flows" in recognition that they were developed through negotiations with NMFS and CDFW. The minimum instream bypass flows, Conservation Flows, and Agreed Flows are identical.

Numerous studies undertaken in support of the ASHCP and cited in the ASHCP have evaluated what limiting factors may be affecting steelhead and coho in streams from which the City diverts water. Among other things, these analytical efforts include evaluation of instream flow needs during all freshwater life phases (migration, spawning, incubation, and rearing) over a range of hydrologic year types. Because these studies indicated that, at certain times and locations, habitat conditions in these streams could be improved by bypassing flows which would otherwise be diverted (bypass flows),[4] the City began voluntarily implementing bypass flows in 2007 on an interim basis in connection with the pursuit of the ASHCP. Currently, the City is implementing interim bypass flow requirements[5] protective of steelhead and coho in agreement with CDFW at the diversions on the North Coast Streams and at one of two diversions on the San Lorenzo River (the Tait Street Diversion) that supply surface water to the City (City of Santa Cruz 2021b). The City also has two existing Memoranda of Agreement (MOAs) with CDFW for operation of the Felton Diversion based on streamflow conditions during winter months to allow steelhead and coho to migrate upstream (Agreement Between City of Santa Cruz and CDFW for Streamflow Maintenance and Operation of Fishway at Felton Diversion Project on San Lorenzo River for the Protection and Preservation of the Fish and Wildlife Resources [CDFG 1971], and Memorandum of Agreement between CDFW and the City of Santa Cruz Regarding Operation of the Felton Water Diversion [Hunter 1998]; see Appendix 4 of the ASHCP).

The City has negotiated long-term minimum bypass flow requirements (Agreed Flows) with CDFW and NMFS as part of the ASHCP process. See Appendix A for details on the Agreed Flows. The differences between the interim bypass flows and the Agreed Flows under the ASHCP are as follows:

- The Agreed Flows have a bypass during adult migration in Laguna Creek, Liddell Creek, and Majors Creek in April of 0% to 60% hydrologic conditions; the interim bypass flows do not have bypass flows for adult migration during April in those locations.
- The Agreed Flows have a bypass for adult spawning in Liddell Creek and Majors Creek in December of 0% to 60% hydrologic conditions and in Laguna Creek in December of all hydrologic conditions; the interim bypass flows have no bypass for spawning during December.
- The Agreed Flows have a 1 cfs minimum release to Newell Creek with a 0.25 cfs release during low Loch Lomond Reservoir storage levels; the interim bypass flows have a 1 cfs minimum release to Newell Creek at all times.
- The Agreed Flows have a 40 cfs minimum flow below the Felton Diversion during migration and spawning periods; the interim bypass flows have a 20 cfs minimum during migration and spawning periods below the Felton Diversion.
- The interim bypass flows have an exception year reduced bypass for rearing downstream of the Tait Street Diversion; the Agreed Flows do not have a reduced exception year rearing flow.
- The Agreed Flows have a bypass for adult migration in April of 0% to 60% hydrologic conditions in the San Lorenzo River downstream of the Tait Street Diversion; the interim bypass flows have no bypass for adult migration in April at this location.

In the reach between the Felton Diversion and the Tait Street Diversion, the effect of Agreed Flows is to slightly increase (3% or less) the frequency of flows in the range of 20 cfs to 40 cfs and to slightly decrease (3% or less) the frequency of flows in the range of 40 cfs to 50 cfs as compared to the interim bypass flows. This would provide minimally increased frequency of flows at the 40 cfs migration minimum flow but minimally reduced spawning habitat suitability.

[4] A bypass flow refers to the amount of flow required below a diversion that may limit the amount of water that may be diverted.

[5] The interim bypass flow requirements are those flow requirements agreed to by CDFW and the City as part of an agreement between CDFW and the City. The City and CDFW have had numerous such agreements since 2007 during development of the ASHCP.

In the reach of the San Lorenzo River downstream of the Tait Street Diversion, the water rights modifications with the Agreed Flows would result in a small reduction in flow from September through May relative to the interim bypass flows. This could translate to slightly reduced rearing habitat downstream of the Tait Street Diversion.

The ASHCP seeks to improve habitat conditions for all life-stages of the subject species within the natural variability of the hydrologic regime. Any impacts to coho would be of particular concern because coho populations south of the Golden Gate Bridge are on the brink of extirpation. Provision of the Agreed Flows would generally require reduced diversions from the North Coast Streams and from the San Lorenzo River at the Tait Street Diversion at certain times and corresponding increased use of stored water from Loch Lomond Reservoir and use of groundwater. This would result in reduced storage in Loch Lomond Reservoir available for use during dry and drought periods. Absent the other changes proposed in the Santa Cruz Water Rights Project related to water rights modifications, water supply augmentation, and surface water diversion improvements, the implementation of the Agreed Flows would further reduce the City's dry-year water supply reliability, as it would further limit the amount of water that the City can divert. Thus, the Agreed Flows present a challenge to the City's water supply reliability and, for that reason, their implementation is dependent on the implementation of the Santa Cruz Water Rights Project, as further discussed below.

The Santa Cruz Water Rights Project would serve to provide additional flexibility in the use of all City water sources to address the reduced storage at Loch Lomond Reservoir while benefiting instream flows for salmonid habitat. Without such flexibility, it would not be feasible for the City to implement the Agreed Flows and meet current and future demands. At the same time, the Santa Cruz Water Rights Project would potentially benefit regional water supply security and provide opportunities to address regional groundwater overdraft. Therefore, the ASHCP conservation strategy assumes, and is dependent upon, approval of the Santa Cruz Water Rights Project by the City and the SWRCB. As both CDFW and NMFS have tentatively agreed on the bypass flow requirements, the City has committed to implement the Agreed Flows as part of the Santa Cruz Water Rights Project, if approved, regardless of the final outcome of the ASHCP process.

Note that the effects analysis presented in ASHCP Section 5.2, Effects of Water Supply Operations - Water Diversions (City of Santa Cruz 2023a) uses a different baseline than is used in this initial study, as described in Appendix B. Specifically, as further discussed in Appendix B, the ASHCP modeling used a baseline that did not account for any additional bypass flows for fisheries habitat at the City's surface water diversions to demonstrate the full effects of the Agreed Flows, whereas the Santa Cruz Water Rights Project EIR modeling used a baseline that accounted for interim bypass flows in place in 2018 when the City initiated the EIR. The 2018 interim bypass flows continue to be representative of existing conditions, as the City and CDFW signed a new agreement in 2023 that has the same interim bypass flows as the 2018 agreement. Therefore, like the Santa Cruz Water Rights Project EIR, this initial study uses the interim bypass flows (i.e., existing conditions) as the baseline by which to analyze effects of the Agreed Flows.

2.4 Project Characteristics

2.4.1 Permit Term

The ASHCP is a 30-year plan and the City is requesting authorization from CDFW and NMFS for corresponding 30-year permit terms. The permit term is the length of time for which take authorizations issued by CDFW and NMFS can be used by the City to cover incidental take of Covered Species resulting from the Covered Activities. Prior to expiration of the ASHCP and take authorizations, the City may apply to renew or amend the ASHCP and take authorizations to include an extension of the permit term, subject to subsequent review under CEQA and NEPA.

2.4.2 Covered Species

Covered Species are those species addressed in the ASHCP for which the City is seeking incidental take authorization and for which the Conservation Strategy would be implemented. The ASHCP proposes coverage for two anadromous salmonid species: federally threatened steelhead and federally and state-endangered coho. The ASHCP includes a Conservation Strategy to protect both Covered Species and their habitats.

The state 2081(b) Permit can only include Covered Species currently listed under the CESA as endangered, threatened, or candidate plants or wildlife, or as rare plants; therefore, the state ITP will cover only coho. If the federally listed species were listed by the state during the permit term, take coverage under the CESA would apply to that species only if the CESA ITP is amended accordingly or CDFW finds pursuant to CFGC Section 2080.1 that the ASHCP satisfies the requirements of the CESA in its treatment of steelhead.

2.4.3 Covered Activities

Covered Activities are activities that the City would implement within the Plan Area that have the potential to result in incidental take of a Covered Species. The ASHCP would provide coverage for the following Covered Activities, which are further described in Table 1 and are fully described in Chapter 3 of the ASHCP (City of Santa Cruz 2023a):

- Operation, maintenance, and rehabilitation of the City's water supply and water system facilities, including water diversions and reservoir rehabilitation and operations; sediment management; fish ladder and screen maintenance; pipeline installation, rehabilitation, and operations; and dewatering of creeks for maintenance and repairs;
- Operation and maintenance of the City's municipal facilities, including flood control and stormwater maintenance, emergency operations and response, and general vegetation management within riparian corridors; and
- Management of City lands, including Loch Lomond Recreation Area and watershed lands, habitat management and restoration, and monitoring.

Table 1. Summary of Covered Activities

General Activity	Description
Rehabilitation of diversion structures and pipeline reaches	▪ Laguna Creek,[2] Majors Creek, and Reggiardo Creek Diversions: Sediment transport and fish screening improvements ▪ Felton Diversion: Fish passage improvements and pump upgrades and replacements ▪ Tait Street Diversion:[3] Fish passage improvements and diversion capacity increase ▪ North Coast System pipeline rehabilitation: Replacement of portions of supply pipelines
Water diversion	▪ Provision of drinking water utilizing existing water rights and pending water rights modifications under consideration by the SWRCB with addition of "Conservation Flows" (also known as Agreed Flows) at Liddell Spring Diversion, Reggiardo Creek Diversion, Laguna Creek Diversion, Majors Creek Diversion, Newell Creek Dam, Felton Diversion, and Tait Street Diversion and Wells

Table 1. Summary of Covered Activities

General Activity	Description
Reservoir operations	▪ Chemical algaecide treatment of reservoir: 1-5 algaecide treatments annually ▪ Testing deluge and gate valves: 1 test annually of 5-10 cubic feet per second (cfs) for several hours. Bigger tests during winter/high flows as possible ▪ Woody debris removal on reservoir face: 10 cubic yards of less than 10-inch-diameter/8-foot-long wood removed annually
Water diversion sediment management	▪ Liddell Spring Diversion: Excavation of up to 3 yards per event, 1-3 events per year. Valve operations: valves operated as needed to maintain natural sediment transport dynamics during storm events ▪ Laguna Creek Diversion: Excavation of 5-10 cubic yards per event, 1-3 events per year. Valve operations (described above). ▪ Majors Creek Diversion: Excavation of 5-10 cubic yards per event, 1-3 events per year. Valve operations (described above).
Fish ladder and screen maintenance	▪ Felton Diversion: 1-3 maintenance events per year to remove up to 1 yard of sediment and wood material from the ladder ▪ Tait Street Diversion: 1-3 maintenance events per year to remove up to 1 yard of sediment and wood material from the intake
Pipeline operations	▪ Conveyance pipeline system inspections and repairs: Inspection and leak response on 19.23 miles of water line and 5.5 miles of leachate line ▪ Finished water pipeline system flushing and repairs: Flushing and leak response on 270 miles of water line ▪ Pumping well return to the San Lorenzo River: Ongoing pumping from clear well to remove sediment during high and moderate flows in winter and spring ▪ North Coast valve blow-off to the San Lorenzo River: 5-10 cfs blow-off to riverbank for 1-4 hours per event occurring during any part of the year once every few years
Dewatering of creeks for maintenance and repairs	▪ Dewatered stream reaches can range from approximately 20-200 feet at 1-10 sites for 1-4 weeks per year
Flood control maintenance	▪ Debris/obstruction removal: 1-3 maintenance events per year to remove up to 100 cubic yards of material in wet years ▪ Flood control sediment management/removal: Removal of approximately 2 cubic yards of sediment per drainage structure annually or biannually at up to 30 drainage structures ▪ Vegetation management: Thin riparian groves and remove willows greater than 3 inches diameter at breast height (dbh) and alders greater than 6 inches dbh. Retain a 5-10-foot wide riparian buffer adjacent to the low flow channel, but remove vegetation greater than 6 inches dbh annually
Stormwater maintenance	▪ Inspection and cleaning: Inspect and clean as needed but as frequently as weekly. Sweep 35 miles of streets daily ▪ Structural retrofits of storm drain inlets and basins: As-needed improvements of storm drain infrastructure ▪ Sanitary landfill leachate management: Ongoing maintenance of two leachate ponds, transmission of leachate to wastewater plant and repair of leachate line
Emergency operations and response	▪ Response to flood, fire, spill, or other related incident on an as-needed basis, lasting from a few days to several weeks every couple of years
General vegetation management within riparian corridors	▪ Pruning and limited removal of riparian trees less than 5,000 square feet on an annual basis during the summer/fall months as needed adjacent to pipeline rights-of-way, water diversions, and other utility infrastructure

Table 1. Summary of Covered Activities

General Activity	Description
Land management	▪ Management of Loch Lomond Recreation Area and watershed lands: Operation and management of 180-acre recreation area and 3,880 acres of open space ▪ Trail maintenance and repair: less than 50 yards of trail in non-anadromous watersheds annually ▪ Road maintenance and decommissioning: - Maintenance: Approximately 6.9 miles of road maintained annually - Decommissioning: 0-1 miles of road including up to 3-4 culverts on non-anadromous drainages annually
Habitat management and restoration	▪ Aquatic habitat management and restoration: Fish removal and dewatering of streams, up to 100 cumulative yards for 2-6 weeks annually ▪ Monitoring: Habitat typing up to 20 miles of stream and tagging/handling up to10,000 salmonids annually. Visual census of up to 5,000 feet of stream annually. Maintenance of up to 10 stream gages, 2 pit tag antennas, 10 temperature loggers, 1 fish trap, and 2 water quality data sondes annually

Notes: cfs = cubic feet per second; dbh = diameter at breast height.
[1] The Laguna Creek Diversion facility was retrofitted in 2021 in conformance with the ASHCP and is not analyzed in this IS.
[2] Tait Street Diversion, also referred to as San Lorenzo River Tait Street Diversion, Tait Diversion, San Lorenzo River Tait Intake, etc., is one of two surface water diversions on the San Lorenzo River and located in Santa Cruz with the other being located in Felton.

2.4.4 Conservation Strategy

The Conservation Strategy is designed to avoid, minimize, and fully mitigate the effects of Covered Activities on Covered Species and their habitat in support of the long-term viability of these populations within the San Lorenzo River and North Coast Streams in the Plan Area. The Conservation Strategy recognizes that the City's efforts will support and coordinate with overarching efforts to contribute to the conservation of these species within Santa Cruz County and the larger DPS and ESU boundaries. The Conservation Strategy assumes, and is dependent upon, approval of the pending Santa Cruz Water Rights Project with the SWRCB. The Conservation Strategy includes three primary components: Biological Goals and Objectives, Avoidance and Minimization Measures (AMMs), and a Non-Flow Conservation Fund (NFCF). The Conservation Strategy would be funded by the City through allocation of a portion of its water rate revenues in defined increments over the 30-year permit term. The Conservation Strategy is summarized as follows and is fully described in Chapter 4 of the ASHCP.

2.4.4.1 Biological Goals and Objectives

The Biological Goals and Objectives, which are fully described in Section 4.3 of the ASHCP (City of Santa Cruz 2023a), provide a statement of desired future conditions and provide the basis for determining strategies, monitoring effectiveness, and evaluating the success of actions. Biological Goals are broad, guiding principles based on the conservation needs of the resources. Biological Goals involve provision of bypass flows at each diversion source to improve habitat conditions; creation, restoration, and enhancement of physical habitat to mitigate any residual effects of the diversions; and avoiding, minimizing, and fully mitigating effects to Covered Species resulting from City operations and maintenance activities. Objectives are expressed as conservation targets or desired conditions for each Biological Goal. Some objectives are further expanded into specific sub-objectives focused on North Coast Streams and the San Lorenzo River for each of the two Covered Species.

- **Biological Goal #1.** Contribute to the conservation of Covered Species by providing flows sufficient to improve habitat conditions and increase the likelihood of persistence of populations within the Plan Area.
  - **Objective 1.1.** Within two (2) years of permit issuance, and for the duration of HCP implementation, increase the quantity and quality of habitat supporting adult migration in terms of average number of days with flow meeting minimum migration criteria during the adult migration period (December through April for steelhead, December and January for coho).
  - **Objective 1.2.** Within two (2) years of permit issuance, and for the duration of Plan implementation, increase the quantity and quality of habitat supporting spawning as measured by average annual weighted usable area (WUA) during potential spawning periods (after migration event in December-May for steelhead, December-March for coho).
  - **Objective 1.3.** Within two (2) years, and for the duration of Plan implementation, increase the quantity and quality of habitat supporting juvenile rearing as measured by seasonal average (winter, spring, summer) rearing WUA.
  - **Objective 1.4.** Smolt Outmigration – Within two (2) years of permit issuance, and for the duration of Plan implementation, increase the quantity and quality of habitat supporting smolt outmigration as measured by annual number of days with flows meeting minimum migration criteria during the smolt migration period (January through May).
  - **Objective 1.5.** Within two (2) years of permit issuance and for the duration of Plan implementation, improve rearing habitat in the San Lorenzo River Lagoon by providing minimum inflow of 8 cubic feet per second (cfs) to improve temperature and dissolved oxygen (DO) levels during periods when the lagoon is closed.
- **Biological Goal #2.** Contribute to the conservation of Covered Species by creating, restoring, or enhancing aquatic habitat in the Plan Area.[6]
  - **Objective 2.1.** Between years 1-10, fund and oversee habitat restoration or enhancement projects worth $2.7M (2018 dollars excluding administration) and potentially including removal of passage obstacles, placement of large wood structures, riparian conservation easements, spawning gravel augmentation, riparian restoration, and sediment control projects.
  - **Objective 2.2.** Between years 11-20, fund and oversee habitat restoration or enhancement projects worth $2.7M (2018 dollars excluding administration) and potentially including removal of passage obstacles, placement of large wood structures, riparian conservation easements, spawning gravel augmentation, riparian restoration, and sediment control projects.
  - **Objective 2.3.** Between years 21-30, fund and oversee habitat restoration or enhancement projects worth $2.7M (2018 dollars excluding administration) and potentially including removal of passage obstacles, placement of large wood structures, riparian conservation easements, spawning gravel augmentation, riparian restoration, and sediment control projects.
- **Biological Goal #3.** Avoid, minimize, and fully mitigate effects to Covered Species resulting from City operations and maintenance activities.
  - **Objective 3.1.** During all years of Plan implementation, operate facilities to avoid stranding Covered Species by implementing a ramping rate during flow changes at the Felton Diversion Dam, Tait Street Diversion, Laguna Creek Diversion, Liddell Spring Diversion, Majors Creek Diversion, and Newell Creek Dam to limit flow reductions such that change in stage is limited.
  - **Objective 3.2.** During all years of Plan implementation, operate facilities to reduce introduction of sediment.

[6] The objectives for Biological Goal #2 relate to implementation of the NFCF (discussed further below).

- **Objective 3.3.** Within ten (10) years of permit issuance, enhance fish passage through the Felton Diversion Dam by upgrading facilities to meet current NMFS and CDFW criteria for fish screens and passage.
- **Objective 3.4.** Within ten (10) years of permit issuance, enhance fish passage through the Tait Street Diversion by modifying the Tait Street Diversion to prevent entrainment and impingement and provide bypass in accordance with current criteria issued by NMFS and CDFW.

2.4.4.2 Avoidance and Minimization Measures

Numerous AMMs are incorporated into the ASHCP to eliminate or reduce effects of Covered Activities on Covered Species to the extent practicable. The AMMs define specific tools and techniques and measurable steps to meet HCP objectives and achieve desired future conditions. The AMMs may involve the removal of an activity from a particular location or the scheduling of an activity to occur during a period in which the species is unlikely to be affected. Avoidance and minimization measures may also apply constraints or limitations on an activity that allow it to proceed while avoiding or minimizing effects to species. The AMMs are listed in Table 2 and summarized as follows:

- Provision of minimum bypass flows at each City diversion under a range of hydrologic conditions. The minimum instream flow requirements are those flows needed to maintain habitat for steelhead and coho during all freshwater life stages (migration, spawning, incubation, and rearing) over a range of Hydrologic Condition Types. Bypass flows are presented by month, life stage, and hydrologic condition, and are driven by the salmonid life stage having the highest flow requirement. This also includes implementation of ramping rates during flow changes. See Appendix A of this document and Section 4.4.2 of the ASHCP for specific minimum instream flow targets. (ASHCP Section 4.4.2, Measures WS-1 through WS-30, WS-34 through WS-39, WS-41 through WS-46).
- Measures to facilitate sediment transport and fish passage at diversions to avoid accumulation of sediment behind dams, remove accumulated sediment behind dams, flush sediments when the majority of sediment is being transported, allow adult steelhead and coho to migrate upstream, and rehabilitate the Laguna, Reggiardo, and Majors diversions to allow more natural sediment transport (ASHCP Section 4.4.3, Measures WO-15 through WO-17).
- Measures for fish ladder and fish screen inspections and maintenance (ASHCP Section 4.4.2, Measures WS-31 and WS-32; ASHCP Section 4.4.3, Measures WO-18 and WO-19).
- Temporal restrictions on surface water diversions at Felton Diversion (ASHCP Section 4.4.2, Measure WS-33).
- Facility upgrades to Felton and Tait Street Diversions to meet current fish screen and fish passage criteria (ASHCP Section 4.4.2, Measures WS-33 and WS-40).
- Measures to avoid or minimize effects related to treatment of the Newell Reservoir (also referred to as the Loch Lomond Reservoir) with copper-containing algaecides/aquatic pesticides (ASHCP Section 4.4.2, Measures WS-47 through WS-52).
- Measures related to release of reservoir water to maintain aeration of released water, control turbidity, and ensure appropriate temperatures of released water (ASHCP Section 4.4.2, Measures WS-53 through WS-57).
- Use of woody debris removed from the inside reservoir face for instream restoration projects downstream of the reservoir and minimization of debris removal to allow natural habitat-forming material to remain in streams (ASHCP Section 4.4.2, Measure WS-58; ASHCP Section 4.4.4, Measures MF-1 through MF-4).
- General measures for work around water bodies, including working outside the wetted channel, conducting activities during the low-flow season, erosion control measures, and measures related to management of riparian vegetation for shading, streambank stabilization, and removal of non-native vegetation (ASHCP Section 4.4.3, Measures WO-1 through WO-8).

- Measures applicable to work that must occur within the wetted channel, such as isolation of the work area from flowing water, relocation of fish from areas to be dewatered to nearby suitable habitat, minimizing hazardous materials spills/contamination, and staff training (ASHCP Section 4.4.3, Measures WO-9 through WO-14).
- Measures to avoid sediment discharge to water courses, and contain sediment and spills, including procedures for flushing pipelines to reduce impacts of potential chlorine and sediment discharges, and preventing riparian erosion and hydromodification by implementing flow dissipation, erosion control, and hydromodification-prevention measures; and minimizing sediment discharge, turbidity, and color impacts by implementing sediment, turbidity, erosion, and color control measures (ASHCP Section 4.4.3, Measures WO-20 and WO-21).
- Procedures for dewatering and relocation of Covered Species, construction timing guidelines, and restoration and regrading of stream channels following completion of work activities, minimizing the size of access routes and staging areas and siting them outside of sensitive riparian and wetland areas (ASHCP Section 4.4.3, Measures WO-22 through WO-30).
- Installation of habitat improvement features (e.g., boulders, riparian plantings) in conjunction with scheduled instream repair work whenever feasible (ASHCP Section 4.4.3, Measure WO-31).
- Surveys to identify important salmonid habitat areas, vegetation characteristics, and sediment aggradation (ASHCP Section 4.4.4, Measures MF-6 and MF-7).
- Sediment removal restrictions/guidelines (ASHCP Section 4.4.4, Measures MF-5, MF-8 through MF-10).
- Vegetation management guidelines, including timing of vegetation removal and non-native plant control (ASHCP Section 4.4.4, Measures MF-11 through MF-17, MF-36, and MF-37).
- Minimization of stormwater pollutants and runoff, and upgrades to and maintenance of stormwater facilities (ASHCP Section 4.4.4, Measures MF-18 through MF-35).
- Temporal restrictions on vehicle access, installation of drainage improvements, remediation of erosion areas, monitoring and removing unauthorized trails, and assuring appropriate use of trails (ASHCP Section 4.4.5, Measures LM-1 through LM-4).
- Road management including erosion control and procedures for decommissioning of roads that are no longer required for Covered Activities (ASHCP Section 4.4.5, Measures LM-5 through LM-14).
- Habitat restoration methods, permitting, timing, and monitoring protocols (ASHCP Section 4.4.5, Measures LM-15 through LM-21).

Table 2. Avoidance and Minimization Measures in the ASHCP

AMM Number	AMM Description	Applicable Covered Activities
Rehabilitation of Diversion Structures and Pipeline Reaches		
AMMs WO-1 through WO-14 (listed below)		
Water Supply Operations		
Water Diversions		
WS-1	Provide 0.25 cfs minimum bypass flow for rearing juvenile steelhead in Liddell Creek in the two driest hydrologic conditions (80%-100% exceedance and 60%-80% exceedance). A flow of 0.25 cfs provides approximately 27% of the maximum habitat index for steelhead rearing in the reach (HES 2014b).	Water diversions – Liddell Spring

Table 2. Avoidance and Minimization Measures in the ASHCP

AMM Number	AMM Description	Applicable Covered Activities
WS-2	Provide up to 5.2 cfs minimum bypass flow for rearing juvenile steelhead in the anadromous reach of Liddell Creek in normal, wet, and very wet hydrologic conditions (0%-60% exceedance). This provides approximately 76% of the maximum habitat index for steelhead rearing in the reach (HES 2014b).	Water diversions – Liddell Spring
WS-3	Provide minimum bypass flows for adult migration in the anadromous reach in December through April of 0%-60% hydrologic conditions with a lower flow threshold of 4.9 cfs and an upper threshold of 11.3 cfs whenever flow would be at this level without City diversions.	Water diversions – Liddell Spring
WS-4	Provide minimum bypass flows for spawning in the anadromous reach in December through May of 0%-60% hydrologic conditions of 7.4 cfs for 14 days following any adult migration period (provides estimated 80% of peak habitat index for steelhead spawning and 97% of the peak for coho).	Water diversions – Liddell Spring
WS-5	Provide bypass flows for egg incubation in January through May of 0%-60% hydrologic conditions. The incubation flow in Liddell Creek is 2.0 cfs. Incubation flows are provided for 60 days after the last spawning day or until May 30, whichever is earliest.	Water diversions – Liddell Spring
WS-6	Provide bypass flows for smolt migration in the anadromous reach during January through May in 0-60% hydrologic conditions (hydrologic conditions 1-3), and for at least 3 consecutive days per week in March, April, and May in 60%-100% conditions (hydrologic conditions 4 and 5). The smolt migration minimum is 2 cfs.	Water diversions – Liddell Spring
WS-7	Implement a ramping rate during flow changes at Liddell Spring Diversion to limit flow reductions such that change in stage is no greater than 0.16 feet per hour when fry may be present (January 15 through May 31) and no greater than 0.3 feet per hour at other times.	Water diversions – Liddell Spring
WS-8	Provide 2 cfs minimum bypass flow for rearing juvenile steelhead in the anadromous reach of Laguna Creek at all times. This is approximately the 44% exceedance flow for August in the historical hydrologic record and equates to about 70% of the maximum habitat index for steelhead rearing in August in the reach and approximately 99% of the maximum habitat index for coho rearing (HES 2014).	Water diversions – Reggiardo/Laguna Creek
WS-9	Provide minimum bypass flows for adult migration in the anadromous reach with a lower flow threshold of 11.3 cfs and an upper threshold of 15.5 cfs in December through March of all hydrologic conditions and April when hydrologic condition is 0-60% whenever flow would be at this level without City diversions.	Water diversions – Reggiardo/Laguna Creek
WS-10	Provide minimum bypass flows for spawning in the anadromous reach of 9.4 cfs during December through May for 14 days following any adult migration period (providing 80% of peak habitat index for steelhead spawning and 97% of the peak for coho).	Water diversions – Reggiardo/Laguna Creek
WS-11	Provide bypass flows for egg incubation in January through May in all hydrologic conditions. The incubation flow in Laguna Creek is 4.0 cfs. Incubation flows are provided for 60 days after the last spawning day or until May 30, whichever is earliest.	Water diversions – Reggiardo/Laguna Creek

Table 2. Avoidance and Minimization Measures in the ASHCP

AMM Number	AMM Description	Applicable Covered Activities
WS-12	Provide bypass flows for smolt migration in the anadromous reach during January through May in 0-80% hydrologic conditions (hydrologic conditions 1-4), and for at least 3 consecutive days per week in 80%-100% conditions (hydrologic condition 5). The smolt migration minimum is 3.8 cfs. For background on the various hydrologic conditions, see Appendix 8: Hydrologic, Water Supply, and Fisheries Habitat Effects Modeling.	Water diversions – Reggiardo/Laguna Creek
WS-13	Implement a ramping rate during flow changes at Laguna Creek Diversion to limit flow reductions such that change in stage is no greater than 0.16 feet per hour when fry may be present (January 15 through May 31) and no greater than 0.3 feet per hour at other times.	Water diversions – Reggiardo/Laguna Creek
WS-14	Provide 0.25 cfs minimum bypass flow for rearing juvenile steelhead in Majors Creek in the two driest hydrologic conditions (80%-100% and 60%-80%). A flow of 0.25 cfs equates with approximately 27% of the maximum WUA for rearing juvenile steelhead occurring in Majors Creek.	Water diversions – Majors Creek
WS-15	Provide up to 4.7 cfs minimum bypass flow for rearing juvenile steelhead in the anadromous reach of Majors Creek in normal, wet, and very wet hydrologic conditions (0%-60%). This is more than the maximum August flow and approximately the 10% exceedance flow for June in the historical hydrologic record and equates to about 86% of the maximum habitat index for steelhead in June (HES 2014b).	Water diversions – Majors Creek
WS-16	Provide minimum bypass flows for adult migration in the anadromous reach in December through April of 0%-60% hydrologic conditions with a lower flow threshold of 9 cfs and an upper threshold of 16 cfs whenever flow would be at this level without City diversions.	Water diversions – Majors Creek
WS-17	Provide minimum bypass flows for spawning in the anadromous reach in December through May of 0%-60% hydrologic conditions of 12.1 cfs for 14 days following any adult migration period (provides estimated 80% of peak habitat index for steelhead spawning and 97% of the peak for coho).	Water diversions – Majors Creek
WS-18	Provide bypass flows for egg incubation in January through May of 0%-60% hydrologic conditions. The incubation flow in Majors Creek is 2.9 cfs. Incubation flows are provided for 60 days after the last spawning day or until May 30, whichever is earliest.	Water diversions – Majors Creek
WS-19	Provide bypass flows for smolt migration in the anadromous reach during January through May in 0-60% hydrologic conditions (hydrologic conditions 1-3), and for at least 3 consecutive days per week in March, April, and May in 60%-100% conditions (hydrologic conditions 4 and 5). The smolt migration minimum is 3.4 cfs.	Water diversions – Majors Creek
WS-20	Implement a ramping rate during flow changes at Majors Creek Diversion to limit flow reductions such that change in stage is no greater than 0.16 feet per hour when fry may be present (January 15 through May 31) and no greater than 0.3 feet per hour at other times.	Water diversions – Majors Creek
WS-21	Provide 0.25 cfs minimum bypass flow for rearing juvenile steelhead in the anadromous reach of Newell Creek when Loch Lomond Reservoir storage is less than specified storage levels (Table 4-5).	Water diversions – Newell Creek

Table 2. Avoidance and Minimization Measures in the ASHCP

AMM Number	AMM Description	Applicable Covered Activities
WS-22	Provide 1 cfs minimum bypass flow for rearing juvenile steelhead in the anadromous reach of Newell Creek at all other times.	Water diversions – Newell Creek
WS-23	During changes in bypass rates downstream of Newell Creek Dam, a ramping rate will be implemented to limit flow reductions in Newell Creek such that the change in stage is no greater than 0.16 feet per hour when fry may be present (January 15 through May 31) and no greater than 0.3 feet per hour at all other times.	Water diversions – Newell Creek
WS-24	At times when the Loch Lomond Reservoir is spilling during late spring and summer when surface temperatures in the reservoir are warmer and the cooler 1 cfs fish release below the dam (generally between 11°C and 14°C) may not be sufficient to maintain temperature in Newell Creek below 21°C, which is within the suitable range for steelhead and coho salmon, the City will release additional flow through the fish release to achieve a maximum instantaneous temperature of less than 21°C as measured in the anadromous reach of Newell Creek and verified at the City stream gage in Newell Creek below the dam.	Water diversions – Newell Creek
WS-25	Deflate dam during the first one or two rainstorms of the season to flush sediments and organic matter from the channel.	Water diversions – Felton
WS-26	Deflate dam during high flows when the majority of sediment is being transported.	Water diversions – Felton
WS-27	During November 1 through March 31 when the mouth of the San Lorenzo River is open and streamflow is less than 40 cfs and the City is diverting water, the dam will be inflated to allow 20 cfs bypass flow through the fish ladder. During the same period, if the City is not diverting, the City will inflate small air bladders beneath the deflated dam or employ similar, comparable measures for the purpose of facilitating fish passage over or around the facility. If passage over the deflated dam is provided, the depth of flow within the zone of concentrated flow crossing the dam will be 8 inches or greater. Similarly, if passage is provided around the dam through the pumping channel, 8 inches of depth or greater will be provided.	Water diversions – Felton
WS-28	During December 1 through April 30 when the mouth of the San Lorenzo River is open and streamflow is 40 cfs or more configure the dam to bypass 40 cfs with a minimum of 20 cfs through the fish ladder.	Water diversions – Felton
WS-29	For moderate streamflow conditions, during November 1 through March 31 when the mouth of the San Lorenzo River is open and streamflows are between 40 and 200 cfs, the City will divert water by inflating the dam and allowing a minimum 40 cfs bypass flow. During these moderate streamflow conditions, the City will keep the dam deflated during the first one or two rainstorms to flush sediments and organic matter from the channel. During these conditions of winter operation, migrating fish can pass over the deflated dam.	Water diversions – Felton

Table 2. Avoidance and Minimization Measures in the ASHCP

AMM Number	AMM Description	Applicable Covered Activities
WS-30	In high streamflow conditions (exceeding 200 cfs) from November 1 through March 31, when the City is diverting, the dam will be inflated such that the fish ladder is operational. When streamflow exceeds approximately 300 cfs, the slide gate on the fish ladder will be opened approximately 8 inches to increase attraction flow to the ladder entrance. When streamflows have equaled or exceeded 300 cfs for five consecutive days and adult steelhead or salmon are observed holding downstream of the dam, on the following day the dam will be partially deflated and the slidegate closed in the evening and overnight. This allows the steelhead and salmon the opportunity to jump and swim over the partially deflated dam. When streamflows exceed 2,000 cfs the City will fully deflate the dam.	Water diversions – Felton
WS-31	Inspect fish ladder 2-3 times per week and manually clean and remove debris as needed. Remove debris from site and dispose at approved waste disposal facility.	Water diversions – Felton
WS-32	Inspect all fish screens regularly (daily) and manually clean and remove debris from screens and debris racks as needed.	Water diversions – Felton
WS-33	Upon implementation of the proposed Santa Cruz Water Rights Project (as described in Section 6.2.1), the City will undertake a facility upgrade at the Felton Diversion. Planning for the facility upgrade will include a comprehensive evaluation of existing fish migration conditions at the facility and potential improvements for upstream and downstream migration of both juvenile and adult steelhead. Findings of this evaluation will be used to design state of the art fish passage components that may include revisions to the pumping channel, the Denil fish ladder, or both. The evaluation will consider the potential for channel changes downstream of the diversion and revisions will be designed to accommodate possible channel changes. Any revisions based on these findings will be incorporated in the upgrade project. The upgrade will include screen replacement, continuous cleaning system, and juvenile passage modifications to meet current fish screen and fish passage criteria. The fish screen material will be replaced with either wedge wire with a 1.75 mm slot width or a perforated plate with 3/32" diameter perforations. A mechanical traveling brush system will be installed for continuous screen cleaning. The brush system will provide a 5-minute continuous cleaning cycle. A continuous bypass route will be installed so that out-migrants entrained in the intake structure can continue their movement downstream. Ladder upgrades to improve passage will be evaluated and incorporated as appropriate as well.	Water diversions – Felton
WS-34	Do not divert at the Felton Diversion during June through August.	Water diversions – Felton
WS-35	Provide 20 cfs minimum bypass flow for rearing and smolt migration during November 1 through May 31 in all hydrologic categories.	Water diversions – Felton
WS-36	Provide 10 cfs minimum bypass flow during September and 25 cfs minimum bypass in October in all hydrologic categories.	Water diversions – Felton
WS-37	Provide 40 cfs minimum bypass flow for adult migration in December through April whenever natural flow would occur at this level in the absence of a diversion.	Water diversions – Felton

Table 2. Avoidance and Minimization Measures in the ASHCP

AMM Number	AMM Description	Applicable Covered Activities
WS-38	Provide 40 cfs minimum bypass flow for spawning in December through April for 14 days after potential passage events (i.e., 40 cfs flow and mouth of the river is open).	Water diversions – Felton
WS-39	The City will manage inflation and deflation of the Felton Diversion Dam to maintain stage increase of less than 1.68 feet per hour during deflation of the dam and stage decrease of no more than -0.55 feet per hour during inflation of the dam. This will be accomplished through manual operation of the dam bladders by a trained operator. Inflation and deflation of the dam in response to anticipated changes in the hydrograph from forecast storms will be planned in advance in consultation with staff hydrologists to minimize stage changes to the maximum extent practicable.	Water diversions – Felton
WS-40	Modify the Tait Street Diversion to prevent entrainment and impingement and provide bypass per criteria issued by NMFS and/or CDFW. This may include: screens aligned parallel to river flow and composed of either perforated plate with screen openings not exceeding 3/32 inches (2.38 mm), measured in diameter; profile bar with screen openings not exceeding 0.0689 inches (1.75 mm) in width; or woven wire with screen openings not exceeding 3/32 inches (2.38 mm), measured diagonally (e.g. 6-14 mesh). Screen material shall provide a minimum of 27% open area. The screen material shall be corrosion resistant and sufficiently durable to maintain a smooth and uniform surface with long-term use. Design features will also include: uniform flow across the screens; approach velocities not exceeding 0.33 f/s; sweeping velocities that exceed approach velocities; provision for appropriate juvenile bypass; and provision for continuous cleaning. Fish Screens shall be automatically cleaned as frequently as necessary to prevent accumulation of debris. Open channel intakes shall include a trash rack in the screen facility design which shall be kept free of debris. In certain cases, a satisfactory profile bar screen design can substitute for a trash rack. The head differential to trigger screen cleaning for intermittent type systems shall be a maximum of 0.1 feet (0.03 m), unless otherwise agreed to by NMFS. It should be noted that, because the Tait Street Diversion currently has a “drum” type screen, the alternative CDFW/NOAA criteria for diversions under 40 cfs may apply. Final retrofit will be determined pending ongoing feasibility studies. Additionally, a feasibility analysis for horizontal wells, which also will prevent take of listed salmonids at this location, is also ongoing. Upgrades to improve passage will be evaluated and incorporated as appropriate.	Water diversions – Tait Street
WS-41	Provide 8 cfs minimum bypass flow for rearing juvenile steelhead and lagoon inflows in the San Lorenzo River below the Tait Street diversion in dry and very dry hydrologic conditions (Table 4-8). This is approximately 60% of the maximum habitat index for steelhead rearing in the reach (HES 2014b).	Water diversions – Tait Street
WS-42	Provide up to 18 cfs minimum bypass flow for rearing juvenile steelhead in the San Lorenzo River below the Tait Street diversion and for inflow to the lagoon in normal, wet, and very wet hydrologic conditions (Table 4-8). This is approximately 80% of the maximum habitat index for steelhead rearing in the reach (HES 2014b).	Water diversions – Tait Street

Table 2. Avoidance and Minimization Measures in the ASHCP

AMM Number	AMM Description	Applicable Covered Activities
WS-43	Provide minimum bypass flows for adult migration downstream of Tait Street with a lower flow threshold of 17 cfs and an upper threshold is 25.2 cfs in December through March of dry and very dry years. Adult migration bypass flows are to be provided whenever flow would be at this level without City diversions and when storage in Loch Lomond Reservoir is sufficient (Table 4-8), otherwise provide bypass flow for 3 consecutive days per week or 5 consecutive days depending on Loch Lomond Reservoir storage levels (Table 4-8).	Water diversions – Tait Street
WS-44	Provide minimum bypass flows for adult migration downstream of Tait Street with a lower flow threshold of 17 cfs and an upper threshold is 25.2 cfs in December through April of normal, wet, and very wet years whenever flow would be at this level without City diversions (Table 4-8).	Water diversions – Tait Street
WS-45	Provide minimum smolt migration flows of 10 cfs during January through May in dry, normal, wet, and very wet hydrologic conditions, and for at least 3 consecutive days per week in very dry conditions during March through May (Table 4-8). If the City determines that conditions will require diversion of stored water from Loch Lomond Reservoir that cannot be offset by diversions at Felton, or from Liddell and Majors Creeks, the City may further reduce smolt outmigration requirements at the Tait Street Diversion provided that: (a) drought has been officially declared; and (b) this reduction in smolt outmigration opportunities will not reduce smolt migration more than one full day/week in the lower San Lorenzo River system or there is evidence from the San Lorenzo River or neighboring watersheds (i.e. Scott Creek) indicating that smolt migration is no longer occurring.	Water diversions – Tait Street
WS-46	Implement a ramping rate during flow changes at the Tait Street Diversion to limit flow reductions such that change in stage is no greater than 0.16 feet per hour when fry may be present (January 15 through May 31) and no greater than 0.3 feet per hour at other times.	Water diversions – Tait Street
Reservoir Operations		
WS-47	Avoid application of algaecide except when algae blooms occur. In the case where reservoir overflow cannot be prevented or is imminent, allow algae to bloom and do not apply copper-containing aquatic pesticides.	Chemical algaecide treatment of the Reservoir
WS-48	Minimize copper application through use of peroxide-based algaecides whenever possible and GPS-guided application.	Chemical algaecide treatment of the Reservoir
WS-49	Adhere to the Aquatic Pesticide Application Plan and algaecide label instructions.	Chemical algaecide treatment of the Reservoir
WS-50	Avoid release of treated surface water by application of algaecide at least 50 days before there is any potential for the Reservoir to spill (City of Santa Cruz Water Department 2005)	Chemical algaecide treatment of the Reservoir
WS-51	Lower the lake level prior to application of copper-containing aquatic pesticides if there is a risk of rain by drawing more water to the plant for treatment, releasing reservoir water from the deluge valve, and/or increasing release through the creek flow maintenance system.	Chemical algaecide treatment of the Reservoir

Table 2. Avoidance and Minimization Measures in the ASHCP

AMM Number	AMM Description	Applicable Covered Activities
WS-52	Implement a monitoring program to assess the copper application, verify that application control goals are met, and to monitor copper discharges to Newell Creek through the fish water release.	Chemical algaecide treatment of the Reservoir
WS-53	Do not release water warmer than 18 °C.	Testing deluge and gate valves
WS-54	Release discharge into boulders/broken concrete below the dam to prevent scour of the streambed and provide aeration.	Testing deluge and gate valves
WS-55	Monitor DO and turbidity levels just below the Newell Creek Dam road crossing to confirm aeration of released water and control of turbidity. Discontinue releases if adverse levels are observed.	Testing deluge and gate valves
WS-56	Meter out releases so that changes in streamflow are minimized and mimic the natural rise and fall of a natural hydrograph. Record flows at the stream gaging station located several hundred feet downstream of the dam.	Testing deluge and gate valves
WS-57	Conduct releases at times when lake coppering is not occurring, or otherwise ensure that releases do not have copper levels higher than that allowable by the Basin Plan.	Testing deluge and gate valves
WS-58	Continue the practice of reserving larger pieces of wood for use in restoration projects.	Woody debris removal on Reservoir face
Water System Operations and Maintenance		
WO-1	Conduct activities outside of the wetted channel whenever feasible by timing work to the low flow season or by utilizing equipment or methods that do not require access in the channel.	Work around water bodies
WO-2	Conduct activities during the low flow season (June through October) whenever possible.	Work around water bodies
WO-3	Minimize sediment input into the channel by installing erosion control devices and fencing as appropriate.	Work around water bodies
WO-4	Store construction materials outside of the stream channel area and cover loose soils and materials while stored.	Work around water bodies
WO-5	Minimize disturbance to banks and riparian vegetation. Proactively restore impacted riparian vegetation with native species.	Work around water bodies
WO-6	Minimize removal of overstory/canopy trees that provide shade to the stream channel or banks through marking trees to not be removed.	Work around water bodies
WO-7	Limit management of vegetation that is stabilizing the stream banks to trimming and pruning.	Work around water bodies
WO-8	Remove non-native vegetation where accessible and where removal would have demonstrable habitat benefits.	Work around water bodies
WO-9	Isolate the work area and bypass flowing water around the work site.	Work within the wetted channel
WO-10	Relocate fish from areas to be dewatered to nearby suitable habitat (see Measures WO-24 through WO-32 for fish relocation measures).	Work within the wetted channel
WO-11	Remove any foreign materials from the channel before re-watering.	Work within the wetted channel
WO-12	Minimize potential for hazardous spill from heavy equipment by not storing equipment in the channel and equipping vehicles with spill kits.	Work within the wetted channel

Table 2. Avoidance and Minimization Measures in the ASHCP

AMM Number	AMM Description	Applicable Covered Activities
WO-13	Refuel vehicles a minimum of 50 feet outside the channel.	Work within the wetted channel
WO-14	Develop staff training manual for working in waterways and protecting water quality. The manual will describe applicable conservation measures, agency and permitting authorities, biological issues, and habitat types and for conducting work in waterways and for protecting water quality. This manual will be distributed to field staff and via the City's intranet system. Annual field training will accompany the manual.	Work within the wetted channel
Water Diversion Sediment Management		
WO-15	Until completion of rehabilitation projects provided in WO-17, operate diversions to pass the bedload and suspended sediment through the impoundment on stormflows by opening a slide gate in the dam face during the ascending hydrograph and then closing it again on the receding limb. At the Liddell Spring Diversion crack the valve to allow sediment to pass through without accumulating in the spring box and to allow transport of the peak of the hydrograph when necessary.	Water diversion sediment management
WO-16	Remove any sediment that does collect behind the dams or in the Liddell Spring Box using hand tools, suction pumps, backhoes or vacuum equipment during the dry season (August – October) or in occasional emergency conditions in the winter time during low flow conditions. Remove sediment from site immediately or store it temporarily on site with appropriate sediment and turbidity containment.	Water diversion sediment management
WO-17	Rehabilitate Laguna Creek diversion, Reggiardo Creek diversion, and Majors Creek diversion to allow flow and sediment to move naturally down the stream channel during high flows and avoid any potential for "pulsing" of sediment to downstream habitat (Chapter 3).	Water diversion sediment management
Fish Ladder and Screen Maintenance		
WO-18	Inspect fish ladder 2-3 times per week or daily during storm flows and manually clean and remove debris as needed. Remove debris from site and dispose at approved waste disposal facility.	Fish ladder and screen maintenance
WO-19	Inspect all fish screens daily and manually clean and remove debris from screens and debris racks as needed.	Fish ladder and screen maintenance
Pipeline Operations		
AMMs WO-1 through WO-14 (listed above)		Conveyance pipeline system inspection and repair
WO-20	Follow Stormwater SOPs, including SOP 7102-01 Superchlorinated Potable Water Discharges, SOP 7102-02 Low-Chlorine Potable Water Discharges, and SOP 7105-01 Sediment and Turbidity Control During Open Channel Water Discharges.	Finished water pipeline system flushing and repairs
WO-21	Follow Sediment Control for Open Water Channel Discharges – Water Department SOP #8300-01, including procedures for controlling sediment during main or service break repair activities and any other activities that involve open channel discharges to the storm drain system or receiving waters. This includes use of vacuum truck to eliminate discharge; filtration with pea gravel bags before discharge to storm drain; and overland filtration.	Finished water pipeline system flushing and repairs

Table 2. Avoidance and Minimization Measures in the ASHCP

AMM Number	AMM Description	Applicable Covered Activities
Dewatering of Creeks for Maintenance and Repairs		
WO-22	If work areas are to be de-watered, as many individuals of the Covered Species as possible will be captured and relocated prior to draining the site. The work area will be isolated with block nets and Covered Species will be captured, transported in buckets, and released in the most appropriate habitat (i.e., similar habitat conditions) immediately adjacent to the de-watered area. Methods will be determined based on the site conditions but may include electrofishing, dipnet, or seine. The number of individuals relocated will be estimated for each species prior to release. As the work site is de-watered, the remaining pools will be inspected for presence of Covered Species. Handling and holding time will be minimized to the maximum extent practicable.	Dewatering of creeks for maintenance and repairs
WO-23	Only NMFS-approved biologists will participate in activities associated with the capture, handling, and monitoring of Covered Species. The City will provide NMFS with the names and credentials of personnel proposed to conduct these activities for review and approval at least 15 days prior to the onset of the activities. No capture, handling, or monitoring activities will begin until NMFS notifies the City in writing that the biologist(s) is approved.	Dewatering of creeks for maintenance and repairs
WO-24	Prior to the onset of activities that result in disturbance of potential Covered Species habitat or individuals, a NMFS-approved biologist will conduct a training session for all construction personnel. At a minimum, the training will include: a description of the Covered Species and their' habitat; the importance of the species and their habitat; the general measures that are being implemented to conserve the species as they relate to the project; and the boundaries within which the project may be accomplished. Brochures, books, and briefings may be used in the training session.	Dewatering of creeks for maintenance and repairs
WO-25	A NMFS-approved biologist will monitor the work site until all removal of Covered Species, and habitat disturbance have been completed. After this time, the City will designate a person to monitor on-site compliance with all minimization measures. The approved biologist will ensure that this individual receives training in the identification of Covered Species and on the topics outlined above in Measure WO-26. The monitor and the approved biologist will have the authority to halt activities to avoid death or injury to individuals of the Covered Species. If work is stopped, the City will notify NMFS of the event within 48 hours.	Dewatering of creeks for maintenance and repairs
WO-26	If a work site is to be temporarily de-watered by pumping, intakes will be completely screened with wire mesh not larger than five millimeters (mm) to prevent Covered Species from entering the pump system. Water will be released or pumped downstream at an appropriate rate to maintain instream flows during construction. Upon completion of construction activities, any barriers to flow will be removed in a manner that would allow flow to resume with the least disturbance to the substrate.	Dewatering of creeks for maintenance and repairs

Table 2. Avoidance and Minimization Measures in the ASHCP

AMM Number	AMM Description	Applicable Covered Activities
WO-27	If project activities could degrade water quality, the existing water quality parameters will be determined (e.g., temperature, DO, pH, and turbidity) prior to the onset of work. Water samples will be taken in a manner that minimizes disturbance, injury, or mortality of Covered Species. Results will be used to monitor water quality parameters during and after maintenance and sediment removal activities.	Dewatering of creeks for maintenance and repairs
WO-28	Work activities will be conducted between July 1 and October 31 to the maximum extent practicable. Should the City need to conduct activities outside this period, it will notify NMFS.	Dewatering of creeks for maintenance and repairs
WO-29	If the substrate of the natural stream channel is altered during work activities, it will be graded or otherwise restored to approximate natural conditions after the work is completed.	Dewatering of creeks for maintenance and repairs
WO-30	The number of access routes, number and size of staging areas, and the total area of the activity will be limited to the minimum necessary to achieve the project goal. Routes and boundaries will be clearly demarcated, and these areas will be outside of sensitive riparian and wetland areas.	Dewatering of creeks for maintenance and repairs
WO-31	To mitigate for the small residual effects of this activity, the City will incorporate habitat improvement features with any scheduled (non-emergency) instream repair work whenever feasible. This could be relatively efficient since there will likely be heavy equipment on site for the repair work and habitat features (e.g., LWD, boulder placement, or additional riparian plantings beyond what is needed for bank stabilization) could be efficiently added. If installation of habitat features at the work site is judged to be impractical or not particularly beneficial, an offsite installation of similar dimensions will be installed elsewhere to achieve a 1:1 mitigation ratio.	Dewatering of creeks for maintenance and repairs
Municipal Facility Operations and Maintenance		
Flood Control Maintenance		
MF-1	Only remove material that creates a hazard to life, property, infrastructure, or public safety.	Debris/obstruction removal
MF-2	Involve a biologist with knowledge of Covered Species habitat needs as part of the team that evaluates need to remove materials and methods to be used. Have work overseen by environmental monitors and implement standard measures for instream work (See preceding).	Debris/obstruction removal
MF-3	Whenever possible leave natural habitat-forming material in the stream by moving it downstream of structures to be protected or cutting larger material into smaller segments that may float downstream in larger flows, as long as these segments retain habitat forming characteristics.	Debris/obstruction removal
MF-4	Allow retention of up to 3-foot square root wads in the channel every 500 feet for habitat value, provided there are no undesirable changes in channel hydraulics and provided such root wads do not show signs of developing into larger log jam structures in the future.	Debris/obstruction removal

Table 2. Avoidance and Minimization Measures in the ASHCP

AMM Number	AMM Description	Applicable Covered Activities
MF-5	Conduct sediment removal only as necessary to maintain and/or restore capacity of stormwater conveyance facilities or to prevent flood events; define sediment removal areas in the San Lorenzo River flood control channel (FCC) by cross section and HEC-6 analysis.	Flood control sediment management/removal
MF-6	Conduct a pre-project survey to define important salmonid habitat areas, including riffles, pools, and runs, and avoid sediment removal in these areas.	Flood control sediment management/removal
MF-7	Conduct annual surveys to identify vegetation characteristics and sediment aggradation within the San Lorenzo River FCC between Highway 1 and Soquel Avenue, and in the Branciforte Creek FCC.	Flood control sediment management/removal
MF-8	In the San Lorenzo River FCC maintain a 5-foot vegetation no-work buffer along both sides of the wetted channel where sediment removal activities will not occur.	Flood control sediment management/removal
MF-9	In the San Lorenzo River FCC disk bars annually during dry season to loosen root materials and promote scour. Encourage existing cross-channel scour areas through disking and manipulation of discarded root wads/vegetation material.	Flood control sediment management/removal
MF-10	Do not conduct sediment removal in San Lorenzo River FCC downstream of Laurel Street.	Flood control sediment management/removal
MF-11	Do not remove mature riparian trees except in the San Lorenzo River FCC and Branciforte Creek FCC; riparian shrubs may be trimmed from ground level up to 6-8 feet in height. Remove cuttings from the work area and recycle as green waste at the landfill or chip and leave in place.	Vegetation management
MF-12	Avoid vegetation management in the wetted channel to the maximum extent practicable. For work in the wetted channel follow measures for in-channel work (WO-9 through WO-14).	Vegetation management
MF-13	Conduct vegetation management late in the dry season, preferably August.	Vegetation management
MF-14	Selectively remove riparian vegetation that could possibly undermine the stability of the levees or exceeds accepted Army Corps of Engineers' "Manning's n roughness coefficient" for the FCC. Retain a minimum 5-foot vegetated buffer on either side of the wetted channel.	Vegetation management
MF-15	In the reach from Highway 1 to Water St., allow 10-foot-wide strip of willow and alder along toe of levee. Willows allowed to grow to 3 inches dbh; alders allowed to grow to 6 inches dbh. Trim lower limbs of the alder trees to reduce flood impacts. Thin willows to favor providing overhanging cover to the low flow channel. Maintain a 5-foot buffer along wetted edges of channel, but thin groves and limb-up trees. Remove any trees in 5-foot buffer area that are greater than 6 inches dbh.	Vegetation management
MF-16	In the reach from Water St. to Laurel St. maintain a 10-foot-wide strip of woody riparian vegetation and tules and cattails on the west bank. Maintain east bank to keep trees overhanging water. Trees or branches that fall in the water may be left, cut into smaller pieces, or removed entirely if they cause an immediate safety hazard. Maintain sandbars to allow volunteer groves to establish but remove all trees greater than 6 inches dbh.	Vegetation management

Table 2. Avoidance and Minimization Measures in the ASHCP

AMM Number	AMM Description	Applicable Covered Activities
MF-17	In the reach downstream of Laurel St. maintain a 5-foot-wide strip of willow, cattail and tule at the levee toe. Willows will be maintained with stem diameter of no greater than 0.5 inches and be limbed-up and periodically thinned to create defined groves.	Vegetation management
Stormwater Maintenance		
MF-18	Continue to implement Municipal Operations/Pollution Prevention and Good Housekeeping Program to prevent pollutants generated by municipal operations and activities from entering the storm drain system by implementing measures to prevent or reduce pollutant runoff from municipal operations.	Stormwater maintenance
MF-19	Continue Illicit Discharge Detection and Elimination Program is to detect and eliminate illicit connections and illegal discharges to the storm drain system from a variety of sources, including industrial facilities, commercial establishments, residential areas, and construction sites.	Stormwater maintenance
MF-20	Continue Public Education Program to increase public awareness on urban runoff pollution issues, to educate the community about specific sources of pollutants and what people can do to reduce them, to foster participation through community-based projects or volunteer activities focused on pollution prevention, and to decrease amount of illegal dumping and polluted urban runoff that is discharged into the storm drain system.	Stormwater maintenance
MF-21	Continue "Construction Site Stormwater Runoff Control Program" to protect the City's storm drain system and receiving waters from pollutants that may be discharged as a result of construction activities, including clearing, grading, excavation, landscaping, building, and remodeling of existing buildings. Minimize land disturbance at all permitted construction sites, protect water quality from pollutants generated by construction activities, and require measures to be implemented at all permitted construction sites.	Stormwater maintenance
MF-22	Continue Post-Construction Stormwater Management to ensure that new developments and remodeled sites are designed and constructed in a manner that minimizes the alteration of natural watercourses and drainage patterns, as well as alleviating the impact of new developments or remodeling projects on a site's and surrounding natural hydrology.	Stormwater maintenance
MF-23	Continue the Industrial Facilities Program to reduce urban runoff pollution generated by industrial facility operations and activities and to ensure that industrial facilities comply with the City's Stormwater Ordinance, mandatory measures, and Industrial Waste Discharge Permit requirements (as applicable).	Stormwater maintenance
MF-24	Continue the Program Effectiveness Assessment and Improvement Plan to track annual and long-term effectiveness of the Stormwater Program at protecting water quality. Use results of the assessment to adaptively manage Stormwater Program by providing supporting documentation for proposed modifications.	Stormwater maintenance

Table 2. Avoidance and Minimization Measures in the ASHCP

AMM Number	AMM Description	Applicable Covered Activities
MF-25	Reduce pollutant loading from multiple City sources to the maximum extent practicable in the San Lorenzo River, San Lorenzo River Lagoon, Branciforte Creek and Carbonera Creek consistent with Implementation Plans for TMDLs for sediments and pathogens.[7]	Stormwater maintenance
MF-26	Use City developed GIS layer for storm drains to create preventative maintenance schedules for catch basins and inlets and maintenance tracking software system, CMMS Maintenance Connection, to help with scheduling and tracking inspections, cleanings, and upgrades of stormwater facilities.	Storm drain inspection and cleaning
MF-27	Conduct CCTV camera inspections of storm drain lines as needed each year to help evaluate the condition of storm drain lines and identify repair needs.	Storm drain inspection and cleaning
MF-28	Use Combination Sewer Cleaning unit[8] or similar appropriate tool and hand cleaning to clean storm drains. Plug lines at both ends and employ combination unit, using reclaimed water, to "hydro-jet" the line, and then vacuum the line to remove sediment and other material. Dispose of resulting sediment and other material at the Resource Recovery Facility (landfill) after dewatering at the Wastewater Treatment Plant.	Storm drain inspection and cleaning
MF-29	Inspect sediment basins and clean known problem basins (basins that collect large amounts of sediment and trash) at least monthly or more frequently during wet season. Dispose of collected debris at the Resource Recovery Facility.	Storm drain inspection and cleaning
MF-30	Inspect and clean intensive-use basins semi-annually using a combination unit. Clean monthly during September and October. Dispose of collected debris at the Resource Recovery Facility.	Storm drain inspection and cleaning
MF-31	Inspect and clean commercial basins annually.	Storm drain inspection and cleaning
MF-32	Inspect residential basins on an eight-year cycle and clean, as necessary.	Storm drain inspection and cleaning
MF-33	Inspect pump stations along San Lorenzo River weekly and clean at least bi-annually and after large storm events.	Storm drain inspection and cleaning
MF-34	Inspect large diameter stormwater pipelines (including inlets, culverts, bar racks, screens, and vaults) annually, and clean at least on a five-year cycle.	Storm drain inspection and cleaning
MF-35	Inspect small diameter stormwater pipelines (including inlets, culverts, and vaults) on a two-year cycle, and clean as needed or on a fifteen-year cycle.	Storm drain inspection and cleaning

7 https://www.waterboards.ca.gov/rwqcb3/water_issues/programs/tmdl/docs/san_lorenzo/sediment/slr_sed_tmdl_proj_rpt.pdf https://www.waterboards.ca.gov/rwqcb3/board_decisions/adopted_orders/2008/2008_0001_slr_path_tmdl_att_2_proj_rept_21mar08.pdf

8 https://cdn2.hubspot.net/hubfs/6860826/FED12-Impact%20Brochure_1.20_WEB.pdf

Table 2. Avoidance and Minimization Measures in the ASHCP

AMM Number	AMM Description	Applicable Covered Activities
AMMs WO-1 through WO-14 (listed above)		Structural retrofits and storm drain inlets and basins
AMMs listed above under *Water System Operations and Management* and *Municipal Facilities*		Emergency operations and response
General Vegetation Management within Riparian Corridors		
MF-37	Trim vegetation using hand tools and maintain canopy, downed trees, and snags to the extent possible. Leave downed wood on the ground and lop only as required for fire safety or to facilitate moving downed wood off of roads and trails.	General vegetation management within riparian corridors
MF-38	Remove non-native invasive plants through hand trimming and limited herbicide application according to the City's Integrated Pest Management Program.	General vegetation management within riparian corridors
Land Management		
Management of Loch Lomond Recreation Area and Watershed Lands		
LM-1	Restrict vehicle access during wet weather (except for emergency access); require use of ATVs for winter access.	Trail maintenance and repair
LM-2	Install drainage improvements such as culverts, dips, and bars; and realign trail segments to avoid sensitive habitats and steep slopes.	Trail maintenance and repair
LM-3	Remediate existing erosion areas on an annual basis.	Trail maintenance and repair
LM-4	Conduct ranger patrols to ensure appropriate use of trails and adherence to closures or restrictions. Remove unauthorized trails as resources permit.	Trail maintenance and repair
Road Maintenance and Decommissioning		
LM-5	Conduct all road work with the support of a Registered Professional Forester and Certified Erosion Control Specialist, with engineers also being involved on more difficult road projects (City of Santa Cruz 2010).	Road maintenance and decommissioning
LM-6	Use culverts: (1) to route drainages through the road prism; (2) where in-sloping has to be maintained to pick up bank seepage; or (3) to control drainage away from a landslide or road fill failure. Maintain culverts and trash racks; maintain proper energy dissipation at outlets; clear bank slough; conduct bank stabilization; and hand dig rolling dips and/or water bars as necessary to maintain appropriate drainage. Conduct culvert replacement or upgrades in July – September with hand tools and heavy equipment.	Road maintenance and decommissioning
LM-7	Maintain unpaved roads as out-sloped dirt roads, with rolling dips and/or water bars to manage drainage. Manage unpaved roads as "restricted use" roads that are not used in winter under saturated conditions. These roads may be rocked to reduce road surface sediment production, to improve access for patrols or emergencies, and to extend the season that the roads can be traveled.	Road maintenance and decommissioning

Table 2. Avoidance and Minimization Measures in the ASHCP

AMM Number	AMM Description	Applicable Covered Activities
LM-8	Reshape roads periodically as needed to maintain out-slope drainage and as appropriate for the road and topography. Complete reshaping work within the existing road width and cut fill area for most roads to avoid additional disturbance to adjacent areas. Apply rock, straw, and seed to bare soil areas, as necessary.	Road maintenance and decommissioning
LM-9	Decommission roads that are not necessary for patrolling the properties for security and trespass concerns (off-road vehicles, poaching, camping, etc.); fire access, resource management and habitat restoration; and maintenance of drainage infrastructure. To the extent practicable, decommission roads that are significant sediment sources and that cannot be treated by maintenance activities (Chapter 3).	Road maintenance and decommissioning
LM-10	To the extent practicable, roads no longer required for Covered Activities in the Newell Creek and Zayante Creek watershed lands will be decommissioned. For roads traversing relatively mild slopes with few drainage structures (culverts), complete more severe out-slope or slope as close to natural grade as possible without generating excessive levels of disturbance. Construct frequent, large water bars where water may still concentrate on the road. For roads in steeper topography, remove all fill from the down slope portion of the road and place this material on top of the roadbed cut surface (keyway) and compact against the existing cut bank. Construct a severe out-slope to bring the contour to as close to natural grade as possible. Restrict the area of disturbance associated with road decommissioning to the 14-16 foot width of the roadbed, plus an additional 15-20 feet for re-contouring of more benign roads, and 20-30 feet for the more difficult ones.	Road maintenance and decommissioning
LM-11	Install erosion control as necessary, including straw wattles, native duff, straw, jute netting, etc.	Road maintenance and decommissioning
LM-12	During road decommissioning, remove culverts by excavating the culvert fill with an excavator or backhoe, down to native grade, and removing the culvert. Restrict the area of disturbance associated with culvert removal to the 14-16 foot wide roadbed, plus the area to the outer edge of the fill (10-20 feet). Conduct additional work as needed for grade control and energy dissipation above and below the culvert removal site. Use gabion-sized rock to small rip-rap, or placement of large wood in the channel, as needed for channel stabilization upstream and/or downstream of the removed culvert. Restrict majority of channel adjustments from culvert removal to within 30-50 feet of the existing crossing.	Road maintenance and decommissioning
LM-13	Install erosion control measures for surface stabilization following culvert removal (straw, seed, straw rolls, blankets, etc.), and replant the disturbed area with native species, particularly conifer and riparian species.	Road maintenance and decommissioning
LM-14	Complete road decommissioning during June – September; select road segments that can be decommissioned, stabilized for erosion, and replanted with native species within one season. Conduct follow-up erosion control and further planting/care until the area is stabilized and growing.	Road maintenance and decommissioning

Table 2. Avoidance and Minimization Measures in the ASHCP

AMM Number	AMM Description	Applicable Covered Activities
Habitat Management		
LM-15	Obtain appropriate state and federal permits prior to doing the work.	Aquatic habitat management and restoration
LM-16	Complete projects in accordance with methods detailed in the California Salmonid Stream Habitat Restoration Manual (Flossi et al. 1998).	Aquatic habitat management and restoration
LM-17	Complete work during the summer/ fall period (and before October 15), when streamflows are lower and work conditions are dry to minimize soil disturbance and mobilization, and the critical spawning and smolting periods are over.	Aquatic habitat management and restoration
LM-18	Retain services of geomorphologists and aquatic biologists as necessary to consult on projects for design and implementation. Conduct ongoing physical profiling and biological surveys of project sites post-implementation to demonstrate effectiveness and provide feedback for future projects.	Aquatic habitat management and restoration
LM-19	Perform all monitoring activities under the guidance and supervision of the HCP Administrator or Conservation Program Manager in compliance with a Monitoring Manual prepared by the Conservation Program Manager. All individuals performing monitoring will have qualifying knowledge and experience and will be trained in implementation of the Monitoring Manual.	Monitoring
LM-20	The monitoring program will be conducted in coordination with NMFS and CDFW through regular meetings (one to two per year) of an HCP Technical Advisory Committee.	Monitoring
LM-21	Monitoring will be conducted under applicable Section 10, Scientific Collector's Permit, or other required authorizations. Standard practices for minimizing effects to protected species will be implemented.	Monitoring

2.4.4.3 Non-Flow Conservation Fund

After implementation of AMMs, some residual effects of Covered Activities would remain, including diversion-related effects at most diversions, effects of sediment and vegetation management in the FCCs, and repairs conducted instream that involve dewatering. To ensure that effects remaining after the implementation of AMMs are fully mitigated, the City would implement a compensatory non-flow conservation program to fund enhancement and restoration of Covered Species habitat. The non-flow conservation program would focus on actions that improve salmonid habitat in the North Coast and San Lorenzo River watersheds. The program is designed to address key limiting factors in watersheds where Covered Activities take place and would prioritize measures that address the life stage and/or location directly affected by a specific activity. In some cases, however, direct on-site conservation actions may be impracticable or of limited benefit to the species. As such, conservation actions funded may include areas outside the Plan Area or be focused on other life stages than

those directly affected by Covered Activities. The NFCF would allocate approximately $8 million[9] to fund numerous habitat enhancement projects over the 30-year permit term.

The City would work with NMFS, CDFW, the Resource Conservation District of Santa Cruz County (RCD), and an array of local partners (including private landowners) to develop a working list of potential habitat enhancement projects. The City, NMFS, CDFW, and the RCD would form a Technical Advisory Committee to collaboratively develop the working NFCF project list, review project concepts, and provide design-level review of selected projects at key milestones during the planning process. Potential projects would be evaluated over a planning cycle of 5 years. The number of projects selected for funding through the NFCF would vary for each 5-year planning cycle based on the size and complexity of projects. It is expected that most projects funded through the NFCF would require a 1- to 3 -year project timeline from initial planning to construction. The actual projects selected for funding are not known at this time and would be determined by the Technical Advisory Committee based on restoration opportunities and priorities during Plan implementation. Possible project types are identified in Table 4-9 of the ASHCP, including but not limited to floodplain expansion and riparian corridor restoration; removal of bridges, dams, and other passage obstructions; and installation of large woody debris (LWD) structures in streams. The extent, if any, of CEQA and NEPA analysis required for these future enhancement projects would be determined prior to formal approval and implementation.

The NFCF project types would focus on linkages with the specific residual impacts identified from the Covered Activities. While the residual impacts are generally limited to a specific life history stage and/or water year type, many of the potential projects that would be implemented through the NFCF provide benefits across life history and water year types. For example, placement of LWD structures to offset impacts to rearing in dry years would provide deeper pools and pool tail-outs to increase summer rearing opportunities, and could also provide high-flow refuge during wet winters and improve spawning opportunities through better substrate sorting.

2.4.4.4 Monitoring Program

The Proposed Project also includes a monitoring program to assess compliance with the terms of the ASHCP, verify progress toward the biological goals and objectives, provide information so that the AMMs can be adapted as needed in response to changing conditions and new knowledge, and inform management decisions including the selection of projects to be funded from the NFCF. The monitoring program would involve data collection on the distribution and abundance of the Covered Species, their habitats, and potential threats within the Plan Area. Monitoring activities would consist of the following categories: compliance monitoring for Covered Activities, effectiveness monitoring for NFCF projects, and population and habitat monitoring for the Covered Species. Monitoring results would be reported to NMFS and CDFW in an annual monitoring report and would support an adaptive management approach.

2.4.4.5 Overview of Conservation Strategy Facility Improvements

The ASHCP Conservation Strategy includes several facility improvements including upgrading the Felton, Tait Street, Laguna Creek, Reggiardo Creek, and Majors Creek Diversions where needed to improve sediment transport during high flows and/or fish passage in accordance with current fish screening criteria (NMFS 2022b; CDFW 2000). Specifically, within 10 years of the signed ITP, the ASHCP calls for modifying the Laguna Creek, Reggiardo Creek,

[9] The NFCF analysis presented in Appendix 1 of the ASHCP estimated a range of approximately $8,011,479 to $8,250,000 specifically for habitat conservation spending over the permit term. $8 million is used for simplicity's sake in this discussion and future planning purposes.

and Majors Creek Diversions on the North Coast to provide improved sediment transport during high flows (ASHCP Objective 3.2.2, Measure WO-17) and the Felton and Tait Street Diversions on the San Lorenzo River to enhance fish passage (ASHCP Objectives 3.3 and 3.4, Measures WS-32 and WS-39). The Laguna Creek Diversion was already retrofitted in 2021 and is therefore not analyzed in this IS. Specific design details are not known at this time for the improvements to the other diversion facilities, but are generally described in the ASHCP's Conservation Strategy as follows below. The potential approval of the ASHCP and issuance of the ITPs would not directly authorize these diversion improvements. Rather, proposed diversion improvements would be subject to additional permitting and subsequent environmental review under NEPA and/or CEQA when the City develops specific design details and pursues each of these diversion improvements.

The Reggiardo Creek[10] and Majors Creek Diversions are concrete impoundments that can collect sediment and debris during storm flows. Sediment may accumulate behind these dams during storm flows and, if the diversions are not properly operated, this sediment may be passed downstream in a concentrated plug. These sediment plugs may impair habitat for production of benthic macro-invertebrates as a food source for Covered Species, and impair habitat for spawning, egg incubation, and juvenile rearing. Thus, as part of the Conservation Strategy, the City would undertake rehabilitation of the Reggiardo Creek Diversion and Majors Creek Diversion to allow flow and sediment to move naturally down the stream channel during high flows and avoid any potential for pulsing of sediment to downstream habitat. Modifications to these structures, which are located above the anadromous reaches on the creeks, would likely include dewatering by way of the installation of a cofferdam and a temporary bypass system, earthwork, reinforced concrete demolition and construction, metal work fabrication and installation, bank armoring, and miscellaneous electrical and mechanical services, including a pneumatically operated spillway gate or a passive intake structure. This work would enable the diversion structures to facilitate bypass flows and passage of suspended sediment and bed load downstream in a more natural manner, minimizing the need for manual clearing of these materials and deposition in downstream habitat.

The Felton Diversion is a surface water diversion/intake on the San Lorenzo River that pumps raw water from the river to the City's Loch Lomond Reservoir. The Felton Diversion was constructed in 1976 and, in general, consists of an inflatable rubber dam, fish-screened intake structures, a conventional sump and high-lift pump station, a slide-gated bypass channel, a Denil-style fish ladder, an operations building, and miscellaneous site improvements. Future rehabilitation of the Felton Diversion would include pump, screen, and ladder improvements, though no pumping capacity increases are currently planned. Proposed fish passage improvements at the Felton Diversion would provide for compliance with current fish passage and screening requirements (NMFS 2022b; CDFW 2000). Planning for the facility upgrade would include a comprehensive evaluation of existing fish migration conditions at the facility and potential improvements for upstream and downstream migration of both juvenile and adult steelhead. Findings of this evaluation would be used to design state-of-the-art fish passage components that may include revisions to the pumping channel, the Denil fish ladder, or both. These improvements may include fish screen replacement, installation of a mechanical traveling brush system on a 5-minute continuous cleaning cycle to keep the fish screens operating at optimum efficiency, and construction of a continuous downstream outmigration bypass route so that outmigrants entrained in the intake structure can continue their movement downstream. Ladder upgrades to improve passage would be evaluated and incorporated as appropriate as well. The Felton Diversion improvements were analyzed in the Santa Cruz Water Rights Project EIR (City of Santa Cruz 2021b); those analyses are incorporated into this IS by reference and summarized herein.

[10] The Reggiardo Creek impoundment has filled with sediment and is currently inoperable.

The Tait Street Diversion is located on a fairly straight, low-gradient section of the San Lorenzo River approximately 2.4 miles upstream of the mouth of the river, and is one of the City's critical water supply sources, supplying up to 12.2 cfs to its overall water supply via the adjacent Coast Pump Station facility. The Tait Street Diversion was constructed in 1961 and was modified in 1983 with a fish screen that met California Department of Fish and Game[11] and NMFS regulatory design criteria at that time. Proposed improvements at the Tait Street Diversion would provide for compliance with current fish screening requirements, as well as pumping capacity to take advantage of high winter flows and allow deferral of winter pumping at North Coast diversions. The capacity of the Tait intake and pump station would be designed to accommodate up to 28 cfs[12] of surface water flows. Improvements at the Tait Street Diversion would include a new or modified intake and screen design. Design features would include uniform flow across the screens; approach velocities not exceeding 0.33 f/s; sweeping velocities that exceed approach velocities; provision for appropriate juvenile bypass; and provision for continuous cleaning. The Tait Street Diversion improvements were analyzed in the Santa Cruz Water Rights Project EIR (City of Santa Cruz 2021d); those analyses are incorporated into this IS by reference and summarized herein.[13]

2.5 Construction Phasing for Conservation Strategy

The primary construction activities that the ASHCP biological goals and objectives anticipate in the Plan Area include upgrading or retrofitting the Felton, Tait Street, Laguna Creek, Majors Creek, and Reggiardo Creek diversion facilities to improve sediment transport during high flows and/or improve fish passage per current fish screening requirements, as needed, and in the case of Tait Street, add pumping capacity. As mentioned previously, the Laguna Creek Diversion Retrofit Project was already completed in 2021.

While the potential approval of the ASHCP and issuance of the ITPs would not directly authorize the diversion improvements and additional environmental review would be required for them, Table 3 provides, for present analysis purposes, a summary of the estimated construction schedules for the diversion upgrades and retrofits. These construction schedules were developed to provide a reasonable worst-case construction scenario for the evaluation of environmental impacts by providing for the earliest possible construction initiation date for each diversion facility. The actual construction schedules for these diversion facility upgrades could be extended further out in time.

In addition to the diversion facility improvements, the ASHCP biological goals and objectives include implementation of habitat restoration or enhancement projects that would be covered by the NFCF and which may require some level of construction activities. These habitat restoration or enhancement projects may include the following types of activities: removal of passage obstacles, placement of large wood structures, riparian conservation easements, spawning gravel augmentation, riparian restoration, and sediment control projects. These activities would be implemented throughout the permit term.

11 The former Department of Fish and Game was renamed the Department of Fish and Wildlife in 2013.

12 Intake and pump station capacity of 28 cfs would provide for the proposed diversion of water at the Tait Street Diversion under both the Tait Licenses and Felton Permits.

13 Pursuant to CEQA Guidelines Section 15150, the Santa Cruz Water Rights Project EIR (State Clearinghouse number 2018102039) is available for review in digital format at the Santa Cruz Public Library, Downtown Branch, 224 Church Street, Santa Cruz, California, 95060, or online at https://www.cityofsantacruz.com/home/showpublisheddocument/86973/637731697885370000.

Table 3. Estimated Construction Schedules for Analysis Purposes

Diversion Facility	Estimated Construction Schedule
North Coast Streams	
Majors Creek	2027 – 2030
Reggiardo Creek	To Be Determined
San Lorenzo River	
Felton	June 2027 – August 2027
Tait Street	April 2028 – December 2028

Note: These construction schedules were developed to provide a reasonable worst-case construction scenario for the evaluation of environmental impacts by providing for the earliest possible construction initiation date for each diversion facility. The actual construction schedules for these diversion facility upgrades could be extended further out in time.

2.6 Project Approvals

This section describes discretionary actions required for project approval by federal, state, and local agencies. The City is the lead agency under CEQA with the discretionary action of whether to accept ITPs granted by NMFS and CDFW. The City will consider this IS/MND and its comments in determining whether to adopt the MND, adopt the MMRP, and approve the Proposed Project.

Implementation of the proposed ASHCP would also require permits and approvals (i.e., take authorizations) from other federal and state agencies. Table 4 summarizes the discretionary approvals associated with implementation of the Proposed Project. Although Table 4 lists federal approvals, the City recognizes that federal agencies are not subject to CEQA but rather are subject to NEPA, and must comply with that federal law, as applicable, before taking their actions.

Table 4. Summary of Permits and Approvals for the Proposed ASHCP

Agency	Legal Authority	Permit or Approval
Federal		
National Marine Fisheries Service	Federal ESA, Section 10(a)(1)(B)	Incidental Take Permit
	Federal ESA, Section 7	Biological Opinion
	NEPA	Findings and Recommendations
U.S. Fish and Wildlife Service	Federal ESA, Section 7	Section 7 Intra-Service Consultation
State		
California Department of Fish and Wildlife	CEQA	Consideration of City-adopted MND
	California Fish and Game Code, Section 2081	Incidental Take Permit
Local		
City of Santa Cruz	CEQA	Adoption of MND
	Project Approval	Acceptance of NMFS ITP and CDFW ITP

Notes: ASHCP = Anadromous Salmonid Habitat Conservation Plan; CDFW = California Department of Fish and Wildlife; CEQA = California Environmental Quality Act; CESA = California Endangered Species Act; ESA = Endangered Species Act; ITP = incidental take permit; MND = Mitigated Negative Declaration; NEPA = National Environmental Policy Act; NMFS = National Marine Fisheries Service.

3 Initial Study Checklist

1. **Project title:**

   City of Santa Cruz Anadromous Salmonid Habitat Conservation Plan for the Issuance of an Incidental Take Permit under Section 10(a)(1)(B) of the Endangered Species Act

2. **Lead agency name and address:**

   City of Santa Cruz
   212 Locust Street, Suite A
   Santa Cruz, California 95060

3. **Contact person and phone number:**

   Zeke Bean
   (831) 420-5478

4. **Project location:**

   Watershed and water service/urban areas that total approximately 176 square miles in Santa Cruz County across three geographically distinct areas: (1) the 18-square-mile North Coast watersheds (Liddell, Laguna, and Majors Creek watersheds); (2) portions of the 138-square-mile San Lorenzo River watershed; and (3) the City Urban Center, which encompasses approximately 12 square miles centered around the mouth of the San Lorenzo River, as well as the approximately 8 square miles of water service areas outside of the City limits.

5. **Project sponsor's name and address:**

   City of Santa Cruz
   212 Locust Street, Suite A
   Santa Cruz, California 95060

6. **General plan designation:**

   Multiple/various designations

7. **Zoning:**

   Multiple/various zoning

8. **Description of project. (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary):**

   The Proposed Project includes the implementation of the ASHCP in support of applications for federal and state ITPs for state- and federally endangered Central California Coast coho salmon and federally

threatened Central California Coast steelhead. The state ITP would be granted by CDFW pursuant to Section 2081 of the CFGC (the CESA of 1984). The federal ITP would be granted by NMFS pursuant to Section 10(a)(1)(B) of the federal ESA of 1973. The ASHCP Covered Activities include operation, maintenance, and rehabilitation of the City's water supply and water system facilities, including surface water diversions, operation and maintenance of the City's municipal facilities, and management of City lands. The ASHCP Conservation Strategy is designed to avoid, minimize, and fully mitigate the effects of the City's Covered Activities on Covered Species (steelhead and coho) and their habitat in support of the long-term viability of these populations within streams affected by the ASHCP Covered Activities. The Conservation Strategy recognizes that the City's efforts will support and coordinate with overarching efforts to preserve these species within Santa Cruz County and the larger habitat boundaries for these species. The ASHCP biological goals and objectives address key limiting conditions in the Santa Cruz Mountains diversity stratum, particularly effects of surface water diversions, as identified in the recovery plans for steelhead and coho.

9. Surrounding land uses and setting (Briefly describe the project's surroundings):

The Plan Area setting includes the heavily forested Santa Cruz Mountains, coastal areas, and developed urban areas. The North Coast is northwest of the City along Highway 1, including Majors Creek, Laguna Creek, Reggiardo Creek, Liddell Creek, and Lombardi Gulch. Streams in the North Coast flow off the west flank of Ben Lomond Mountain and drain directly into the Pacific Ocean. The San Lorenzo River watershed includes the San Lorenzo River and its major tributaries, including Newell Creek and Zayante Creek. Streams within the City Urban Center are the lower San Lorenzo River and tributaries, and the smaller urban drainages and aquatic resources potentially influenced by Covered Activities, including Neary Lagoon, Laurel Creek, Moore Creek, Arana Creek, Branciforte Creek, Carbonera Creek, and Pogonip Creek.

10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement):

The Proposed Project will require approvals from NMFS (Federal ESA Section 10(a)(1)(B) Incidental Take Permit and Section 7 Biological Opinion), USFWS (Federal ESA Section 7 intra-service consultation), and CDFW (California Fish and Game Code Section 2081 Incidental Take Permit). Additional permitting may be required when the City pursues individual Covered Activities and/or elements of the Conservation Strategy. Such permitting would vary depending on the specific project being pursued.

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

On December 1, 2022, the City of Santa Cruz notified the applicable tribe informing them of the Proposed Project, providing a project description and background, and requesting consultation pursuant to Assembly Bill (AB) 52. Contacts included Valentin Lopez, of the Amah Mutsun Tribal Band. No response was received.

Environmental Factors Potentially Affected

The following initial study checklist is based on Appendix G of the CEQA Guidelines and the City of Santa Cruz CEQA Guidelines. The potential impacts of the Proposed Project on each environmental factor listed below are evaluated through various checklist questions discussed in Sections 3.1 through 3.21. Each question is treated as embodying a significance threshold and the level of significance of the impact caused by the Proposed Project is indicated by the check boxes for each environmental factor in Sections 3.1 through 3.21 (potentially significant impact, less-than-significant impact with mitigation incorporated, less-than-significant impact, and no impact). Where applicable, the evaluation also accounts for the mandatory findings of significance found in CEQA Guidelines section 15065 (e.g., for biological resources), significance considerations developed in CEQA case law (e.g., for permanent noise impacts), and regional or local environmental standards (e.g., for air pollutant emissions or noise levels). The environmental factors checked below would be potentially affected by this project, involving at least one impact that is potentially significant unless mitigation is incorporated, as indicated by the checklist on the following pages. All potentially significant impacts would be reduced to less than significant with mitigation.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☐ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Energy
☒ Geology and Soils	☐ Greenhouse Gas Emissions	☒ Hazards and Hazardous Materials
☐ Hydrology and Water Quality	☐ Land Use and Planning	☐ Mineral Resources
☒ Noise	☐ Population and Housing	☐ Public Services
☐ Recreation	☐ Transportation	☒ Tribal Cultural Resources
☒ Utilities and Service Systems	☐ Wildfire	☒ Mandatory Findings of Significance

Determination (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature _____ Date 8/25/2023

Evaluation of Environmental Impacts

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an Environmental Impact Report (EIR) is required.
4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less-Than-Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
    a. Earlier Analysis Used. Identify and state where they are available for review.
    b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c. Mitigation Measures. For effects that are "Less Than Significant With Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9. The explanation of each issue should identify:
    a. The significance criteria or threshold, if any, used to evaluate each question; and
    b. The mitigation measure identified, if any, to reduce the impact to less than significance

3.1 Aesthetics

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
I. AESTHETICS – Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Scenic Views and Scenic Resources

Scenic views and scenic resources in the Plan Area include ocean vistas along the coastline, open agricultural lands along the North Coast, redwood forests, and the rolling hillsides and ridgetops of the Santa Cruz Mountains. Scenic resources include redwood forests, coastal cliffs and estuaries, and rural agricultural fields and orchard areas. Scenic resources also include rivers, streams, watersheds, reservoirs, special geologic formations such as sandhill outcroppings, and selected vegetative communities. Panoramic views of the City and ocean are available from steep slopes and high elevations (County of Santa Cruz 2017). The County of Santa Cruz General Plan/LCP also designates "Coastal Special Scenic Areas," which include Bonny Doon sandstone formations, generally found within the borders of Pine Flat Road, Laguna Creek, Ice Cream Grade, and Martin Road (County of Santa Cruz 2020). This area includes geologic features with high aesthetic appeal, including the black cliffs and exposed rocks of Majors Creek Canyon, unusual sandhill outcroppings in botanical sites along Martin Road, coastal rock formations near Table Rock and Yellow Bank Creek, and limestone caves near Wilder Creek; these features are discussed further in Section 3.7, Geology and Soils. The Laguna and Reggiardo Creek Diversion facilities are located within redwood forest areas identified as scenic in the County's Geographic Information System (GIS) (County of Santa Cruz 2022c).

Within the City Urban Center, significant panoramic views are identified from neighborhoods and open space areas at upper elevations as well as along the coast. Significant urban views are identified along the San Lorenzo River, including near the Tait Street Diversion (City of Santa Cruz 2011).

State Scenic Highways

The State Scenic Highway Program, managed by the California Department of Transportation (Caltrans), preserves and protects scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to designated scenic highways. The State Scenic Highway System includes a list of eligible and officially designated scenic highways. There are no officially designated State Scenic Highways in the Plan Area; however, the Plan Area contains three eligible State Scenic Highways that have the potential to be officially designated in the future. These include Highway 1, Highway 9, and Highway 17 (Caltrans 2018).

In addition, the County of Santa Cruz General Plan/LCP (County of Santa Cruz 2020) designates the following local scenic roads in the vicinity of the Plan Area:

- Bonny Doon Road – Highway 1 to Pine Flat Road
- Empire Grade – Santa Cruz city limits to the end of Empire Grade
- East Cliff Drive - 33rd Avenue to 41st Avenue
- Graham Hill Road – Lockwood Lane to Highway 9
- Ice Cream Grade
- Martin Road – Pine Flat to Ice Cream Grade
- Mt. Hermon Road – Scotts Valley city limits to Graham Hill Road
- Pine Flat Road – Bonny Doon Road to Empire Grade
- Smith Grade

Existing Visual Character

The North Coast area provides a mix of rugged coastline, sandy beaches, coastal agricultural terraces, pastoral grasslands, and densely forested uplands and riparian corridors. This area includes agricultural and timberlands and low-density residential development. Public lands include Big Basin Redwoods and Wilder Ranch State Parks, Cotoni-Coast Dairies National Monument, other state park beaches along the coast, and City watershed lands including the Laguna Tract. Coastal terraces in this region provide area for cultivated agriculture and some cattle grazing; pockets of agricultural use also occur in the hillside and mountainous areas, including larger acreage residential lots in the community of Bonny Doon (County of Santa Cruz 2017). The North Coast affords many scenic vistas of the Pacific Ocean and visually interesting views of natural features, such as rolling hills, wetlands, and unique vegetation communities; these vistas are predominantly available along Highway 1, coastal bluffs, and in areas of higher elevation.

The San Lorenzo River watershed in the Santa Cruz Mountains area includes small communities in the San Lorenzo Valley with rural residential neighborhoods and timber operations in foothill and mountainous areas. The unincorporated towns include Felton, Ben Lomond, and Boulder Creek, which are small mountain communities along Highway 9. The aesthetic of these towns is characterized as rustic with individualistic architecture that represent the towns' historic roots as western settlements (County of Santa Cruz 2017). Public lands and open space include Henry Cowell Redwoods State Park, Big Basin State Park, and City watershed lands including the Newell Creek Tract, which includes the Loch Lomond Reservoir and Loch Lomond Recreation Area, and the Zayante Tract. Much of the Santa Cruz Mountains range, which comprises deep valleys and forested slopes, provides public views of scenic natural areas along public roads and numerous recreational trails. Natural scenic resources in this region include dense redwood forest, oak woodland and chaparral, and other unique vegetation communities. The headwaters of the San Lorenzo River watershed originate in this region above Boulder Creek; the river and its tributaries flow through Boulder Creek on the east and south through Brookdale, Ben Lomond, and Felton (County of Santa Cruz 2017).

The City Urban Center and surrounding water service area is characterized by both urban and suburban development and is developed with a mix of older (some of which are historic) and newer buildings. Existing urban uses include a mix of residential and commercial facilities, some industrial uses, and institutional uses. Generally, the visual features of the developed City vary from area and neighborhood. Mixed use areas include the Westside industrial area, the Harvey West area, downtown and River Street, and the Beach/Boardwalk area. Four primary corridors contribute to the urban form and character of Santa Cruz: Mission Street Corridor, Ocean Street Corridor, Water Street Corridor, and Soquel Avenue Corridor. Mixed commercial and residential buildings are found in some of these areas, as well as in the downtown, where ground-floor retail and upper-floor residential are the primary uses. A number of neighborhoods within the City are characterized by older, smaller bungalow and historic structures, while other areas of the City are mostly characterized by post-World-War-II ranch houses built on larger parcels (City of Santa Cruz 2011). The City's General Plan EIR identifies key aesthetic natural and open space features including the coastline and beaches, the San Lorenzo River and other creeks, the Santa Cruz Mountains, and open space lands that make up the City's greenbelt. Scenic resources in the City Urban Center can be found along creeks and watershed drainages flowing from the mountains to lagoons and beaches. The Santa Cruz Mountains and its foothills provide a backdrop of open space and panoramic views of the City and Monterey Bay. The City's largest open spaces make up its greenbelt and generally include Moore Creek Preserve, Pogonip, DeLaveaga Park, and Arana Gulch (City of Santa Cruz 2011).

a) Would the project have a substantial adverse effect on a scenic vista?

Less-Than-Significant Impact. The Agreed Flows would not result in impacts related to riparian or other vegetation along the Loch Lomond Reservoir, Newell Creek, San Lorenzo River, and North Coast Streams, as the Agreed Flows with pending water rights modifications would not substantially affect surface water levels or baseflows (City of Santa Cruz 2021d). Therefore, the Agreed Flows would have no impact on aesthetics and are not further discussed in this subsection.

Implementation of the Proposed Project has the potential to temporarily affect scenic vistas, particularly those that occur near scenic areas designated by the County General Plan/LCP near Laguna and Reggiardo Creeks or scenic urban views along the San Lorenzo River, because of construction activities needed to implement Covered Activities and the Conservation Strategy. Rehabilitation of diversion facilities and water supply pipelines, excavation of sediment in various areas (e.g., behind some diversions, FCCs), removal of woody debris, vegetation management activities, road and trail maintenance, and habitat restoration projects such as placement of boulders or LWD in streams may require the use of construction equipment, which could be visible from public roadways. For example, ongoing FCC maintenance involving excavation of sediment and removal of vegetation may be visible from Highway 1 in the City Urban Center. The full range of activities could entail earth moving, grading, and installation of infrastructure at existing facilities. However, construction activities would be temporary, and would be dispersed over the 30-year permit term and across the large Plan Area.

Post-construction, public views would be similar to existing conditions, as physical improvements and operations and maintenance activities would take place at existing facilities and continue existing uses of the sites. The Proposed Project would maintain visual conditions similar to existing conditions, with upgrades to existing infrastructure and other habitat improvement projects. Improvements to City diversion facilities would result in some alterations to the facilities; however, these would appear similar to existing conditions and would not substantially change the height of the existing facilities. Furthermore, public views of the diversion facilities are limited due to factors such as topography, dense surrounding vegetation, and locations generally set back from public roads with restricted public access by gates and/or fencing; thus, such facilities are not readily visible to the public.

While specific NFCF site locations are not known at this time, public views of NFCF sites post-construction would include views of restored native habitat with infrequent maintenance activities. Because potential effects on scenic vistas would be temporary, and implementing the Proposed Project would result in improvements to Covered Species habitat, the potential for substantial adverse effects on scenic vistas from construction, management, and operational activities is extremely low. Furthermore, habitat improvement would likely result in beneficial aesthetic impacts such as the restoration of degraded riparian and in-stream habitat to increase habitat value for anadromous salmonids. Therefore, the Proposed Project would not have a substantial adverse effect on scenic vistas, and this impact would be less than significant.

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Less-Than-Significant Impact. As described above, while there are no officially designated state scenic highways within the Plan Area, the Plan Area contains multiple eligible state scenic highways and County-designated scenic roads. Diversion facilities on the North Coast are located near some of the scenic roads identified in the County's General Plan/LCP, including Smith Grade and Bonny Doon Road. However, mountainous terrain and dense forest largely obscure public views of the facilities from these roadways. Smith Grade and Bonny Doon Road do not provide views of any of the City's nearby diversion facilities. Felton Diversion and Tait Street Diversion are located along Highway 9, which is an eligible state scenic highway. The Felton Diversion is surrounded by mountainous terrain and dense forested vegetation, which obscures public views of the site, except that the existing pump station can be partially viewed from Highway 9 at the entrance to the facility. The Tait Street Diversion is located in an industrial area along River Street/Highway 9, is set back from the road, and public views are obscured by chain-link fencing and existing facilities at the Coast Pump Station.

Implementation of the Proposed Project would include temporary construction activities associated with Covered Activities and the Conservation Strategy, which could introduce visually discordant features as viewed from scenic highways or roads if they are within the viewshed of the highway or road because such activities would involve grading; site clearing and cleaning; sediment, dirt, and vegetation removal; materials hauling; and use of construction equipment for site improvements. Temporary changes to the visual environment could also result from vegetation removal that could be noticeable to travelers along these routes, especially as restoration work is in process and vegetation growth is pending. However, construction activities would be temporary, and would be dispersed over the 30-year permit term and across the large Plan Area.

Post-construction, public views from scenic highways and roads would be similar to existing conditions, as physical improvements would take place at existing facilities and continue existing uses of the sites. Diversion facilities are generally set back from public roads and not part of prominent public views from scenic roads. If warranted, limited tree removal may occur at some facilities during construction activities associated with upgrades to diversion facilities to allow for improvements to diversion structures, accommodate access road improvements, and facilitate access to sites for construction equipment. Tree removal, if any, would not be visible from Smith Grade, Bonny Doon Road, or Highway 9 as views of diversion facilities are not available from these locations, or are very limited, as in the case of the Felton Diversion. Additionally, standard construction practices #2, #8, and #9 will minimize removal of riparian trees, protect trees to be retained, and require replanting of native tree species when tree removal is required. Upon completion of construction and associated restoration, diversion facilities would appear similar to existing conditions.

Some diversion facilities and appurtenant structures, in particular those constructed in the late 1800s/early 1900s, have the potential to be historical resources. However, as discussed above, limited views of the facilities are available from scenic highways or roads and the diversion structures themselves are not visible from roads due to their in-stream locations. Furthermore, implementation of MM CUL-1 described in Section 3.5, Cultural Resources, would ensure that historical resources, if present, are not substantially damaged as a result of project-related modifications. Additionally, changes associated with NFCF restoration activities would not damage scenic resources, as habitat restoration projects would enhance the visual quality and visual diversity of streams and riparian areas within the Plan Area by restoring riparian vegetation and in-stream habitat features, as described in criterion (a).

Operations and maintenance activities for City facilities could involve cleaning, repair of structures, sediment removal, vegetation management and care along embankments, maintenance of roads and trails, inspections, monitoring of habitat success, and removal of trash, among other activities. These activities could be visible from scenic highways or roads if they are in proximity to these features. The physical act of maintaining Proposed Project sites would be the primary element visible from scenic highways or roads during operation. These activities would require equipment ranging from machine-operated to hand-held tools to maintain facilities. However, maintenance activities are anticipated to occur within short periods of time and be of limited duration.

Therefore, the Proposed Project would not substantially damage scenic resources within a scenic highway or road due to the short-term nature of construction/maintenance activities, and the activities being dispersed across a large Plan Area over the 30-year permit term, and limited views of facilities from scenic highways and roads. In the long term, operations and maintenance activities implemented as part of the Conservation Strategy would improve scenic resources by enhancing site conditions compared to the existing setting by, for example, removing trash and non-native invasive species. Therefore, the Proposed Project would not substantially damage scenic resources, and impacts would be less than significant.

c) ***In non-urbanized areas, would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?***

Less-Than-Significant Impact. Portions of the Plan Area are within urban areas, while others are less developed and more natural. Temporary visual impacts would occur during construction activities (e.g., rehabilitation of diversion facilities) and operations and maintenance activities (e.g., sediment excavation/removal, riparian tree pruning/removal, trail and road repairs). Many of these activities would require the use of construction equipment. However, such activities would be short-term in nature and would be dispersed over the 30-year permit term and throughout the large Plan Area. Furthermore, the activities would maintain the existing visual character of the sites, and would not act to further change the visual quality or character of the sites or surrounding visual landscape during operations. Some activities, such as pipeline repairs or replacements, would be located below ground and would therefore not be visible following completion of construction. NFCF projects may include removal of passage obstacles, placement of LWD, riparian conservation easements, spawning gravel augmentation, riparian restoration, and sediment control projects. Restoration of aquatic habitat through implementation of the Conservation Strategy would not degrade visual character and quality following completion of construction and would enhance visual character and quality of restored sites.

Rehabilitation of diversion facilities would result in some alterations to the existing facilities; however, the existing visual character and quality of the sites and surroundings would be maintained. The sites are currently developed with surface water diversion facilities and associated appurtenances such as pump stations, and the proposed upgrades would occur on the existing sites and would not change the use or visual characteristics of the existing facilities. Therefore, rehabilitation of diversion facilities would not substantially alter the existing visual character or quality of the sites or their surroundings.

Given the above, the Proposed Project would not substantially degrade the existing visual character or quality of the sites or surroundings and the impact would be less than significant.

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less-Than-Significant Impact. The Proposed Project would not involve the installation of substantial new sources of light and glare, as it consists of implementation of Covered Activities and the Conservation Strategy, including activities in support of operation, maintenance, rehabilitation, and habitat restoration of the City's water supply and water system facilities, municipal facilities, and City lands. The Conservation Strategy includes habitat improvement, management, and monitoring activities within the Plan Area. Most project construction activities would occur during daylight hours. If any construction activities were to take place at night, construction lighting would be required; however, this would be temporary and would not create a new source of substantial light or glare.

No new night lighting would be installed with the diversion improvements at the Tait Street Diversion and the Felton Diversion (City of Santa Cruz 2021d). However, rehabilitation of other diversion facilities under the Proposed Project (e.g., Majors Diversion) could include the installation of new lighting to provide for nighttime safety at diversion facilities if needed; however, lighting would be expected to be used on a limited basis for emergency work only and substantial new lighting would not be required. These diversion facilities on the North Coast are located in remote, forested locations with no public access. Furthermore, if required, new lighting would be expected to be installed on project components that are set back from roadways, would be directed downwards, and would not be expected to have substantial spill off site. Habitat restoration projects under the NFCF would include the placement of natural materials such as boulders and LWD and would not include installation of reflective structures that could create new sources of glare. Therefore, the Proposed Project would not result in permanent new sources of light or glare and the impact would be less than significant.

3.2 Agriculture and Forestry Resources

		Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
II.	**AGRICULTURE AND FORESTRY RESOURCES** – In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☒	☐
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☒	☐
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220[g]), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104[g])?	☐	☐	☒	☐
d)	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☒	☐
e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☒	☐

Farmland

The California Department of Conservation (DOC) Farmland Mapping and Monitoring Program (FMMP) compiles Important Farmland Maps combining current land use information with U.S. Department of Agriculture Natural Resources Conservation Service soil survey data. Agricultural land mapped by the FMMP includes Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. In addition to agricultural land mapped by the FMMP, the County's agricultural zoning districts include Commercial Agriculture, Agriculture, and Agricultural Preserve.

The North Coast watersheds contain the majority of agricultural lands in the Plan Area. Agricultural land designated by the FMMP is concentrated on the lower marine terraces along Highway 1 of the North Coast, with relatively small,

isolated patches of farmland farther inland, including within the North Coast watersheds (DOC 2022a). The majority of land area in the North Coast watersheds is mapped as Other Land, followed by Grazing Land (DOC 2022a). The North Coast also contains most of the zoning for Commercial Agriculture and Agricultural Preserve in the Plan Area, as well as pockets of lands zoned Residential Agriculture.

Agricultural land mapped by the FMMP in the San Lorenzo River watershed is limited to an isolated patch along the San Lorenzo River just outside of the City limits on Ocean Street Extension. All other lands within the San Lorenzo River watershed are designated as Other Land, Urban and Built-Up Land, and Grazing Land (DOC 2022a). Lands zoned Agriculture by the County are located primarily east of Highway 17. Pockets of lands zoned Residential Agriculture are also located throughout the San Lorenzo Valley.

No agricultural land exists in the City Urban Center. The City is largely developed and all lands within City limits and the City's existing Sphere of Influence are designated as Urban and Built-Up Land, Other Land, and Grazing Land (DOC 2022a; City of Santa Cruz 2021d).

Williamson Act Contracts

The Williamson Act (California Land Conservation Act of 1965) enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments which are lower than full market value of the property because they are based on farming and open space uses. Lands enrolled in Williamson Act contracts in the Plan Area are concentrated in the North Coast area (DOC 2022b).

Forest Land

There are no areas of protected forest land or timberland within the City Urban Center (City of Santa Cruz 2011). However, forest land and timberland occupy a substantial portion of the Plan Area, with large areas zoned Timber Production in the Santa Cruz Mountains and North Coast (County of Santa Cruz 2022e). Many of the City's water supply and water system facilities and watershed lands are located on heavily forested lands, including Liddell Spring Diversion, Reggiardo Creek Diversion, Laguna Creek Diversion, Majors Creek Diversion, Newell Creek Dam, the Loch Lomond Recreation Area, and a majority of the North Coast Pipeline and Newell Creek Pipeline. The Laguna Creek Diversion, Newell Creek Dam, and portions of the Laguna Tract, Newell Creek Tract including Loch Lomond Recreation Area, and Zayante Tract are on parcels zoned Timber Production, and the Liddell Spring Diversion, Reggiardo Creek Diversion, and Majors Creek Diversion are adjacent to lands zoned Timber Production.

a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

and

b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

Less-Than-Significant Impact. Implementation of the Proposed Project would not result in construction of new facilities on agricultural land and therefore would not have the potential to directly convert agricultural lands to non-agricultural uses. Nor would the Proposed Project result in conflicts with existing zoning for agricultural use or Williamson Act contracts, as project activities would not change zoning or result in new

land uses that could cause such conflicts. Rather, the City would conduct Covered Activities and implement the Conservation Strategy at existing City facilities that do not contain agricultural land. While specific NFCF projects and locations are not known at this time, the NFCF would be focused on projects that improve salmonid habitat in the North Coast and San Lorenzo watersheds, and thus projects would be located in and adjacent to streams. As such, NFCF projects would not be located on land containing existing agricultural land and uses and would not result in conversion of or other impacts on agricultural land. Therefore, the Proposed Project impact on agricultural resources would be less than significant.

c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220[g]), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104[g])?

and

d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

Less-Than-Significant Impact. As discussed above, several of the City's water supply and water system facilities are located in heavily forested areas, including on or adjacent to lands zoned Timber Production in the Santa Cruz Mountains and North Coast in unincorporated Santa Cruz County. Local zoning ordinances are not applicable to the Proposed Project pursuant to Article 5 (Regulation of Local Agencies by Counties and Cities) of Chapter 1 (General) of Part 1 (Powers and Duties Common to Cities, Counties, and Other Agencies) of Division 2 (Cities, Counties, and Other Agencies) of Title 5 (Local Agencies) of the Government Code. Article 5 describes the extent to which defined "local agencies" must comply with city or county zoning and building ordinances. Cities and counties themselves are expressly excluded from the definition of "local agencies" found in Government Code Section 53090, subdivision (a). Cities are generally understood to be exempt from all county regulations when operating city-owned facilities in county unincorporated areas. (7 Cal.App.4th 778, 783.)

However, as some Covered Activities and Conservation Strategy elements would be located within the coastal zone, those elements would be subject to the California Coastal Act and would not be exempt from the Santa Cruz County Local Coastal Program (LCP), and would require compliance with the LCP, including LCP policies and standards contained LCP implementing ordinances, including, but not limited to, the Zoning Regulations (Santa Cruz County Code Chapter 13.10). The Proposed Project would be considered an allowed use (utilities) under Santa Cruz County Code Section 13.10.372(B) and would not conflict with Timber Production zoning. The Proposed Project also meets the definition of a "Compatible Use" under the California Timberland Productivity Act of 1982. This definition is found in California Government Code Section 51104(h), and includes "the erection, construction, alteration, or maintenance of gas, electric, water, or communication transmission facilities" that do "not significantly detract from the use of the property for, or inhibit, growing and harvesting timber[.]" The Proposed Project does not include rezoning of forest land or timberland, as defined. Therefore, the Proposed Project would not conflict with existing zoning or result in rezoning related to forest lands.

The Proposed Project would include general vegetation management along stream corridors as a Covered Activity, which could involve annual pruning and limited removal of trees as needed adjacent to pipeline rights-of-way, water diversions, and other utility infrastructure. Additionally, diversion improvements and pipeline replacements could involve limited tree removal to allow for construction. Tree removal involving timber harvesting would likely constitute a Minor Conversion as defined in Chapter 16.52.195 of the Santa

Cruz County Code, given the limited scope of such removal. Minor Conversion permits are administered by the California Department of Forestry and Fire Protection (CAL FIRE; 14 CCR Section 1104[a][4]). It is anticipated that a less than 3-acre conversion exemption (14 CCR Section 1104.1[a]) approved by CAL FIRE would be required to remove timber. Timber operations conducted under an exemption are exempt from conversion permit and timber harvesting plan requirements of the California Forest Practice Rules, although they are still required to comply with all other applicable provisions of the Z'berg-Nejedly Forest Practice Act, regulations of the Board of Forestry, and currently effective provisions of county general plans, zoning ordinances, and any implementing ordinances. Although the Proposed Project would result in limited tree removal subject to the CAL FIRE permit process as individual projects are pursued, it would not result in rezoning of forest land to non-forest use or the conversion of forest land to non-forest uses, as the forest canopy and forest land functions on the project site would be retained. Therefore, impacts related to loss or conversion of forest land would be less than significant.

e) Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

Less-Than-Significant Impact. The Conservation Strategy of the Proposed Project would include the implementation of Agreed Flows, which could result in limitations on the availability of water for agricultural use on the North Coast during drier hydrological conditions as less water would be available for surface water diversions. However, Agreed Flows would not have the potential to indirectly convert agricultural lands to non-agricultural uses. The Proposed Project would not involve other changes to the existing environment that would result in the indirect conversion of Farmland to non-agricultural use or forest land to non-forest use and the impact would be less than significant.

3.3 Air Quality

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
III. AIR QUALITY – Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

Meteorology and Topography

The Proposed Project is located in the North Central Coast Air Basin (Air Basin), which consists of Monterey, Santa Cruz, and San Benito counties and encompasses an area of 5,159 square miles. The northwest sector of the Air Basin, where the Proposed Project is located, is dominated by the Santa Cruz Mountains. The Diablo Range marks the northeastern boundary and, together with the southern extent of the Santa Cruz Mountains, forms the Santa Clara Valley, which extends into the northeastern tip of the Air Basin. Farther south, the Santa Clara Valley merges into the San Benito Valley, which extends northwest–southeast and has the Gabilan Range as its western boundary. To the west of the Gabilan Range is the Salinas Valley, which extends from Salinas at the northwest end to King City at the southeast end. The western side of the Salinas Valley is formed by the Sierra de Salinas, which also forms the eastern side of the smaller Carmel Valley. The coastal Santa Lucia Range defines the western side of the valley (MBARD 2008). This series of mountain ranges and valleys influences the dispersion of criteria air pollutants through the Air Basin.

The Pacific High pressure cell, a semi-permanent high pressure cell in the eastern Pacific Ocean, is the controlling factor in the Air Basin's climate. In the summer, the Pacific High pressure cell is dominant and causes persistent west and northwest winds over the entire California coast. Air descends in the Pacific High pressure cell forming a stable temperature inversion of hot air over a cool coastal layer of air. As the air currents move onshore, they pass over cool ocean waters and bring fog and relatively cool air into the coastal valleys. The warmer air above acts as a lid to inhibit vertical air movement. The generally northwest–southeast orientation of mountainous ridges tends to restrict and channel the summer onshore air currents. Surface heating in the interior portion of the Salinas and San Benito Valleys creates a weak low pressure that intensifies the onshore air flow during the afternoon and evening.

In the fall, the surface winds become weak and the marine layer grows shallow, dissipating altogether on some days. The air flow is occasionally reversed in a weak offshore movement, and the relatively stationary air mass is held in place by the Pacific High pressure cell, which allows pollutants to build up over a period of a few days. It is most often during this season that the north or east winds develop to transport pollutants from either the San Francisco Bay Area or the Central Valley into the Air Basin.

During the winter, the Pacific High migrates southward, allowing storm systems to enter the area from the northwest, and has less influence on the Air Basin. Air frequently flows in a southeasterly direction out of the Salinas and San Benito valleys, especially during night and morning hours. Northwest winds are nevertheless still dominant in winter, but easterly flow is more frequent. The general absence of deep, persistent inversions and the occasional storm systems usually result in good air quality for the Air Basin in winter and early spring (MBARD 2008).

Criteria Air Pollutants

The Monterey Bay Air Resources District (MBARD) is the designated air quality control agency for the Air Basin. Under the federal and state Clean Air Acts, both the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) have established ambient air quality standards for common criteria air pollutants. These ambient air quality standards represent safe levels of contaminants that avoid specific adverse health effects associated with each pollutant. As the local air quality management agency, MBARD is required to monitor air pollutant levels to ensure that state and federal air quality standards are met and, if they are not met, to develop strategies to meet the standards.

Criteria air pollutants include ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), coarse particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead. In California, sulfates, vinyl chloride, hydrogen

sulfide, and visibility-reducing particles are also regulated as criteria air pollutants. The Air Basin is designated as non-attainment for the state PM_{10} standard. The Air Basin is designated as unclassified or attainment for all other state and federal standards (EPA 2022b; CARB 2020).

Toxic Air Contaminants

Toxic air contaminants (TACs) are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer). Examples of TACs include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. TACs are generated by stationary sources, such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources, such as automobiles; and area sources, such as landfills. Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level.

Diesel exhaust is the predominant TAC in urban air. Diesel exhaust is a complex mixture of gases, vapors, and fine particles. Diesel particulate matter (DPM) is part of the complex mixture that makes up diesel exhaust. More than 90% of DPM is less than 1 micrometer in diameter, and thus is a subset of $PM_{2.5}$ (CARB 2022b). DPM is typically composed of carbon particles ("soot," also called black carbon) and numerous organic compounds, including over 40 known carcinogenic organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene (CARB 2022b). CARB classified "particulate emissions from diesel-fueled engines" (i.e., DPM) (17 CCR Section 93000) as a TAC in August 1998. DPM is emitted from a broad range of diesel engines: on-road diesel engines of trucks, buses, and cars; and off-road diesel engines including locomotives, marine vessels, and heavy-duty construction equipment, among others. Approximately 70% of all airborne cancer risk in California is associated with DPM (CARB 2000).

Sensitive Receptors

There are groups of people more affected by air pollution than others, classified as sensitive receptors. MBARD defines sensitive receptors as any residence, including private homes, condominiums, apartments, and living quarters; education resources such as preschools and K-12 schools; daycare centers; and health care facilities such as hospitals or retirement and nursing homes. Sensitive receptors also include long-term care hospitals, hospices, prisons, and dormitories or similar live-in housing (MBARD 2008). Sensitive receptors are located throughout the Plan Area.

Odors

Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The ability to detect odors varies considerably among the population and overall is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. In a phenomenon known as odor fatigue, a person can become desensitized to almost any odor, and recognition may only occur with an alteration in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors.

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

Less-Than-Significant Impact. The California Clean Air Act of 1988 required each nonattainment district in the state to adopt a plan showing how the state ambient air quality standards for O_3 would be met in

their area of jurisdiction. The California Clean Air Act required initial preparation of an Air Quality Management Plan (AQMP) in 1991, with subsequent updates every 3 years. The most recent update for the Air Basin is the 2012–2015 AQMP, which was adopted in March 2017. The 2012–2015 AQMP identifies a continued trend of declining O_3 emissions in the Air Basin primarily related to lowered vehicles miles traveled (VMT). Therefore, the MBARD determined progress was continuing to be made toward attaining the 8-hour O_3 standard during the three-year period reviewed (MBARD 2017). As noted above, the Air Basin is currently in attainment with the state O_3 standard.

The AQMP addresses only attainment of the O_3 California ambient air quality standards. Attainment of the PM_{10} California ambient air quality standards is addressed in the MBARD's *2005 Report on Attainment of the California Particulate Matter Standards in the Monterey Bay Region* (Particulate Matter Plan), which was adopted in December 2005. In accordance with SB 655, CARB, in conjunction with local air pollution control districts, is required to adopt a list of the most readily available, feasible, and cost-effective control measures that could be implemented by air pollution control districts to reduce ambient levels of particulate matter in their air basins (MBARD 2005). The Particulate Matter Plan's proposed activities include control measures for fugitive dust, public education, administrative functions, and continued enhancements to the MBARD's smoke management and emission-reduction incentive programs.

A project could be inconsistent with the AQMP if it would generate population, housing, or employment growth exceeding forecasts used in the development of the AQMP. The Association of Monterey Bay Areas Governments (AMBAG) is the regional planning agency for Monterey, San Benito, and Santa Cruz counties, and addresses regional issues relating to transportation, economy, community development, and environment. Regarding air quality planning, AMBAG has prepared the 2045 Metropolitan Transportation Plan/Sustainable Communities Strategy, a long-range transportation plan that uses growth forecasts to project trends for regional population, housing, and employment growth out to 2045 to identify regional transportation strategies to address mobility needs. The Proposed Project would generate a limited number of short-term construction jobs and approximately one additional permanent job during operations. These jobs could be accommodated within the existing local labor force in the Plan Area and would not likely require substantial relocation of workers to the Plan Area. Therefore, the Proposed Project would have a negligible increase on the residential population or employment in the Plan Area. As such, construction and operation of the Proposed Project would not conflict with or obstruct implementation of the AQMP and this impact would be less than significant.

b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Less-Than-Significant Impact. Short-term construction and long-term operational activities would result in a minimal increase in daily criteria air pollutant emissions. Given that the Air Basin is designated as non-attainment for PM_{10}, this is the primary pollutant of concern for the Air Basin. MBARD has established thresholds of significance for criteria air pollutants of concern for construction and operations. For construction, the threshold is 82 pounds per day of PM_{10}. Construction projects using typical construction equipment such as dump trucks, scrappers, bulldozers, compactors and front-end loaders that temporarily emit other air pollutants, such as precursors of O_3 (i.e., reactive organic gases [ROGs] and nitrogen oxides [NO_x]), are accommodated in the emission inventories of state- and federally required air plans and would not have a significant impact on the ambient air quality standards. For operations, a project would result in a significant impact if it results in the generation of emissions of or in excess of 137 pounds per day for ROG or NO_x, 550 pounds per day of CO, 150 pounds per day of sulfur oxides (SO_x), and 82 pounds per day of PM_{10} from on-site

sources (MBARD 2008). Notably, if a project exceeds the identified significance thresholds, its emissions would be considered cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions; and, conversely, if a project's emissions are below the MBARD thresholds, then the project's cumulative impact would be considered to be less than significant (MBARD 2008).

Internal combustion engines used by construction equipment, trucks, and worker vehicles would result in emissions of volatile organic compounds, NO_x, CO, PM_{10}, and $PM_{2.5}$. Emissions of PM_{10} and $PM_{2.5}$ would also be generated by entrained dust, which results from the exposure of earth surfaces to wind from the direct disturbance and movement of soil. Dust control measures would be implemented by the City through standard construction practice #3 (see Appendix C), including watering of active construction areas, which would reduce the generation of particulate emissions during construction.

Construction emissions would be primarily associated with major construction activities from implementation of Covered Activities, such as the diversion improvements included as both Covered Activities and as elements of the Conservation Strategy. Based on construction emissions modeling done for the Santa Cruz Water Rights Project EIR (City of Santa Cruz 2021d) and the Laguna Creek Diversion Retrofit Project EIR (City of Santa Cruz 2021c), criteria air pollutant construction emissions from diversion improvements would not exceed the applicable MBARD thresholds. Table 5 shows construction emissions associated with improvements to the City's Laguna Creek Diversion (construction completed in 2021), Felton Diversion, and Tait Street Diversion, as modeled for the Laguna Creek Diversion Retrofit Project EIR and the Santa Cruz Water Rights Project EIR (City of Santa Cruz 2021c, 2021d). As shown in Table 5, maximum daily PM_{10} emissions from construction would be well below the MBARD threshold of 82 pounds per day. Furthermore, such construction activities would be dispersed over time and would not occur concurrently. While no project-specific modeling has been completed for the Majors and Reggiardo Creek Diversion facilities, emissions would likely be similar to those modeled for the other City diversion facilities and would be well below the MBARD significance threshold.

Table 5. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions

Facility and Construction Year	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	(pounds per day)					
Laguna Creek Diversion (2021)	6.70	57.44	73.85	0.12	2.67	3.22
Felton Diversion (2027)	1.15	10.10	12.07	0.02	0.54	0.45
Tait Street Diversion (2028)	3.05	25.93	40.33	0.07	1.26	1.10
MBARD threshold	*N/A*	*N/A*	*N/A*	*N/A*	*82*	*N/A*
Threshold exceeded?	**N/A**	**N/A**	**N/A**	**N/A**	**No**	**N/A**

Source: City of Santa Cruz 2021c, 2021d.
Notes: ROG = reactive organic gases; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; MBARD = Monterey Bay Air Resources District; N/A = not applicable.

Operations and maintenance activities would be similar to existing conditions, and would entail a minimal increase in on-road vehicle activity that would result in a negligible increase in criteria air pollutant emissions and would not exceed the applicable MBARD significance thresholds.

MBARD considers emissions of ROG, NO_x, and PM_{10} from an individual project that exceeds the applicable emissions thresholds to be a substantial contribution to a cumulative impact on regional air quality, and projects that do not exceed the project-level thresholds may conclude that they are not cumulatively considerable. Given that the Proposed Project would not exceed the applicable MBARD significance threshold, the Proposed Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is non-attainment under an applicable federal or state ambient air quality standard. This impact would be less than significant.

c) Would the project expose sensitive receptors to substantial pollutant concentrations?

Less-Than-Significant Impact. In addition to criteria air pollutant emissions discussed above, construction activities involving the use of heavy-duty equipment and vehicles would generate emissions of TACs, which could expose nearby sensitive receptors to increased health risks. DPM would be the primary TAC emitted from diesel-fueled equipment and trucks during construction activities. Heavy-duty construction equipment and commercial trucks are subject to CARB Air Toxic Control Measures to reduce DPM emissions. Furthermore, the Proposed Project would be required to comply with state laws for reducing DPM emissions. The state implements emission standards for different classes of on- and off-road diesel vehicles and equipment that applies to off-road diesel fleets and includes measures such as retrofits that continue to reduce diesel emissions. Additionally, Title 13, Section 2485 of the California Code of Regulations prohibits idling of a diesel engine for more than five minutes in any location.

As discussed for criterion (b), maximum daily total PM_{10} emissions generated by construction equipment operation and trucks (exhaust particulate matter, or DPM, combined with fugitive dust generated by equipment operation and vehicle travel), would not exceed the MBARD significance threshold, which is designed to be protective of public health. Since PM_{10} is representative of the levels of DPM, the Proposed Project would also not result in substantial DPM emissions during construction and operation, and therefore, would not result in significant health effects related to DPM exposure. Construction activities would also not result in localized violations of the health-protective federal or state ambient air quality standards. Moreover, construction activities would be temporary and dispersed over the 30-year permit term and the large Plan Area.

No long-term sources of TAC emissions are anticipated during operation of the Proposed Project. Due to the relatively short period of exposure at any individual sensitive receptor and minimal particulate emissions generated, TACs emitted during construction would not result in concentrations causing significant health risks.

Traffic-congested roadways and intersections have the potential to generate localized high levels of CO. Localized areas where ambient concentrations exceed federal and/or state standards for CO are termed CO "hotspots." CO transport is extremely limited and disperses rapidly with distance from the source. Under certain extreme meteorological conditions, however, CO concentrations near a congested roadway or intersection may reach unhealthy levels, affecting sensitive receptors. Since the Proposed Project would result in a minimal increase in vehicle trips, the Proposed Project would not contribute to potential adverse traffic impacts that may result in the formation of CO hotspots.

Therefore, the Proposed Project would not expose sensitive receptors to substantial pollutant concentrations and the impact would be less than significant.

d) Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less-Than-Significant Impact. The occurrence and severity of potential odor impacts depends on numerous factors, including the nature, frequency, and intensity of the source; the wind speeds and direction; and the sensitivity of the receiving location. Although offensive odors seldom cause physical harm, they can be annoying and cause distress among the public and generate citizen complaints. Typical sources of odors include landfills, rendering plants, chemical plants, agricultural uses, wastewater treatment plants, and refineries.

Odors would be potentially generated from Proposed Project implementation by construction vehicles and equipment exhaust emissions. Potential odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment, architectural coatings, and asphalt pavement application. Such odors would be intermittent and temporary and would dissipate rapidly with distance from the respective sites and generally occur at magnitudes that would not affect substantial numbers of people. Therefore, impacts associated with odors during construction would be less than significant.

One of the Covered Activities involves sanitary landfill leachate management, consisting of ongoing maintenance of two leachate ponds, transmission of leachate to the City's wastewater treatment plant, and repair of the leachate line. High levels of odor-causing compounds are found in leachate, primarily volatile hydrogen sulfide, which is generated by the conversion of dissolved sulfate by anaerobic bacteria and has an unpleasant, rotten-egg smell. Soils surrounding the leachate line may have elevated contaminant levels. However, the Covered Activity related to sanitary landfill leachate management would not exacerbate any impacts related to leachate odor, as this management activity is ongoing and part of existing conditions.

Remaining project operations would continue existing operations and maintenance activities, and any odors produced would be minimal and would be similar to existing conditions. Overall, the Proposed Project would not result in odors that would affect a substantial number of people. Therefore, impacts associated with odors during operation would be less than significant.

3.4 Biological Resources

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES – Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Special-Status Species

For the purposes of this IS, special-status species include (1) plants, fish, or wildlife listed, proposed for listing, or candidates for listing as threatened or endangered under the ESA; (2) plants, fish, or wildlife listed as threatened or endangered, or proposed for listing, under the CESA; (3) fish or wildlife designated by CDFW as a California Species of Special Concern (SSC), (4) wildlife designated as Fully Protected species under the CFGC, (5) plants designated as rare under the California Native Plant Protection Act (NPPA) of 1977, or (6) plants with a California Rare Plant Rank (CRPR) of 1 or 2. Special-status species potentially occurring in or near the Plan Area were identified by querying the USFWS Information for Planning and Consultation (IPaC) online tool (USFWS 2022), CDFW's California Natural Diversity Database (CNDDB) (CDFW 2022a), and the California Native Plant Society (CNPS) Inventory or Rare and Endangered Plants (CNPS 2022). Location criteria for the CNDDB and CNPS queries encompassed the Davenport, Felton, Laurel, Santa Cruz, and Soquel U.S. Geological Survey (USGS) 7.5-minute quadrangles.

Special-Status Plants

Based on the results of the CNDDB (CDFW 2022a) and CNPS (2022) queries, 42 special-status plants have been recorded in the Plan Area vicinity (Appendix D). Of these, 11 could potentially occur in the Plan Area and be affected by City activities and/or are Covered Species under the City's OMHCP (Table 6). Additional habitat and occurrence information for these species is provided in Appendix D (Table D-1).

Table 6. Special-Status Plant Species Evaluated

Common Name	Scientific Name	Status (Federal/State/ CRPR)	Notes
Listed Species			
Ben Lomond spineflower	*Chorizanthe pungens* var. *hartwegiana*	FE/None/1B.2	OMHCP Covered Species endemic to Zayante sandhills (San Lorenzo River watershed).
robust spineflower	*Chorizanthe robusta* var. *robusta*	FE/None/1B.1	OMHCP Covered Species known to occur in City Urban Center and Laguna Creek watershed (North Coast).
Santa Cruz wallflower	*Erysimum teretifolium*	FE/SE/1B.1	May occur in sandhills habitat affected by activities (San Lorenzo River watershed).
Santa Cruz tarplant	*Holocarpha macradenia*	FT/SE/1B.1	OMHCP Covered Species known to occur on marine terraces in City Urban Center.
San Francisco popcornflower	*Plagiobothrys diffusus*	None/SE/1B.1	OMHCP Covered Species known to occur in City Urban Center and Laguna Creek watershed (North Coast).
Non-Listed Species			
Bonny Doon manzanita	*Arctostaphylos silvicola*	None/None/1B.2	May occur in sandhills habitat affected by activities (San Lorenzo River watershed).
deceiving sedge	*Carex saliniformis*	None/None/1B.2	May occur in mesic grassland areas affected by activities.
Ben Lomond buckwheat	*Eriogonum nudum* var. *decurrens*	None/None/1B.1	May occur in sandhills habitat affected by activities (San Lorenzo River watershed).
minute pocket moss	*Fissidens pauperculus*	None/None/1B.2	May occur in redwood forest habitat affected by activities.
Choris' popcornflower	*Plagiobothrys chorisianus* var. *chorisianus*	None/None/1B.2	May occur in grassland habitat affected by activities (North Coast).
Santa Cruz clover	*Trifolium buckwestiorum*	None/None/1B.1	May occur in grassland habitat affected by activities (North Coast).

Source: City of Santa Cruz 2021e, CDFW 2022a.
Notes: CRPR = California Rare Plant Rank; FE = federally endangered; FT = federally threatened; SE = state endangered; SR = state rare; 1B.1 = CRPR 1B.1 (seriously threatened); 1B.2 (moderately threatened).

Special-Status Wildlife

Based on the results of the CNDDB (CDFW 2022a) and USFWs IPaC (2022) queries, 46 special-status fish or wildlife species have been recorded in the Plan Area vicinity (Appendix D). Of these, 11 wildlife species could potentially occur in the Plan Area and be affected by City activities and/or are Covered Species under the City's OMHCP (Table 7). Special-status fish are discussed below. Additional habitat and occurrence information for these species is provided in Appendix D (Table D-2).

Table 7. Special-Status Wildlife Species Evaluated

Common Name	Scientific Name	Status (Federal/ State)	Notes
Mount Hermon (=barbate) June beetle	*Polyphylla barbata*	FE/None	OMHCP Covered Species endemic to Zayante sandhills.
Ohlone tiger beetle	*Cicindela ohlone*	FE/None	OMHCP Covered Species known to occur in native grassland at Moore Creek Open Space and Younger Ranch.
Zayante band-winged grasshopper	*Trimerotropis infantilis*	FE/None	Endemic to Zayante sandhills.
California red-legged frog	*Rana draytonii*	FT/SSC	OMHCP Covered Species known to occur in North Coast watersheds.
California giant salamander	*Dicamptodon ensatus*	None/SSC	Suitable habitat in North Coast watershed streams and Upper San Lorenzo River watershed and adjacent redwood, mixed conifer, and riparian forests.
Santa Cruz black salamander	*Aneides flavipunctatus niger*	None/SSC	Suitable habitat in North Coast watershed streams and Upper San Lorenzo River watershed and adjacent redwood, mixed conifer, and riparian forests.
Western pond turtle	*Emys* (=*Actinemys*) *marmorata*	None/SSC	OMHCP Covered Species, despite few Plan Area occurrences except for upper Newell Creek, Loch Lomond Reservoir, and lower San Lorenzo River.
Grasshopper sparrow (nesting)	*Ammodramus savannarum*	None/SSC	Suitable grassland habitat on slopes and ridgetops of North Coast watersheds and northwest of City Urban Center.
American badger	*Taxidea taxus*	None/SSC	Suitable habitat on slopes and ridgetops of North Coast watersheds; known to occur in areas around North Coast pipeline near Laguna Creek.
Ringtail	*Bassariscus astutus*	None/FP	Suitable habitat in all woodland and forest types.
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*	None/SSC	Suitable habitat in all woodland and forest types.

Source: City of Santa Cruz 2021e, CDFW 2022a.
Notes: FE = federally endangered; FT = federally threatened; PT = proposed threatened; SE = state endangered; SSC = California Species of Special Concern; CFP = California Fully Protected Species.

Special-Status Fish

Five special-status fish species are evaluated in the IS/MND, including the ASHCP Covered Species, OMHCP Covered Species of fish, and one other special-status fish species.

ASHCP Covered Species

Steelhead

Steelhead inhabiting the drainages within the Plan Area are part of the Central California Coast DPS. Steelhead are listed as threatened under the federal ESA (NMFS 2006). The Central California Coast DPS consists entirely of winter-run steelhead and extends from the Russian River south to Aptos Creek in the southern end of Santa Cruz County. The Plan Area is located in the southern range of the Central California Coast DPS (Busby et al. 1996). NMFS published a recovery plan for Central California Coast steelhead in 2016 (NMFS 2016b).

Steelhead life history is quite diverse and adaptive, providing the necessary flexibility to survive varied environmental conditions naturally occurring throughout their range and within their natal watershed. In general, steelhead grow and mature in the ocean and spawn in freshwater. In central California, adult steelhead enter coastal streams during the wet season in association with increased runoff. The majority of steelhead enter freshwater from January through March or April, and spawn relatively soon after entering freshwater. Incubation of eggs can take a few weeks. Young steelhead (or fry) typically disperse to the stream margins after emerging from the substrate. Depending upon the size attained by the fall following emergence, the juveniles aggregate in pools and begin the smolting process that prepares them for life in the ocean (known as smoltification). Juvenile steelhead can spend from 1 to 3 years in freshwater before smolting. Steelhead smolts migrate downstream to the ocean as early as the fall, but most commonly in the spring (March through May). Steelhead may spend from 1 to 2 years in the ocean before reaching maturity and returning to their natal stream to spawn.

Laguna Creek, Liddell Creek, Majors Creek, and the San Lorenzo River and its tributaries provide habitat for steelhead (City of Santa Cruz 2023a; Berry, C. et al. 2019). According to watershed characterization protocols developed in the NMFS Recovery Plan for Central California Coastal coho (NMFS 2012), the steelhead populations in Majors, Laguna, and Liddell Creeks are described as Dependent Populations. The term Dependent Populations refers to steelhead populations whose dynamics and extinction risk are substantially affected by neighboring populations. The mouths of these streams may provide seasonal estuarine environments that are well developed (Laguna Creek and the San Lorenzo River) or more transient (Majors and Liddell Creeks). The seasonal lagoons at Laguna Creek and the San Lorenzo River support rearing steelhead. ASHCP Section 2.5.1 provides additional information about the life history and abundance of steelhead in the Plan Area.

Coho

Coho in the Plan Area are part of the Central California Coast ESU, which is listed as endangered under the federal ESA and CESA. Under the ESA, the Central California Coast ESU extends from Punta Gorda in Humboldt County south to and including Aptos Creek. Critical habitat has been designated for the Central California Coast ESU, including the accessible portions of the streams in the Plan Area. NMFS published a recovery plan for Central California Coast coho in 2012 (NMFS 2012). Historically, coho were found in as many as 50 coastal drainages in San Mateo and Santa Cruz counties but spawning runs were limited to 11 stream systems by the 1960s (Anderson 1995). More recently, the two independent populations in the Santa Cruz Mountain diversity strata (Pescadero Creek and San Lorenzo River) were considered currently extirpated or nearly so in the last NMFS 5-year status

review (NMFS 2023). Sporadic observations of coho continue to occur in Santa Cruz County streams, primarily the result of production from the Kingfisher Flat Hatchery in the Scott Creek watershed. For example, there was a release of 10,000 juvenile coho into Pescadero Creek in November 2020. Scott Creek experienced the largest coho run in a decade during 2014-2015, and researchers recently detected juvenile coho within four dependent watersheds where they were previously thought to be extirpated (San Vincente, Waddell, Soquel, and Laguna creeks) (NMFS 2016a). The increase appears to be related to improved hatchery strategies (Williams et al. 2016).

Coho spawning migrations from the ocean to freshwater streams or rivers usually begin after the first heavy rains in late fall or winter. In the short coastal streams of central California, coho typically return to freshwater during November through February. The female may dig several pits to complete spawning, laying an average of 2,500 eggs per female. Newly hatched fry (alevins) remain in gravel for approximately 3 weeks before emerging. As they grow during the spring, juvenile coho disperse to pools where they set up individual territories. After spending the ensuing summer, fall and winter in the stream, the immature yearling coho begin to migrate downstream toward the ocean in spring. During this time, juveniles undergo smoltification. Growth in freshwater varies, but typically smolts leave California streams after 1 to 2 years. Outmigration typically peaks from late April to mid-May. Coho have a fairly strict 3-year life cycle, with about half spent in freshwater and half spent in saltwater. After growing and sexually maturing in the ocean, most coho return to their natal streams as 3-year-olds to spawn and die. Some precocious males (jacks) return to freshwater at 2 years of age. There is very little variability in age of spawning for female coho; nearly all wild female coho spawn at 3 years.

Laguna Creek, Liddell Creek and Majors Creek provide habitat for coho in at least some years (City of Santa Cruz 2023a; Berry, C. et al. 2019). Coho are considered extirpated from the San Lorenzo River. ASHCP Section 2.5.2 provides additional information about the life history and abundance of coho in the Plan Area.

OMHCP Covered Fish Species

Special-status fish species included in the OMHCP Covered Species are tidewater goby and Pacific lamprey.

Tidewater goby are currently listed as endangered under the federal ESA (59 FR 5494) but have been proposed for reclassification as threatened (79 FR 14340). The United States Fish and Wildlife Service (USFWS) characterizes tidewater goby populations (i.e., localities) along the California coast as metapopulations (a group of distinct populations that are genetically interconnected through occasional exchange of animals) (USFWS 2007). Local populations of tidewater gobies occupy coastal lagoons and estuaries that in most cases are separated from each other by the open ocean. Some tidewater goby populations persist on a consistent basis (potential sources of individuals for recolonization), while other tidewater goby populations appear to experience intermittent extirpations. Local extirpations may result from one or a series of factors, such as the drying up of some small streams during prolonged droughts, water diversions, and estuarine habitat modifications (USFWS 2007). Some localities where tidewater gobies have been extirpated apparently have been recolonized when extant populations were present within a relatively short distance of the extirpated population (i.e., less than 6 miles (10 kilometers). Tidewater gobies are known to inhabit, or recently inhabited, the coastal lagoons of several streams in the Plan Area including Laguna Creek, Baldwin Creek, Lombardi Gulch, Old Dairy Gulch, Wilder Creek, Younger Lagoon, Moore Creek, the San Lorenzo River, Corcoran Lagoon, and Moran Lake (USFWS 2005). Suitable habitat for the goby has also been identified in the lagoons of Majors (Smith 2001) and Arana Creeks (City of Santa Cruz 1997; HRG 1996).

Pacific lamprey is a state species of special concern not listed under the federal ESA. Pacific Lampreys are eel-like in form and anadromous, using both fresh water and marine habitats to complete their life cycle. Adult Pacific Lampreys are parasitic and well-known for the sucker-like disc and three cuspid teeth used to cling to other animals to feed (CDFW 2022a).

After about one to three years in the ocean, Pacific lampreys migrate from the ocean to upstream freshwater spawning habitat as adults and, after hatching, larvae drift downstream to low-velocity rearing areas. Larvae eventually transform to juveniles and migrate downstream to enter the ocean (CDFW 2022a). The San Lorenzo River and its tributaries support Pacific lamprey but they have not been reported from the North Coast Streams (City of Santa Cruz 2021d).

Other Special-Status Fish

Monterey roach is a sub-species of California roach and a state species of special concern not listed under the federal ESA. California roach are widely distributed in California, both geographically and in terms of habitat conditions. They are found in small, warm streams, coldwater "trout" streams, in heavily modified habitats, and main channels of rivers. Their relatively short lifespan (maturity in 2 to 3 years and maximum life span of 6 years) and fecundity (250-2000 eggs per female) can produce abundant populations in the right conditions. Monterey roach are present in the San Lorenzo River watershed but have not been reported from the North Coast Streams. Roach have been consistently reported in electrofishing surveys between 1994 and 2019 at 25% to 75% of all sampled locations upstream of the Tait Diversion (SCCWRP 2021). They have been observed most commonly in the mainstem San Lorenzo River between Felton and Boulder Creek and are less common, even infrequent in the tributaries and upper mainstem. They have been captured occasionally or rarely at sites downstream of Felton (SCCWRP 2021). Roach have not been observed in seining surveys in the San Lorenzo lagoon and may not be abundant downstream of the Tait Diversion (HES 2010 – 2019).

Sensitive Natural Communities

For the purposes of this IS/MND, sensitive natural communities include the following: (1) natural vegetation communities considered sensitive by CDFW (2022b) (CDFW sensitive natural communities), which includes riparian habitat; and (2) locally unique biotic communities as identified under criterion 2 of the "sensitive habitat" definition in Section 16.32.040 of the County Code. Each of these sensitive natural communities are briefly discussed below.

CDFW Sensitive Natural Communities

CDFW's Vegetation Classification and Mapping Program (VegCAMP) works to classify and map the vegetation of California and determine the rarity of vegetation types. Since the mid-1990s, CDFW and its partners (including CNPS) have been working on classifying California vegetation using updated standards that comply with the hierarchical National Vegetation Classification Standard (NVCS) and now use the terms "Natural Communities" and "vegetation types" interchangeably. Current classification of vegetation in California is codified in the Manual of California Vegetation (MCV) online edition (CNPS 2022b) and focuses on mapping vegetation at the two lowest levels of the NVCS hierarchy: associations and alliances. Associations are the most granular level and are grouped into alliances. Vegetation alliances and/or associations with a state rarity ranking of S1 through S3 are considered highly imperiled and designated as sensitive natural communities by CDFW (2022b), and project impacts on high-quality occurrences of these communities are typically considered significant under CEQA. Some communities may not be considered sensitive at the alliance level but may contain associations that are.

The OMHCP (City of Santa Cruz 2021e) identifies five dominant vegetation or land cover types in the Plan Area: woodland and forest, riparian forest, scrub, grasslands and artificial ponds, and disturbed areas (see Section 2.6 of the OMHCP [City of Santa Cruz 2021a] for a more detailed description). Specific vegetation communities or cover types within each of these categories are listed in Table 8. Vegetation within the Plan Area has not been mapped to MCV (CNPS 2022b) standards, but some generalizations can be made about which of these cover types support or may support CDFW sensitive natural communities, as discussed in the third column of Table 8.

Table 8. Vegetation and Land Cover Types

Vegetation or Land Cover Type	General Description	Sensitive Natural Community?
Woodland and Forest		
Redwood Forest	Forests dominated by coast redwood (*Sequoia sempervirens*). Occurs on lower slopes of drainages in North Coast watersheds and Upper San Lorenzo River and its tributaries.	**Yes.** The *Sequoia sempervirens* Forest & Woodland alliance has a state rarity ranking of S3.
Mixed Conifer Forest	Coniferous forests comprised of Douglas-fir (*Pseudotsuga menziesii*), knobcone pine (*Pinus attenuata*), and coast redwood. Occurs on north-facing slopes of drainages in upper Liddell and Laguna Creeks and upper tributaries of San Lorenzo River.	**Maybe.** The *Pseudotsuga menziesii* Forest & Woodland alliance has a state rarity ranking of S4 but several of its associations have a ranking of S3; some of these associations may be present in the Plan Area.
Mixed Evergreen Forest	Mixed forest co-dominated by coast live oak (*Quercus agrifolia*), Pacific madrone (*Arbutus menziesii*), and California bay (*Umbellularia californica*). Occurs on moist, well-drained slopes above redwood forest in North Coast watersheds.	**Yes.** The *Quercus agrifolia – Arbutus menziesii – Umbellularia californica* association of the *Quercus agrifolia* Forest & Woodland alliance has a state rarity ranking of S3.
Central Coast Live Oak Woodland	Woodland dominated by coast live oak. Occurs in uplands on hilltop edges above conifer communities.	**No.** The *Quercus agrifolia* Forest & Woodland alliance has a state rarity ranking of S4.
Riparian Forest		
Central Coast Arroyo Willow Riparian Forest	Dense thicket of arroyo willow (*Salix lasiolepis*), often associated with red alder (*Alnus rubra*). Occurs in smaller drainages along Highway 1, in scattered locations along streams in North Coast watersheds, and along Moore Creek and Arana Creek in City Urban Center.	**Yes.** All riparian communities (aka. riparian habitat) are considered sensitive under CEQA.
Coast Live Oak Riparian Forest	Forest dominated by coast live oak mixed with California buckeye (*Aesculus californica*). Occurs along Moore Creek and its tributaries in City Urban Center.	**Yes.** All riparian communities (aka. riparian habitat) are considered sensitive under CEQA.
Red Alder Riparian Forest	Forest dominated by red alder up to heights of 80 feet. Occurs in patches along drainages in North Coast watersheds.	**Yes.** All riparian communities (aka. riparian habitat) are considered sensitive under CEQA.
Scrub		
Coyote Brush Scrub	Scrub dominated by coyote brush (*Baccharis pilularis*). Occurs along Highway 1 and on hillsides throughout Plan Area, often encroaching into historically grazed grassland.	**Maybe.** The *Baccharis pilularis* Shrubland alliance has a state rarity ranking of S5 but several of its associations have rankings of S1 to S3; some of these associations (e.g., coyote brush/ native grass associations such as *B. pilularis/Leymus triticoides* or *B. pilularis/Danthonia californica*) may be present in the Plan Area.

Table 8. Vegetation and Land Cover Types

Vegetation or Land Cover Type	General Description	Sensitive Natural Community?
Coastal Scrub	Diverse scrub community with poison oak (*Toxicodendron diversilobum*), blue blossom (*Ceanothus thyrsiflorus*), California coffee berry (*Frangula californica*), and coyote brush. Occurs on steep hillsides along coastal arroyos.	**Maybe.** The *Toxicodendron diversilobum* Shrubland and *Ceanothus thyrsiflorus* Shrubland alliances have state rarity rankings of S4 but contains associations that have rankings of S3; some of these associations may be present in the Plan Area.
Grasslands and Ponds		
Annual Grassland	Grassland composed of numerous non-native annual grasses such as perennial rye grass (*Lolium perenne*), bromes (*Bromus* spp.), and wild oat (*Avena fatua*). Occurs throughout Plan Area.	**No.** The *Lolium perenne* Herbaceous Semi-Natural alliance and other semi-natural alliances do not have state rarity rankings.
Native Grassland	Grassland primarily composed of native grasses such as purple needlegrass (*Stipa* [=*Nassella*] *pulchra*), California oatgrass (*Danthonia californica*), and California brome (*Bromus carinatus*). Stands intermingled with annual grassland in the Laguna and Majors Creek watersheds (North Coast watersheds) and on slopes just west of the City in the Moore Creek Preserve, portions of Pogonip, and within Arana Gulch Greenbelt (City Urban Center).	**Yes.** The *Nassella* spp. – *Melica* spp. Herbaceous alliance has a state rarity ranking of S3S4.
Freshwater Ponds	Constructed ponds supporting freshwater emergent wetland vegetation (bulrushes [*Schoenoplectus* or *Scirpus* spp.] and cattails [*Typha* spp.]). Several occur along Highway 1.	**Yes.** The *Schoenoplectus* (*acutus*, *californicus*) Herbaceous alliance has a state rarity ranking of S3S4.
Disturbed Areas		
Urban, Industrial, and Agriculture	Urban or agricultural areas without natural vegetation. Includes residential housing, ornamental trees and landscaping plants, roads, barren areas (e.g., sand mining), and agricultural row crops along Highway 1.	**No.** Developed areas do not support native vegetation communities.

Sources: CDFW 2022b, City of Santa Cruz 2021a.
Notes:
State Rarity Rankings
S3: Vulnerable – at moderate risk of extirpation due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
S4: Apparently secure – At a fairly low risk of extirpation due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.

County of Santa Cruz Locally Unique Habitat Areas

Three additional sensitive habitat types as mapped by Santa Cruz County and protected under County Code 16.32 occur within the unincorporated Santa Cruz County portions of Plan Area: Special Forests, Grasslands, and Sandhills Habitat. Special Forest and Grassland areas are defined in the County General Plan adopted May 24, 1994. Special Forests are forests that are (1) unique natural communities, (2) limited in supply and distribution, (3) threatened by substantial disturbance from human activities, and (4) habitat for rare, endangered and/or locally unique species of plants and animals. Special Forests occur in the upper Laguna, Majors, and San Lorenzo watersheds in the Plan Area. Grasslands include (1) North Coast grasslands on the terraces inland of Highway 1, (2) valley grasslands on

the rolling hills of the Watsonville Slough region, and (3) meadow grasslands intermixed with the forested North Coast section of the Santa Cruz Mountains. The North Coast grasslands overlap with the North Coast watersheds portion of the Plan Area. Sandhills Habitat consists of the Zayante sands soil type in scattered locations throughout the North Coast and San Lorenzo watersheds. In these locations, Zayante soils provide habitat for several special-status species endemic to (i.e., found only in) this area, such as the Mount Hermon June beetle, the Zayante band-winged grasshopper, Scotts Valley spineflower, Ben Lomond wallflower, and silver-leaved manzanita.

Aquatic Resources

For the purposes of this IS/MND, aquatic resources include (1) waters of the United States (wetlands and non-wetland waters) subject to U.S. Army Corps of Engineers (USACE) and Regional Water Quality Control Board (RWQCB) jurisdiction under Sections 404 and 401 of the federal Clean Water Act, respectively, (2) waters of the state subject to RWQCB jurisdiction under the Porter-Cologne Water Quality Control Act, and (3) rivers, streams, and lakes subject to CDFW jurisdiction under CFGC Section 1602. Aquatic resources occur throughout the Plan Area and include all the major streams that are the focus of the Proposed Project as well as wetlands that may not have been formally delineated to date. Riparian vegetation communities are also considered aquatic resources for the IS/MND because their physical characteristics (i.e., soils, hydrology, vegetation) often meet the above agencies' regulatory definition of resources under their jurisdiction. For example, riparian forests often meet the definition of "palustrine forested wetland" under USACE jurisdiction. Also, CDFW often considers riparian vegetation outside but adjacent to rivers, streams, and lakes to be subject to its jurisdiction under CFGC Section 1602, although it is not specifically defined as such in the CFGC.

Wildlife Movement Corridors and Nursery Sites

Wildlife Movement Corridors

For the purposes of this IS/MND, wildlife movement corridors include both linear habitat features as well as habitat patches that connect two or more larger patches of wildlife habitat. Wildlife corridors contribute to population viability by assuring continual exchange of genes between populations, providing access to adjacent habitat areas for foraging and mating, and providing routes for recolonization of habitat after local extirpation or ecological catastrophes (e.g., fires). They 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. Most wildlife corridors analyzed within the context of land use planning, including those in this document, are moderate in scale and facilitate regional wildlife movement among habitat patches and through human-dominated landscapes. "Established wildlife movement corridors" analyzed under CEQA for this IS/MND are "large landscape blocks" or "critical linkages" identified in the Bay Area Open Space Council's *Critical Linkages: Bay Area and Beyond* report (Penrod et al. 2013).

All streams with adjacent riparian vegetation in the Plan Area are expected to serve as local movement corridors for resident wildlife traveling up and down the watersheds. Medium- and large-bodied terrestrial species (e.g., mountain lion, deer, bobcat) also likely travel up and down undeveloped ridges between the North Coast watersheds.

The lower Laguna Creek watershed and Liddell Creek watershed are in the "Santa Cruz Mountains" large landscape block (Penrod et al. 2013). This area was deemed important for mountain lion, mule deer, bobcat, American badger, ringtail, and avian species. Large landscape blocks are areas of high ecological integrity that "build upon the existing conservation network in the region" upon which critical linkages were delineated by Penrod (Penrod et al. 2013). However, no such critical linkages were mapped in the Plan Area.

Wildlife Nursery Sites

Nursery sites are locations where fish and wildlife congregate for hatching and/or raising young, such as bird nests, colonial waterbird (e.g., herons and egrets) rookeries, spawning areas for fish, fawning areas for deer, and bat maternity roosts. For the purposes of this IS/MND, nursery sites are considered for native wildlife that are not designated as special-status species, which are addressed separately. Such sites are not mapped on a regional scale and would need to be evaluated at a project-specific level.

The Plan Area supports habitat for many native wildlife species. Inland portions (including upper watersheds) are located in the Santa Cruz Mountains ecoregion, while coastal areas are located in the Monterey Bay Plains and Terraces ecoregion (Griffith et al. 2016). Wildlife species expected to occur in these regions reflect characteristic vegetation types, with species adapted to forests and woodland more likely in the former and those adapted to coastal scrub, grassland, and sand dunes in the latter. Trees and shrubs in all vegetation communities, including those planted as ornamental landscaping in urban and disturbed areas, provide nesting habitat for a variety of native bird species and roosting habitat for foliage-roosting bat species. Human-built structures (e.g., bridges, highway overpasses, culverts, crevices in buildings) may also support nesting by species such as white-throated swift (*Aeronautes saxatalis*), black phoebe (*Sayornis nigricans*), cliff swallow (*Petrochelidon pyrrhonota*), and barn swallow (*Hirundo rustica*). Common bat species that may roost under bridges or in large tree hollows, abandoned buildings, rock crevices, mine shafts, or other features include Mexican free-tailed bat (*Tadarida brasiliensis*), big brown bat (*Eptesicus fuscus*), and California myotis (*Myotis californicus*).

Local Policies or Ordinances

City of Santa Cruz

Local Coastal Program

Pursuant to the California Coastal Act, the City has an LCP that was certified by the California Coastal Commission (CCC) in 1985 with approved amendments since that time. The Coastal Act defines an "environmentally sensitive area" as "any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments" (Coastal Act section 30107.5). The City's existing certified LCP identifies the following sensitive habitats and species: wetlands, riparian habitat, grasslands, mima mounds and habitats that support Ohlone tiger beetle, tidewater goby, burrowing owl, California brown pelican, Monarch butterfly, pigeon guillemot, black swift, Santa Cruz tarplant or American peregrine falcon (City of Santa Cruz 1994), and LCP policies and programs reference and seek to protect these habitats and species. Specifically, existing LCP policies seek to preserve the habitat of and minimize disturbance to seabird rookeries and roosting areas along the coastline (EQ 4.1.2), preserve and enhance the character and quality of riparian and wetland habitats (EQ 4.2), and protect rare, endangered, sensitive and limited species and the habitats supporting them as shown in Map EQ-9 or as identified through the planning process or as designated as part of the environmental review process (EQ 4.5).

In 2003, the City adopted the San Lorenzo Urban River Plan (SLURP) for the portion of the river south of Highway 1. Policies developed from recommendations in this plan were included in the LCP as a CCC-approved LCP amendment in 2004. The SLURP is the product of a planning process initiated by City Council in 1999 to update previous plans for the San Lorenzo River that guided flood control, vegetation restoration and public access improvements along the San Lorenzo River. Only the lower portion of the river is within the coastal zone. The SLURP contains recommendations for habitat enhancement, as well as public access and ideas to promote river-oriented

development. One of the key goals of the plan is to enhance and restore biotic values of the river, creek and marsh fish and wildlife habitat. The SLURP includes the Lower San Lorenzo River and Lagoon Management Plan as an appendix, which provides resource management and restoration recommendations within the constraints of providing flood protection. Management and restoration recommendations address: annual vegetation management; summer lagoon water level management; enhancement of the aquatic, shoreline and riparian habitats; and marsh restoration.

In 2007, the City adopted the City-Wide Creeks and Wetlands Management Plan, which approved by the CCC as a LCP amendment in October 2007. The Management Plan provides a comprehensive approach to managing all creeks and wetlands within the City. Long-term goals to manage these resources include reduction and/or elimination of pollutants; improvement of water quality; improvement and restoration of natural habitat; and increased public awareness of the value of watershed quality. The Management Plan recommends development setbacks along each watercourse in the City based on biological, hydrological, and land use characteristics for various watercourse types. The recommended setbacks within a designated management area include a riparian corridor, a development setback area, and an additional area that extends from the outward edge of the development area. The Management Plan establishes the requirements for obtaining a Watercourse Development Permit for activities within or near these areas. Repair, maintenance, or minor alteration of existing public utility, drainage, flood control, and water storage and provision facilities, including pumps and other appurtenant structures where there is no or negligible expansion of use, are exempt from obtaining a Watercourse Development Permit. In addition, projects that concurrently are reviewed and approved by the USACE, CDFW, NMFS, or USFWS for maintenance, flood protection, restoration, or enhancement of a natural resource are exempt from obtaining a Watercourse Development Permit.

General Plan 2030

Chapter 10 (Natural Resources and Conservation) of the City's General Plan 2030 (City of Santa Cruz 2012) addresses "valuable natural assets that make Santa Cruz unique" and its purpose is to "preserve and protect them in perpetuity." It includes the following goals and policies relevant to biological resources:

- **Goal NRC 1.** Protected, enhanced, and sustainably managed creek systems, riparian environments, and wetlands.
  - **NRC1.1.** Protect the city's river and wetland areas while increasing and enhancing public access where appropriate.
  - **NRC1.2.** Encourage low impact uses and practices in watershed lands upstream of the city's riverine, stream, and riparian environments.
  - **NRC1.3.** Encourage the restoration and enhancement of existing riparian corridors, wetlands, and water resources.
- **Goal NRC 2.** Protected, enhanced, and sustainable native and natural plant and animal communities and habitats.
  - **NRC2.1.** Protect, enhance, or restore habitat for special-status plant and animal species.
  - **NRC2.2.** Protect sensitive habitat areas and important vegetation communities and wildlife habitat, to include riparian, wetland (salt marsh and freshwater wetland), coastal prairie, coastal bird habitat, and habitat that support special status species, as well as, sensitive and edge habitats ("ecotones").
  - **NRC2.3.** Protect, enhance, and maintain significant dispersal corridors and buffers.
  - **NRC2.4.** Protect, manage, and enhance tree groves and understory that provide sensitive habitat features.

Municipal Code Chapter 9.56 (Heritage Trees)

Chapter 9.56 of the City Municipal Code defines heritage trees, establishes permit requirements for the removal of a heritage tree, and sets forth mitigation requirements as adopted by resolution by the City Council. Heritage trees are defined by size, historical significance, and/or horticultural significance, including, but not limited to, those which are: (1) unusually beautiful or distinctive; (2) old (determined by comparing the age of the tree or shrub in question with other trees or shrubs of its species within the city); (3) distinctive specimen in size or structure for its species (determined by comparing the tree or shrub to average trees and shrubs of its species within the city); (4) a rare or unusual species for the Santa Cruz area (to be determined by the number of similar trees of the same species within the city); or (5) providing a valuable habitat. Resolution NS-23,710, which was rescinded by Resolution No. NS-28-706 and then reinstated by Resolution No NS-29,092, establishes criteria and standards for the circumstances under which a heritage tree may be removed. City regulations require tree replacement for approved to include replanting three 15-gallon or one 24-inch size specimen or the current retail value which shall be determined by the Director of Parks and Recreation. Removal would be permitted if found in accordance with the criteria and requirements previously outlined.

Council Policy 11.3 (Timber Harvests in Watershed Area and Preservation of Old Growth Trees)

Council Policy 11.3 defines old growth trees and residual trees, and establishes policies for their preservation. Old growth trees are defined as having a size of at least 40 inches in diameter at breast height (dbh) and/or age of over 200 years old, and residual trees are defined as trees which were alive during initial harvesting of the old growth forest, but were either younger/smaller trees at that time or suppressed trees in that forest. The policy requires City staff to notify the City Council of any requests for timber harvest permits in the City's watershed area. The policy also requires that old growth trees and specimen trees on City-owned forest lands are to be preserved unless safety factors dictate their removal or the City Council makes a specific exception, and that residual trees may only be harvested in cases where silvicultural guidelines indicate their harvest would be beneficial for the health and vigor of the stand or safety or where extraneous factors dictate their removal.

County of Santa Cruz

Proposed Project Covered Activities that are located in the coastal zone of unincorporated Santa Cruz County, would have to comply with relevant County LCP policies and implementing ordinances, as water infrastructure is not exempt from the California Coastal Act or the relevant LCP.

County General Plan and Local Coastal Program

The Santa Cruz County General Plan and LCP is a comprehensive, long-term planning document for the unincorporated areas of the County and includes the County's LCP, which was certified by the CCC in 1994 (County of Santa Cruz 1994). The County General Plan and LCP provides policies and programs to establish guidelines for future growth and all types of physical developments. The County General Plan and LCP are part of the regulatory framework for the Proposed Project's components, which will require coastal development permits from the County to the extent that they are located in the coastal zone. The County's General Plan and LCP, Chapter 5 (Conservation and Open Space), Objective 5.2 (Riparian Corridors and Wetlands), establishes definitions for riparian corridors and wetlands to ensure their protection. Policies 5.2.1 through 5.2.5 identify and define riparian corridors and wetlands, determine the uses which are allowed in and adjacent to these habitats, and specify required buffer setbacks and performance standards for land in and adjacent to these areas.

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

The County's General Plan and LCP, Chapter 5 (Conservation and Open Space), Objective 5.6 (Maintaining Adequate Streamflows), indicates that in-stream flows should be protected and restored to ensure a full range of beneficial uses including fish and wildlife habitat. Policies 5.6.1 through 5.6.3 call for maintaining instream flows necessary to maintain fish runs and riparian vegetation; designating critical water supply streams, including the City's surface water sources; prohibiting new riparian or off-stream development, or increases in the intensity of use, which require an increase in water diversions; opposing or prohibiting new or expanded diversion from such streams; and adequately conditioning new major water supply projects to protect beneficial instream uses and riparian habitat.

An update to the County's General Plan, known as the Sustainability Policy and Regulatory Update or Sustainability Update (County of Santa Cruz 2022h), was approved by the County Board of Supervisors in December 2022 and is pending final certification by the California Coastal Commission. The documents will not be in effect until certified. In the Sustainability Update, the existing Conservation and Open Space Element is proposed to be renamed as the Agriculture, Natural Resources + Conservation (ARC) Element and has been reorganized. The proposed amendments generally retain existing policies related to biological resources protection. Proposed changes include: addition of new policies and implementation strategies supporting implementation of the County's 2013 Steelhead and Coho Salmon Conservation Strategy with priority actions addressing streamflow, habitat complexity, sediment reduction, and migration passage; stream wood retention; and fuel management to reduce threat and potential severity of wildfires while protecting sensitive habitats; as well as other updated resource management regulations consistent with current state law and practice.

County Code

The County's certified LCP is administered by the County Planning Department, pursuant to the California Coastal Act, and includes specific plans and ordinances for activities within the coastal zone. The LCP implementing ordinances in the County Code that are particularly relevant in the evaluation of biological resources related to Proposed Project Covered Activities that are within the coastal zone of unincorporated Santa Cruz County, and that are not exempt from the LCP, include the following: County Grading Ordinance (Chapter 16.20), Erosion Control Ordinance (Chapter 16.22), Riparian Corridor and Wetlands Protection (Chapter 16.30), Sensitive Habitat Protection (Chapter 16.32), and Significant Trees Protection (Chapter 16.34).

Habitat Conservation Plans

The only other City-sponsored HCP in the Plan Area besides the Proposed Project and OMHCP is the Graham Hill Water Treatment Plant Low-Effect HCP (LEHCP). City staff developed a low-effect HCP with USFWS for the operations, maintenance, and construction activities associated with the GHWTP (the LEHCP; City of Santa Cruz 2013). The LEHCP covers incidental take of Mount Hermon June beetle, Zayante band-winged grasshopper, and Ben Lomond spineflower during current and future operations, maintenance, and construction activities at the GHWTP. The LEHCP covers the entire 12.71 acres of the GHWTP property, and includes 5.7 acres of suitable habitat, and 0.88 acres of occupied habitat for these species. The conservation strategy emphasizes protection of habitat through impact avoidance and implementation of measures designed to minimize impacts to Mount Hermon June beetle. To mitigate for unavoidable impacts to Mount Hermon June beetle, the City established the Laguna Creek Sandhills Preserve (shown on Figure 1), a 17-acre area within the City's Laguna Creek watershed property in Bonny Doon in order to protect suitable and occupied sandhills habitat.

The USFWS has approved three other HCPs in the Plan Area. The Quail Hollow Quarry Amendment #1 HCP covers incidental take of Mount Hermon June beetle, Zayante band-winged grasshopper, Ben Lomond spineflower, and Ben Lomond wallflower from mining activities on 220 acres at the Graniterock Quail Hollow Quarry and was adopted on August 31, 1998, with a permit term of 100 years (USFWS 2023a). The Wilder Quarry HCP covers incidental take of California red-legged frog from mining activities on 125 acres at the Graniterock Wilder Quarry and was adopted on June 19, 1998, and has a permit term of 30 years (USFWS 2023b). The University of California, Santa Cruz (UCSC) Ranch View Terrace HCP covering incidental take Ohlone tiger beetle and California red-legged frog associated with construction of the Ranch View Terrace development was adopted on October 27, 2005, with a permit term of 60 years (USFWS 2023c).

a) Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

The following analysis is supported by analyses in the ASHCP (City of Santa Cruz 2023a), the OMHCP (City of Santa Cruz 2021e), and the Santa Cruz Water Rights Project EIR (City of Santa Cruz 2021d). These analyses are incorporated by reference into this IS/MND, where relevant, and are summarized herein. Where relevant, it is assumed that the ASHCP would be subject to conservation measures in the OMHCP and related ITP, which were approved by the USFWS in 2021. These conservation and mitigation measures are referenced, where relevant. Evaluation of effects on fish species are supported by analyses of the Agreed Flows that were developed and included in the Santa Cruz Water Rights Project EIR (City of Santa Cruz 2021d). Note that the effects of the Agreed Flows that are presented in ASHCP Section 5.2, Effects of Water Supply Operations - Water Diversions (City of Santa Cruz 2023a), are compared to a different baseline than is used in this IS/MND, as further described in Appendix B.

Special-Status Plants

Less-Than-Significant Impact With Mitigation Incorporated. Implementation of Agreed Flows under the Proposed Project would not impact any species-status plants as these flows would not result in ground disturbance, vegetation removal, or other disturbance or degradation to vegetation. Covered Activities under the Proposed Project could impact undocumented special-status plant occurrences, however, if present in or adjacent to work areas. Direct impacts on special-status plants could result from excavation and clearing for diversion improvements or pipeline replacements, as an example. Indirect impacts on special-status plants could result from increased competition from invasive species and smothering from construction-related dust. Such impacts would be significant if they involve the direct removal of a special-status plant occurrence or threatened the long-term survival of nearby occurrences through habitat modification or degradation (e.g., facilitating increased invasive species cover through new disturbance).

The OMHCP addresses potential effects of OMHCP Covered Activities on Ben Lomond spineflower (*Chorizanthe pungens* var. *hartwegiana*), robust spineflower (*Chorizanthe robusta* var. *robusta*), Santa Cruz tarplant (*Holocarpha macradenia*), and San Francisco popcorn flower (*Plagiobothrys diffusus*) (OMHCP plant species). The OMHCP provides several measures to address potential effects of OMHCP Covered Activities on OMHCP plant species. OMHCP measure SSM-27 would minimize direct effects by requiring that covered plant species population boundaries be clearly delineated with visible flagging or fencing prior to beginning the Covered Activity. If covered plant populations cannot be avoided, the number of plants impacted by the project would be determined and seed and associated topsoil from the impacted plants would be collected prior to construction and appropriately stored. After project completion, salvaged topsoil would be reapplied and

collected seeds hand-broadcast into the impact area for revegetation. The revegetation area would be monitored for at least five years and deemed successful after the number of covered plants attains 50% of pre-disturbance levels. If no covered plants are observed in Year 1, the City will implement remedial measures (e.g., additional management and revegetation actions) upon concurrence from USFWS. OMHCP measure GM-3 requires that the spread or introduction of invasive exotic plant species be avoided to the extent practicable, and that when practicable, invasive exotic plants in the project areas will be removed. SSM-28 will eliminate the potential adverse effects from fugitive dust. GM-8, GM-9, and GM-10 will minimize potential effects related to erosion and siltation by recompacting and revegetating project areas with native species after work is complete, returning stream contours to their original condition after work is complete, and implementing best management practices to control erosion of stream channel banks during and after implementation of Covered Activities (e.g., install straw wattles or silt fencing to filter surface runoff, install exclusion fencing to prevent heavy equipment from entering unstable areas). The OMHCP concluded that the combination of the implementation of avoidance and minimization measures along with the nature and location of operations and maintenance activities would result in only minimal direct or indirect effects to covered plant species (City of Santa Cruz 2021e).

Covered Activities could impact the remaining special-status plants in Table 6 through rehabilitation of diversion structures and pipeline reaches, vegetation management during pipeline operations (rights-of-way inspections and repairs) and flood control and stormwater maintenance, and general vegetation management within riparian corridors. Vegetation management activities outside riparian corridors are less likely to result in direct impacts since pipeline rights-of-way and City facilities are already highly disturbed and these activities have been ongoing. Indirect impacts on special-status plants that could result from the above activities include increased competition from invasive species and smothering from construction-related dust.

Any potentially significant impacts from such activities on other special-status plants from Covered Activities would be minimized through the implementation of Mitigation Measure (MM) BIO-1, which provides for preconstruction special-status plant surveys on construction sites and appropriate compensation to address direct impacts on special-status plants not otherwise addressed by the OMHCP. Additionally, several conservation measures under the Proposed Project would avoid or minimize impacts on riparian vegetation (e.g., WO-5 and WO-6) and such actions would indirectly benefit any special-status plants potentially occurring in affected areas. Because of these and other measures implemented under the OMHCP, the Proposed Project would not substantially reduce the number or restrict the range of rare or endangered plants and would not have a substantial adverse effect, either directly or through habitat modifications, on such plants. Therefore, the impact on special-status plants would be less than significant.

MM BIO-1: Preconstruction Special-Status Plant Surveys and Compensation to Address Plant Species Not Otherwise Addressed by the OMHCP. If ground-disturbing activities associated with planned construction project staging and work areas occur outside existing developed areas and maintained rights-of-way in areas where special-status plant species are likely to occur, a qualified biologist shall conduct a focused botanical survey for special-status plants for each species that is likely to occur in the project area. Additional surveys will be conducted during the appropriate bloom period where project timing may result in impacts. If special-status plant species are not detected, no further surveys or mitigation would be necessary. If special-status plant species are detected and direct impacts (i.e., ground disturbance resulting in removal of plants or any part of their root systems) cannot

be avoided, the biologist shall map its location(s) and develop a botanical survey report. This report shall include the following information:

a. A description of the special-status plant occurrence(s) that would be impacted by the activity(ies), including number of plants impacted and their microhabitat conditions;
b. Analysis of species-specific requirements and considerations for revegetation success;
c. A description of proposed methods for salvage and restoration of affected plants to the disturbance area after project completion;
d. A description of specific performance standards for the revegetation site and associated monitoring, including a minimum success standard of the area attaining the equivalent number of pre-disturbance plants; and
e. A description of adaptive management and associated remedial measures to be implemented if performance standards are not achieved.

Special-Status Wildlife

Less-Than-Significant Impact With Mitigation Incorporated. Implementation of Agreed Flows under the Proposed Project would not impact any species-status wildlife, as these flows would not result in ground disturbance, vegetation removal, or other disturbance or degradation to habitat. Covered Activities under the Proposed Project could impact special-status wildlife individuals, however, if present in or adjacent to work areas at the time of construction. Direct impacts on special-status wildlife could result from excavation and clearing for diversion improvements or pipeline replacements that causes direct mortality or injury to individual animals, as an example. Indirect impacts on special-status wildlife could result from increased noise and vibration from construction vehicles and equipment that cause abandonment of nearby breeding sites. Such impacts would be significant if they reduced the breeding success or threatened the long-term survival of local populations of affected species, either directly (loss of individuals from the population) or through habitat modification or degradation.

The OMHCP addresses potential effects of OMHCP Covered Activities on Mount Hermon June beetle (*Polyphylla barbata*), Ohlone tiger beetle (*Cicindela ohlone*), Zayante band-winged grasshopper (*Trimerotropis infantilis*), California red-legged frog (*Rana draytonii*), and western pond turtle (*Emys marmorata*) (OMHCP wildlife species). The OMHCP provides several measures to address potential effects of OMHCP Covered Activities on OMHCP wildlife species. OMHCP measures SSM-29, SSM-30, SSM-34, and SSM-35 would minimize direct effects on Mount Hermon June beetle and Ohlone tiger beetle by requiring that access routes and work areas in areas potentially occupied by these species be sited to avoid as much ground disturbance as possible and clearly delineated prior to beginning the Covered Activity. OMHCP measures SSM-31 and SSM-36 identify procedures for avoiding take of individual Ohlone tiger beetles and Mount Hermon June beetles, respectively. SSM-32 and SSM-37 will eliminate potential adverse effects from fugitive dust. OMHCP measures SSM-12 and SSM-14 would minimize direct effects on California red-legged frog (CRLF) individuals from capture and relocation during emergency repairs and sediment removal by requiring that only trained biologists handle frogs and full-time monitoring of such activities; OMHCP measures SSM-20 to SSM-23 would do the same for western pond turtles. Implementation of standard erosion control best management practices (BMPs) and GM-10 will minimize potential erosion and sedimentation effects to CRLF habitat. The OMHCP concluded that the combination of the implementation

of avoidance and minimization measures along with the nature and location of operations and maintenance activities would result in only minimal direct or indirect effects to covered wildlife species (City of Santa Cruz 2021e).

Except for grasshopper sparrow, which would be addressed through the implementation of standard construction practice #19 requiring preconstruction nesting bird surveys before any vegetation removal conducted during the nesting season (February 1 to August 31), Covered Activities could impact the remaining special-status wildlife in Table 7 through rehabilitation of diversion structures and pipeline reaches, vegetation management during pipeline operations and flood control and stormwater maintenance, general vegetation management within riparian corridors, and dewatering. Indirect impacts on other special-status wildlife that could result from the above activities include reduced breeding success if construction-related disturbance causes individuals to abandon nearby breeding sites.

Any potentially significant impacts from such activities on other special-status wildlife from Covered Activities would be avoided or minimized through the implementation of MM BIO-2 and MM BIO-3, which provide for preconstruction special-status wildlife surveys and monitoring on construction sites to avoid direct impacts on special-status wildlife not otherwise addressed by the OMHCP. Additionally, several conservation measures under the Proposed Project would avoid or minimize impacts on riparian vegetation (e.g., WO-5 and WO-6) that provide habitat for these species and such actions would indirectly benefit any individuals of these species using affected areas. Because of these and other measures implemented under the OMHCP, the impact of the Proposed Project on special-status wildlife would be less than significant.

MM BIO-2: Preconstruction Special-Status Wildlife Surveys to Address Wildlife Species Not Otherwise Addressed by the OMHCP. For planned construction projects, a qualified biologist shall conduct preconstruction surveys of all ground disturbance areas within off-pavement project footprint areas where special-status wildlife species are likely to occur to determine if ground-dwelling special-status wildlife species are present or are likely to occur prior to the start of construction. The survey area shall include all suitable habitat within the work areas, plus a 50-foot buffer where possible. The biologist will conduct these surveys no more than 48 hours prior to the beginning of construction.

MM BIO-3: Biological Construction Monitoring to Address Wildlife Species Not Otherwise Addressed by the OMHCP. A qualified biologist shall monitor vegetation removal and initial ground disturbing activities during all work hours for off-pavement work where special-status wildlife species are likely to occur. The frequency and characteristics of monitoring will be determined by the qualified biologist during the implementation of MM BIO-2. During construction, the biological monitor shall keep a daily observation and photo log to document monitoring, construction activities, any non-compliance issues and remedial actions taken, and wildlife species observations, including any relocation of individuals to identified relocation sites (see below). These logs shall be included in weekly (or more frequently as warranted) monitoring reports to City staff and/or regulatory agency staff, as relevant.

If the biologist observes the presence of special-status wildlife or determines that they could move into the work area during construction, the biologist shall determine the closest appropriate relocation site. The biologist shall identify suitable habitats as potential release

sites prior to start of construction activities or during construction, and relocate the species out of harm's way. The habitat values of release sites shall be as high as, or better than, those of the site impacted by project construction activities. Relocation of special-status species individuals shall only be conducted by biologists authorized to do so by USFWS and/or CDFW.

Special-Status Fish

ASHCP Covered Species

Less-Than-Significant Impact. The Proposed Project would result in implementation of the ASHCP Conservation Strategy including the Agreed Flows, Biological Goals and Objectives, AMMs, Monitoring Program, and NFCF. Habitat conditions for steelhead and coho would be as evaluated in the ASHCP and the Santa Cruz Water Rights Project EIR (City of Santa Cruz 2021d, 2022a). ASHCP Chapter 5 provides an estimate of the impacts anticipated to occur to steelhead and coho from implementation of the ASHCP Conservation Strategy and the Covered Activities, associated with the Proposed Project. Impacts were evaluated in the context of existing habitat conditions and conditions expected over the life of the Plan.

Habitat modeling that characterizes the effects of the Agreed Flows indicates that, although there are isolated instances of minor effects to some life stages in some reaches relative to existing conditions, the Proposed Project would result in a net beneficial effect on both steelhead and coho (City of Santa Cruz 2021d, 2022a). The only negative effect of the Proposed Project (relative to existing conditions) that showed more than a 2% decline in habitat indices is a 2.7% decline in the rearing habitat index[14] in wet years for coho in Laguna Creek as compared to existing conditions (see Appendix B, Table B-2). This effect was determined not to be biologically significant or substantial and it is compensated for by habitat improvements for other life stages in other areas, some of them substantial (City of Santa Cruz 2021d, 2022a). Overall, based on these results, the Proposed Project would not have a substantial adverse effect on habitat indices for steelhead or coho in the Plan Area, would not interfere substantially with migration of steelhead or coho, and would not cause steelhead or coho population to drop below self-sustaining levels, threaten to eliminate steelhead or coho or, substantially reduce the number or restrict the range of steelhead or coho.

The Proposed Project would trigger the full suite of AMMs that are part of the ASHCP Conservation Strategy. The majority of potential non-flow related effects on Covered Species from other elements of the Conservation Strategy and Covered Activities are avoided or minimized by application of AMMs (see IS/MND Section 2.4.4.2 and ASHCP Section 4.4). The Monitoring Program involves observation or capture of juveniles and adults that may result in disturbance, temporary dislocation from preferred habitats, interruption of normal behaviors including feeding, and low levels of incidental mortality (less than 2%). Much of this monitoring has been in place for the last 10 years and would not have substantial adverse effects on Covered Species. Implementation of the NFCF compensates for remaining effects by contributing to regional, non-flow conservation actions for steelhead and coho. Therefore, the impacts of the Proposed Project on Covered Species would be less than significant.

[14] The habitat index may be either the WUA value for spawning or rearing, or the number of days with suitable conditions for migration of adult or smolt life stages.

OMHCP Covered Fish Species

Tidewater Goby

Less-Than-Significant Impact. Effects of flow alterations under the Agreed Flows related to tidewater goby has been evaluated in the Santa Cruz Water Rights Project EIR (City of Santa Cruz 2021d) and are summarized here. The analysis concluded that the Agreed Flows with the pending water rights modifications could result in some reduction in inflows to the San Lorenzo River lagoon with the greatest effect in wet and normal years when inflows are relatively high. Changes in inflow to the San Lorenzo River lagoon related to the Agreed Flows are not of sufficient magnitude to result in a substantial adverse effect on tidewater goby in this lagoon. Additionally, inflow to Laguna Creek lagoon would increase slightly with the Proposed Project in spring of dry, normal, and wet years and would be unchanged in summer and in spring of critically dry years. The increase in lagoon inflow may result in later closure of the lagoon in spring of wetter years; however, this condition is closer to the natural streamflow pattern. Change in inflow to the Laguna Creek lagoon under the Proposed Project would not result in a substantial adverse effect on tidewater goby in this lagoon.

Effects of the Covered Activities on tidewater goby have been addressed in the City's OMHCP (City of Santa Cruz 2021e). The OMHCP found that some Covered Activities (e.g., water supply operations, pipeline construction) have the potential to impact tidewater goby. As a component of the OMHCP, AMMs will be implemented to minimize and avoid effects to tidewater goby from these activities including pre-construction surveys, project timing, limitation and demarcation of work areas, isolation of work areas, relocation of gobies present, construction monitoring, and post-construction stream channel restoration.

Implementation of Covered Activities and the Conservation Strategy, including the Agreed Flows, under the Proposed Project would not result in a significant adverse effect on tidewater goby, would not cause goby population to drop below self-sustaining levels, or threaten to eliminate or substantially reduce the number or restrict the range of goby. Therefore, the impacts of the Proposed Project on tidewater goby would be less than significant.

Pacific Lamprey

Less-Than-Significant Impact. Effects of the Covered Activities on Pacific lamprey have been addressed in the City's OMHCP (City of Santa Cruz 2021e) and are summarized herein. Covered Activities with the greatest potential for impacts to Pacific lamprey or its habitat are related to water supply operations and flood control maintenance, such as sediment removal in FCCs. However, lamprey rearing in the FCCs likely represents a minor component of the population in the San Lorenzo River system. Other Covered Activities are conducted in areas where lamprey do not occur or have negligible potential for effects due to limited scope or potential for downstream effects. Potential effects of the Covered Activities are avoided and minimized through implementation of the AMMs as specified in the OMHCP. These AMMs include monitoring and relocation during sediment removal operations (SSM-53) and minimum bypass flows of at least 2 cfs at the Laguna Creek Diversion and at least 8 cfs at the Tait Street Diversion (SSM-54).

Implementation of the Agreed Flows will have minimal effect on lamprey in the San Lorenzo River and Newell Creek where migration, spawning, and rearing can occur. Lamprey rearing is not likely to be affected by these flow changes since larval lamprey (ammocoetes) occupy benthic habitat composed of fine sediments, generally in quieter water. The effect of flow on the larval stage of this species is likely to be

less than on juvenile salmonids which feed in a current (City of Santa Cruz 2021d). Adult lamprey migrate upstream in winter during the same period that steelhead migrate. Adult lamprey migration may be hindered at low flows by shallow riffle depth, similar to steelhead and coho, but lamprey can likely negotiate somewhat more shallow depths than salmonids since their body depth is not as great. Under the Agreed Flows, minimum flows for adult migration and spawning are increased from 20 cfs under existing operation to 40 cfs. Analysis in the ASHCP indicates that migration and spawning conditions for steelhead and coho will be improved in the San Lorenzo River in dry and critical years through implementation of the Agreed Flows and not changed from existing conditions in normal and wet years. Conditions for steelhead and coho migration and spawning in Newell Creek will be unchanged or improved in all year types (City of Santa Cruz 2023a). Similar effects are anticipated for lamprey. Therefore, the Proposed Project would not likely have a substantial adverse effect on Pacific lamprey, would not cause lamprey population to drop below self-sustaining levels, or threaten to eliminate or substantially reduce the number or restrict the range of lamprey. Therefore, the impacts of the Proposed Project on Pacific lamprey would be less than significant.

Other Special-Status Fish

Less-Than-Significant Impact. The effects of the Proposed Project are limited to relatively small flow changes downstream of the Felton Diversion, the Tait Street Diversion and Newell Creek Dam. Monterey roach are tolerant of a range of environmental conditions. The relatively small flow changes under the Proposed Project would not likely have a significant adverse effect on Monterey roach, would not cause roach population to drop below self-sustaining levels, or threaten to eliminate or substantially reduce the number or restrict the range of roach. Therefore, the impacts of the Proposed Project on Monterey roach would be less than significant.

b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Less-Than-Significant Impact. Implementation of Agreed Flows under the Proposed Project would not impact any sensitive natural communities as these flows would not result in ground disturbance, vegetation removal, or other disturbance or degradation to vegetation. Additionally, hydrologic and water supply modeling conducted for the Santa Cruz Water Rights Project EIR determined that the impact of the Proposed Project on residual flows downstream of City diversions would be minimal relative to the historical average, as discussed in Section 3.10, Hydrology and Water Quality, criterion (a) below. Given that residual flows below the City's surface water diversions would not be substantially altered, operational impacts resulting from the Agreed Flows with pending water rights modifications to riparian and sensitive vegetation communities would be less than significant (City of Santa Cruz 2021d).

Covered Activities could impact sensitive natural communities through rehabilitation of diversion structures and pipeline reaches, vegetation management during pipeline operations (rights-of-way [ROWs] inspections and repairs) and flood control and stormwater maintenance, and general vegetation management within riparian corridors. Indirect impacts could result if ground disturbance associated with the above activities caused increased cover of nonnative invasive plants within a stand of a given community. Such impacts would be significant if the community was degraded to the extent that it was dominated by nonnative invasive species, further reducing its spatial extent in the Central Coast ecoregion.

The OMHCP provides several measures to address potential effects of OMHCP Covered Activities on OMHCP Covered Species that would also avoid or minimize impacts on sensitive natural communities. OMHCP measure GM-2 requires that all refueling, maintenance, and equipment staging occur greater than 65 feet from riparian habitat. OMHCP measure GM-3 requires that the spread or introduction of invasive exotic plant species be avoided to the extent practicable and that when practicable, invasive exotic plants in the project areas will be removed. GM-8 requires that project sites be revegetated with an appropriate mix of native species suitable for the area after work is completed. SSM-33 requires revegetation of coastal terrace prairie (i.e., native grassland) habitat for Ohlone tiger beetle, which would benefit North Coast grasslands. Similarly, SSM-39 requires that revegetation of Zayante soil areas (i.e., Sandhills Habitat) disturbed by repairs or new access routes be limited to indigenous sandhills species, which would minimize impacts to this sensitive community.

Several AMMs to minimize water system operations and maintenance effects on Covered Species under the Proposed Project would avoid or minimize impacts on riparian habitat. Measure WO-5 would minimize disturbance to stream banks and riparian vegetation and restore impacted riparian vegetation with native species. Measures WO-6 and WO-7 would minimize the removal of canopy trees and limit management of bank-stabilizing vegetation to trimming and pruning only. Measure WO-8 would remove non-native vegetation where doing so would provide demonstrable habitat benefits. Additionally, the City's standard construction practices #8 and #9 would minimize impacts to riparian vegetation by implementing measures to prevent the spread of pathogens into native vegetation and minimize removal or trimming of riparian vegetation when working in or adjacent to an active stream channel (see Appendix C). Because of these and other measures implemented under the OMHCP and the City's standard construction practices, the impact of the Proposed Project on sensitive natural communities and riparian habitat would be less than significant.

c) Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Less-Than-Significant Impact. Implementation of Agreed Flows under the Proposed Project would not impact any wetlands as these flows would not result in ground disturbance, vegetation removal, or other disturbance or degradation. Additionally, hydrologic and water supply modeling conducted for the Santa Cruz Water Rights Project EIR determined that the impact of the Proposed Project on residual flows downstream of City diversions would be minimal relative to the historical average, as discussed in Section 3.10, Hydrology and Water Quality, criterion (a) below. Given that residual flows below the City's surface water diversions would not be substantially altered, operational impacts resulting from the Agreed Flows with pending water rights modifications to jurisdictional aquatic resources would be less than significant (City of Santa Cruz 2021d).

Covered Activities could impact riparian vegetation that meets USACE, RWQCB, and/or CDFW definitions of aquatic resources under their jurisdiction; these impacts would be the same as those described above for sensitive natural communities. Other aquatic resources (i.e., non-wetland waters) would also be directly impacted by any Covered Activities involving in-water work or ground disturbance of adjacent areas. Potential indirect impacts include increased sedimentation of downstream waters from construction-related soil erosion; altered hydrology from temporary water diversions or changes in topography; and pollution of downstream waters from inadvertent release of chemical pollutants (e.g., oils and fluids from construction equipment). Covered Activities could result in the above impacts through rehabilitation of diversion structures and pipeline reaches, vegetation management during pipeline operations, and flood

control and stormwater maintenance/general vegetation management within riparian corridors. Such impacts would be significant if they resulted in the total loss of an aquatic resource (e.g., through filling) or resulted in the loss or degradation of habitat functions and values.

The OMHCP provides several measures to address potential effects of OMHCP Covered Activities on OMHCP Covered Species that would also avoid or minimize impacts on aquatic resources. OMHCP measure GM-2 requires that all equipment and vehicle refueling, maintenance, and staging occur at least 65 feet from any riparian habitat or water body to avoid contamination of habitat. GM-3 requires that the spread or introduction of invasive exotic plant species be avoided to the extent practicable and that when practicable, invasive exotic plants in the project areas will be removed. GM-8, GM-9, and GM-10 will minimize potential effects related to erosion and siltation by recompacting and revegetating project areas with native species after work is complete, returning stream contours to their original condition after work is complete, and implementing best management practices to control erosion of stream channel banks during and after implementation of Covered Activities (e.g., install straw wattles or silt fencing to filter surface runoff, install exclusion fencing to prevent heavy equipment from entering unstable areas). GM-14 requires the development and implementation of an Inadvertent Drilling Fluid Response Plan or "frac-out" contingency plan prior to any pipeline repairs or rehabilitation involving the use of directional drilling.

The Proposed Project has been designed to contribute to the conservation of anadromous salmonids and their habitat, which coincides with riverine and riparian aquatic resources subject to federal and state jurisdiction. Therefore, all the AMMs in Table 2 would address related impacts on aquatic resources. Additionally, several of the City's standard construction practices would minimize impacts to aquatic resources. Standard construction practice #1 would minimize sedimentation of waters downstream of work areas by implementing erosion and sediment control practices. Standard construction practice #5 would avoid pollution of waters downstream of work areas by implementing hazardous materials containment measures to prevent inadvertent release of fuel, oil, and other chemical pollutants from construction equipment. Standard construction practice #10 would avoid or minimize construction-related impacts on streams and drainages by avoiding work in wetted channels or minimizing impacts when such work cannot be avoided, such as bypassing flows around work areas before starting work, using tracked or wheeled vehicles to minimize disturbance, and using platforms to distribute the weight of heavy equipment when working on saturated soils. Because of these and other measures implemented under the OMHCP and the City's standard construction practices, the impacts of the Proposed Project on aquatic resources, including wetlands would be less than significant.

d) Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less-Than-Significant Impact. Implementation of Agreed Flows under the Proposed Project would not impact wildlife movement corridors as these flows would not result in ground disturbance, vegetation removal, or other disturbance or degradation. Additionally, hydrologic and water supply modeling conducted for the Santa Cruz Water Rights Project EIR determined that the impact of the Proposed Project on residual flows downstream of City diversions would be minimal relative to the historical average, as discussed in Section 3.10, Hydrology and Water Quality, criterion (a) below. Given that residual flows would not be substantially altered, operational impacts resulting from the Agreed Flows with pending water rights modifications to potential habitat for riparian-dependent species including wildlife movement would be less

than significant (City of Santa Cruz 2021d). (See response to criterion [a] above under Special-Status Fish for information about migration of fish.)

Covered Activities could have short-term, localized effects on local wildlife movement along streams and adjacent riparian corridors. Construction fencing and dewatering could create temporary barriers to movement, precluding the normal movement of animals. Noise and vibration from construction vehicles and equipment may alter or delay movement of individuals as they attempt to avoid the construction area. However, these impacts would be temporary and would not substantially degrade the quality or use of local corridors or the Santa Cruz Mountains large landscape block delineated by Penrod et al. (Penrod et al. 2013). Existing habitat functions would remain intact during and after construction. In addition, the Proposed Project would not create any new structures that would impede local or regional wildlife movement. Therefore, the impact of the Proposed Project on wildlife movement corridors would be less than significant.

Covered Activities would occur in or near vegetation potentially supporting native bird nests but would not impact these resources, if present. All tree work is and will continue to be conducted outside the nesting season, if possible, and if not, trees are inspected for nests by City biologists prior to felling. In addition, standard construction practice #19 requires preconstruction nesting bird surveys before any vegetation removal activities conducted during the nesting season (February 1 to August 31) and avoidance of any active nests found during such surveys. Therefore, the impacts of the Proposed Project on native bird nests or other wildlife nursery sites would be less than significant.

e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No Impact. As a public project, the City has designed the Proposed Project to comply with all local policies and ordinances protecting biological resources. Covered Activities and the Conservation Strategy (including the NFCF) would contribute to General Plan 2030 Policies NRC1.3 and NRC2.1 by restoring and enhancing existing riparian corridors and habitat for anadromous salmonids. The ASHCP AMMs, the OMHCP measures, and the City's standard construction practices would be implemented to protect creek systems, riparian corridors, wetlands, and natural plant communities and habitats in accordance with General Plan 2030 Goals NRC1 and NRC2. Watercourse Development Permits for activities within or near creeks and wetlands within City limits, such as for the Tait Street Diversion improvements, would be obtained where not otherwise exempted due to concurrent review by the USACE, CDFW, NMFS, or USFWS. Such permits would also provide for protection of these resources. It is unlikely that Covered Activities would remove heritage trees protected under the City's municipal code since mature trees would be retained unless they threaten infrastructure or must be removed to allow for diversion or pipeline improvements. If such trees are identified, they would be inspected by a certified arborist. If the arborist determines that the tree(s) meet the definition of heritage tree and that it must be removed, the City would replace the trees at a ratio of 1:1 or greater as determined by the arborist and in accordance with all replacement requirements in the municipal code.

Covered Activities involving construction projects in the coastal zone of unincorporated Santa Cruz County would also be required to meet various riparian, wetland, and sensitive habitat requirements (Policies 5.1.1 through 5.1.11 and 5.2.1 through 5.2.5), as would be enforced through the County's LCP policies and related coastal ordinances (Riparian Corridor and Wetlands Protection [Chapter 16.30]), Sensitive Habitat Protection [Chapter 16.32]), and Significant Trees Protection [Chapter 16.34]). In terms of stream flow Policies 5.6.1 through 5.6.3, the Agreed Flows with pending water rights modifications were determined

not to conflict with these policies (City of Santa Cruz 2021d). Additionally, the ASHCP's Conservation Strategy would also support the County's Steelhead and Coho Salmon Conservation Strategy (Policy ARC-3.1.12 and Implementation Strategy ARC-3.1g) through the implementation of Agreed Flows, biological objectives, AMMs, and the NFCF, which taken together would provide for: instream flows to maintain habitat during all freshwater life stages; sediment management during operations and construction activities; general procedures for work around water bodies; fish screening and passage improvements, where needed; vegetation management guidelines; habitat restoration methods; and habitat restoration projects. Therefore, the Proposed Project would not conflict with any local policies or the heritage tree ordinance and there would be no impact.

f) ***Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?***

No Impact. The Proposed Project is itself an HCP and has been designed to complement the OMHCP and LEHCP. The remaining USFWS-approved HCPs in the Plan Area at Quail Hollow Quarry, Wilder Quarry, and UCSC were issued to cover incidental take of federally listed species occurring from mining or development activities at these sites and conservation measures are focused on the lands under control of the respective landowners (Graniterock or UCSC). The Proposed Project would not interfere with the implementation of conservation measures under these HCPs. Therefore, the Proposed Project would not conflict with the provisions of any such plans and there would be no impact.

3.5 Cultural Resources

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
V. CULTURAL RESOURCES – Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Prehistoric and Historic Context

Prior to European contact, Native Americans residing along California's central coast practiced a hunter-gatherer lifeway. The Plan Area lies within the territory that was occupied by the Ohlone or Costanoan people. Post-Spanish contact development in the County began with the establishment of Mission Santa Cruz on August 28, 1791. The Spanish missions drastically altered the lifeways of the Native Americans, who were conscripted by Spanish missionaries to move to missions where they were indoctrinated as Catholic neophytes. In 1834, the Mexican government secularized the mission lands, releasing the Native Americans from control of the mission system.

Extensive land grants were established covering over 150,000 acres in the County (Koch 1973; Lehmann 2000). The Mexican American War ended with the Treaty of Guadalupe Hidalgo in 1848. Santa Cruz was designated as one of the 27 original counties of California on February 18, 1850. The lumber, lime, cement, fishing, tanning, and leisure industries formed the economic foundation of the County during the second half of the nineteenth century. In the central and southern areas of the County, early settlers established large farms and dairies (Lehmann 2000). Urban expansion continued into the early twentieth century across the County. Agriculture and tourism continued as the region's most prominent economic drivers. The expansion of urban areas included the widespread growth of commercial corridors and municipally funded improvements.

Archaeological Resources

Based on archaeological sensitivity maps developed for the City and County (City of Santa Cruz 2011; County of Santa Cruz 2022a), the Plan Area includes defined areas that are sensitive for archaeological resources,[15] some of which may contain unrecorded or undiscovered resources. These areas have a high potential for archaeological resources to occur, as determined by the locations of known archaeological sites, and by geographic attributes based on the topography and geological conditions of the area. Greater sensitivity generally occurs on level to gently rolling hills near the coast or along water courses. These areas of heightened sensitivity occur throughout the Plan Area.

Previous California Historical Resources Information System (CHRIS) records search results from the Northwest Information Center and field surveys conducted for the Santa Cruz Water Rights Project, Laguna Creek Diversion Retrofit Project, and Newell Creek Dam Inlet/Outlet Replacement Project included the Felton and Tait Street Diversions, Laguna Creek Diversion, and Newell Creek Dam and Loch Lomond Recreation Area, respectively. No archaeological resources were identified within or near these sites and the sites were determined to have a low potential for encountering unknown archaeological resources (City of Santa Cruz 2019, 2021c, 2021d).

Historical Built Environment Resources

Previous evaluations for potential historical significance have been conducted for some of the City's water diversion facilities that are 45 years old or older, including the Newell Creek Dam, Laguna Creek Diversion, and Tait Street Diversion (City of Santa Cruz 2019, 2021c, 2021d). The Tait Street Diversion was evaluated for the Santa Cruz Water Rights Project and the site was not recommended as eligible for listing in the National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR) due to a lack of historical associations, architectural merit, and compromised integrity (City of Santa Cruz 2021d). The Newell Creek Dam and Laguna Creek Dam appear eligible for listing in the NRHP and CRHR for their associations with the development history of water infrastructure in the City's water service area; therefore, they are considered historical resources under CEQA (City of Santa Cruz 2019, 2021c). The Majors Creek, Reggiardo Creek, and Felton Diversion facilities are over 45 years of age and have not been evaluated for potential historical significance; given their ages, these facilities may be considered historical resources under CEQA if they are determined to be eligible for listing in the NRHP and CRHR.

[15] The term "archaeological resources" used in this IS/MND includes archaeological resources of a historic nature and unique archaeological resources. If a site is either listed or eligible for listing in the California Register of Historical Resources, or if it is included in a local register of historical resources or identified as significant in a historical resources survey (meeting the requirements of Public Resources Code Section 5024.1[q]), it is a "historical resource" and is presumed to be historically or culturally significant for purposes of CEQA (Public Resources Code Section 21084.1; CEQA Guidelines Section 15064.5[a]). A unique archaeological resource is an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets criteria for such a resource, as specified in Public Resources Code Section 21083.2(g).

a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

Less-Than-Significant Impact With Mitigation Incorporated. The Proposed Project includes Covered Activities that could be located within or adjacent to eligible or potentially eligible historical built environment resources and therefore may have the potential to adversely affect such resources directly or indirectly. Activities that include alterations to built environment resources 45 years old or older, including improvements to the Majors Creek, Reggiardo Creek, and Felton Diversions; North Coast pipeline rehabilitation; pipeline inspections and repairs; retrofits of storm drain inlets and basins; and decommissioning of roads would have the potential to have significant impacts on historical resources if such facilities are determined to be potentially eligible for listing on the NRHP or CRHR. In consideration of the historic context for the existing water management systems in the region, there is a low likelihood that water management structures that postdate the late 1800s or early 1900s (pioneering water system era) would be found historically significant. Implementation of MM CUL-1 would reduce potentially significant impacts on historical built environment resources to less than significant by ensuring that potential historical resources are identified and evaluated, and any proposed modifications to identified historical built environment resources are in conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR Part 68) such that the historical resources would continue to convey their historical significance. Therefore, with the implementation of MM CUL-1, the impact of the Proposed Project on historical built environment resources would be less than significant.

Historical resources of an archaeological nature are discussed under criteria (b) and (c) below.

MM CUL-1: Historical Built Environment Resources. Potentially significant impacts of construction projects on potential historical built environment resources shall be addressed through the following measures:

a. **Identify Potential Historical Built Environment Resources.** When planned construction projects (Covered Activities or elements of the Conservation Strategy) are being pursued by the City, a qualified cultural resource specialist meeting the Secretary of the Interior's Professional Qualifications Standards shall review the project site and conduct a CHRIS records search, if a recent search (within 5 years) of the project site is not otherwise available and such a records search is determined to be warranted by the cultural resource specialist due to the presence of historic-era buildings or structures. If there are no previously recorded resources or historic-era buildings or structures located on the site, no further action is warranted. If these project site review efforts indicate a potential for historical resources, all buildings and structures within the project site that are 45 years or older shall be identified and measure b shall be implemented.

b. **Evaluate Potential Historical Built Environment Resources.** Should potential historical built environment resources be identified within the specific site(s), prior to project implementation, the City shall retain a qualified architectural historian meeting the Secretary of the Interior's Professional Qualification Standards (36 CFR Part 61) to record such potential resources based on professional standards and formally assess their significance per Section 106 of the National Historic Preservation Act (NHPA) and California Environmental Quality Act (CEQA). A Built Environment Inventory and Evaluation Report shall be prepared by the architectural historian to evaluate resources

over 45 years of age under all applicable significance criteria, including the National Register of Historic Places (NRHP), California Register of Historical Resources (CRHR), and local designation criteria and integrity requirements. No further work shall be required for historic-era built environment properties, buildings, or structures 45 years old or older at sites that are not found to meet the historical significance criteria. If a resource is found to be eligible for listing under the applicable significance criteria and therefore is considered a cultural resource pursuant to the NHPA and/or CEQA, the resource shall be avoided or preserved in place such that it continues to convey its historical significance unless the Water Director determines that avoidance or preservation in place would preclude the construction of important structures or infrastructure, or require exorbitant expenditures, and the resource therefore will have to be modified through design such that it may not be able to convey its historic significance. Where avoidance or preservation in place is not possible for these reasons, the City will retain a qualified architectural historian who meets the Secretary of the Interior's Professional Qualifications Standards to prepare a subsequent technical report. This required report will assess the proposed project design plans and/or schematics in conjunction with the subject historic property and determine whether the proposed design conforms with the Secretary of the Interior's Standards for the Treatment of Historic Properties, specifically, the Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (Structures). The City shall modify the proposed design, as needed, to ensure that the Secretary of the Interior's Standards are met such that the historic property continues to convey its historical significance.

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

and

c) Would the project disturb any human remains, including those interred outside of formal cemeteries?

Less-Than-Significant Impact With Mitigation Incorporated. Archaeological resources, including archaeological resources of a historic nature and unique archaeological resources, are usually adversely affected only by physical destruction or damage that can be caused by grading and excavation, trenching, weather-induced erosion, etc. Impacts to archaeological resources and human remains most often occur as the result of excavation or grading within the vertical or horizontal boundaries of an archaeological resource, such as could occur during construction activities associated with Covered Activities. Archaeological resources may also suffer impacts as the result of Covered Activities that increase erosion, or increase the accessibility of a surface resource, and thus increase the potential for vandalism or illicit collection. Because archaeological resources often are buried or cannot be fully defined or assessed on the basis of surface manifestations, substantial ground-disturbing work in native soils[16] may have the potential to uncover previously unidentified resources, including archaeological deposits and human remains. As precise excavation and fill depths may not be known in all cases, it must be assumed that any ground-disturbing activities in native soils in any portion of the Plan Area where ground-disturbing activities would occur could potentially affect archaeological resources. Therefore, Covered Activities and

[16] As related to cultural resources, a native soil is soil that was not imported from elsewhere; in other words, soil in the location of its last natural deposition. Native soils are more sensitive for discoveries of artifacts and archaeological sites than imported materials.

components of the Conservation Strategy that include ground disturbance in native soils would have the potential to have significant impacts on archaeological resources or human remains if such resources are present. These include improvements to the Majors Creek and Reggiardo Creek diversion facilities, North Coast pipeline rehabilitation, pipeline inspections and repairs, retrofits of storm drain inlets and basins, trail maintenance and repair, road maintenance and decommissioning, and vegetation management involving ground disturbance in native soils. Management provisions for inadvertent discoveries of buried resources during ground-disturbing activities and cultural resource sensitivity training for construction workers are provided in standard construction practices #15, #16, and #20 (Appendix C) and would minimize potential adverse effects related to inadvertent discoveries. Furthermore, management provisions for identification and evaluation of archaeological resources in advance of implementation of Covered Activities are provided in MM CUL-2. Therefore, with incorporation of MM CUL-2, the impact of the Proposed Project on archaeological resources or human remains would be less than significant impact.

MM CUL-2: Identify Unique Archaeological Resources, Historical Resources of an Archaeological Nature, and Subsurface Tribal Cultural Resources. This measure shall be implemented for planned construction projects involving excavation, grading, and/or disturbance in native soils to address potentially significant impacts on unique archaeological resources, historical resources of archaeological nature, and subsurface tribal cultural resources. A qualified archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards shall conduct a California Historical Resources Information System (CHRIS) records search, a Native American Heritage Commission (NAHC) Sacred Lands File (SLF) search, and an intensive surface reconnaissance within the specifically defined project site to identify potential unique archaeological resources, historical resources of an archaeological nature, and tribal cultural resources within or near the project site. The sensitivity of the location for discovering unknown resources shall also be identified. The qualified archaeologist will prepare a technical report with the results of the above. The qualified archaeologist shall attempt to ascertain whether any identified archaeological sites qualify as unique archaeological resources, historical resources of an archaeological nature, or subsurface tribal cultural resources. If known or identified resources of these kinds are present, procedures shall be implemented under the City's standard construction practices #15 and #16 for determining if a resource is potentially eligible for the National Register of Historic Places (NRHP), California Register of Historical Resources (CRHR), or local register.

This measure shall also be implemented for planned construction projects that include ground disturbance in native soils if the most current CHRIS records search and NAHC SLF search for the location exceeds five years old.

3.6 Energy

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
VI. ENERGY – Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

Electricity and Natural Gas

Pacific Gas and Electric Company (PG&E) provides electrical and natural gas service to the Plan Area. Incorporated in California in 1905, PG&E is one of the largest combination natural gas and electric utilities in the United States. It currently provides service to approximately 16 million people throughout a 70,000-square-mile service area in northern and central California from Eureka in the north to Bakersfield in the south, and from the Pacific Ocean in the west to the Sierra Nevada in the east. The service area includes 106,681 circuit miles of electric distribution lines, 18,466 circuit miles of interconnected transmission lines, 42,141 miles of natural gas distribution pipelines and 6,438 miles of transportation pipelines. PG&E and other utilities in the state are regulated by the California Public Utilities Commission (CPUC) (PG&E 2022).

Central Coast Community Energy (3CE) provides electricity to the Plan Area generated from a greater percentage of renewable energy sources in comparison to the standard statewide energy mix. 3CE operates through the Community Choice Energy (CCE) model established by the State of California. The CCE model enables communities to choose clean-source power at a cost equivalent to PG&E while retaining PG&E's role in maintaining power lines and providing customer service (3CE 2022). The CCE model helps ensure local economic vitality because surplus revenues that would normally flow to PG&E will stay in the community. 3CE started serving electricity to customers beginning spring 2018, with current PG&E customers automatically switched over. Notably, the City purchases electricity from 3CE for its municipal facility operations.

According to the U.S. Energy Information Administration (EIA), California used approximately 247,250 gigawatt hours of electricity in 2021 (EIA 2022d). Electricity usage in California for different land uses varies substantially by the types of uses in a building, type of construction materials used in a building, and the efficiency of all electricity-consuming devices within a building. Due to the state's energy efficiency building standards and efficiency and conservation programs, California's electricity use per capita in the residential sector is lower than any other state except Hawaii (EIA 2022a). In Santa Cruz County, PG&E reported an annual electrical consumption of approximately 1,162 million kilowatt-hours (kWh) in 2021, with 581 million kWh for non-residential use and 581 million kWh for residential use (CEC 2022a).

According to the EIA, California used approximately 2,092,612 million cubic feet of natural gas in 2021 (EIA 2022c). The majority of California's natural gas customers are residential and small commercial customers (core customers). These customers account for approximately 35% of the natural gas delivered by California utilities (CPUC 2021). Large consumers, such as electric generators and industrial customers (noncore customers), account for approximately 65% of the natural gas delivered by California utilities (CPUC 2021). CPUC regulates California natural gas rates and natural gas services, including in-state transportation over transmission and distribution pipeline systems, storage, procurement, metering, and billing. Most of the natural gas used in California comes from out-of-state natural gas basins. Biogas (e.g., from wastewater treatment facilities or dairy farms) is just beginning to be delivered into the gas utility pipeline systems, and the State has been encouraging its development (CPUC 2021). In 2021, PG&E delivered approximately 53 million therms to Santa Cruz County, with 20 million therms for non-residential use and 33 million therms for residential use (CEC 2022b).

Transportation-Related Energy Consumption

According to the EIA, California used approximately 524 million barrels of petroleum in 2020, with the majority (433 million barrels) used for the transportation sector (EIA 2022b). This total annual consumption equates to a daily use of approximately 1.4 million barrels of petroleum. There are 42 U.S. gallons in a barrel, so California consumes approximately 58.8 million gallons of petroleum per day, adding up to an annual consumption of 21.5 billion gallons of petroleum. In California, petroleum fuels refined from crude oil are the dominant source of energy for transportation sources. Petroleum usage in California includes petroleum products such as motor gasoline, distillate fuel, liquefied petroleum gases, and jet fuel. California has implemented policies to improve vehicle efficiency and to support use of alternative transportation.

a) Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less-Than-Significant Impact. As further discussed below, the Proposed Project would have a less-than-significant impact related to consumption of energy resources, including electricity, natural gas, and petroleum.

Electricity

Construction activities associated with some Covered Activities would require temporary electric power for as-necessary lighting and electronic equipment. The amount of electricity used during construction would be minimal because typical demand would be generated by electrically powered hand tools. The electricity used for construction activities would be temporary and minimal. Similarly, additional electricity demand for Proposed Project maintenance and operations activities would represent a minimal increase in usage throughout the Plan Area and would not be unusual or wasteful as compared to overall local and regional demand for energy resources. Therefore, the Proposed Project would not result in wasteful, inefficient, or unnecessary consumption of electricity.

Natural Gas

Natural gas is not anticipated to be required during implementation of the Proposed Project. Any minor amounts of natural gas that may be consumed as a result of Proposed Project would be temporary and negligible and would not have an adverse effect; therefore, the Proposed Project would not result in wasteful, inefficient, or unnecessary consumption of natural gas.

Petroleum

Construction, management, and maintenance activities associated with implementation of the Proposed Project would involve on-site energy demand and consumption related to use of oil in the form of gasoline and diesel fuel for construction worker vehicle trips, haul trucks exporting materials off site, materials delivery vendor truck trips, and operation of heavy-duty construction equipment. In addition, diesel-fueled portable generators may be necessary to provide supplemental electricity for temporary on-site uses such as welding, and supplying energy to areas of the site where energy supply cannot be met by way of a hookup to the existing electricity grid during construction.

Fuel consumption from construction equipment was estimated for the Laguna Creek, Felton, and Tait Street Diversion improvements in the Laguna Creek Diversion Retrofit EIR (City of Santa Cruz 2021c) and the Santa Cruz Water Rights Project EIR (City of Santa Cruz 2021d) by converting the total CO_2 emissions from each construction phase to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel. The conversion factor for gasoline is 8.78 kilograms per metric ton (MT) of CO_2 per gallon, and the conversion factor for diesel is 10.21 kilograms per MT CO_2 per gallon (The Climate Registry 2019). The estimated diesel fuel usage from construction equipment, haul trucks, and vendor trucks, as well as estimated gasoline fuel usage from worker vehicles for the retrofits of the Laguna Creek Diversion, Felton Diversion, and Tait Street Diversion is shown in Table 9. While upgrades to the Laguna Creek Diversion have already been completed, construction petroleum demand for this facility is provided in Table 9 for comparison purposes. While no project-specific modeling has been completed for the Majors and Reggiardo Creek Diversion facilities, fuel consumption would likely be comparable to those modeled for the other City diversion facilities.

Table 9. Proposed Project Construction Petroleum Demand for Diversion Facility Retrofits

Diversion Facility	Off-Road Equipment (diesel)	Haul Trucks (diesel)	Vendor Trucks (diesel)	Worker Vehicles (gasoline)
	gallons			
Laguna Creek Diversion	8,191.97	307.40	105.78	658.31
Felton Diversion	1,956.11	28.60	48.39	90.44
Tait Street Diversion	21,744.42	64.05	731.45	379.52
Total	**31,892.50**	**400.05**	**885.62**	**1,128.27**

Source: City of Santa Cruz 2021c, 2021d.

As shown in Table 9, construction of the diversion facility upgrades to Laguna Creek Diversion, Felton Diversion, and Tait Street Diversion would consume an estimated 34,306 gallons of petroleum. By comparison, as discussed above, almost 22 billion gallons of petroleum are consumed in California annually (EIA 2022b). While the Proposed Project's petroleum consumption would be more than shown in the table due to the petroleum consumption of Covered Activities of the Proposed Project that have not been modeled, the Proposed Project's petroleum consumption would constitute a negligible portion of the statewide annual petroleum consumption. Overall, the Proposed Project would not be unusual as compared to overall local and regional demand for energy resources and would not involve characteristics that require equipment that would be less energy-efficient than at comparable construction sites in the region or state.

The estimated gasoline fuel usage associated with new employees for Proposed Project operations would be negligible as approximately one new employee would be required associated with implementation of the ASHCP. This fuel usage would represent a negligible increase in gasoline demand. Therefore, the Proposed Project would not result in wasteful, inefficient, or unnecessary consumption of petroleum. Energy consumption of potential long-term maintenance, monitoring, and management activities that may result from implementation of the Proposed Project would not substantially increase relative to existing conditions regarding routine site cleanup and other maintenance activities. Other activities involving habitat restoration projects under the NFCF would not represent a new long-term source of energy use that would result in larger amounts of energy consumption.

In summary, the Proposed Project would result in a commitment of energy resources in the form of diesel fuel, gasoline, and electricity during construction and operation. However, it would not result in the wasteful, inefficient, or unnecessary consumption of energy. Energy consumption during construction and operation would not substantially contribute to an increase in energy consumption or be any different than any other similar construction, restoration, maintenance, or management project, and therefore would not substantially affect local and regional energy supplies or result in wasteful or inefficient use of energy. Impacts during construction and operation related to energy consumption would be less than significant.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Less-Than-Significant Impact. Part 6 of Title 24 of the California Code of Regulations establishes energy efficiency standards for residential and non-residential buildings constructed in California to reduce energy demand and consumption. Part 6 is updated periodically (every 3 years) to incorporate and consider new energy efficiency technologies and methodologies. Title 24 also includes Part 11, the California Green Building Standards (CALGreen). CALGreen institutes mandatory minimum environmental performance standards for nonresidential structures that include new buildings or portions of new buildings, additions, and alterations. Components of the Proposed Project that include construction of new or replacement structures, or upgrades or alterations to existing structures, such as improvements to support buildings or pump station buildings at diversion facilities, would meet all applicable Title 24 and CALGreen standards to reduce energy demand and increase energy efficiency.

Additionally, as discussed in Section 3.8, Greenhouse Gas Emissions, criterion (b), the Proposed Project would not conflict with the various state and local plans that mandate reduced energy use, including the City's Santa Cruz Climate Action Plan (CAP) 2030, AMBAG's 2045 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS), and CARB's 2022 Scoping Plan. Measures in the City's CAP related to increased commercial EV adoption to 25% by 2030 and 35% by 2035 (Measure T-5), and electrification/decarbonization of 50% of off-road equipment by 2030 and 75% by 2035 (Measure T-6) would potentially be applicable to the vehicles and equipment used in Proposed Project activities. Overall, the Proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency; therefore, impacts during construction and operation of the Proposed Project would be less than significant.

3.7 Geology and Soils

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
VII. GEOLOGY AND SOILS – Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

Regional Geology

The Plan Area is located along on the southwestern side of the Santa Cruz Mountains. The Santa Cruz Mountains are in the central portion of the Coast Ranges Physiographic Province of California, which is a series of coastal mountain chains paralleling the pronounced northwest-southeast structural grain of central California geology, between Point Arguello, in

Santa Barbara County, and the California/Oregon border. The Plan Area and surrounding region are underlain by granitic and metamorphic rocks of the Salinian Block. This suite of basement rocks is separated from contrasting basement rock of the Franciscan Formation to the northeast by the San Andreas Fault System. While the core of the mountain range is dominated by gneiss, schist, limestone, quartzite, and granite, Cretaceous through Holocene sedimentary rocks and lesser amounts of Tertiary volcanic rocks overlie much of the region (USGS 1981a, 1981b; AECOM 2018; USGS 2020a).

Regional Seismicity and Seismic Hazards

The Plan Area is located in a seismically active region of California, between two major Holocene-active faults, including the San Andreas Fault, located approximately 3 miles to the northeast, and the San Gregorio Fault, located approximately 3 miles to the southwest. Historical earthquakes along the San Andreas Fault and its branches have caused substantial seismic shaking in Santa Cruz County in historical time. The two largest historical earthquakes to affect the area were the moment magnitude (Mw) 7.9 San Francisco earthquake of April 18, 1906, and the Mw 6.9 Loma Prieta earthquake of October 17, 1989 (corresponding to Richter magnitudes of 8.3 and 7.1, respectively). The San Francisco earthquake caused severe seismic shaking and structural damage to many buildings in the Santa Cruz Mountains. The Loma Prieta earthquake may have caused more intense seismic shaking than the 1906 event in localized areas of the Santa Cruz Mountains, although its regional effects were not as extensive. There were also major earthquakes in northern California along or near the San Andreas Fault in 1838, 1865, and possibly 1890 (City of Santa Cruz 2011).

Regional Faulting

As previously discussed, Santa Cruz County is in a portion of California that is crossed by several faults. The California Geological Survey (CGS) classifies faults as:

- Holocene-active faults, which are faults that have moved during the past approximate 11,700 years. These faults are capable of surface rupture and are also known as active faults.
- Pre-Holocene faults, which are faults that have not moved in the past 11,700 years. This class of fault may be capable of surface rupture but is not regulated under the Alquist-Priolo Special Studies Zones Act of 1972. Pre-Holocene faults are also known as potentially active faults.
- Age-undetermined faults, which are faults where the recency of fault movement has not been determined (CGS 2018). Age-undetermined faults are also known as inactive faults.

This fault classification is consistent with criteria of the Alquist-Priolo Earthquake Fault Zoning Act of 1972. Distances to regional faults, maximum probable earthquake magnitudes, and recurrence intervals are shown in Table 10.

Table 10. Distances to Regional Faults

Fault	Distance from Study Area (miles)	Maximum Expected Earthquake Magnitude (Moment Magnitude)	Approximate Time Between Major Earthquakes (years)
San Gregorio	3	7.5	400
Zayante-Vergeles	0 (traverses Plan Area)	7.5	8,821
Monterey Bay-Tularcitos	2	7.3	2,841
San Andreas	3	7.8	210

Sources: AECOM 2018; City of Santa Cruz 2012a; USGS 2017a, 2017b, 2017c, 2017d, 2020b.

The Plan Area is traversed by the Zayante-Vergeles Fault (USGS 2020b), which is mapped by the USGS as a late Pleistocene to possibly Holocene fault, active within the past 15,000 years (i.e., Holocene-active to pre-Holocene fault). The Zayante-Vergeles Fault was considered Holocene-active in a review prepared as part of the City of Santa Cruz General Plan EIR (City of Santa Cruz 2011, Appendix F-4), based on detailed geologic mapping by numerous geologists. Additionally, a magnitude 4.0 earthquake occurred in 1998 along this fault in the Santa Cruz Mountains (USGS 2000). The Zayante-Vergeles Fault is marked by a zone of relatively parallel fault traces that extend from the vicinity of West Waddell Creek, southeast through the Santa Cruz Mountains, beneath Quaternary alluvium of the Pajaro River, and across the northern Gabilan Range, where the fault has a complex junction with the San Andreas Fault, approximately 5 miles southeast of Hollister (USGS 2000). For planning purposes, the maximum probable earthquake associated with the Zayante-Vergeles Fault is Mw 7.5 (USGS 2017a).

The Plan Area is located approximately 3 miles southwest of the San Andreas Fault (USGS 2020b), which is a 680-mile network of Holocene-active faults that collectively accommodate most of the north-south motion between the North American and Pacific tectonic plates. The San Andreas Fault Zone is considered to be a Holocene-active and historically active strike-slip fault that extends along most of coastal California, from its complex junction with the Mendocino Fault Zone on the north, southeast to the northern Transverse Range, and inland to the Salton Sea, where a well-defined zone of seismicity (i.e., the Brawley Seismic Zone) transfers slip to the Imperial Fault. Two major surface-rupturing earthquakes have occurred in historic time, including the 1857 Fort Tejon earthquake and the 1906 San Francisco earthquake (USGS 2002). For planning purposes, the maximum probable earthquake associated with the San Andreas Fault is Mw 7.8 (USGS 2017b).

The Plan Area is located approximately 3 miles northeast of the San Gregorio Fault (USGS 2020b), which is a Holocene-active (past 11,700 years), structurally complex fault zone as much as 3 miles wide. The fault zone is primarily located offshore, west of San Francisco Bay and Monterey Bay, with onshore locations at promontories, such as Moss Beach, Pillar Point, Pescadero Point, and Point Año Nuevo. The San Gregorio Fault is a complex fault zone consisting of several named faults, including the Seal Cove, Frijoles, Coastways, Greyhound Rock, Carmel Canyon, Denniston Creek, and Año Nuevo Faults. This fault zone extends from Bolinas Lagoon south to the Point Sur region (USGS 1999). For planning purposes, the maximum probable earthquake associated with the San Gregorio Fault is Mw 7.5 (USGS 2017c).

The Plan Area is located approximately 2 miles north of the Monterey Bay-Tularcitos Fault Zone, which is generally considered late Quaternary (past 15,000 years) (USGS 2020b); however, portions of this fault are considered Holocene-active (past 11,700 years). This offshore fault zone is a complex, generally northwest-trending zone up to 9 miles wide, consisting primarily of right-lateral, reverse/thrust faults, extending across Monterey Bay southeast to the Monterey Peninsula, to near the crest of the Sierra de Salinas (USGS 2001). For planning purposes, the maximum probable earthquake associated with the Monterey Bay-Tularcitos Fault Zone is Mw 7.3 (USGS 2017d).

Surface Rupture

Surface rupture involves the displacement and cracking of the ground surface along a fault trace. Surface ruptures are visible instances of horizontal or vertical displacement, or a combination of the two, typically confined to a narrow zone along the fault. Surface rupture is more likely to occur in conjunction with Holocene-active fault segments, where earthquakes are large, or where the location of the movement (earthquake hypocenter) is shallow.

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 regulates development near Holocene-active faults to mitigate the hazard of surface fault rupture. This Act requires the State Geologist to establish regulatory zones (known as Alquist-Priolo Special Study Fault Zones) around the surface traces of Holocene-active faults and to issue

appropriate maps. Local agencies must regulate most development projects within the zones. The Alquist-Priolo Special Study Fault Zone located closest to the Plan Area is associated with the San Andreas Fault, located approximately 3 miles to the northeast (USGS 2020b, CGS 2020).

Liquefaction and Lateral Spreading

Soil liquefaction occurs when ground shaking from an earthquake causes a sediment layer saturated with groundwater to lose strength and take on the characteristics of a fluid, thus becoming like quicksand. Factors determining the liquefaction potential are soil type, the level and duration of seismic ground motions, the type and consistency of soils, and the depth to groundwater. Liquefaction generally occurs at depths of less than 40 feet in soils that are young (Holocene-age), saturated, and loose (CGS 2004). Soils that are most susceptible to liquefaction are clay-free deposits of sands and silts, and unconsolidated alluvium. Liquefaction potential is variable throughout the Plan Area. Areas of moderate liquefaction potential are generally located along the San Lorenzo River in Felton, areas of high liquefaction potential are generally located along the San Lorenzo River in the Harvey West area of the City, areas of very high liquefaction potential are generally located in the downtown area of the City and around the mouth of the San Lorenzo River (County of Santa Cruz 2022d).

Lateral spreading is the lateral movement of unsupported soils in association with liquefaction. Examples of areas/scenarios prone to lateral spreading include: (1) liquefaction-prone soils on slopes adjacent to rivers, canals, or lakes; and (2) liquefaction-prone soils during excavation and construction of subterranean parking garages.

Landslides

Slope stability is a function of the height and steepness of slopes, the inherent strength of underlying soil and rock, moisture levels, and the presence and orientation of geologic planes of weakness such as bedding, joints, and faults. Landsliding is a general term that describes a wide variety of mass movements of soil and rock in response to gravity. Landsliding occurs as falls, topples, slides, spreads, flows, and a combination of these categories, and may change from one form of failure to another during their movement. Factors causing landsliding include the rock strength and rock structure, erosion, weathering, high rainfall, steepness of slopes, recent fire activity, and human activities such as the removal of vegetation and inappropriate grading (County of Santa Cruz 2021). Landsliding in the Plan Area primarily occurs along the steeper slopes in the hills and mountains, along stream corridors, and along coastal bluffs and inlets. Landslides are a common occurrence in the Santa Cruz Mountains.

Subsidence

Subsidence is a settling or sudden sinking of a geological surface due to subsurface movement of earth materials. The principal causes of subsidence in California are aquifer-system compaction, drainage and decomposition of organic soils, and oil and gas extraction. Effects of land subsidence include damage to buildings and infrastructure such as roads and canals, increased flood risk in low-lying areas, and lasting damage to groundwater aquifers and aquatic ecosystems. Soils that are particularly subject to subsidence include those with high silt or clay content and/or high organic content. Based on a review of a USGS subsidence map, the Plan Area is not in an area of regional ground subsidence (USGS 2020c).

Expansive Soils

Expansive soils are composed largely of clays, which greatly increase in volume when saturated with water and shrink when dried. Alternating soil expansion and contraction can result in distress and damage to overlying structure foundations and/or infrastructure, such as pipelines. If this expansive movement varies underneath different parts of the structure, foundations may crack and portions of the structure may be distorted. Many areas within the Plan Area are underlain by expansive soils. The Natural Resources Conservation Service (NRCS) Soil Survey of Santa Cruz County mapped various soil types throughout the County. The primary soil types mapped by NRCS as expansive are Watsonville Loam, Clear Lake Clay, Diablo Clay, Fagan Loam, Los Osos Loam, Mocho Silt Loam, Pinto Loam, Felton Sandy Loam, Cropley Silty Clay, Danville Loam and Lompico Varient Loam (County of Santa Cruz 2021).

Unique Paleontological Resources and Geologic Features

Paleontological resources are the fossilized remains, traces, and associated data of plants and animals, preserved in earth's crust, and are generally considered to be older than middle Holocene (approximately 5,000 years before present) by the Society of Vertebrate Paleontology (SVP) (SVP 2010). Body fossils include bones, teeth, shells, leaves, and wood, while trace fossils include trails, trackways, footprints, and burrows. With the exception of fossils found in low-grade metasedimentary rocks, significant paleontological resources are found in sedimentary rock units that are old enough to preserve the remains or traces of plants and animals. The fossil potential of geological units is assessed based on the likelihood of encountering fossils within the unit. For the purposes of this analysis, a "unique paleontological resource" means a paleontological resource about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets one of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information; or
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.

The basic definition of geologic features includes the detail of the Earth's surface or topography, for example mountains, valleys, canyons, bodies of water, volcanoes, and caves. Geologic features result from the cycling of water, rock, and sediment through geologic processes including plate tectonics, weathering, erosion, deposition, and weather. A geologic feature may be considered unique if it has qualities that make it unusual or distinct, including scenic or scientific value. For the purposes of this analysis, a "unique geologic feature" means a geologic feature that meets one of the following criteria:

- Is the best example of its kind locally or regionally;
- Embodies the distinctive characteristics of a geologic principle that is exclusive locally or regionally;
- Provides a key piece of geologic information important in geology or geologic history;
- Is a "type locality" of a geologic feature (i.e., the place where a geologic feature was first recognized and described);
- Is a geologic formation that is exclusive locally or regionally;
- Contains a mineral that is not known to occur elsewhere in the region; or
- Is used repeatedly as a teaching tool.

Within the Plan Area, the following four locations on the North Coast are identified as being "significant hydrological, geological, and paleontological features" in the County's General Plan/LCP (County of Santa Cruz 2020):

- Majors Creek Canyon: The cliffs and exposed rocks of this canyon to the east of Highway 1 are outstanding scenic features. (The massive, steep black cliffs are composed of bitumen-saturated sandstone or rock asphalt.)
- Martin Road: Unusual sandhill outcroppings in botanical sites east and west of Martin Road.
- Table Rock: Highly scenic coastal rock formations (sedimentary intrusive bodies) are found in the vicinity of Table Rock and Yellow Bank Creek.
- Wilder Creek: This area contains a concentration of limestone caves.

Karst topography in the Plan Area may also be considered a unique geologic feature. Karst topography is formed from the dissolution of soluble bedrock, such as limestone, marble, dolomite, and gypsum, which generates voids in the subsurface. Karst is characterized by irregular surface landforms, such as sinkholes, sinking streams, and springs, that reflect the presence of underground drainage systems with subsurface cavities and caves, which can be susceptible to collapse. Karst underlies much of the southeastern and midwestern United States, but is rare in California (USGS 2014). Soluble marble bedrock underlies portions of the Plan Area along the North Coast (Ben Lomond Mountain and Bonny Doon), in Felton, and within the University of California, Santa Cruz (UCSC) campus and Pogonip, producing karst formations in the Laguna Creek, Liddell Creek, and San Lorenzo River watersheds (City of Santa Cruz 2023b, 2023c, 2023d; USGS 1997). Construction in karst terrain is potentially hazardous because many karst features are not visible at the surface, and settling or collapse can occur beneath a structure.

According to County GIS, seven areas within the Plan Area are likely to have rare or unique geologic and paleontological resources related to their scarcity, scientific or educational value, aesthetic quality, or cultural significance. The largest of these areas is located between the Lompico and Glenwood areas in the Santa Cruz Mountains and Scotts Valley. Another area is located within the North Coast and urban areas on the northwestern edge of the City of Santa Cruz. The remaining five areas are all located within the North Coast area, with two occurring close together north of Bonny Doon, and three located on marine terraces along the coast between Davenport and the City of Santa Cruz (County of Santa Cruz 2017). None of these sensitive paleontological/geologic areas are located at the City's existing water supply facilities or municipal facilities. One circular area with an approximately 0.25-mile radius is identified roughly centered on Majors Creek just north of Highway 1; this area coincides with a portion of the existing and future water pipelines on the North Coast near Majors Creek, just north of Highway 1.

a) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

No Impact. The Plan Area is not located within the boundaries of an Earthquake Fault Zone for fault rupture hazard as defined by the Alquist-Priolo Earthquake Fault Zoning Act and no new infrastructure would be located on a known earthquake fault. Therefore, no impact related to fault rupture would occur as a result of the Proposed Project.

ii) Strong seismic ground shaking?

Less-Than-Significant Impact. Due to its location in a seismically active region, the Proposed Project and its Covered Activities and associated infrastructure would be highly likely to experience strong ground shaking from seismic events on local and regional faults. While such shaking poses risks to existing and proposed structures and infrastructure, proposed Covered Activities would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death resulting from seismic ground shaking. Construction activities, habitat restoration projects, monitoring, management, and maintenance activities needed to implement the Conservation Strategy could take place during strong seismic ground shaking. However, the Proposed Project would generally consist of improvements to existing structures and infrastructure and would not pose substantial risks related to ground shaking. NFCF projects would consist of aquatic habitat restoration including placement of natural materials such as LWD and boulders into streams, which would not result in risk of loss, injury, or death resulting from seismic ground shaking. Therefore, impacts of the Proposed Project related to seismic ground shaking would be less than significant.

iii) Seismic-related ground failure, including liquefaction?

Less-Than-Significant Impact. Loose, unconsolidated alluvial materials within the North Coast Streams and San Lorenzo River, upstream and downstream of the City's diversion facilities, may be susceptible to liquefaction and associated lateral spreading in the event of strong seismically induced ground shaking. Rehabilitation of diversion facilities associated with the Proposed Project would be constructed in accordance with provisions of the California Building Code under the supervision of a California Geotechnical Engineer and/or California Certified Engineering Geologist. In addition, construction and operation of the diversion facility improvements would not increase the potential for earthquakes or seismically induced ground failure to occur.

Based on County of Santa Cruz GIS data (County of Santa Cruz 2022d), the Majors and Reggiardo Creek Diversions are not located within liquefaction hazard areas. The Felton Diversion is in an area of moderate liquefaction potential and the Tait Street Diversion is in an area of high liquefaction potential, associated with shallow groundwater beneath the San Lorenzo River. Creation of over-steepened excavations along the riverbank would be prone to lateral spreading, but would be temporary pending completion of construction, thus minimizing the potential for lateral spreading. Design and construction of the diversion facility improvements would be completed in accordance with California Building Code and California Division of Occupational Safety and Health regulations, thus minimizing the potential for damage and safety impacts. As such, construction and operation of the diversion improvements would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death resulting from seismic-related ground failure, including liquefaction and associated lateral spreading. Therefore, impacts of the Proposed Project related to seismic-related ground failure would be less than significant.

iv) Landslides?

Less-Than-Significant Impact. Landslides and seismically induced slope failure typically occur on steep to very steep slopes. Undercutting a slope and placing additional loads at the top can cause a slope to fail, depending on the geologic and soil units and degree of water present. Seismic ground shaking can also cause an unstable slope to fail by destabilizing the cohesion between soil

particles, allowing gravity to play a greater role in the position of the slope materials and allowing them to move downhill. Risk of slope failure is greatest where the soil is unconsolidated and saturated, such as at natural waterbody crossings.

The County of Santa Cruz has mapped definite, probable, and questionable landslide deposits throughout the Plan Area (County of Santa Cruz 2022b). No landslide deposits have been identified near the Felton and Tait Street Diversions. Probable and questionable landslide deposits have been identified near the Reggiardo and Majors Creek Diversions. The potential exists for construction equipment used to implement Covered Activities and the Conservation Strategy to destabilize slopes and existing landslide deposits and to place additional loads on slopes vulnerable to landslides. However, upgrades to diversion facilities under the Proposed Project would be constructed in accordance with provisions of the California Building Code regarding slope stability, under the supervision of a California Geotechnical Engineer and/or California Certified Engineering Geologist, thus minimizing the potential for landslide hazards. Furthermore, the Conservation Strategy includes AMMs related to streambank stabilization and minimization of disturbance to streambanks, including Measures WO-5 and WO-7 to minimize disturbance to banks and riparian vegetation that is stabilizing streambanks, LM-6 which includes bank stabilization activities, LM-13 to install erosion-control measures for stabilization following culvert removal, and LM-14 for stabilizing decommissioned roads. Therefore, impacts related to landslides would be less than significant.

b) Would the project result in substantial soil erosion or the loss of topsoil?

Less-Than-Significant Impact. The Proposed Project is located in areas that are subject to water erosion along North Coast Streams and the San Lorenzo River. Thus, ground-disturbing activities associated with construction activities needed for implementation of Covered Activities and the Conservation Strategy could result in increased risk of erosion. Construction activities, including grading and excavation, may entail removal of vegetative cover that otherwise intercepts and slows water and potential erosion and could increase susceptibility of erosion by moving water. However, the Conservation Strategy includes AMMs related to work around water bodies that would minimize the potential for erosion, including conducting activities during the low-flow season (Measure WO-2), installing erosion-control devices and covering loose soils while stored (Measures WO-3 and WO-4), and minimizing disturbance to banks and riparian vegetation that serves to stabilize banks (Measures WO-5, WO-6, and WO-7). Additionally, implementation of the City's standard construction practices #1, #2, and #3 (Appendix C) would also reduce the potential for soil erosion during construction activities by implementing measures for erosion and sediment control, post-construction restoration of temporarily disturbed areas, and prevention of wind erosion and dust generation. Therefore, impacts related to erosion and loss of topsoil would be less than significant.

c) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Less-Than-Significant Impact. Excavation activities would result in temporary slopes that, if not constructed properly, could be prone to failure, which in turn could result in safety impacts to construction personnel and damage to infrastructure. However, these temporary slopes would be designed and constructed in accordance with provisions of the California Building Code and California Division of Occupational Safety and Health, thereby minimizing the potential for slope failure.

Rehabilitation of diversion facilities may require improvements to access roads to allow access to the sites by construction equipment, which could entail limited road widening, grading, compaction, and placement of aggregate. Access road improvements could result in slope alterations and temporary oversteepening and slope failure, if not completed properly. However, slope modifications would be designed in accordance with final engineered design plans and would be constructed in accordance with provisions of the California Building Code. In addition, the City has identified standard construction practices that would be implemented by the City and its contractors during construction activities associated with the Proposed Project. As described in Appendix C, finished slopes would be covered in non-toxic soil binders and/or hydroseed (standard construction practice #3), which would encourage plant growth, thus further stabilizing the slopes. In addition, all temporarily disturbed areas would be replanted with native vegetation (standard construction practice #2), thus contributing to long-term slope stability.

As discussed above, construction in karst terrain is potentially hazardous because many karst features are not visible at the surface, and settling or collapse can occur beneath a structure. While portions of existing and proposed water pipelines and the Reggiardo Creek Diversion facility are located in karstic watersheds, field mapping conducted in 2016 (Nolan 2016) shows that marble outcrops occur to the north/northeast of these facilities away from any existing or proposed sites. As individual construction projects are pursued by the City, project facilities and infrastructure would be designed to accommodate site-specific geologic conditions, and, as applicable, would adhere to the provisions of the California Building Code, including Section 1803 requiring preparation of a site-specific geotechnical investigation to address geologic hazards and recommend appropriate design measures. These measures would minimize risks associated with karst hazards such as subsidence or collapse.

In summary, the Proposed Project would not result in on- or off-site landslide, slope failure/instability, subsidence, or collapse due to unstable geologic units or soils. Therefore, the impact of the Proposed Project related to unstable geologic units or soils would be less than significant.

d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Less-Than-Significant Impact. The majority of construction activities associated with the Proposed Project would occur at the City's diversion facilities with identified improvements as part of both Covered Activities and the Conservation Strategy. Soils underlying the Reggiardo Creek Diversion facility consist of the Lompico-Felton complex, and soils underlying the Majors Creek Diversion facility consist of the Ben Lomond-Felton complex. The Felton Diversion site is underlain by Soquel loam, and the Tait Street Diversion site is underlain by Soquel loam and Baywood loamy sand. None of these soils are identified as expansive (County of Santa Cruz 2022g).

However, it is possible that other Covered Activities, such as pipeline replacements, may be located in areas with expansive soils within the Plan Area. Site-specific geotechnical investigations, which typically include an analysis of the soil expansion potential, have not been completed for all of the Covered Activities of the Proposed Project. However, construction would be completed in accordance with California Building Code regulations, which include provisions for construction on expansive soils. These construction techniques include over-excavation of soils beneath structures and pipelines, followed by construction on a layer of sandy, nonexpansive soils. Alternatively, post-tensioned slabs can be constructed to prevent cracking associated with expansive soils. In addition, the Proposed Project would not exacerbate the potential for

soil expansion to occur. Therefore, the impact of the Proposed Project regarding risks related to expansive soil would be less than significant.

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No Impact. The Proposed Project would not involve the installation of septic tanks or alternative wastewater disposal systems. Therefore, the Proposed Project would have no impact related to soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems.

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less-Than-Significant Impact With Mitigation Incorporated. Any significant grading, excavations, trenching, or augering that is below the depth of topsoil could potentially result in disturbance of unique paleontological resources or unique geologic features, if present. Such disturbance of unique paleontological resources or unique geologic features during construction of the Proposed Project could result in significant impacts. Implementation of MM GEO-1 would avoid directly or indirectly destroying a unique paleontological resource by requiring: a paleontological records search and desktop geological and paleontological research be conducted by a qualified paleontologist when a new construction project site is being pursued, and preparation and implementation of a Paleontological Resources Impact Mitigation Program (PRIMP) if known or identified resources are present on the site. At a minimum, the PRIMP will identify grading activities with potential for impact to paleontological resources, relevant regulations, requirements for preconstruction meeting attendance, locations where full-time monitoring is required or where spot-checks are required, the types of equipment the monitor will have on site, discoveries treatment protocols and methods, requirements for adequate reporting, requirements for collection and complete documentation of fossils identified with the project site, and requirements for deposition of prepared fossils and documentation at a scientific institution with paleontological collections.. For projects located in areas with moderate to high paleontological sensitivity, the City's standard construction practice #21 requires standard clauses in construction contracts to include paleontological resource sensitivity training for workers prior to conducting earth disturbance activities and procedures to follow in the event that paleontological resources are unearthed during grading, thereby minimizing associated impacts. Therefore, with the implementation of MM GEO-1 and standard construction practice #21, the potential impact on paleontological resources would be reduced to less than significant.

MM GEO-1: Paleontological Resources Impact Mitigation Program and Paleontological Monitoring. Potentially significant impacts to unique paleontological resources from planned construction projects that would include ground disturbance of native soils shall be addressed through the following measures:

a. **Identify Potential Paleontological Resources.** A qualified paleontologist pursuant to the Society of Vertebrate Paleontology (SVP) 2010 guidelines, or more recent version if available, shall conduct a paleontological records search from the Natural History Museum of Los Angeles County and conduct a desktop geological and paleontological review for planned construction projects that would include ground disturbance of native soils to identify all paleontological sites within or near the project site prior to the start of construction. The sensitivity of the site for discovering unknown paleontological resources shall also be

identified. The qualified paleontologist will prepare a brief technical report with the results of the above. If known or identified resources are present on the site, or if the site has moderate to high sensitivity for paleontological resources, measure b shall be implemented.

b. **Develop Paleontological Resources Impact Mitigation Program.** Prior to commencement of any grading activity on construction sites with moderate to high paleontological sensitivity or that may have such sensitivity at depth, the City shall retain a qualified paleontologist pursuant to the SVP 2010 guidelines, or more recent version if available. The paleontologist shall prepare a Paleontological Resources Impact Mitigation Program (PRIMP) for the Proposed Project. The PRIMP can be written to include all infrastructure components located in sites with moderate to high paleontological sensitivity. The PRIMP shall be consistent with the SVP guidelines and shall, at a minimum, contain the following elements:

- Introduction to the project, including project location, description of grading activities with the potential to impact paleontological resources, and underlying geologic units.
- Description of the relevant laws, ordinances, regulations, and standards pertinent to the project and potential paleontological resources.
- Requirements for preconstruction meeting attendance by the qualified paleontologist and/or their designee and worker environmental awareness training for grading contractors that outlines laws protecting paleontological resources and the types of resources that may be encountered on site.
- Identification of locations where full-time paleontological monitoring within geological units with high paleontological sensitivity is required within the project or programmatic sites based on construction plans and/or geotechnical reports.
- Requirements and frequency of paleontological monitoring spot-checks below a depth of five feet below the ground surface in areas underlain by Holocene sedimentary deposits.
- The types of paleontological field equipment the paleontological monitor shall have on-hand during monitoring.
- Discoveries treatment protocols and paleontological methods (including sediment sampling for microinvertebrate and microvertebrate fossils).
- Requirements for adequate reporting and collections management, including daily logs, monthly reports, and a final paleontological monitoring report that details the monitoring program and includes analyses of recovered fossils and their significance and the stratigraphy exposed during construction.
- Requirements for collection and complete documentation of fossils identified within the project site prior to construction and during construction, including procedures for temporarily halting construction within a 50-foot radius of the find while documentation and salvage occurs and allowing construction to resume once collection and documentation of the find is completed. Prepared fossils along with copies of all pertinent field notes, photos, maps, and the final paleontological monitoring report shall be deposited in a scientific institution with paleontological collections. Any curation costs shall be paid for by the City.

3.8 Greenhouse Gas Emissions

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
VIII. GREENHOUSE GAS EMISSIONS – Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Overview of Climate Change and the Greenhouse Effect

Climate change refers to any significant change in measures of climate, such as temperature and precipitation, lasting for an extended period (decades or longer). In recent times, climate change is the result of numerous, cumulative sources of greenhouse gas (GHG) emissions contributing to the "greenhouse effect," a natural occurrence which takes place in Earth's atmosphere and helps regulate the temperature of the planet. The greenhouse effect traps heat in the troposphere through a threefold process: (1) short-wave radiation emitted by the Sun is absorbed by the Earth; (2) the Earth emits a portion of this energy in the form of long-wave radiation; and (3) GHGs in the upper atmosphere absorb this long-wave radiation and emit this long-wave radiation into space and back toward the Earth. This trapping of the long-wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect.

GHG emissions occur both naturally and as a result of human activities, such as fossil-fuel combustion, decomposition of landfill wastes, raising livestock, deforestation, and some agricultural practices. GHGs produced by human activities include carbon dioxide (CO_2), primarily as a byproduct of fossil-fuel combustion; methane, (CH_4) resulting mostly from off-gassing associated with agricultural practices and landfills; nitrous oxide, (N_2O) mainly through agricultural activities; and fluorinated gases, including hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride, associated with certain industrial products and processes. CO_2 from fossil-fuel combustion is the predominant GHG emitted by human activities.

Different GHGs have different global warming potentials (GWPs). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emitted, referred to as "CO_2 equivalent" (CO_2e), which is the amount of GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of 1. By contrast, CH_4 has a GWP of 25, meaning its global warming effect is 25 times greater than CO_2 on a molecule-per-molecule basis. The GWP for N_2O is 298, and fluorinated gases are particularly potent GHGs with GWPs ranging from 12,200 to 22,800 (EPA 2022a).

Greenhouse Gas Emissions Inventories and Recent Trends

In 2020, total U.S. GHG emissions were approximately 5,981.4 million metric tons (MMT) CO_2e. Emissions decreased from 2019 to 2020 by 9.0% (590.4 MMT CO_2e), driven largely by a 10.5% decrease in CO_2 emissions from fossil-fuel combustion, including a 13.3% decrease in transportation sector emissions attributed to less vehicle travel due to the COVID-19 pandemic (EPA 2022a). California emitted 369.2 MMT CO_2e in 2020, 35.3 MMT CO_2e lower than 2019 levels. Similar to trends for the U.S. as a whole, the 2019 to 2020 decrease in emissions in California is likely due in large part to the impacts of the COVID-19 pandemic, including a 16% decrease in transportation sector emissions most likely from light duty vehicles after shelter-in-place orders were enacted in response to the COVID-19 pandemic. Economic recovery from the pandemic may result in emissions increases over the next few years (CARB 2022a).

Greenhouse Gas Emissions Thresholds

To date, MBARD has not adopted significance criteria or thresholds for land use projects. MBARD has adopted a significance threshold of 10,000 MT of CO_2e for stationary source projects (MBARD 2016), which does not apply to the Proposed Project, as no new stationary sources of GHG emissions are proposed. Nor has the City adopted a threshold of significance for generally applicable use. In the absence of a numeric threshold adopted by either MBARD or the City, the City exercised its discretion to assess the significance of the Proposed Project's GHG-related impacts by considering whether GHG emissions of the Proposed Project meet the 900 MT CO_2e per year screening level threshold identified by the California Air Pollution Control Officers Association (CAPCOA) (CAPCOA 2008). The 900 MT CO_2e per year threshold was developed based on various land use densities and future discretionary project types to determine the size of projects that would likely have a less than cumulatively considerable contribution to climate change. The CAPCOA threshold was developed to ensure capture of 90% or more of likely future discretionary developments with the objective to set the emissions threshold low enough to capture a substantial fraction of future development while setting the emission threshold high enough to exclude small development projects that would contribute a relatively small fraction of cumulative statewide GHG emissions.

CAPCOA's 900 MT CO_2e per year threshold was developed to meet the target identified by AB 32 (2006) of reducing emissions to 1990 levels by year 2020. Subsequent to CAPCOA identifying the 900 MT CO_2e per year threshold, the California Legislature has passed both SB 32 (2016) and AB 1279 (2022), setting revised statewide reduction targets. Under SB 32, the State is required to reduce GHG emissions to 40% below 1990 levels by year 2030. AB 1279 declares state policy to "[a]chieve net zero greenhouse gas emissions as soon as possible, but no later than 2045" and to "[e]nsure that by 2045, statewide anthropogenic greenhouse gas emissions are reduced to at least 85% below" 1990 (2020) levels. Though the CAPCOA threshold was formulated before the Legislature had enacted into statute the post-2020 GHG reduction targets set by SB 32 or AB 1279, the CAPCOA threshold was set at a time when (i) the Intergovernmental Panel on Climate Change (IPCC) had already recommended that, on a worldwide basis, GHG emissions should be reduced to 80 percent below 1990 levels by 2050, and (ii) Governor Schwarzenegger had already issued Executive Order S-3-05, by which the State of California adopted the aggressive IPCC 2050 target. The CAPCOA threshold was thus developed with an awareness that achieving the initial AB 32-mandated 2020 GHG reductions was only the first step towards a needed long-term steep downward trend in GHG emissions. The CAPCOA threshold thus set an aggressive project-level GHG emission capture rate of 90%. Due to this aggressive GHG emission capture rate, the City has determined that, for a project such as the ASHCP, which is mainly focused on protecting endangered and threatened fish species, the CAPCOA threshold remains a viable threshold.

To the extent that various Covered Activities will be individually subject to CEQA analysis, the City can determine whether to use the CAPCOA threshold or some other threshold suited to activities that might involve ongoing

operational emissions. Notably, most of the needed statewide GHG reductions under SB 32 and AB 1279 should come from a combination of more stringent state legislative requirements such as (i) Building Energy Efficiency Standards, (ii) Renewable Portfolio Standards, which require the State's electrical grid to provide carbon free electricity by 2045, and (iii) transportation-related efficiency measures such as the phase-in of electric cars in lieu of fossil-fuel powered vehicles. (See Draft EIR for Santa Cruz Water Rights Project, pp. 4.6-10 – 4.6-17.) The Covered Activities will be pursued against the backdrop of all these ongoing developments in California law and society.

Under the CAPCOA threshold, projects that generate emissions beyond the 900 MT CO_2e per year screening level threshold are required to implement feasible on-site mitigation measures to reduce their impacts on climate change. Projects that meet or fall below CAPCOA's screening level threshold of 900 MT CO_2e per year of GHG emissions require no further analysis and are not required to implement mitigation measures to reduce GHG emissions. As such, the CAPCOA threshold of 900 MT CO_2e per year is used as a quantitative threshold for the analysis of impacts related to GHG emissions generated by the Proposed Project.

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less-Than-Significant Impact. The Proposed Project would result in the generation of GHG emissions[17] from the use of heavy-duty construction equipment and on-road vehicle movement associated with some Covered Activities, such as diversion improvements and pipeline replacements. Emissions would vary depending on the level of activity, length of the activity, types of equipment, and number of personnel. On-site sources of GHG emissions would include off-road equipment and off-site sources would include haul trucks, vendor trucks, and construction worker vehicles.

Operational activities that would generate GHG emissions include management and maintenance activities such as site inspections, monitoring, surveys, testing, research, repairs and maintenance, excavations and cleanups, and vegetation management, and access road maintenance. Activities would generally be performed periodically and include actions such as minor construction, earth moving, vegetation management, program staff support, and monitoring of habitat success. These activities, most of which are ongoing activities, would generate minor amounts of GHG emissions from employee commutes and worker truck trips. Repairs and vegetation management may also require off-road equipment, such as backhoes or chainsaws, which would generate GHG emissions.

Table 11 presents GHG emissions estimated for the Laguna Creek Diversion Retrofit Project EIR and Santa Cruz Water Rights Project EIR for certain components of the ASHCP. While specific modeling has not been done for all components of the ASHCP Covered Activities and Conservation Strategy, emissions for the diversion facility upgrades at Majors and Reggiardo Creeks would be expected to be similar. Construction activities for the diversion facility upgrades would not occur simultaneously and would be dispersed over the 30-year permit term. As shown in the table, emissions would be well below the CAPCOA threshold of 900 MT CO_2e per year.

[17] The World Resources Institute and World Business Council for Sustainable Development created the GHG Protocol as an international standard for corporate accounting and reporting emissions, categorizing GHG emissions into Scope 1, 2, 3 emissions. These scope categories are typically used by agencies and companies that are doing GHG reduction planning and are not typically discussed in CEQA documents. This analysis covers Scopes 1 (direct) and 2-3 (indirect) to the extent applicable. CalEEMod estimates direct and indirect emissions of GHGs. CalEEMod does not include speculative life-cycle analysis of "downstream activities" that are not directly related to a project. The CalEEMod approach is consistent with CEQA case law, which does not require life-cycle analysis. (See *Save the Plastic Bag Coalition v. City of Manhattan Beach* (2011) 52 Cal.4th 155, 175.)

Table 11. Estimated Annual Construction Greenhouse Gas Emissions from Diversion Facility Upgrades

Project and Year of Construction	CO_2	CH_4	N_2O	CO_2e
	metric tons per year			
Laguna Creek Diversion (2021)	91.80	0.02	0.00	92.23
Felton Diversion (2027)	21.55	0.00	0.00	21.64
Tait Street Diversion (2028)	233.46	0.02	0.00	234.05

Source: City of Santa Cruz 2021c, 2021d.

Operations would entail a minimal increase in on-road vehicle trips associated with routine maintenance and management activities at City facilities by City staff. It is anticipated that up to one new staff would be needed for the Agreed Flows implementation. The Proposed Project would generate relatively little vehicular traffic and would consume relatively limited amounts of electricity due to Agreed Flows with pending water rights modifications. Specifically, Agreed Flows with pending water rights modifications would result in 141 MT CO_2e per year of GHG emissions from mobile sources and electricity, as reported on in the Santa Cruz Water Rights EIR (City of Santa Cruz 2021d). Given that temporary GHG emissions from construction activities due to Covered Activities and the Conservation Strategy would be amortized over the 30-year permit term and would not contribute substantially to annual operational GHG emissions, increased annual operational GHG emissions from the Proposed Project would not exceed the applied threshold of 900 MT CO_2e per year. Therefore, the impact of the Proposed Project due to GHG emissions would be less than significant.

b) Would the project generate conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less-Than-Significant Impact. An analysis of the potential for the Proposed Project to conflict with relevant plans that include GHG reduction strategies is provided below. As discussed below, the Proposed Project would not result in substantial GHG emissions that would impede attainment of state or local reduction targets, and this impact would be less than significant.

Climate Action Plans

The City adopted the Santa Cruz CAP 2030 in September 2022. The CAP provides City emission inventories and forecasts, identifies emissions reduction targets of 40% below 1990 levels by 2030 and carbon neutrality by 2035, and includes measures to reduce emissions and achieve the City's vision and targets. The CAP includes 9 measures and 43 actions related to sustainable government, 17 measures and 90 actions related to climate mitigation, 2 measures and 4 actions related to climate economy, and 3 measures and 15 actions related to climate restoration. The climate mitigation measures outlined in the CAP include measures for building energy; transportation; and water, waste, and wastewater. Examples include enforcement of the City's new construction natural gas prohibition ordinance, electrification of residential and commercial buildings, increased use of solar systems, implementation of active transportation and public transportation programs, discouraging single-occupancy passenger vehicles, increased use of electric vehicles (EVs), electrification of off-road equipment, maintaining per capita water use at a level at least 10% below the state goal of 55 gallons per day, reducing organic and inorganic waste production, and reducing GHG emissions from wastewater treatment, among others. Measures in the CAP related to increased commercial EV adoption to 25% by 2030 and 35% by 2035 (Measure T-5), and

electrification/decarbonization of 50% of off-road equipment by 2030 and 75% by 2035 (Measure T-6) would potentially be applicable to the vehicles and equipment used in Proposed Project activities. Therefore, the Proposed Project would not conflict with the City's CAP.

Metropolitan Transportation Plan/Sustainable Communities Strategy

AMBAG's 2045 MTP/SCS is a regional growth-management strategy that targets per-capita GHG reduction from passenger vehicles and light-duty trucks within the Monterey Bay Area. The 2045 MTP/SCS incorporates local land use projections and circulation networks in city and county general plans. Typically, a project would be consistent with the MTP/SCS if the project does not exceed the underlying growth parameters within the MTP/SCS. As discussed in Section 3.14, Population and Housing, the Proposed Project would generate negligible new employment. Therefore, the Proposed Project would not result in significant population growth that would exceed AMBAG growth projections. The major goals of the 2045 MTP/SCS are as follows:

- Provide convenient, accessible, and reliable travel options while maximizing productivity for all people and goods in the region.
- Raise the region's standard of living by enhancing the performance of the transportation system.
- Promote environmental sustainability and protect the natural environment.
- Protect the health of our residents; foster efficient development patterns that optimize travel, housing, and employment choices, and encourage active transportation.
- Provide an equitable level of transportation services to all segments of the population.
- Preserve and ensure a sustainable and safe regional transportation system.

The Proposed Project would not conflict with any of the above goals and would not inhibit AMBAG from achieving these goals.

California Air Resources Board's Scoping Plan

AB 32 and SB 32 outline the state's GHG emissions reduction targets for 2020 (1990 levels) and 2030 (40% below 1990 levels), respectively. EO S-03-05 establishes the state's long-term goal to reduce GHG emissions 80% from 1990 levels by 2050. EO B-55-18 sets a more ambitious state goal of net zero GHG emissions by 2045. In 2008 and 2014, CARB adopted the Scoping Plan and First Update, respectively, as a framework for achieving AB 32 reductions. The Scoping Plan and First Update outline a series of technologically feasible and cost-effective measures to reduce statewide GHG emissions. CARB adopted the Climate Change Scoping Plan in November 2017 as a framework to achieve the 2030 GHG reduction goal described in SB 32. In December 2022, CARB approved the 2022 Scoping Plan for Achieving Carbon Neutrality, which lays out a path to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels and achieve carbon neutrality no later than 2045, as directed by Assembly Bill 1279. As discussed above, the City has adopted a CAP that include measures and policies to reduce local emissions consistent with the state's GHG reduction targets.

The 2022 Scoping Plan identifies measures for cutting GHG emissions and reducing the utilization of fossil fuels within California, transitioning to zero-emission transportation, and phasing out the use of petroleum and natural gas used for heating homes and buildings. It also sets a more aggressive goal to reduce carbon emissions by 48% below 1990 levels in 2030, which represents an 8% increase from the current SB 32 target of a 40% reduction. The Plan identifies three priority areas for local governments as they develop

their local climate plans, measures, policies, and actions. Those priority areas include electrification of transportation, reducing vehicle miles traveled (VMT), and decarbonization of buildings.

The purpose of the Proposed Project is to balance the effects of water supply, municipal facility, and City land management activities in the Plan Area with the conservation needs of special-status anadromous salmonids and their habitats. The Proposed Project would not involve any land use development that would directly result in population growth or increased VMT. The Proposed Project would be affected by the Scoping Plan measures related to fuel and clean vehicle standards because activities would involve the use of equipment required for construction, management, and maintenance activities. These measures would lead to cleaner vehicles and equipment for the Proposed Project and thus lower GHG emissions. Therefore, the Proposed Project would not conflict with the Scoping Plan.

Based on the above considerations, the Proposed Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. This impact would be less than significant.

3.9 Hazards and Hazardous Materials

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
IX. HAZARDS AND HAZARDOUS MATERIALS – Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

Definition and Overview

As defined in the California Health and Safety Code Section 25501, "hazardous material" means any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant hazard to human health and safety, or to the environment, if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing would be injurious to the health and safety of persons, or harmful to the environment if released into the workplace or the environment. Hazardous wastes are hazardous substances that no longer have a practical use, such as material that has been abandoned, discarded, spilled, or contaminated, or is being stored prior to proper disposal.

California Code of Regulations, Title 22, Chapter 11, Article 2, Section 66261.10 provides the following definition for hazardous waste:

> [A] waste that exhibits the characteristics may: (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed or otherwise managed.

According to CCR Title 22, substances having a characteristic of toxicity, ignitability, corrosivity, or reactivity are considered hazardous waste. Toxic substances may cause short-term or long-lasting health effects, ranging from temporary effects to permanent disability or death. For example, toxic substances can cause eye or skin irritation, disorientation, headache, nausea, allergic reactions, acute poisoning, chronic illness, or other adverse health effects if human exposure exceeds certain levels (levels depend on the substance involved). Carcinogens, substances known to cause cancer, are a special class of toxic substances. Examples of toxic substances include most heavy metals, pesticides, and benzene (a carcinogenic component of gasoline). Ignitable substances, such as gasoline, hexane, and natural gas, are hazardous because of their flammable properties. Corrosive substances (e.g., strong acids and bases such as sulfuric battery acid or lye) are chemically active and can damage other materials or cause severe burns upon contact. Reactive substances (e.g., explosives, pressurized canisters, and pure sodium metal, which react violently with water) may cause explosions or generate gases or fumes.

Pipelines and Oil Drilling Features

According to the National Pipeline Mapping System, natural gas transmission pipelines in the Plan Area run south of Highway 1 in the North Coast area; south of Mission Street on the Westside of the City, through Beach Hill and

Seabright, along roadways north of Water Street, and along 7th Avenue in the City Urban Center, along Rodriguez Street in Live Oak, and along Graham Hill Road in the Santa Cruz Mountains, terminating at a large lumberyard near Roaring Camp (NPMS 2022). The natural gas pipeline that runs along Graham Hill Road is located approximately 0.40 miles east of the Felton Diversion and approximately 0.13 miles east of the Tait Street Diversion. No natural gas pipelines are located within 1 mile of the City's other diversion facilities. Natural gas pipelines are located in proximity to the City's existing and proposed future water pipelines.

According to the California Geologic Energy Management Division (CalGEM) Well Mapping database (CalGEM 2022), there are no active oil and gas wells located in the Plan Area. Multiple plugged core holes are sparsely located throughout the Plan Area; however, none are located within 1 mile of any of the City's diversion facilities. These core holes were completed between the 1930s and 1960s as exploratory borings for oil and gas. The holes were subsequently plugged when no oil nor gas were produced. Therefore, oil and gas wells are not considered a potential hazard to the Proposed Project.

Hazardous Material Sites

Government Code Section 65962.5 requires the California Environmental Protection Agency (CalEPA) to compile a list of hazardous waste and substances sites (also known as the Cortese List). While the Cortese List is no longer maintained as a single list, the following databases provide information that meet the Cortese List requirements:

- List of hazardous waste and substance sites from the Department of Toxic Substances Control's (DTSC's) EnviroStor database (Health and Safety Codes 25220, 25242, 25356, and 116395).
- List of leaking underground storage tank (LUST) sites from the State Water Resources Control Board (SWRCB) GeoTracker database (Health and Safety Code 25295).
- List of solid waste disposal sites identified by SWRCB with waste constituents higher than hazardous waste levels outside the waste management unit (Water Code Section 13273 subdivision [e] and 14 CCR Section 18051).
- List of active cease and desist orders and cleanup and abatement orders from SWRCB (Water Code Sections 13301 and 13304).
- List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the California Health and Safety Code, as identified by DTSC.

Based on a search of these databases, numerous Cortese List sites are located in the Plan Area, primarily consisting of LUST cleanup sites which are concentrated within the City Urban Center (CalEPA 2022a, 2022b, 2022c; DTSC 2022a, 2022b; SWRCB 2022a, 2022b). No Cortese List sites are located within 1 mile of the Reggiardo, Laguna, or Majors Diversion facilities.

Three LUST and two cleanup program sites were identified within 0.5 miles of the Felton Diversion site. The LUST sites and one cleanup site have received regulatory closure, and residual contamination, if any, is not likely to affect the environmental condition at the Felton Diversion site (City of Santa Cruz 2021d).

Ten LUST sites and two cleanup program sites were identified within 0.50 miles of the Tait Street Diversion site. The LUST sites have all received regulatory closure and are not likely to affect the environmental conditions at the site (City of Santa Cruz 2021d).

Airport Hazards

The Plan Area is not located within an Airport Land Use Plan, nor is it located within 2 miles of a public use airport.

Fire Protection and Emergency Response

The City's facilities within the Plan Area fall within multiple jurisdictions responsible for emergency response and fire protection, including CSA 48 (County Fire) (North Coast Streams and Loch Lomond Reservoir), Felton Fire District (Felton Diversion site), and the City of Santa Cruz (Tait Street Diversion site) (LAFCO 2021).

a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less-Than-Significant Impact. Construction activities would include the use of commonly used hazardous substances such as gasoline, diesel fuel, lubricating oil, adhesive materials, grease, solvents, and architectural coatings. These materials are not considered extremely hazardous and are used routinely for both construction projects and structural improvements. These materials would be used and stored in designated construction staging areas within the boundaries of the individual sites and would be used, transported, handled, and stored in accordance with all applicable federal, state, and local laws and regulations, which are intended to minimize health risk to the public associated with hazardous materials. These applicable federal, state, and local laws and regulations are set forth at length in the Final EIR for the Santa Cruz Water Rights Project on pages 4.7-12 through 4.7-19. The use of these materials for their intended purpose would not pose a significant risk to the public or environment. Wastes, both hazardous and non-hazardous, accumulated during demolition, rehabilitation, and construction activities would be handled, documented, and disposed of in accordance with federal, state, and local laws regulating the management and use of hazardous materials. Additionally, implementation of the City's standard construction practice #5, listed in Appendix C, which describes measures for hazardous materials containment and spill prevention and response, would further reduce the risk of use, transportation, and disposal of hazardous materials. Consequently, use of these construction materials for their intended purpose would not pose a significant risk to the public or environment. Once construction has been completed, construction fuels and other hazardous materials would no longer remain within the work areas.

Operation, maintenance, and management activities of the Proposed Project would involve similar use of hazardous materials as under existing conditions. Hazardous materials would be used in accordance with requirements and recommendations in the applicable Safety Data Sheet(s) and would be managed in accordance with federal, state, and local laws and regulations, and would be stored in secured, covered areas with secondary containment. Hazardous wastes generated by operation, maintenance, and management activities would be generated, stored, manifested, and transported in accordance with federal, state, and local regulations.

Therefore, the Proposed Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, and the impact would be less than significant.

b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less-Than-Significant Impact. As discussed above under criterion (a), relatively small amounts of commonly used hazardous materials would be used for construction and operation of the Proposed Project, and these materials would be handled, stored, transported, and disposed of in accordance with

manufacturer's recommendations and federal, state, and local laws and regulations and in accordance with the City's standard construction practices, which reduce the risk of use, transportation, and disposal of hazardous materials and associated hazards from upset and accident conditions. As described above, operation, maintenance, and management activities would result in similar use of hazardous materials as under existing conditions and would therefore not result in an increase in routine transport, use, and disposal of hazardous materials and/or wastes generated by routine operations.

Proposed Project construction activities that would disturb more than 1 acre would be subject to the provisions of the State's General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit, 99-08-DWQ), including preparation of a Stormwater Pollution Prevention Plan (SWPPP) and implementation of BMPs, designed to prevent and minimize incidental spills of petroleum products and hazardous materials during construction. In addition, the City's standard construction practice #5 outlining hazardous materials containment and spill prevention and response measures (see Appendix C) would be employed to ensure water quality protection with respect to potential hazardous materials spills during construction.

As indicated above, natural gas pipelines are present in the Plan Area near existing and proposed future water pipelines. Prior to rehabilitation of existing water pipelines or installation of new water pipelines in the vicinity of the natural gas pipelines, the City would contact the operator of the gas pipelines to determine the exact locations of the pipelines, such that the gas pipeline would be avoided as part of the final design. In addition, in compliance with California Government Code 4216, the Proposed Project contractor would contact DigAlert at least two days prior to initiating Proposed Project excavations. The DigAlert notification would prompt all underground utility operators (i.e., gas, electric, water, telecommunication) to physically mark the location of their utilities to avoid disrupting and/or damaging the utilities during construction. As part of this process, the natural gas pipelines would be identified on the ground surface with markers such as flags, paint, and stakes, thus eliminating the possibility of rupturing the gas pipelines during construction activities.

With implementation of a SWPPP, BMPs, and City standard construction practices, as well as delineation of the existing natural gas pipelines prior to final design and construction, the Proposed Project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. The impact would be less than significant.

c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Less-Than-Significant Impact. There are no existing or proposed schools located within 0.25 miles of the City's diversion facilities. An existing daycare facility is located on Western Drive within 0.25 miles of the proposed future raw water pipeline, and existing treated water pipelines are located within 0.25 miles of all of the City's public and private schools and daycare facilities as well as public and private schools and daycare facilities in neighboring school districts. Within the City water service area there are also schools within 0.25 miles of the San Lorenzo River and Branciforte Creek FCC. As discussed above under criteria (a) and (b), relatively small amounts of commonly used hazardous materials would be used during Proposed Project construction and operation, in accordance with manufacturer's recommendations, applicable laws and regulations, and the City's standard construction practice #5 outlining hazardous materials containment and spill prevention and response measures. With such measures in place, the Proposed Project would not pose a hazard to students and staff at these schools related to the handling of hazardous materials or substances. The impact would be less than significant.

d) Would the project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Less-Than-Significant Impact With Mitigation Incorporated. The City's surface water diversion facilities and Loch Lomond Reservoir are not located on a hazardous materials site that is included on a list compiled pursuant to Government Code Section 65962.5, and therefore construction, operation, management, and maintenance activities at those sites would not result in a significant hazard to the public or the environment related to such a site.

Existing and proposed future water pipelines could result in potentially significant impacts associated with construction on or nearby hazardous materials sites. In particular, existing water pipelines are ubiquitous throughout the City Urban Center where numerous Cortese List sites are located. Implementation of MM HAZ-1 and MM HAZ-2 would require review of hazardous materials site databases prior to the construction of new or replacement pipelines and if soil, soil vapor, and/or groundwater contamination is identified in the review that has the potential to be disturbed and released during construction, a Hazardous Materials Contingency Plan (HMCP) will be prepared and implemented. The HMCP shall include procedures for assessment, characterization, management, and disposal of hazardous constituents, materials, and wastes, in accordance with all applicable state and local regulations. Therefore, with the implementation of MM HAZ-1 and MM HAZ-2, the impacts of the Proposed Project related to pipeline construction on or nearby hazardous materials sites would be reduced to less than significant.

MM HAZ-1: Review of Hazardous Materials Site Databases. Prior to planned construction projects for new or replacement pipelines where ground disturbance is required, a review of hazardous materials site databases will be conducted within 0.5 miles of the project site where the construction is proposed (project site). Each site identified within 0.5 miles of the project site will be reviewed for environmental contamination that could impact the project site, including soil, soil vapor, and groundwater contamination. If soil, soil vapor, and/or groundwater contamination is identified in the review that has the potential to be disturbed and released during construction, MM HAZ-2 will be implemented.

MM HAZ-2: Hazardous Materials Contingency Plan. Prior to commencement of any planned pipeline construction projects where soil, soil vapor, and/or groundwater contamination has been identified per MM HAZ-1, a Hazardous Materials Contingency Plan (HMCP) shall be developed that addresses known and suspected impacts in soil, soil vapor, and groundwater from releases on or near the project sites. The HMCP shall include training procedures for identification of contamination. The HMCP shall describe procedures for assessment, characterization, management, and disposal of hazardous constituents, materials, and wastes, in accordance with all applicable state and local regulations. Contaminated soils and/or groundwater shall be managed and disposed of in accordance with local and state regulations. These regulations include hazardous material transportation (California Department of Transportation and Department of Toxic Substances Control [DTSC]), hazardous waste regulations (U.S. Environmental Protection Agency and DTSC), worker health and safety during excavation of contaminated materials (California Division of Occupational Safety and Health Administration), and local disposal requirements (DTSC and landfill-specific). The HMCP shall include health and safety measures, which may include but are not limited to periodic work breathing zone

monitoring and monitoring for volatile organic compounds using a handheld organic vapor analyzer in the event impacted soils are encountered during excavation activities.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

No Impact. The Proposed Project would not result in a safety hazard or excessive noise for people working or residing in the study area due to airports because the Proposed Project site is not located within 2 miles of a public use airport nor is it located within an airport land use plan. Therefore, the Proposed Project would have no impact related to airport hazards.

f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less-Than-Significant Impact. As further explained in Section 3.17, Transportation, construction activities could require partial road closures or access limitations in public rights-of-way on a temporary and periodic basis. Where construction could take place in public roadways, encroachment permits would need to be obtained in most cases from the applicable local agency. The issuance of encroachment permits requires submission of traffic control plans in Santa Cruz County and the cities of Santa Cruz and Capitola.

Operation, maintenance, and management activities would be similar to current operations of water infrastructure and City facilities in the Plan Area. The upgrade of existing facilities would not impede emergency response. After construction, new or rehabilitated water pipelines would be located subsurface such that existing rights-of-way would not be permanently impeded.

Therefore, the Proposed Project would not physically interfere with an adopted emergency response plan or emergency evacuation plan and the impact would be less than significant.

g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Less-Than-Significant Impact. Construction and operation of the Proposed Project would not exacerbate wildfire risks or include habitable structures that could expose people or structures to wildfire. Construction activities could include the use of welding equipment, torching, generators, chainsaws, and chippers, all of which could produce sparks. However, the City's standard construction practice #18, as described in Appendix C, includes fire safety measures that would be implemented during construction on undeveloped sites or sites with surrounding trees and other vegetation, specifically during use of such equipment. As stipulated in standard construction practice #18, spark arrestors would be required for internal combustion engine equipment, fire suppression equipment would be required on site during use of such mechanical equipment, and construction activities would not be conducted during high fire hazard periods (i.e., red flag warnings).[18] Fire suppression equipment would include items such as fire extinguishers and shovels. Therefore, the impact would be less than significant.

[18] Red flag warnings and fire weather watches are issued by CAL FIRE based on weather patterns (low humidity, strong winds, dry fuels, etc.) and listed on its website (https://www.fire.ca.gov/programs/communications/red-flag-warnings-fire-weather-watches/).

3.10 Hydrology and Water Quality

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
X. HYDROLOGY AND WATER QUALITY – Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site;	☐	☐	☒	☐
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
iv) impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Hydrology

The Plan Area encompasses several watersheds. A watershed identifies an area of land that contains a common set of streams and rivers that all drain into a single larger body of water, such as a creek, river, lake, or ocean. Watersheds with the potential to be affected by Covered Activities and/or the Conservation Strategy are discussed as follows.

Liddell Watershed

Liddell Creek is a second-order stream that drains in a southwest direction off Ben Lomond Mountain and flows into the Pacific Ocean at Bonny Doon Beach, along the North Coast of Santa Cruz County, directly south of Davenport. The Liddell watershed comprises approximately 4 surface square miles, with an additional drainage area of over 3 square miles provided by sub-surface karst. The elevation of the watershed ranges from 0 feet at the creek mouth to approximately 1,300 feet at its headwaters near Smith Grade. Liddell Creek consists of three distinct forks, including the Middle, East, and West branches. The approximate stream channel length from the mouth of Liddell Creek to the mainstem headwaters is 3.2 miles. The Liddell Spring feeds the watershed and is the location of the City's intake in this watershed. The intake is located on a tributary to the East Branch of Liddell Creek, near its headwaters, approximately 2.5 miles upstream from the creek mouth. The channel gradient from the diversion to the creek mouth is approximately 3% along the East Branch of the creek. Former CEMEX quarry operations in the upper portion of the Liddell watershed have locally affected the hydrology and water quality in the upper watershed. In addition, the CEMEX quarry operated a stream diversion on a tributary to East Liddell Creek to support quarry operations and the current landowner continues to operate the diversion (City of Santa Cruz 2021d). Land use in the watershed is predominantly zoned for agriculture with the remainder comprised of mountainous residential areas (County of Santa Cruz 2014).

Laguna Watershed

Laguna Creek is a second-order stream that drains in a southwest direction off Ben Lomond Mountain and flows into the Pacific Ocean along the North Coast of Santa Cruz County. The Laguna watershed drains an area of approximately 8 square miles and is comprised of Laguna Creek, Reggiardo Creek, and several unnamed streams. The elevation of the watershed ranges from 0 feet at the creek mouth to approximately 2,420 feet at the headwaters near Empire Grade. The Laguna watershed is underlain by karst topography which has a significant influence on streamflow and summer baseflow by producing multiple springs within the watershed (City of Santa Cruz 2005). The karst topography also provides permeability between the Laguna and Liddell watersheds. The approximate stream length from the mouth of Laguna Creek to its headwaters is 8.5 miles. The City diversion on Laguna Creek is directly upstream (0.1 mile) of the Reggiardo Creek confluence, which is approximately 4.2 miles upstream from the mouth of Laguna Creek. The channel gradient from the diversion to the creek mouth is about 3%, and the channel gradient upstream of the diversion to the headwaters is approximately 6% (City of Santa Cruz 2021d). Predominant land uses in the watershed are agriculture, residential, and resource conservation uses (County of Santa Cruz 2014).

Majors Watershed

Majors Creek is a second-order stream that drains off Ben Lomond Mountain and flows into the Pacific Ocean along the North Coast area of Santa Cruz County. The Majors watershed, located between the Laguna and Baldwin/Wilder watersheds, drains an area of approximately 5 square miles and is comprised of Majors Creek and three unnamed tributaries. The elevation of the watershed ranges from 0 feet at the creek mouth to approximately 1,800 feet at its headwaters near Felton Peak. The approximate stream channel length from the creek mouth to the creek headwaters is 5.9 miles. The City diversion on Majors Creek is located approximately 2.2 miles upstream from the mouth of Majors Creek. The channel gradient from the diversion to the creek mouth is about 3%, and the channel gradient upstream of the diversion to the headwaters is approximately 6% (City of Santa Cruz 2021d). Land use is predominantly parkland, with the remainder comprised of rural residential and a small area of agricultural production (County of Santa Cruz 2014).

San Lorenzo Watershed

The San Lorenzo River, located within a 138-square mile watershed in northern Santa Cruz County, is the City's largest source of water supply. Originating in the Santa Cruz Mountains, the watershed consists of a 25-mile-long main stem and nine principal tributaries that include primary creeks Branciforte, Carbonera, Zayante, Bean, Fall, Newell, Bear, Boulder, Lompico, and Kings Creeks. The watershed includes the cities and communities of Santa Cruz, Scotts Valley, Felton, Ben Lomond, and Boulder Creek. Much of the watershed is forested except for these pockets of urban areas. City diversions on the San Lorenzo River include the Felton Diversion in Felton and the Tait Street Diversion in Santa Cruz. The watershed is comprised predominantly of open space lands (41%) in the northern portion and residential neighborhoods (26%) and paved roads (13%) as the river flows south through the City. Land uses in the remaining 20% of the watershed include commercial businesses and a portion of the UCSC campus (City of Santa Cruz 2011; County of Santa Cruz 2014).

Surface water flows within tributary creeks in the watershed are characterized as flashy with periodic high flow events that coincide with winter storms and low summer baseflows. This results in high-energy systems that have the potential to move a significant quantity of sediment. Stream base flow levels, sustained by groundwater flow, rise in the winter and decline steadily through the spring and early summer months. The lowest flows occur in the late summer and fall months before winter rains. Zayante Creek is the largest tributary to the San Lorenzo River (City of Santa Cruz Water Department 2013).

Since approximately 1960, the San Lorenzo River has been impacted by increasing development within the watershed and the channelization of the lower 2.5 miles into a levee flood control structure, following a damaging flood in Santa Cruz in 1955. This flood control project, developed in cooperation with the U.S. Army Corps of Engineers (USACE), included rip-rap levee banks, removal of all vegetation from the banks, and dredging of the river channel bottom. During construction of the levee project, Jessie Street Marsh was filled, and the lower Branciforte Creek was channelized in a cement FCC. The USACE completed another levee improvement project in 2000 that improved and raised the levees (City of Santa Cruz 2011).

Newell Watershed

Newell Creek and the Loch Lomond Reservoir, which is impounded by Newell Creek Dam, are located within the San Lorenzo River watershed. Loch Lomond Reservoir is located near the town of Ben Lomond in the Santa Cruz Mountains. Construction of the reservoir was completed in 1961 and has a maximum capacity of approximately 2,858 million gallons (Whealdon-Haught et al. 2021). The Newell watershed (a subwatershed of the San Lorenzo River watershed) upstream of the reservoir is about 9 square miles (City of Santa Cruz 2016). The City-owned tract, which is predominantly upstream of the Newell Creek Dam, comprises approximately 46% of the total watershed. Newell Creek is the largest drainage within this tract, entering the reservoir at the north end. Three other tributaries, including McFarland Creek and two unnamed tributaries (northern tributary and southern tributary), enter the reservoir from the west. Terrain within the watershed consists of rugged, ridge-and-valley terrain, including narrow-crested, steep-sided ridges and deeply incised, v-shaped valleys (City of Santa Cruz 2013). The Newell Creek Dam impounds water to support the City's water supply production and it does not act as flood control.

Water Quality

The Regional Water Quality Control Board (RWQCB) establishes beneficial uses and characterizes the water quality of surface water bodies based on watershed boundaries. Stormwater pollutants present in City watersheds include metals, solvents, paint, concrete, masonry products, detergents, vehicle fuels and fluids, oil and grease, pesticides

and herbicides (organic compounds and nutrients), debris and litter, bacteria, pathogens and oxygen-demanding compounds, and sediment and silt. The June 2019 Water Quality Control Plan for the Central Coastal Basin (Basin Plan) is the Central Coast RWQCB's current master water quality control planning document (Central Coast RWQCB 2019). The Basin Plan establishes beneficial uses and water quality objectives for each of the water bodies in the Central Coast Region. The Clean Water Act requires that states adopt water quality standards to protect public health, enhance the quality of water resources, and ensure implementation of the Clean Water Act. Clean Water Act Section 303(d) requires states to identify and prepare a list of water bodies that do not meet water quality objectives, and to establish total maximum daily loads (TMDLs) for each water body to ensure attainment of water quality objectives. These TMDLs are updated every two years in the SWRCB Integrated Report, also known as the Section 305(b) report, which assigns an Integrated Report Condition Category to all assessed water body segments. Water body segments that exceed protective water quality standards are placed on the 303(d) list of impaired waters. Water quality impairments for the water bodies potentially affected by the Proposed Project include benthic community effects, chlordane, chloride, chlorpyrifos, enterococcus, nitrate, polychlorinated biphenyls (PCBs), sedimentation/siltation, sodium, water temperature, and toxicity for the San Lorenzo River and pH and sedimentation/siltation for Newell Creek (SWRCB 2022c). These impaired bodies are listed as Category 5 in the SWRCB Integrated Report, which includes waters where at least one beneficial use is not supported, and a TMDL is required. Loch Lomond Reservoir, Liddell Creek, Laguna Creek, and Majors Creek do not have any water quality impairments.

a) Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less-Than-Significant Impact. Potential water quality effects could result due to operations of the City's system with the Agreed Flows and pending water rights modifications, and due to the proposed diversion improvements, other Covered Activities, and other elements of the Conservation Strategy. As indicated below, the impact of the Proposed Project on water quality from these activities would be less than significant.

Agreed Flows

Direct effects associated with the implementation of Agreed Flows include those related to changes in hydrology of the San Lorenzo River and North Coast Streams. Implementation of Agreed Flows would modify the hydrology of the San Lorenzo River and the North Coast Streams by both increasing and reducing stream flows at different times, in different seasons and in different water-year types. Residual flows are the stream flows downstream of the City's diversions. The residual flow is either the Agreed Flow for that time period, the Agreed Flow plus whatever amount is not needed for City supply, or the natural streamflow if the available flow is zero and diversion is precluded. Hydrologic and water supply modeling conducted for the Santa Cruz Water Rights Project EIR assessed potential effects of Agreed Flows on residual flows based on an average of all years and an average of critically dry years in the historical record (1936 to 2015) for the San Lorenzo River at the Felton Diversion and Tait Street Diversion, Newell Creek at the Newell Creek Dam, and the North Coast Stream diversions at Laguna Creek, Liddell Spring, and Majors Creek. If stream diversions resulted in a substantial decrease in residual flows, water quality impacts could occur, including increased temperature (i.e., due to shallower water) and altered salinity, dissolved oxygen, and pH concentrations. Changes in Loch Lomond Reservoir levels and spill characteristics were also modeled to assess potential water quality impacts that could occur. The results of the modeling are included in the discussions below and incorporated by reference from the Santa Cruz Water Rights Project EIR (City of Santa Cruz 2021d).

Based on an average of all years in the historical record (1936 to 2015), the difference in residual flows with the Proposed Project would be minimal, with the exception of residual flows in Newell Creek during critically

dry years. In that case, the Proposed Project would result in an increase in residual flows of approximately 1 cfs relative to the existing conditions (City of Santa Cruz 2021d). The Proposed Project would increase Loch Lomond Reservoir levels, which indicates that the reservoir would spill more frequently. Operation of Loch Lomond Reservoir (reservoir spill and the existing required 1 cfs fish release) is the only City activity associated with the Proposed Project that has the potential to influence water temperatures. The majority of spill occurs during or after precipitation events in the winter when Loch Lomond Reservoir's temperature is cool. However, reservoir spill can result in increased temperature downstream of the dam in Newell Creek during periods when the reservoir surface temperature is high during spring and early summer (May through July) when the lake surface is warming and there is still a potential for spill, at least in wetter years when storage is high. Under AMM WS-24, when the reservoir is spilling during late spring and summer, the City would release additional cooler flow through the fish release below the dam when needed to offset the potential warming effects of reservoir spills below Newell Creek Dam at that time of the year. Therefore, Agreed Flows would not substantially alter the existing drainage patterns of the City's surface water sources such that potentially adverse water quality impacts would result. Therefore, the Agreed Flows of the Proposed Project would not violate any water quality standards or waste discharge requirements or otherwise degrade surface or ground water quality and the impact would be less than significant.

Diversion Facility Improvements and Other Covered Activities

Construction activity on projects that disturb 1 or more acres of soil must obtain coverage under the State's Construction General Permit. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling or excavation. The Construction General Permit requires the development and implementation of a SWPPP. The SWPPP must list BMPs that the discharger will use to protect stormwater runoff and the placement of those BMPs. A Notice of Intent (NOI) and SWPPP must be prepared prior to commencement of construction. Proposed grading and development on the project sites of Covered Activities would likely disturb more than 1 acre in some instances, and, thus, such projects would be subject to the Construction General Permit and preparation of a SWPPP. The City's regulatory requirements and BMPs, as detailed in the "Stormwater Best Management Practices Manual" published by the City's Public Works Department, must be implemented.

Commonly practiced BMPs and the City's standard construction practices would be implemented to control construction site runoff and reduce the discharge of pollutants to storm drain systems from stormwater and other nonpoint-source runoff, for example, implementation of a SWPPP for individual activities. As part of compliance with permit requirements during ground-disturbing or construction activities, implementation of water quality control measures and BMPs would ensure that water quality standards would be achieved, including the water quality objectives that protect designated beneficial uses of surface and groundwater, as defined in the Basin Plan. The Construction General Permit also requires stormwater discharges not to contain pollutants that cause or contribute to an exceedance of any applicable water quality objectives or water quality standards, including designated beneficial uses.

Under the Proposed Project, improvements to diversion facilities, habitat restoration projects, and other maintenance activities may require constructions activities that could result in short-term effects on surface water quality. Rehabilitation of City diversion facilities on the North Coast Streams and San Lorenzo River may require dewatering during construction activities subject to permitting approval by the Central Coast RWQCB. Excavations and construction associated with the diversion facility improvements or other Covered Activities immediately adjacent to Reggiardo Creek, Majors Creek, and the San Lorenzo River could potentially result in erosion and sedimentation of these water bodies if not properly controlled. In addition to sediment, other pollutants associated

with construction activity could include heavy metals, oil/grease, fuels, debris/trash from construction-related materials, and concrete-curing compounds. Sediment can also be a carrier for these pollutants if they are released to soils. Short-term water quality effects from habitat improvement activities could also involve temporary disturbance of sediment that could increase surface water turbidity and accidental release of oil, gas and other fluids from construction equipment. Impacts to water quality through exceedance of water quality standards, non-conformance with waste discharge requirements, or by other means can potentially result from the short-term effects of construction activities (e.g., erosion and sedimentation due to land disturbances, uncontained material and equipment storage areas, improper handling of hazardous materials) and the long-term effects of operation of the new or upgraded facilities (e.g., use/handling of hazardous materials). These potential effects would be addressed through implementation of SWPPPs, where relevant, and by a number of AMMs in the ASHCP, all of which would serve to control pollutants affecting water quality, including:

- Protocols related to release of reservoir water to maintain aeration of released water, control turbidity, and ensure appropriate temperatures of released water (Measures WS-53 through WS-57);
- Installation of erosion control measures, devices, and fencing and remediation of erosion areas (Measures WO-3, WO-4, LM-3, LM-11, LM-13, and LM-14);
- Minimization of disturbance to banks and riparian vegetation that stabilizes banks (Measures WO-5 through WO-7);
- Practices related to minimizing hazardous materials spills/contamination and protecting water quality during work within the wetted channel (Measures WO-9 through WO-14);
- Measures to avoid sediment discharge to water courses, and contain sediment and spills (Measures WO-20 and WO-21); and
- Minimization of stormwater pollutants and runoff, and upgrades to and maintenance of stormwater facilities (Measures MF-18 through MF-35).

Additionally, as listed in Appendix C, the City has identified standard construction practices #1 through #3, which identify measures for erosion and sediment control, post-construction restoration of temporarily disturbed areas, and prevention of wind erosion and dust generation, and #8 through #10, which identify measures for protection of trees and riparian vegetation, and protection of the streambed and bank during work in or adjacent to streams or drainages, that would be implemented by the City or its contractors during construction activities, where relevant, thus further minimizing the potential for erosion-induced siltation of water bodies.

No water quality impacts are anticipated with diversion facility operations, as no new potential pollutants (other than currently used minor quantities of oil, grease, degreasers, etc.) would be used to operate the diversion structures. Additionally, Covered Activities are not expected to result in a substantial increase in impervious surface area that could contribute stormwater pollutants given that facility sites are already developed and paved, and pipeline corridors would be subsurface. Therefore, construction and operations at the diversions and other facility sites and construction or land disturbance associated with other Covered Activities would not substantially alter drainage patterns, increase the rate or amount of surface runoff, violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality of North Coast Streams, the San Lorenzo River, and Newell Creek. No substantial groundwater quality effects would be expected because the Proposed Project does not involve actions that could change groundwater quality conditions.

Because implementation of the Conservation Strategy, including NFCF restoration projects, is intended to improve habitat for Covered Species, it is anticipated that the long-term effect of implementing the Proposed

Project would be to improve water quality conditions in the North Coast Streams and San Lorenzo River, as well as other streams that provide habitat for Covered Species when restoration projects are implemented outside of the Plan Area. Given the above, the diversion improvements and other Covered Activities of the Proposed Project would not violate any water quality standards or waste discharge requirements or otherwise degrade surface or ground water quality and the impact would be less than significant.

b) Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less-Than-Significant Impact. As indicated above, dewatering would be required during diversion modifications. However, such dewatering would be temporary and localized, and would result in a negligible quantity of groundwater being extracted with respect to the quantity of groundwater present in the underlying aquifers. In addition, dewatering would occur in accordance with a dewatering discharge permit to be issued by the Central Coast RWQCB. Diversion facility improvements would not require a substantial increase in impervious surface area given that the sites are already developed and paved, and therefore would not result in loss of recharge. Additionally, new or replacement pipelines would be installed underground so would not result in new impervious surface area. As a result, the Proposed Project would not decrease groundwater supplies or interfere substantially with groundwater recharge such that sustainable groundwater management of the basin would be impeded. In addition, the Proposed Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Therefore, the Proposed Project would have a less-than-significant impact related to groundwater.

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

i) Result in substantial erosion or siltation on- or off-site?

Less-Than-Significant Impact. As discussed for criterion (a), excavations and construction associated with the diversion facility improvements or other Covered Activities immediately adjacent to Reggiardo Creek, Majors Creek, and the San Lorenzo River could potentially result in erosion and sedimentation of these water bodies if not properly controlled. The Conservation Strategy AMMs and the City's standard construction practices referenced in the response for criterion (a) would minimize the potential for erosion-induced siltation of water bodies. Therefore, impacts of the Proposed Project related to erosion and siltation would be less than significant.

ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site?

Less-Than-Significant Impact. Covered Activities are not expected to result in a substantial increase in impervious surface area given that facility sites are already developed and paved, and pipeline corridors would be subsurface. Therefore, construction and operations at the diversions and other facility sites and construction or land disturbance associated with other Covered Activities and the Conservation Strategy would not substantially increase the rate or amount of surface runoff. The impact would be less than significant.

iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Less-Than-Significant Impact. As discussed above under criterion (c-ii), Covered Activities and implementation of the Conservation Strategy are not expected to result in a substantial increase in impervious surface area given that facility sites are already developed and paved, and pipeline corridors would be subsurface. As a result, the Proposed Project would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems. Therefore, the impact of the Proposed Project would be less than significant.

iv) Impede or redirect flood flows?

Less-Than-Significant Impact. As indicated for criterion (a), with the Agreed Flows with pending water rights modifications, the Proposed Project would increase Loch Lomond Reservoir levels, which indicates that the reservoir would spill more frequently. As Newell Creek Dam does not function as a flood control impoundment, an increase in Loch Lomond Reservoir levels and spill frequency would not cause downstream flooding. Flood control maintenance is included as a Covered Activity of the Proposed Project, which would involve debris/obstruction removal, sediment management/removal, and vegetation management conducted to prevent flooding of City waterways; therefore, such activities would not impede flood flows.

The Felton and Tait Diversion improvements would be completed within the 100-year flood zone of the San Lorenzo River. While there are no designated flood hazard zones at the diversion facilities on the North Coast Streams, diversion improvements at Majors Creek and Reggiardo Creek would take place within the water courses of those creeks. Although these components would be located within designated 100-year floodplains or within water courses, construction and operation of these facilities would not increase the risk of downstream flooding, as no proposed structures would impede flooding and increase downstream flood flows.

NFCF restoration projects would include placement of materials such as boulders and LWD in streams. Restoration projects would be designed to withstand and function in a variety of streamflows, including storm flood flows, and would not impede or redirect flood flows such that the existing drainage patterns would be substantially altered. Therefore, the Proposed Project impact would be less than significant.

d) In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation?

Less-Than-Significant Impact. The Proposed Project is not located in a tsunami or seiche zone where the potential for release of pollutants from inundation exists. The Proposed Project includes Covered Activities and actions of the Conservation Strategy that would be located in or near the North Coast Streams and San Lorenzo River and its tributaries. For these areas, some risk exists that pollutants could be released during flood flow events because of construction activities that are undertaken within the 100-year flood zone of the San Lorenzo River or in North Coast water courses.

While there are no designated flood hazard zones at the diversion facilities on the North Coast Streams, diversion improvements in Majors Creek and Reggiardo Creek would be completed in the water courses of these creeks. The Felton and Tait Street Diversion improvements would be completed within the 100-year flood zone of the San Lorenzo River. However, all proposed diversion improvements and other Covered Activities would involve similar use of hazardous materials as under existing conditions and would not result in an increase in the storage of hazardous materials. Materials such as oil, grease, or degreasers would be used, stored, and disposed in accordance with all applicable state and local regulations. Because construction activities would be temporary, construction activities would typically not occur during flood flow events and standard construction safety standards would be incorporated into project designs, the potential for release of pollutants during a flood event is considered to be low. In addition, implementation of AMMs and standard construction practices described for criterion (a) that contain specific practices to control pollutants affecting water quality would further reduce impacts.

NFCF projects implemented as part of the ASHCP Conservation Strategy would involve the placement of natural materials into streams, such as boulder and LWD. These habitat restoration projects would not have the potential for substantial pollutant release once completed because these materials would not contain pollutants. Other ongoing activities such as land management and monitoring would be temporary and would not include the use of harmful pollutants. Therefore, the Proposed Project impact regarding the risk of release of pollutants due to inundation would be less than significant.

e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less-Than-Significant Impact. Erosion and sedimentation affect water quality and interfere with aquatic species feeding, respiration, reproduction (due to embeddedness), and rearing (due to pool filling). In addition to sediment, other pollutants associated with construction activity could include heavy metals, oil/grease, fuels, debris/trash from construction-related materials, and concrete curing compounds. Sediment can also be a carrier for these pollutants in the event that contaminants leak into on-site soils and are subsequently transported off site as a result of erosion. Basin Plan objectives for organic contaminants (e.g., fuels, paints, solvents) are generally the same as the respective drinking water quality standards (i.e., maximum contaminant levels), and the Basin Plan objectives for debris and certain other compounds are qualitative in nature, requiring that release of such pollutant sources not adversely impact the beneficial uses of downstream water bodies. Without adequate precautions, wind and rain events that occur during construction activities could generate pollutants or mobilize sediment such that those pollutants contribute to the water quality degradation of receiving waters or violate Basin Plan objectives.

SWPPPs, which would specify water quality BMPs designed to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from construction sites, would apply to any construction activities disturbing more than 1 acre of soil. The City has also identified standard construction practices that would be implemented by the City or its contractors during construction activities associated with Covered Activities and the Conservation Strategy, where relevant. Implementation of SWPPPs, BMPs, standard construction practices, and AMMs contained in the ASHCP, as discussed under criterion (a) above, would protect water quality and the Proposed Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. The impact would be less than significant.

3.11 Land Use and Planning

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XI. LAND USE AND PLANNING – Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

Land uses throughout the Plan Area vary greatly, and the Plan Area encompasses multiple jurisdictions, including unincorporated areas within Santa Cruz County, as well as the incorporated City of Santa Cruz and part of the incorporated City of Capitola. The North Coast region includes coastal agricultural areas and rural communities such as Bonny Doon. The San Lorenzo River watershed region in the Santa Cruz Mountains is primarily redwood forests and timberlands with low-density rural residential uses outside of small mountain communities. The City Urban Center contains the most developed areas of the Plan Area including the incorporated City of Santa Cruz, unincorporated community of Live Oak, and a portion of the incorporated City of Capitola. The City Urban Center is comprised primarily of residential uses, and is generally enveloped by parks/open space and public/institutional uses, with commercial uses concentrated in the downtown area and along the Mission Street, Soquel Avenue, Ocean Street, and Water Street corridors, and industrial uses concentrated in the Harvey West and Westside industrial areas.

a) Would the project physically divide an established community?

No Impact. The Proposed Project would take place at existing City facilities located throughout the Plan Area and would continue the existing land uses on the respective sites. The Proposed Project would not include the construction of barriers such as roadways or other dividing linear features that would have the potential to physically divide an established community. All linear features that are included in the Proposed Project (i.e., pipelines) would be located below ground, and the overlying areas would be restored after construction activities. Therefore, no impact related to physical division of an established community would occur.

b) Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. The Proposed Project was developed to implement the Conservation Strategy proposed by the ASHCP in the Plan Area to conserve and restore quantity, quality, and function of anadromous salmonid habitats while enabling the City to continue to conduct its essential Covered Activities regarding operation, maintenance, and rehabilitation of the City's water supply, water system, and municipal facilities, and management of City lands. As discussed in Section 3.2, Agriculture and Forestry Resources, criterion (d), local zoning and building ordinances are generally not applicable to the Proposed Project. However, as some Covered Activities and Conservation Strategy elements would be located within the coastal zone,

those elements would not be exempt from the City and County LCPs, and would require compliance with the LCPs, including LCP policies and standards contained in LCP implementing ordinances.

The Conservation Strategy for the Proposed Project is designed to avoid, minimize, and mitigate environmental impacts on anadromous salmonids from Covered Activities to the maximum extent practicable. The Proposed Project was also designed to meet the regulatory requirements of the Federal Endangered Species Act and California Endangered Species Act and to streamline compliance with other applicable environmental regulations. Additionally, as indicated in Section 3.4, Biological Resources (criterion [e]), the Proposed Project would conflict with specific City and County polices related to riparian, wetland, and sensitive habitat, as well as stream flows.

With implementation of the Proposed Project, disturbance to adjacent land uses could temporarily result from construction, maintenance, and management activities associated with Proposed Project activities. However, Proposed Project activities are proposed at existing City facilities and would continue existing land uses on those sites. Therefore, the Proposed Project is consistent with the City and County general plans, and no conflicts with these plans are likely to result. Furthermore, the Conservation Strategy is also consistent with the plans, and it would not reduce or affect the ability of the local agencies to regulate land use through their general plans. As applicable, some Covered Activities seeking coverage under the ASHCP, such as diversion facility rehabilitations, would require individual permits and approvals pursuant to the local agencies' general plans and land use regulations or the requirements of the implementing agency and would undergo subsequent project-level CEQA review for construction and operation-related impacts. The Conservation Strategy, including NFCF projects, would be consistent with the existing uses of land at the sites of those actions. The ASHCP explicitly ensures compliance with other existing applicable HCPs, including the City's OMHCP, as indicated in Section 3.4, Biological Resources (criterion [f]). Therefore, no impact due to a conflict with any land use plan, policy, or regulation would occur.

3.12 Mineral Resources

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XII. MINERAL RESOURCES – Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☒	☐
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☒	☐

Construction aggregate (sand, gravel, and crushed stone) is the principal non-fuel mineral commodity in California by value, comprising 42% of the state's non-fuel mineral economy (CGS 2021). Maintaining local sources of aggregate is important in reducing truck haulage distances, which have a positive correlation with the price of aggregate as well as environmental and societal impacts such as increased fuel consumption, CO_2 emissions, air

pollution, traffic congestion, and road maintenance (CGS 2021). The California Geological Survey is responsible for classifying land into Mineral Resource Zones (MRZs) under the Surface Mining Control and Reclamation Act (SMARA) based on the known or inferred mineral resource potential of that land. Mineral lands are classified based on geologic and economic factors without regard to existing land use and ownership (CGS 2021). The following MRZ categories are used to classify land:

- MRZ-1: Areas where available geologic information indicates that little likelihood exists for the presence of significant construction aggregate resources.
- MRZ-2: Areas where geologic information indicates the presence of significant construction aggregate resources.
- MRZ-3: Areas containing known or inferred construction aggregate resources of undetermined mineral resource significance.
- MRZ-4: Areas where available geologic information is inadequate to assign to any other MRZ category.

Lands classified as MRZ-2 in the Plan Area are located west and south of the town of Felton, near Quail Hollow County Park in Ben Lomond, near Wilder Ranch State Park in the North Coast area, and west of the City of Scotts Valley (CGS 2021). Quarries in the Plan Area contain regionally significant construction aggregate mineral resources, located in areas that are classified as MRZ-2. Active quarries in the Plan Area include Felton Quarry located west of the town of Felton, Quail Hollow Quarry located within the sensitive Sandhills habitat near Quail Hollow County Park, and Wilder Quarry located near Wilder Ranch State Park. Closed quarries in the Plan Area include Bonny Doon Limestone and Shale Quarry located in Bonny Doon, and Hanson Quarry and Olympia Quarry located within the sensitive Sandhills habitat west of the City of Scotts Valley (County of Santa Cruz 2022f).

There are no mineral lands classifications by the State Geologist at or near the North Coast diversion facilities, Loch Lomond Reservoir, or City watershed lands. The closed Bonny Doon Limestone and Shale Quarry is located near the Liddell Spring Diversion. Existing and proposed future water pipelines located in the North Coast traverse MRZ-2 lands at the active Wilder Quarry. The City's Resource Recovery Facility (RRF) is classified as MRZ-3 and MRZ-4. The Felton Diversion site is classified MRZ-1, and the Tait Street Diversion site is classified MRZ-1 and MRZ-3. The City Urban Center predominantly contains lands classified as MRZ-3 and MRZ-4, with some areas classified as MRZ-1 primarily along the San Lorenzo River (CGS 2021).

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

and

b) Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

Less-Than-Significant Impact. The Proposed Project would be implemented at existing City facilities that do not contain mining operations and would not result in the loss of availability of a known mineral resource or locally important mineral resource recovery site. Most of the City facilities are not classified as mineral lands. While a portion of the Tait Street Diversion site is classified as an area containing known or inferred construction aggregate resources of undetermined mineral resource significance, there is no aggregate production at the site or along the San Lorenzo River. Existing and proposed future pipelines that may be repaired or constructed under the Proposed Project would primarily not be located in MRZ-2 areas, with the exception of an approximately 384-acre (0.6-square-mile) area surrounding Wilder Quarry on the North

Coast, as described above. However, the Proposed Project would not result in a change in land use or introduction of land uses that are incompatible with mining. Construction activities under the Proposed Project would consist of modifications to existing infrastructure and associated improvements at existing facilities. While specific NFCF projects are not known at this time, the NFCF would be focused on projects that improve salmonid habitat in the North Coast and San Lorenzo watersheds, and thus projects would be located in and adjacent to streams. As such, NFCF projects would not be located on land containing existing or potential future aggregate production and would not result in the loss of mineral resources. Therefore, the impact of the Proposed Project on mineral resources would be less than significant.

3.13 Noise

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XIII. NOISE – Would the project result in:				
a) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
b) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
c) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☒	☐	☐
d) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Fundamentals of Noise

Vibrations, traveling as waves through air from a source, exert a force perceived by the human ear as sound. Sound pressure level (referred to as sound level) is measured on a logarithmic scale in decibels (dB) that represent the fluctuation of air pressure above and below atmospheric pressure. Frequency, or pitch, is a physical characteristic of sound and is expressed in units of cycles per second or hertz (Hz). The normal frequency range of hearing for most people extends from about 20 to 20,000 Hz. The human ear is more sensitive to middle and high frequencies, especially when the noise levels are quieter. As noise levels get louder, the human ear starts to hear the frequency spectrum more evenly. To accommodate for this phenomenon, a weighting system to evaluate how loud a noise level is to a human was developed. The frequency weighting called “A” weighting is typically used for quieter noise

levels which de-emphasizes the low frequency components of the sound in a manner similar to the response of a human ear. This A-weighted sound level is called the "noise level" and is referenced in units of dBA.

Hourly average noise levels are usually expressed as dBA L_{eq} or the equivalent noise level over that period of time. It is generally accepted that the average healthy ear can barely perceive a noise level change of 3 dB (Caltrans 2013) in an outdoor environment. A change of 5 dB is usually readily perceptible, and a change of 10 dB is perceived as twice or half as loud. A doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound energy (e.g., doubling the average daily number of traffic trips on a road) would result in a barely perceptible change in sound level.

Ambient environmental noise levels can be characterized by several different descriptors. Energy Equivalent Level (L_{eq}) describes the average or mean noise level over a specified period of time. L_{eq} provides a useful measure of the impact of fluctuating noise levels on sensitive receptors and is the most common noise metric. Other descriptors of longer-term noise incorporate a weighting system that accounts for human's susceptibility to noise irritations at night. Community Noise Equivalent Level (CNEL) is a measure of cumulative noise exposure over a 24-hour period, with a 5-dB penalty added to the hourly L_{eq} of evening hours (7:00 p.m. to 10:00 p.m.) and a 10-dB penalty added to the hourly L_{eq} of night hours (10:00 p.m. to 7:00 a.m.). Since CNEL is a 24-hour average noise level, an area that has 65 dBA CNEL could have sporadic loud noise levels above 65 dBA which average lower over the 24-hour period. The L_{dn} or Day-Night Level is a similar metric addressing long-term noise over a 24-hour period with the same 10 dB penalty during nighttime, but without the penalty during the evening hours. Additionally, statistical noise levels (L_{xx}) are used to describe a sound level that has been exceeded for a certain percentage of the measurement time. For example, L_{10} is the sound level exceeded for 10% of the measurement time.

The sound produced by mechanical equipment is sometimes reported as sound power (L_w). The sound power level of a noise source is the rate at which sound energy is emitted from the source per unit time. Sound power levels are independent of the environment or distance from a source unlike the sound pressure level, which is reduced as distance from the source increases. Similar to the light-intensity produced by a light bulb, sound power is the rate at which sound energy is emitted.

Sensitive Noise Receptors

Certain land uses are particularly sensitive to noise, such as schools, hospitals, and rest homes. Residential land uses are also considered noise sensitive, especially during evening and nighttime hours when occupants would typically be relaxing or resting. Noise-sensitive receptors are located throughout the Plan Area.

Ambient Noise Environment

The Plan Area has a number of existing noise sources influencing the ambient noise environment, such as vehicular traffic, aircraft overflights, maintenance and construction operations; general community noise (e.g., landscaping activities and people interacting) and the natural environment (e.g., creek/water flowing) contribute to a lesser extent. Transportation noise from vehicular traffic on the local and regional roadway network surrounding the City facilities tends to be the predominant noise source in the Plan Area, even at facilities that are located in more remote locations. Roadway traffic noise levels attenuate based on the distance to the noise-sensitive receptors and shielding provided by intervening objects between the source roadway and the receptors.

Transportation-related vibration from roadways in the Plan Area is the primary source of groundborne vibration. Heavy truck traffic can generate groundborne vibration, which varies considerably depending on vehicle type, weight, and pavement conditions. However, groundborne vibration levels generated from vehicular traffic are not typically perceptible outside of the roadway right-of-way.

Local Noise Standards

City of Santa Cruz General Plan

Applicable noise standards in the City of Santa Cruz General Plan are contained within Chapter 8 of the General Plan (Hazards, Safety, and Noise) (City of Santa Cruz 2012). The Hazards, Safety, and Noise chapter contains specific goals, policies, and standards for use in planning and land compatibility determinations within the City of Santa Cruz. In particular, the Hazards, Safety, and Noise chapter establishes noise/land-use compatibility standards which are applicable to all new residential, commercial, and mixed-use projects (Figure 2 of the Hazards, Safety, and Noise chapter and Goal HZ3.2.1), and the General Plan seeks to ensure that noise standards are met in the siting of noise-sensitive uses (Goal HZ3.2).

The Hazards, Safety, and Noise chapter policies establish a maximum interior noise level threshold of 45 dBA L_{dn} for all residential uses, consistent with California noise insulation standards. Figure 2 of the Hazards, Safety, and Noise chapter indicates that exterior noise levels up to 60 dBA L_{dn} are normally acceptable for residential development and exterior noise levels up to 65 dBA L_{dn} are normally acceptable for multi-family residential and transient residential development; with noise levels up to 70 dBA L_{dn} considered conditionally acceptable. Hazards, Safety, and Noise chapter Policy HZ3.2.3 reiterates the "noise level target" of 65 dBA L_{dn} for outdoor activity areas associated with new multi-family residential developments. Policies HZ3.1.3 and HZ3.1.5 qualitatively discuss the management and monitoring of construction noise levels to minimize noise impacts on surrounding land uses.

City of Santa Cruz Municipal Code

Chapters 9.36 and 24.14 of the City of Santa Cruz Municipal Code (City of Santa Cruz 2020) include provisions for noise regulations. The former prohibits excessive noise during nighttime hours (10:00 p.m. through 8:00 a.m.) (Section 9.36.010, Subsection(a)), but without any quantitative (numerical) limits. For the purposes of construction activities performed in support of public works, the nighttime noise restriction shall not apply during the hours of 7:00 a.m. to 8:00 a.m.

Subsection (d) of Chapter 9.36 states that "Subsection (a) shall not apply to any person engaged in performance of a contract for public works awarded by the City of Santa Cruz, in the event of an emergency and if the city manager of the City of Santa Cruz so authorizes work."

Subsection (e) of Chapter 9.36 allows for specific construction activities to occur between the hours of 10:00 p.m. and 8:00 a.m. where either the chief building inspector, public works director, planning and community development director or water department director have provided written determination and consent that said task is required to commence or be completed between said hours.

Section 9.36.025 states "This chapter shall not apply to refuse collection, recyclable collection or street sweeping activities undertaken by, or pursuant to contract with, the city of Santa Cruz. Similarly, this chapter shall not apply to any other activity undertaken by the city, another governmental agency, or city contractor, for public health and

safety purposes when, in the judgment of the city or governmental agency, such activity cannot be undertaken effectively or efficiently in compliance with the regulations set forth in this chapter.

In addition to the Chapter 9.36 regulations, Section 24.14 describes performance standards which limit noise production with respect to noise production from residential and commercial/industrial land uses: up to a 5 dB or 6 dB increase, respectively, above existing outdoor ambient sound levels.

County of Santa Cruz General Plan

The Public Safety and Noise Element of the County of Santa Cruz General Plan/Local Coastal Program contains the following policy that pertains to operational and construction noise:

9.2.2 Require site-design and noise reduction measures for any project, including transportation projects that would cause significant degradation of the noise environment due to project effects that could:

(a) Increase the noise level at existing noise-sensitive receptors or areas by 5 dB or more, where the post-project CNEL or DNL will remain equal to or below 60 dB;

(b) Increase the noise level at existing noise-sensitive receptors or areas by 3 dB or more, where the post-project CNEL or DNL would exceed 60 dB;

9.2.6 Require mitigation and/or best management practices to reduce construction noise as a condition of project approvals, particularly if noise levels would exceed 75 dBA at neighboring sensitive land uses or if construction would occur for more than 7 days.

County of Santa Cruz Noise Ordinance

Chapter 8.30 of the Santa Cruz County Code states that no person shall make, cause, suffer, or permit to be made any offensive noise, which can include construction noise. According to Section 8.30.010(C)(1)(a), noise that occurs during daytime and evening hours (8:00 a.m. to 10:00 p.m.) is considered to be offensive if one or more of the following occurs:

- Noise is clearly discernable at a distance of 150 feet from the property line of the property from which the sound is broadcast.
- Noise is in excess of 75 dBA at the property line of the property from which the sound is broadcast.

Section 13.15.040(A) states exemptions from the County Code for noise sources associated with construction, repair, remodeling, or grading of any real property, provided a permit has been obtained from the County as required, and said activities take place between the hours of 8:00 a.m. and 5:00 p.m. on weekdays. Furthermore, Section 13.15.040(G) states that the provisions of the County Code noise standards shall not apply to construction, maintenance, and repair operations conducted by public agencies and/or utility companies or their contractors which are deemed necessary to serve the best interests of the public.

a) Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project??

Less-Than-Significant Impact. The Proposed Project would result in the generation of a substantial permanent increase in ambient noise levels resulting in a significant impact if it would cause an increase of +5 dBA L_{dn} in the ambient noise level exposure where existing ambient noise levels are below 60 dBA L_{dn}, or a +3 dBA L_{dn} increase in the ambient noise level exposure where existing ambient noise levels are

above 60 dBA L_{dn}, based on quantitative thresholds outlined by the County of Santa Cruz described above. Implementation of Agreed Flows and other Proposed Project operation and maintenance activities for existing infrastructure and City facilities would generally have similar long-term operational noise as existing activities and facilities and would have a similar frequency and intensity. As such, the Proposed Project would not result in a permanent increase in ambient noise levels. Therefore, the permanent noise impact of the Proposed Project would be less than significant.

b) Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less-Than-Significant Impact. Based on the local noise standards discussed above, for temporary construction activities of the Proposed Project in any location, a significant impact would generally result if construction noise exceeds 60 dBA between 10:00 p.m. and 8:00 a.m. or 75 dBA between 5:00 p.m. and 10:00 p.m. Between the hours of 8:00 a.m. to 5:00 p.m. on weekdays, construction noise is not limited, based on Santa Cruz County Code Section 8.30.10. Other factors considered in the determination of significance are pitch, duration of sound, time of day or night, necessity of the noise, and proximity to buildings used for sleeping.

For operational noise in any location the same quantified significance thresholds as identified for criterion (a) above would apply. As discussed above, implementation of Agreed Flows and other Proposed Project operation and maintenance activities for existing infrastructure and City facilities would generally have long-term operational noise levels similar to those of existing activities and facilities, and would have a similar frequency and intensity. Therefore, the Proposed Project would not result in a permanent increase in ambient noise levels and this analysis focuses on temporary increases in ambient noise levels that would result from construction-related activities.

The principal source of project-generated noise would be associated with the operation of heavy-duty construction equipment during construction activities for rehabilitation of the City's diversion facilities, rehabilitation of existing pipelines, and installation of new pipelines. In addition, heavy-duty construction equipment may be required for some management activities such as excavation of sediment, removal of debris/obstructions, and NFCF restoration projects. Construction noise would be temporary and intermittent, and would cease upon completion of construction-related activities.

The effects of construction noise depend largely on the types and specific locations of construction activities occurring on any given day, noise levels generated by those activities, distances to noise-sensitive receptors,[19] and the existing ambient noise environment in the vicinity of the receiver. Construction generally occurs in several discrete phases, with each phase varying the equipment mix and the associated noise. These phases alter the characteristics of the noise environment generated on any given day and for the duration of construction. The typical noise levels for various pieces of construction equipment at a distance of 50 feet are presented in Table 12.

[19] Distances of construction activities to noise-sensitive receptors can vary throughout a given day and over the course of construction as construction equipment and activities move around a discrete construction site or along a linear pipeline construction site.

Table 12. Typical Construction Equipment Noise Emission Levels

Equipment Description	Acoustical Use Factor (%)	L_{max} at 50 feet (dBA, slow)[1]
Auger Drill Rig	20	85
Backhoe	40	80
Compactor (ground)	20	93
Compressor (air)	40	80
Concrete Mixer Truck	40	85
Concrete Pump Truck	20	82
Concrete Saw	20	90
Crane	16	85
Dozer	40	85
Dump Truck	40	80
Excavator	40	85
Flat Bed Truck	40	84
Front End Loader	40	80
Generator	50	82
Grader	40	85
Jackhammer[2]	20	85
Mounted Impact Hammer (hoe ram)[2]	20	90
Paver	50	85
Pneumatic Tools	50	85
Pumps	50	77
Rock Drill	20	85
Roller	20	85
Scraper	40	85
Tractor	40	84
Vacuum Excavator (Vac-truck)	40	85

Sources: DOT 2006; FTA 2018.
Notes: L_{max} = maximum noise level; dBA = A-weighted decibels.
1 All equipment fitted with a properly maintained and operational noise control device, per manufacturer specifications.
2 Impulsive/impact device.

Construction noise effects related to rehabilitation of the Felton Diversion and Tait Street Diversion were assessed for the Santa Cruz Water Rights Project EIR (City of Santa Cruz 2021d) with respect to nearby noise-sensitive receptors and their relative exposure (accounting for intervening topography, barriers, distance, etc.), based on application of Federal Highway Administration (FHWA) Roadway Construction Noise Model and Federal Transit Administration (FTA) reference noise level data and usage-factors. The results of those analyses are incorporated into the following discussion.

Construction of all diversion facility improvements, pipeline improvements, and other Covered Activities would be temporary and construction activities would generate typical construction noise that is intermittent and varies throughout the construction period depending on the construction activity, equipment being used, location of equipment, etc. The Proposed Project also includes the implementation of standard construction practice #17 (see Appendix C) that requires that adjacent property owners be notified of nighttime construction schedules and that a Construction Noise Coordinator be identified that will be responsible for responding to local complaints about construction noise.

The nearest noise-sensitive receptor to the Felton Diversion is a single-family residence located approximately 100 feet west of the west end of the Felton Diversion. The predicted composite noise level for the fish passage improvements is 85.2 dBA L_{eq} at a distance of 50 feet from the center of the construction operations. Based on the predicted construction noise levels, the Felton Diversion improvements would generate noise levels exceeding the 60 dBA threshold at a distance of 475 feet and the 75 dBA threshold at a distance of 124 feet. Based on the proximity of the nearest noise-sensitive receptor (100 feet) and an attenuation rate of 6 dB per doubling of distance, construction of the proposed fish passage improvements would exceed the noise level thresholds for a limited duration.

The nearest noise-sensitive receptors in the vicinity the Tait Street Diversion improvements are located within the City of Santa Cruz. Construction activities are assumed to occur at distances ranging from approximately 150 feet up to 400 feet from the nearest noise-sensitive receptor. At this distance, the predicted composite noise level for the site preparation phase would be attenuated to 68 dBA L_{eq}. The loudest construction noise phase would be approximately 68 dBA L_{eq} at the outdoor activity area of the nearest noise-sensitive land use and would comply with the 75 dBA threshold, but would not comply with the 60 dBA threshold. Based on the proximity of the nearest noise-sensitive receptor (150 to 400 feet) and an attenuation rate of 6 dB per doubling of distance, construction of the proposed improvements would exceed the noise level thresholds for a limited duration.

Therefore, construction activities associated with rehabilitation of the Felton and Tait Street Diversions would result in potentially significant temporary increases in ambient noise levels. Construction activities associated with rehabilitation of the Reggiardo and Majors Creek Diversions, pipeline improvements, and with other Covered Activities and elements of the Conservation Strategy could be expected to have similar potentially significant impacts related to temporary construction noise. Implementation of the City's standard construction practice #22 would reduce the temporary increase in ambient noise levels during construction in excess of applicable standards in the vicinity of the diversion facility sites by minimizing elements of construction noise that would be typically considered to be unreasonably disturbing, such as noise having excessive intensity, duration, or pitch. Therefore, with the implementation of standard construction practice #22, the temporary construction noise impact of the Proposed Project would be less than significant.

c) Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Less-Than-Significant Impact With Mitigation Incorporated. There are no state standards for vibration; however, the California Department of Transportation (Caltrans) compiled a synthesis of research on the effects of vibration with thresholds ranging from 0.08 in/sec PPV to 4.0 in/sec PPV for "fragile historic buildings" and "structures of substantial construction," respectively. Based on the synthesis of research, Caltrans developed recommendations for guideline threshold criteria of 0.3 in/sec PPV for older residential structures and 0.25 in/sec PPV for historic buildings and some old buildings exposed to continuous/frequent intermittent sources. For extremely fragile historic buildings, ruins, and ancient monuments, Caltrans recommends a threshold of 0.08 in/sec PPV (Caltrans 2020).

The Proposed Project would result in the generation of a substantial temporary ground borne noise or vibration levels resulting in a significant impact in the vicinity of construction activities for Covered Activities if it would result in groundborne noise or vibration levels that exceed the Caltrans guidance (i.e., 0.3 in/sec PPV for older residential structures and 0.25 in/sec PPV for historic buildings and some old buildings exposed to continuous/frequent intermittent sources). If historic structures are located within a project site

(for instance, if the Felton, Reggiardo, or Majors Creek dams are determined to be historical resources at the time they are evaluated; see Section 3.5, Cultural Resources), a significant impact would result if groundborne noise or vibration levels exceed the Caltrans threshold for fragile historic structures of 0.08 in/sec PPV (Caltrans 2020).

Representative groundborne vibration levels for various types of construction equipment, developed by FTA, are summarized below in Table 13. Groundborne vibration attenuates rapidly, even over short distances. The attenuation of groundborne vibration as it propagates from source to receptor through intervening soils and rock strata can be estimated with equations and reference constants found in FTA and Caltrans guidance. Based on the reference vibration levels presented in Table 13, the distance at which construction equipment would exceed the applicable Caltrans thresholds was calculated for the Felton and Tait Street Diversion improvements in the Santa Cruz Water Rights Project EIR (City of Santa Cruz 2021d).

Table 13. Representative Vibration Levels for Construction Equipment

Equipment		PPV at 25 feet (in/sec)[1,2]	Approximate Lv (VdB) at 25 feet[3]
Pile Driver (impact)	Upper range	1.518	112
	Typical	0.644	104
Pile Driver (vibratory/sonic)	Upper range	0.734	105
	Typical	0.170	93
Vibratory Roller		0.210	94
Hoe Ram		0.089	87
Large Bulldozer		0.089	87
Caisson Drilling		0.089	87
Heavy-duty Trucks (Loaded)		0.076	86
Jackhammer		0.035	79
Small Bulldozer		0.003	58

Source: FTA 2018.
Notes:
1 Where PPV is the peak particle velocity.
2 Vibration levels can be approximated at other locations and distances using the above reference levels and the following equation: PPVequip = PPVref (25/D)$^{1.5}$ (in/sec); where "PPV ref" is the given value in the above table, "D" is the distance for the equipment to the new receiver in feet.
3 Where Lv is the RMS velocity expressed in vibration decibels (VdB), assuming a crest factor of 4.

Construction activities may result in varying degrees of temporary groundborne vibration or noise, depending on the specific construction equipment used and operations involved. Pile driving and blasting, which can generate excessive groundborne vibration, are not currently expected to be utilized in the construction activities of the Proposed Project. The Proposed Project is not anticipated to incorporate equipment or processes that would generate substantial groundborne noise or vibration during operations, as such, groundborne noise and vibration sources would be limited to construction activities.

Groundborne noise and vibration sources associated with rehabilitation of diversion facilities are anticipated to include the use of heavy equipment (e.g., excavator, tractors, etc.), generators, cement mixer trucks, pumps, and powered hand tools. Based on the analysis completed for the Santa Cruz Water Rights Project EIR (City of Santa Cruz 2021d), the equipment associated with the Felton and Tait Street Diversion improvements would produce vibration levels exceeding the Caltrans 0.3 in/sec PPV threshold at distances

less than 9 feet. The closest sensitive receptors to the Felton and Tait Street Diversions are more than 175 feet and more than 150 feet, respectively, from the proposed construction activities. It is anticipated that rehabilitation of the Reggiardo and Majors Creek Diversion facilities would result in similar vibration levels as rehabilitation of the Felton and Tait Street Diversion facilities.

Buildings and infrastructure, including but not limited to diversion facilities, pipelines, levees, storm drain inlets and basins, culverts, and roads, that are over 45 years of age may be considered historical resources under CEQA if they are determined to be eligible for listing (i.e., meeting at least one of four specific criteria) in the NRHP and CRHR.[20] For example, as discussed in Section 3.5, Cultural Resources, the Majors Creek, Reggiardo Creek, and Felton Diversion facilities are over 45 years of age and have not been evaluated for potential historical significance; given their ages, these facilities may be considered historical resources under CEQA if they are determined to be eligible for listing in the NRHP and CRHR. When rehabilitations of these diversion facilities are pursued by the City, the facilities would be evaluated for historical significance as provided in MM CUL-1 above. If a structure is determined to be historical resource, the structure may be susceptible to damage from vibration associated with construction of the Proposed Project if vibration levels exceed the Caltrans threshold for fragile historic structures of 0.08 in/sec PPV (Caltrans 2020). MM NOI-1 requires that an appropriate threshold be developed by qualified personnel that would prevent vibration impacts to any structure determined to be a historical resource under CEQA. Development and implementation of a construction vibration monitoring plan would be required and vibration-generating construction activities would be monitored to ensure compliance with the developed threshold. With implementation of MM NOI-1, the potential for construction-related vibration impacts to a historical resource would be reduced to less than significant.

MM NOI-1: Construction Vibration Effects on Historic Structures. Prior to the use of construction equipment in the vicinity of a structure that has been determined to be a historical resource under the California Environmental Quality Act, a vibration damage threshold will be established by a qualified engineer, acoustical engineer, vibration specialist, or INCE Board certified professional under the direction of the City. The vibration damage threshold will be developed through the evaluation of the condition of the structure, underlying soil conditions, and type of construction operation to be performed.

At the City's direction, a construction vibration monitoring plan will be prepared and implemented prior to the use of construction equipment near the structure. The monitoring plan shall report on the vibration damage threshold and the methods used to develop the threshold. The plan shall also establish the methodology for characterizing the existing baseline vibration levels present on the site, operational construction vibration monitoring consistent with the established threshold, and reporting to be completed during project construction.

Should the construction vibration analysis undertaken during the preparation of the monitoring plan reveal that the proposed construction methods would exceed the vibration threshold established for the structure, alternative construction methods will be used to avoid potential vibration-related damage to the structure during construction.

[20] To qualify for listing under the NRHP and/or CRHR, in addition to meeting applicable criteria for listing, a property generally must be at least 50 years old unless it is exceptionally important. Recognizing that there is commonly a 5-year lag between resource identification and the date that planning decisions are made, the California Office of Historic Preservation considers any physical evidence of human activities over 45 years old to merit recordation. The 45-year threshold explicitly encourages the collection of data about resources that may become eligible for the NRHP or CRHR within that planning period (OHP 1995).

d) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The Proposed Project would not expose people to excessive aircraft noise. The nearest airstrip to the Proposed Project is the Bonny Doon Village Airport, which is a private use airport located approximately 3 miles north. The nearest public or public-use airport is Watsonville Municipal Airport, which is located approximately 10 miles southeast of the Plan Area. Watsonville Municipal Airport is not part of an adopted airport land use plan, and the Plan Area is not located within the airport influence area. Therefore, no impact related to aircraft noise would occur.

3.14 Population and Housing

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XIV. POPULATION AND HOUSING – Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☒	☐

The Plan Area is within Santa Cruz County, which is the 25th most populous county in the State of California. The population within the Plan Area[21] is approximately 142,940, which is approximately 53% of the County's total population of 270,861 (U.S. Census Bureau 2020a). The AMBAG projects that the population of Santa Cruz County will grow to 294,967 by 2045, which would represent an average annual growth rate of 0.4% (U.S. Census Bureau 2020; AMBAG 2022). The current population residing in the Santa Cruz water service area is estimated to be 96,186 people. Approximately two thirds of the total population, over 64,000, lives inside the City limits (City of Santa Cruz 2021a).

Approximately 56% of the housing units in Santa Cruz County are within the Plan Area. The vacancy rate of the Plan Area is 9.5%, which is similar to that for Santa Cruz County (9.5%) and the United States (9.7%), and higher than that for the State of California (6.4%). Approximately 37,701 housing units are within the City's water service area. A large proportion of the local housing stock (over 50%) is rented. Like other coastal communities, housing

[21] For the purposes of this analysis, the Plan Area includes the following 34 Census Tracts (asterisks indicate Census Tracts that are within the Plan Area but not the City's water service area): 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008.01, 1008.02, 1009, 1010.01, 1010.02, 1011, 1012, 1202, 1203.01*, 1203.02*, 1205*, 1206*, 1207, 1208, 1211, 1212, 1213, 1214.01, 1214.02, 1214.03, 1215.01, 1215.02, 1216.01, 1216.02, 1217.01, 1217.02, and 1220.05.

supply in the service area remains limited and housing affordability is a major economic, political, and social issue (City of Santa Cruz 2021a).

The number of employable residents (i.e., its available labor force), the number of job opportunities, and the unemployment rate are key indicators of the economic health of an area. The unemployment rate in the Plan Area is 5.4%, which is slightly lower than that for the County (6.1%) and State (6.2%), and similar to that for the United States (5.4%).

AMBAG estimated the total number of jobs in Santa Cruz County in 2020 to be 140,002. AMBAG projects that the number of jobs will increase to 153,261 by 2045, which represents an increase of 9.5% (AMBAG 2022). Overall, UCSC is the area's largest single employer and is a key component of the region's economic fabric in terms of employment, spending, research, and business creation. Other top employers include the County of Santa Cruz, City of Santa Cruz, and the Santa Cruz Beach Boardwalk. Tourism and lodging are additional major economic drivers in the community (City of Santa Cruz 2021a). Santa Cruz County's economy relies primarily on its agriculture, tourism, high technology, educational, and health care industries. The industries with the largest number of jobs in the Plan Area include educational services, and health care and social assistance; professional, scientific, and management, and administrative and waste management services; arts, entertainment, and recreation, and accommodation and food services; retail trade; manufacturing; and construction. While important to the County's economy, employment in the agricultural industry is relatively lower within the Plan Area (U.S. Census Bureau 2020d).

a) Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Less-Than-Significant Impact. No new residential or commercial uses are proposed under the Proposed Project. Although the Proposed Project would indirectly generate a limited number of short-term construction jobs over the 30-year permit term associated with certain Covered Activities and components of the Conservation Strategy, these jobs could be accommodated within the existing local labor force in the Plan Area and would not require substantial relocation of workers to the Plan Area. Approximately one additional permanent employee may be required for implementation of Agreed Flows, which would be negligible within the context of the existing employment and labor force in the Plan Area. Given the maintenance nature of this new job, it is expected that the new employee would be drawn from the local labor force and likely would not require recruitment from outside of the Plan Area.

The Proposed Project would not result in changes to the City's existing water service area, or the extension of infrastructure or introduction of service into areas that are not currently served and thus, would not include activities that could indirectly induce population growth. While the Agreed Flows with pending water rights modifications are designed to increase available water supplies within the areas served by the City, such supplies are intended to meet projected supply[22] deficits during times of identified water supply shortfalls (M.Cubed 2023; City of Santa Cruz 2021a, 2021d). As such, the Proposed Project would not induce substantial unplanned population growth, directly or indirectly, and the impact would be less than significant.

[22] Demand projections are associated with growth already anticipated in areas served by the City as set forth in the 2020 UWMP, which is consistent with and lower than current AMBAG regional population forecasts and is also consistent with local general plans (City of Santa Cruz 2021d).

b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. The Proposed Project would include operation and management of the City's water supply and other municipal facilities, and land management activities, which do not contain residential uses. Therefore, the Proposed Project would not displace people or housing, or require the construction of replacement housing elsewhere and no impact would occur.

3.15 Public Services

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XV. PUBLIC SERVICES				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

Fire protection in the Plan Area is provided by nine agencies, including one city, one community service area (CSA), and seven fire protection districts (FPDs), listed as follows: City of Santa Cruz Fire Department, CSA 48 (Santa Cruz County Fire), Ben Lomond FPD, Boulder Creek FPD, Branciforte FPD, Central FPD, Felton FPD, Scotts Valley FPD, and Zayante FPD (LAFCO 2021). Santa Cruz County currently contracts with the California Department of Forestry and Fire Protection (CAL FIRE) for the administration of CSA 48 including operational oversight and supervision of all career and volunteer firefighters (LAFCO 2021). Police protection in the Plan Area is provided by the City of Santa Cruz Police Department and the Santa Cruz County Sheriff's Office. Public school districts serve the Plan Area including Santa Cruz City Elementary, Santa Cruz City High, Bonny Doon Union Elementary, Happy Valley Elementary, Lakeside Joint, Live Oak, Pacific Elementary, San Lorenzo Valley Unified, Scotts Valley Unified, and Soquel Union Elementary.

The City Department of Parks and Recreation manages 49 parks totaling over 1,700 acres of parkland, beaches, and open space (City of Santa Cruz 2022), and the Santa Cruz County Parks Department manages 43 parks and open space properties totaling nearly 1,600 acres and 29 miles of coastline (Santa Cruz County Parks 2018). The State of California owns and operates 14 state parks within the county, totaling 42,120 acres (California Department of Parks and Recreation 2022; County of Santa Cruz 2022i). In addition to state lands, the Cotoni-Coast Dairies property within the California Coastal National Monument is federally owned land managed by the Bureau of Land Management (BLM). See Section 3.16, Recreation, for additional details about parkland.

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: fire protection, police protection, schools, parks, or other public facilities?

Less-Than-Significant Impact. As indicated in Section 3.14, Population and Housing, the Proposed Project would generate a limited number of temporary construction jobs over the 30-year permit term, and approximately one permanent job related to implementation of Agreed Flows, which would be negligible within the context of the existing employment and labor force in the Plan Area. Even if it is conservatively assumed that new employees would relocate from outside the Plan Area, this population increase would be nominal and would not be expected to increase the demand for public services in the Plan Area such that new or physically altered governmental facilities would be required in order to meet acceptable performance objectives. Additionally, the Proposed Project would not include any new housing or land uses that would generate substantial new demand for public services. Therefore, the impact of the Proposed Project related to public services would have less than significant impact

3.16 Recreation

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XVI. RECREATION				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒
c) Would the project conflict with established recreational uses of the area?	☐	☐	☐	☒

The Plan Area includes Loch Lomond Recreation Area, as well as known informal access and related recreation along Newell Creek, at or near Loch Lomond Reservoir; along the San Lorenzo River, at various park locations; and at North Coast Streams, where the streams flow through North Coast beaches.

Loch Lomond Recreation Area. Loch Lomond Recreation Area is approximately 355 acres, stretches 3 miles long, and is located at 100 Loch Lomond Way near Ben Lomond, California, in unincorporated Santa Cruz County. Loch Lomond Recreation Area is open from March to September for limited recreational use. Recreational use of the reservoir is prohibited during the winter (City of Santa Cruz 2013).

Amenities at Loch Lomond Recreation Area include a boat dock and launch ramp area, boat rentals, picnic areas with developed restrooms and portable toilets, a park store, fishing, hiking, and natural resource interpretive programs. Due to concerns about contamination of the City's water supply in the reservoir, swimming and wading are prohibited and private boat launching is restricted to only allow boats that are stored at Loch Lomond Recreation Area. Space is limited to approximately 100 boats (City of Santa Cruz 2020); however, most of the boats at the recreation area are paddle and row boats available for rent.

The reservoir supports a warm water fishery primarily composed of introduced non-native 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 (*O. mykiss*)[23] 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 Reservoir as part of an annual stocking program, with stocking occurring as recently as March and April 2021 (CDFW 2021). Therefore, all rainbow trout currently within the reservoir are assumed to be hatchery-raised fish.

When full, Loch Lomond Reservoir provides 180 surface acres of water that are accessible by rental paddle boats and row boats, and private boats that are stored at Loch Lomond Recreation Area (City of Santa Cruz 2013). Loch Lomond Reservoir is kept as full as possible as it serves as the City's primary water supply during drought conditions (City of Santa Cruz 2013). However, the water surface elevation in the reservoir is highly variable and is influenced by natural inflow from Newell Creek, pumping to the Graham Hill Water Treatment Plant, pumping from the Felton Diversion, evapotranspiration, and instream flow releases for fisheries downstream of the dam (City of Santa Cruz 2013). While the reservoir is typically open to the public from March 1 to mid-October, boats and related infrastructure can only operate safely throughout the full recreational season when the lake level is approximately 564 feet above mean sea level (amsl) or higher at the beginning of the season, which allows for current marina infrastructure to function safely (City of Santa Cruz 2014). When the lake level is below approximately 564 feet amsl at the beginning of the season (March 1) the City either, depending on actual lake levels, does not allow for boating at all that season or discontinues boating mid-season when boat launching is no longer possible. Based on an average of all years in the historic hydrologic record (1936 to 2015), there are approximately 12% of days under existing conditions where a full recreational season of boating would not occur because lake levels fall below approximately 564 feet amsl in March, at the beginning of the season (City of Santa Cruz 2021d).

Highlands Park

Highlands Park is owned and operated by the Santa Cruz County Department of Park, Open Space, and Cultural Services. The park is 26 acres and is located at 8500 Highway 9 (State Route 9), Ben Lomond, California, in unincorporated Santa Cruz County. The park is located just south of the confluence of the San Lorenzo River[24] and Newell Creek. The park features softball and baseball fields, soccer field, skate park, volleyball court, tennis courts, group picnic areas and a house used for events, such as weddings, parties, etc. (County of Santa Cruz 2020b). The park also provides informal access to the San Lorenzo River. Fishing is permitted with a license, but no recreational facilities are located along the river's edge.

[23] Rainbow trout are the same species as steelhead, but they have different life histories. Rainbow trout spend their lives mostly or entirely in freshwater, while steelhead are anadromous, meaning they spend part of their lives in the sea before going to rivers to breed.

[24] The San Lorenzo River is 29 miles long and the watershed is approximately 137 square miles and includes the cities of Santa Cruz and Scotts Valley and the communities of Boulder Creek, Ben Lomond, and Felton (City of Santa Cruz 2020g).

Felton Covered Bridge Park

The Felton Covered Bridge Park is owned and operated by the County of Santa Cruz's Department of Parks, Open Space, and Cultural Services. The park is located at on Graham Hill Road at the intersections of Mount Hermon Road, in Felton. The park features a covered wooden bridge, picnic areas, playground and grassy areas (County of Santa Cruz 2020a). The park also provides informal access to the San Lorenzo River. Fishing is permitted with a license, but no recreational facilities are located along the river's edge.

Henry Cowell Redwoods State Park

Henry Cowell Redwoods State Park is owned and operated by the California Department of Parks and Recreation. Henry Cowell Redwoods State Park is located in the Santa Cruz Mountains, on 101 North Big Trees Road, Felton, California. Henry Cowell's primary attraction for visitors is the 40-acre grove of old-growth redwoods. Visitors can enjoy hiking, horseback riding, bicycling, picnicking, swimming, and camping on more than 4,600 acres of forested and open land. The park also provides informal access to and along the San Lorenzo River, including to a popular swimming hole called the Garden of Eden (California Department of Parks and Recreation 2020a).

Pogonip

Pogonip is part of the City of Santa Cruz' open space properties, located at 333 Golf Club Drive, and is operated by the City's Parks and Recreation Department. Pogonip has approximately 8 miles of hiking trails and 3 miles of multi-use (hiking, biking and horseback riding) trails. In the northernmost portion of Pogonip, a multi-use trail provides a connection between Henry Cowell Redwoods State Park, Pogonip, and the upper UCSC campus. Along the eastern boundary of Pogonip is the Emma McCrary Trail, which is accessed from Golf Club Drive. There is also an entrance on State Route 9 to the Sycamore Grove, which is located adjacent to the San Lorenzo River (City of Santa Cruz 2020e).

San Lorenzo Park

The San Lorenzo Park is owned and operated by the City of Santa Cruz. The park is located at 137 Dakota Street, in the City of Santa Cruz, California. The park is approximately 11 acres and features a duck pond, 9-hole disc golf course, large playground, artificial-turf lawn bowling green, and an area called the benchlands greenbelt. The park provides informal access to the San Lorenzo River and a pedestrian bridge connects the park to downtown and Pacific Avenue (City of Santa Cruz 2020f), and to the River Walk, described below.

Santa Cruz Riverwalk

The Santa Cruz Riverwalk is a multi-use pedestrian and bicycle pathway on the top of the San Lorenzo River levee that is maintained by the City of Santa Cruz. The Riverwalk runs from just the north of the State Route 1 Bridge over the river at the Tannery Arts Center and continues south through downtown Santa Cruz ending at the Santa Cruz Beach Boardwalk. Features of the Riverwalk include mile markers, exercise equipment, educational interpretive signage, and park benches (City of Santa Cruz 2020h). As the Riverwalk is located on the levee, it does not provide direct access to the river and does not provide recreational facilities along the river's edge.

Ken Wormhoudt Skate Park at Mike Fox Park

The Ken Wormhoudt Skate Park at Mike Fox Park is owned and operated by the City of Santa Cruz. The park is located at 225 San Lorenzo Boulevard at Riverside Avenue adjacent to the Santa Cruz Riverwalk. The 1.25-acre park includes an approximate 15,000-square foot skate park, pickleball courts and basketball courts (City of Santa Cruz 2020c). The skate park is fenced and does not provide direct access to the river and does not provide recreational facilities along the river's edge.

Main Beach

Main Beach, owned and operated by the City of Santa Cruz, is located west of the San Lorenzo River mouth and is approximately 26 acres. Main Beach offers public bathrooms, lifeguard services, surf rentals, volleyball courts, and close proximity to Santa Cruz Boardwalk, restaurants, hotels, Santa Cruz Municipal Wharf, and public transit. Beach activities include surfing, sunbathing, swimming, various water activities, and walking distance to Santa Cruz Wharf, Santa Cruz Beach Boardwalk, and West Cliff walking trail (City of Santa Cruz 2020b).

North Coast Beaches

The streams that feed into the City's North Coast system include Laguna Creek, Liddell Spring, and Majors Creek. Of these streams, Laguna Creek flows through the Cotoni-Coast Dairies unit of the California Coastal National Monument and Coast Dairies State Park/Laguna Creek Beach; Liddell Spring flows through Bonny Doon Beach; and Majors Creek flows through Red, White, and Blue Beach. Recreational access along the North Coast Streams is likely focused near these beaches, all of which are located in the unincorporated area of Santa Cruz County.

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Less-Than-Significant Impact. As indicated in Section 3.14, Population and Housing, the Proposed Project would generate a limited number of temporary construction jobs over the 30-year permit term, and approximately one permanent job related to implementation of Agreed Flows, which would be negligible within the context of the existing employment and labor force in the Plan Area. Even if it is conservatively assumed that new employees would relocate from outside the Plan Area, this population increase would be nominal and would not be expected to increase the use of parks or recreational facilities in the Plan Area such that substantial physical deterioration of the facilities would occur or be accelerated. Therefore, the Proposed Project would have a less-than-significant impact.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?

No Impact. The Proposed Project does not include new recreational or park facilities and would not require the construction or expansion of recreational facilities, given the nominal staff increase that would result from Proposed Project implementation. Therefore, the Proposed Project would have no impact related to construction or expansion of recreational facilities.

c) Would the project conflict with established recreational uses of the area?

No Impact/Beneficial Impact. With implementation of Agreed Flows, other elements of the Proposed Project, and the pending water rights modifications, the City would rehabilitate the Tait Street and Felton Diversions on the San Lorenzo River, which would involve improvements to pumping capacity at the Tait Street Diversion. These improvements would allow for deferral of winter pumping at North Coast diversions and pursuit of improvements in groundwater storage that could serve water system demand during low-flow periods. The ability to take more water at the Tait Street Diversion and store it in the Santa Cruz Mid-County Groundwater Basin and the Santa Margarita Groundwater Basin, as would be allowed by the pending water rights modifications, would offset water that would otherwise be withdrawn from Loch Lomond Reservoir. Decreased reliance on stored water in Loch Lomond Reservoir for water supply would result in an associated increase in lake levels, based on hydrological and water supply modeling conducted for the Santa Cruz Water Rights Project (City of Santa Cruz 2021d). Under the Proposed Project, on average, there would be approximately 4.5% of days where a full season of boating and related operations would not occur because lake levels fall below approximately 564 feet amsl in March, an improvement over 12% of days under existing conditions (City of Santa Cruz 2021d). Therefore, the Proposed Project would enhance recreational opportunities compared to existing conditions at Loch Lomond Recreation Area—a beneficial effect. Given that lake levels would increase, the Proposed Project would also not degrade the recreational experience of boaters and other recreationalists at the Loch Lomond Recreation Area, such as might occur with aesthetic impacts at the reservoir. Such aesthetic impacts could occur with the Proposed Project if a drop in lake levels and associated appearance of a "bath tub ring" were to result. (A bath tub ring is an area of unvegetated land adjacent to a lake or reservoir that can occur with a substantial decrease in lake levels and is most commonly associated with drought conditions.) Therefore, the Proposed Project would have a beneficial effect on boating in Loch Lomond Reservoir, given that it would improve conditions for boating compared to existing conditions by increasing lake levels, which would allow for a full season of boating more frequently. Given this beneficial effect, the Proposed Project would not conflict with existing recreational uses at Loch Lomond Reservoir.

As discussed in Section 3.10, Hydrology and Water Quality (criterion [a]), based on an average of all years in the historical record (1936 to 2015), the difference in residual flows below the City's points of diversion would be minimal relative to existing conditions, with the exception of critical-year residual flows in Newell Creek. In that case, the Proposed Project would result in an increase in residual flows of approximately 1 cfs relative to existing conditions. Therefore, the changes in residual flows with the Proposed Project would have no effect on informal access and recreational uses along Newell Creek, San Lorenzo River, and the North Coast Streams.

Given the foregoing, the Proposed Project would have no impacts on recreation overall and would result in beneficial effects on recreation at Loch Lomond Recreation Area.

3.17 Transportation

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XVII. TRANSPORTATION – Would the project:				
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	☒	☐
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☐	☒	☐

Existing Roadway Network

Regional access to the Plan Area is provided by State Highways 1, 9, and 17. Roadway characteristics and roadway classifications for key vicinity roads are described below. All roadways discussed are within the unincorporated County and some roadway segments also pass through incorporated areas of the County.

State Highway 1, also co-designated within the study area as Cabrillo Highway, is generally a north-south, four-lane divided freeway that follows the coast of California and regionally connects the coastal communities within the County. State Highway 1 is the main thoroughfare for traffic and provides regional access to the Plan Area. State Highway 1 connects with State Highway 9 and State Highway 17. Since State Highway 1 is a freeway, there are no parking or bicycle facilities provided and the posted speed limit is 65 miles per hour (mph).

State Highway 9 is generally a north-south, two-lane undivided highway that connects the City with areas of unincorporated Santa Cruz County including the communities of Felton, Ben Lomond, and Boulder Creek. State Highway 9 ends in the City of Saratoga where it connects with State Highway 17. State Highway 9 also connects with State Highway 1 within the City of Santa Cruz, near the Tait Diversion site. State Highway 9 also provides access to the Felton Diversion site. There are no parking or bicycle facilities provided and the posted speed limit ranges between 25 mph to 45 mph.

State Highway 17 is a north-south, four-lane divided freeway that connects the City with areas of unincorporated Santa Cruz County, as well as to Santa Clara County and the San Jose metropolitan area. State Highway 17 ends in the City of San Jose where it connects with Interstate 880 (I-880). State Highway 17 also connects with State Highway 1 within the City. State Highway 17 provides regional access to the Plan Area. Since State Highway 17 is a freeway, there are no parking or bicycle facilities provided and the posted speed limit ranges between 50 mph to 65 mph.

Smith Grade is a generally east-west, two-lane, undivided roadway located adjacent to and serving as the primary and only connection to the Laguna Creek and Reggiardo Creek Diversion sites. Smith Grade extends from Empire Grade to Bonny Doon Road, northwest of the City of Santa Cruz. Smith Grade is not designated with a functional street classification by the County of Santa Cruz General Plan Circulation Element; however, it is identified as a Major Street in the Santa Cruz County Bike Map (County of Santa Cruz 2020, 2016). Parking is allowed along some sections, and no pedestrian or bicycle facilities are present along either side of the roadway. The speed limit is not posted along Smith Grade; however, advisory speed signs along the roadway vary and allow for average speeds that range between 30 and 40 mph.

Empire Grade is a generally north-south, two-lane, undivided roadway that provides access to the North Coast Streams from the east. Empire Grade extends from High Street in the City of Santa Cruz to Jamison Creek Road to the north. Empire Grade is not designated with a functional street classification by the County of Santa Cruz General Plan Circulation Element, however, it identified as a Major Street in the Santa Cruz County Bike Map (County of Santa Cruz 2020, 2016). Parking is allowed along some sections, and no pedestrian or bicycle facilities are present along the roadway outside of the Santa Cruz City limits. The posted speed limit is 40 mph.

Bonny Doon Road is a north-south, two-lane, undivided roadway that provides access to the North Coast Streams from the west. Bonny Doon Road stretches from State Route 1 to Pine Flat Road, north of the community of Bonny Doon. Bonny Doon Road is not designated with a functional street classification by the County of Santa Cruz General Plan Circulation Element; however, the Santa Cruz County Bike Map identifies Bonny Doon Road as a Major Street (County of Santa Cruz 2020, 2016). Parking is allowed along some sections, and no pedestrian or bicycle facilities are present along the roadway. The posted speed limit ranges between 30 mph to 45 mph.

Transit Service

Various portions of the study area are directly served by transit service in the County. The Santa Cruz Metropolitan Transit District (Santa Cruz Metro) provides bus service throughout the study area. There are four transit centers within the study area that provide regional bus service from population centers within the County, as well as from the San Jose metropolitan area. The Metro Center is located in the downtown area of the City of Santa Cruz and provides a connection point between regional locations and local bus routes within the County and serves as the main hub for Santa Cruz Metro. The Capitola Mall Transit Center provides bus service for regional routes to the Capitola Mall, from the City of Santa Cruz, City of Capitola, City of Watsonville, Aptos, Soquel, and other communities within the unincorporated County. The Cavallaro Center is located in the City of Scotts Valley and provides regional connections between the communities of Ben Lomond, Felton, Boulder Creek, downtown Santa Cruz, and the San Jose metropolitan Area. The Watsonville Transit Center is located in downtown Watsonville and provides regional connections by utilizing State Highway 1 for connections to downtown Santa Cruz, Capitola, and the unincorporated communities of Aptos, Soquel, and Freedom (Santa Cruz Metro 2020).

Pedestrian and Bicycle Facilities

As stated above, pedestrian facilities are not available along State Highway 1 and State Highway 17. Sidewalks are provided along the western edge of State Highway 9 from State Highway 1 to Vernon Street, after which there are no pedestrian facilities (County of Santa Cruz 2016).

a) Would the project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Less-Than-Significant Impact. The Proposed Project would not involve alterations to the existing circulation system in the Plan Area, including transit, roadway, bicycle, and pedestrian facilities. Construction activities associated with diversion facility upgrades and habitat restoration projects that are part of the Conservation Strategy may temporarily interfere with nearby transit, roadway, bicycle, and pedestrian facilities if such activities involve short-term lane closures. Generally, construction vehicles/equipment interfering with traffic along any facility that is part of the Plan Area's circulation system would be guided by personnel using signs and flags to direct traffic to ensure that access is maintained. Additionally, any work in public rights-of-way would require construction easements and associated traffic control plans to minimize traffic disruptions and provide for safe vehicle, transit, bicycle, and pedestrian access during construction. Due to the temporary nature of construction activities, long-term impacts on transit, roadway, bicycle, and pedestrian facilities would be minimal.

Maintenance and management activities associated with the Proposed Project would result in minimal traffic required to conduct monitoring and management activities, which would be intermittent and would not result in long-term impacts on the circulation system. Therefore, the Proposed Project would not conflict with a program, plan, ordinance, or policy addressing the circulation system and the impact would be less than significant.

b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

Less-Than-Significant Impact. CEQA Guidelines Section 15064.3, subdivision (b), focuses on vehicle miles traveled (VMT) for determining the significance of transportation impacts. It is further divided into four subparagraphs with the following titles: (1) land use projects, (2) transportation projects, (3) qualitative analysis, and (4) methodology. Subparagraph (3) is relevant to the Proposed Project, as qualitative analysis is sufficient here given the nature of the Proposed Project. Subdivision (b)(3) recognizes that lead agencies may not be able to quantitatively estimate VMT for every project type. In these situations, lead agencies are directed to evaluate factors such as the availability of transit, proximity to other destinations, and other factors that may affect the amount of driving required by the project. Additionally, Subdivision (b)(3) indicates that a qualitative analysis of construction traffic is often appropriate. A qualitative analysis of VMT is provided in this analysis as the Proposed Project consists of Covered Activities and the Conservation Strategy that would generate temporary construction-related traffic and nominal operational-related traffic.

The Proposed Project would result in short-term increases in VMT from construction activities needed to implement Covered Activities and elements of the Conservation Strategy, such as habitat improvement construction activities. However, these short-term VMT increases would be small and dispersed over the 30-year permit term and throughout the large Plan Area. Once construction is completed at a given construction site, VMT would return to pre-project conditions. Therefore, because the Proposed Project would not conflict with or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b) or cause an increase in VMT which is greater than 15% below the regional average VMT, impacts would be less than significant.

c) Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less-Than-Significant Impact. The Proposed Project does not involve any road construction with design features that could increase hazards or any activities incompatible with the smooth functioning of roadways. The only exception is that construction related to Covered Activities and elements of the Conservation Strategy would result in a temporary increase in local traffic as a result of construction-related workforce traffic, material deliveries, and construction activities. The primary off-site impacts from the movement of construction trucks would include short-term and intermittent effects on traffic operations because of slower movements and larger turning radii of delivery and haul trucks compared to passenger vehicles. Any roadway blockages for larger construction trucks would be temporary, would occur with flagging and safe maneuvers, and would be under the provisions of a traffic control plan or other encroachment permit requirements, and therefore would not create hazardous roadway conditions.

Operations and maintenance activities would generate nominal traffic and vehicle trips associated with routine operations and maintenance of each facility, and therefore would not create hazardous roadway conditions. As such, no sharp curves, dangerous intersections, or incompatible uses would be introduced during construction and operation of the Proposed Project. Therefore, the Proposed Project would not substantially increase hazards due to a geometric design feature and the impact would be less than significant.

d) Would the project result in inadequate emergency access?

Less-Than-Significant Impact. The Proposed Project would be implemented at multiple locations within the Plan Area. All construction traffic that would be generated as a result of the Proposed Project would be temporary. Construction and staging areas would be located to not block any egress or ingress points for the sites. The existing City facilities and areas of construction would be accessible to emergency responders and associated vehicles during construction and operations and maintenance activities.

Construction activities could require partial road closures or access limitations in public roadways on a temporary and periodic basis during the construction period. Where construction would take place in public roadways, encroachment permits would need to be obtained in most cases from the applicable local agency for work done within the public right-of-way. The issuance of encroachment permits requires submission of traffic control plans. A discussion of the specific rules regarding the issuance of encroachment permits by the County of Santa Cruz and the Cities of Santa Cruz, Capitola, and Scotts Valley can be found in Section 4.12, Transportation of the Final EIR for the Santa Cruz Water Rights Project, at pages 4.12-7 through 4.12-11. Implementation of these plans and requirements would ensure that access for emergency vehicles would be maintained during construction.

Therefore, the Proposed Project would comply with all applicable local requirements and would not result in inadequate emergency access. Similarly, the Proposed Project would have limited operational traffic and vehicle trips associated with routine maintenance of facilities. Therefore, impacts associated with inadequate emergency access would be less than significant.

3.18 Tribal Cultural Resources

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XVIII. TRIBAL CULTURAL RESOURCES				
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or	☐	☒	☐	☐
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Defined in Section 21074(a) of the Public Resources Code, a tribal cultural resource is a site feature, place, cultural landscape, sacred place, or object that is of cultural value to a California Native American tribe and is listed in or eligible for listing in the CRHR or in a local historic register. The definition also includes resources that the lead agency, in its discretion, chooses to treat as a tribal cultural resource based on statutory criteria set forth in Public Resources Code Section 5024.1, subdivision (c) (CRHR listing criteria). The information in this section is based on a search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) for the Plan Area, and coordination with Native American groups.

Assembly Bill (AB) 52 (2014) requires that California lead agencies consult with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of a proposed project, if so requested by the tribe. One Native American tribe—the Amah Mutsun Tribal Band—has contacted the City and requested consultation related to City properties or projects. Pursuant to AB 52, the City sent a letter to the Amah Mutsun Tribal Band on December 1, 2022 to notify them of their opportunity to consult with the City regarding the Proposed Project. No response was received.

On September 19, 2022, Dudek requested a (NAHC) SLF search for the Plan Area. On October 13, 2022, the NAHC responded indicating that the results of the SLF search were positive and recommended contacting the Costanoan Ohlone Rumsen-Mutsen Tribe for additional information. Additionally, the NAHC provided a list of seven Native American tribes culturally affiliated with the Plan Area who may have knowledge of cultural resources in the Plan Area. On December 1, 2022, the City and NMFS sent a joint letter to the Native American

contacts provided by the NAHC and requested their assistance to identify sites of religious or cultural significance in the Plan Area that may be affected by the Proposed Project. Communication from one State of California recognized Tribe has been received to date, occurring on August 3, 2023. Patrick Orozco, Chairman of the Costanoan Ohlone Rumsen-Mutsen Tribe, indicated that there are several recorded Indian sites within or near the Plan Area. The City will coordinate with the Costanoan Ohlone Rumsen-Mutsen Tribe as the Draft EA is released for public comment and seek comments.

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

a) ***Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?***

and

b) ***A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.***

Less-Than-Significant Impact With Mitigation Incorporated. As discussed above, the NAHC SLF search indicated that sacred sites were identified in the vicinity of the Plan Area. As indicated above, the City notified tribes traditionally associated with the Plan Area about the Proposed Project and requested information regarding tribal cultural resources on December 1, 2022. The outreach effort has not resulted in the identification of any new tribal cultural resources within or near the Plan Area.

The Proposed Project would not impact known tribal cultural resources. Nevertheless, in the event that unknown tribal cultural resources are uncovered during the course of construction, management provisions provided in MM CUL-2, which requires site-specific procedures for identification and evaluation of archaeological resources or tribal cultural resources in advance of implementation of Covered Activities, and protocols for inadvertent discoveries during construction, and in standard construction practices #15 and #16, which describe protocols for inadvertent discovery of archaeological resources or human remains would be implemented (see Section 3.5, Cultural Resources, and Appendix C). Implementation of MM CUL-2 would avoid substantial adverse changes in the significance of tribal cultural resources. Therefore, implementation of MM CUL-2 would reduce the potentially significant impacts of the Proposed Project on tribal cultural resources to less than significant.

3.19 Utilities and Service Systems

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XIX. UTILITIES AND SERVICE SYSTEMS – Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☒	☐	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

Water Supply

The Santa Cruz Water Department is a municipal utility that is owned and operated by the City. The City provides water service to an area approximately 20 square miles in size, including the entire City of Santa Cruz, adjoining unincorporated areas of Santa Cruz County, a small part of the City of Capitola, and coastal agricultural lands north of the City (City of Santa Cruz 2021a).

The City water system obtains all its water supply from local sources; the system relies entirely on rainfall, surface runoff, and groundwater infiltration occurring within watersheds located in the County. Surface water sources comprise approximately 95% of the City's total annual water production, which include the North Coast Streams (Liddell Spring and Laguna, Majors, and Reggiardo Creeks), the San Lorenzo River (Felton Diversion, Tait Street Diversion, and Tait Wells), and Newell Creek and Loch Lomond Reservoir. The remainder of the City's supply is derived from groundwater extracted from wells in the Purisima Formation in the Santa Cruz Mid-County Groundwater Basin. In general, the water supply system is managed to use available flowing sources to meet daily demands as

much as possible. Groundwater and stored water from Loch Lomond Reservoir are used primarily in the summer and fall when flows in the North Coast Streams and San Lorenzo River decline (City of Santa Cruz 2021a).

The City's dependence on local surface water flows and lack of storage within the supply system make the system vulnerable to multi-year droughts. Since 2015, the City has been pursuing the Water Supply Augmentation Strategy (WSAS) developed by the Water Supply Advisory Committee, a citizen committee formed in 2014 by the Santa Cruz City Council. The WSAS that the City is pursuing includes demand management (i.e., water conservation), transfers and exchanges with other local water districts, aquifer storage and recovery (ASR), and recycled water or desalination (desalination would be pursued if other alternatives are unable to meet required demands). The Santa Cruz Water Rights Project supports the implementation of the WSAS and involves the modification of the City's existing water rights to increase the flexibility of the water system by improving the City's ability to utilize surface water within existing allocations, including incorporation of the Agreed Flows into the City's water rights, and allowing for water supply augmentation in the form of ASR and transfers and exchanges (City of Santa Cruz 2021a).

Until the early 2000s, the general trend in system demand was one in which water use rose roughly in parallel with account and population growth over time, except during two major drought periods in the late 1970s and the early 1990s. Around 2000, this pattern changed and system demand began a long period of decline, accelerated by pricing changes, drought, economic downturn, and other factors including the influences of active conservation programs and updated plumbing codes. In 2015, after two years of water rationing due to severe drought conditions, annual water use fell to a level of about 2.5 billion gallons, similar to the level experienced during the 1970s drought. In 2020, demand was still at a similar level as 2015, about 2.6 billion gallons, despite several years above long-term average rainfall from 2016 and 2020. While demand did rebound following droughts in the 1970s and 1980s, demand has not rebounded to predrought conditions following 2014, contrary to previous projections. The City's adopted 2020 Urban Water Management Plan (UWMP) estimates that water demand will increase at a slow rate from about 2.6 billion gallons per year in 2020 to about 2.7 billion gallons per year with total water use projected to be about 2.8 billion gallons per year in 2045 (City of Santa Cruz 2021a).

The City's UWMP projects having sufficient water supply available in normal years and single dry years to serve anticipated demand throughout the 2025–2045 analysis period. Consistent with the City's WSAS, implementation of pending water rights modifications including Agreed Flows (i.e., the Santa Cruz Water Rights Project) is assumed in the UWMP's projections after 2025. Improved reliability is projected after 2030 due to implementation of ASR and planned infrastructure projects.

Under multi-year drought conditions in the near term (2025), with proposed water rights modifications but before implementation of the ASR and planned infrastructure projects, available supplies would meet projected demand in years one through four of the multi-year drought scenario, but would fall short of demand by 27% in year five. Under multi-year drought conditions after 2030, with implementation of the ASR and planned infrastructure projects, available supplies would meet projected demand in years one through four of the multi-year drought scenario, and the year-five shortage is anticipated to be substantially reduced with projected shortages no larger than a negligible 2% (City of Santa Cruz 2021a).

The UWMP also projected water supplies and demand under climate change hydrology. The City projects having sufficient water supply available in normal years under the climate change hydrology. In single dry year conditions in the near term (2025), with proposed water rights modifications but before implementation of the ASR and planned infrastructure projects, supply would fall short of projected demand by 7%. Under multi-year drought conditions in the near term, available supplies would meet projected demand in years one and two of the multi-year drought scenario, but would fall short of system demands by 2% in year three and by 23% in years four and

five. However, under multi-year drought conditions after 2030, with implementation of the ASR and planned infrastructure projects, available supplies would meet projected demand in years one through four of the scenario, and the year-five shortage is anticipated to be substantially reduced with projected shortages no larger than 5% (City of Santa Cruz 2021a).

Wastewater

The City wastewater treatment facility (WWTF) serves the cities of Santa Cruz and Capitola and parts of unincorporated Santa Cruz County. In addition to the City, the WWTF serves the Santa Cruz County Sanitation District (SCCSD) and Community Service Areas (CSA) 10 and 57. The City also provides capacity for the City of Scotts Valley to discharge its treated wastewater into the Pacific Ocean via the City's discharge (City of Santa Cruz 2021a).

The City owns and operates the WWTF, located on California Street adjacent to Neary Lagoon that provides secondary level of treatment. The City treats sewage from domestic and industrial sources and discharges the treated effluent into the Pacific Ocean under the provisions of a waste discharge permit (NPDES No. CA0048194) issued by the California RWQCB, Central Coast Region (Order No. R3-2005-0003). Monterey Bay, into which the region's treated wastewater is disposed, was designated in 1992 as a National Marine Sanctuary. Wastewater influent and effluent characteristics are carefully monitored for compliance with state water quality requirements. The City also participates in a regional receiving water monitoring program with other dischargers in the Monterey Bay area (City of Santa Cruz 2021a).

The WWTF has a permitted wastewater treatment capacity of 17.0 million gallons per day (mgd). In 2019, the WWTF treated 3.3 billion gallons of wastewater effluent at an average daily rate of 9.04 mgd. The SCCSD has treatment capacity rights of 8 mgd at the City's WWTF. The City contributes approximately 5.0 mgd and has a remaining capacity of 4.0 mgd. The SCCSD contributes approximately 5.5 mgd with a remaining capacity of 2.5 mgd. The total remaining treatment plant capacity, therefore, is 6.5 mgd (City of Santa Cruz 2021a).

The City wastewater collection system serves approximately 15,000 connections. The collection system includes 23 pump stations and over 160 miles of sewer pipeline ranging in size from 6 to 54 inches in diameter. The SCCSD provides sanitary sewer collection within its service area boundaries in unincorporated urban areas that generally extend from the eastern limits of the City to the unincorporated Aptos community to the south (City of Santa Cruz 2021a).

Solid Waste

Solid waste generally refers to garbage, refuse, sludge, and other discarded solid materials that come from residential, industrial, and commercial activities. Construction, demolition, and inert wastes are also classified as solid waste. Agricultural waste can be generated by agricultural areas, but typically is disposed on site (composted, mulched, chipped, or burned) rather than entering the municipal waste stream. The general waste classifications used for California waste management units, facilities, and disposal sites are Nonhazardous Solid Waste, Special Waste, Designated Waste, Hazardous Waste, and Industrial Waste. Disposal of solid waste generated by the Proposed Project would likely occur at the City of Santa Cruz RRF or the County of Santa Cruz Buena Vista Landfill. The remaining solid waste disposal capacity of these landfills is further described in the following sections.

City of Santa Cruz

Solid waste in the City is taken to the City's RRF, which includes a sanitary landfill, recycling center, yard waste drop-off, construction and demolition drop-off, and household hazardous waste drop-off. The RRF is located

approximately 3 miles west of the City off State Highway 1 at 605 Dimeo Lane. The RRF is a 100-acre solid waste landfill facility with permitted composting or green waste operation with 67 acres available for disposal use. The RRF is permitted to receive a total of 10,484,325 cubic yards (cy) of solid waste, including construction/demolition, dead animals, green materials, industrial, inert, metals, mixed municipal, sludge (biosolids), tires, and wood waste. The facility has a maximum permitted daily solid waste throughput capacity of 535 tons, and a maximum permitted green waste throughput capacity of 12,500 cy. Based on the most recent facility capacity evaluation in May 2017, the landfill had a remaining capacity of 4,806,477 cy and an estimated closure date of January 2062 (CalRecycle 2022c). In 2020, 46,210 tons of solid waste were disposed of at the RRF (CalRecycle 2020), which is an average of approximately 127 tons per day.

County of Santa Cruz

Santa Cruz County Recycling and Trash Services (Recycling & Trash) is responsible for the operation and administration of solid waste diversion and disposal in the unincorporated areas of the County. Recycling & Trash operates the County's two solid waste facilities, the Buena Vista Landfill located west of the City of Watsonville at 1231 Buena Vista Drive and the Ben Lomond Transfer Station located east of Ben Lomond in the San Lorenzo Valley at 9835 Newell Creek Road. The cites of Scotts Valley and Capitola have franchise agreements with Green Waste Recovery for collection of refuse, recycling and yardwaste. Green Waste Recovery also uses the County's facilities.

The Buena Vista Landfill is a 126-acre solid waste landfill facility with permitted composting or green waste operation with 61 acres available for disposal use. The Buena Vista Landfill is permitted to receive a total of 7,537,700 cy of solid waste, including agricultural, construction/demolition, contaminated soil, dead animals, green materials, industrial, inert, metals, mixed municipal, sludge (biosolids), tires, and wood waste. The facility has a maximum permitted daily solid waste throughput capacity of 838 tons, and a maximum permitted green waste throughput capacity of 12,500 cy. Based on the most recent facility capacity evaluation in 2020, the Buena Vista Landfill has a remaining capacity 1,766,005 cy and an estimated closure date of July 2031 (CalRecycle 2020b). In 2019, 95,912 tons of solid waste were disposed of at the Buena Vista Drive Sanitary Landfill (CalRecycle 2020), which is an average of approximately 263 tons per day.

The Ben Lomond Transfer Station is a 3.5-acre large-volume solid waste transfer/processing facility located east of Ben Lomond in the San Lorenzo Valley at 9835 Newell Creek Road. The Ben Lomond Transfer Facility is permitted to receive and process a total of 300 tons per day of mixed municipal, green materials, tires, construction/demolition, and industrial waste. Processed waste from this facility is either diverted for reuse, recycling, or composting off site or is transferred to the Buena Vista Landfill (CalRecycle 2022a).

a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Less-Than-Significant Impact With Mitigation Incorporated. The Proposed Project would not require or result in the construction of new or expanded wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities that could result in potential significant environmental effects. Similarly, the Proposed Project would not require or result in construction or extension of a sewer trunk line with capacity to serve new development.

However, the Proposed Project would include Covered Activities involving construction of improvements to existing water supply facilities and infrastructure. Some of these infrastructure improvements would

result in potentially significant impacts related to biological resources (nesting birds, special status species, sensitive habitat), cultural resources (archaeological, historical, and tribal cultural resources), paleontological resources, hazardous materials, and construction noise, as described throughout this initial study. These impacts can be reduced to less than significant with incorporation of the mitigation measures identified herein. Therefore, with incorporation of these mitigation measures, the impact would be less than significant.

b) Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?

Less-Than-Significant Impact. Incorporating the Agreed Flows into all City water rights would further constrain the City's surface water supply that currently is limited in multiple dry-year periods. Consequently, as discussed in Section 5.2 of the ASHCP, implementation of the ASHCP assumes completion of the Santa Cruz Water Rights Project to enhance the City's operational flexibility and ensure sufficient water supply, including water rights modifications to the existing rights, permits, and licenses to expand the authorized Place of Use; to better utilize existing diversions by, among other things, incorporating groundwater storage; and to extend the City's time to put water within the scope of the City's Felton water-right permits to full beneficial use. The Santa Cruz Water Rights Project, Agreed Flows, and ASHCP are part of an overall City strategy to strike a balance between water supply reliability, on the one hand, and fish protection, on the other. As discussed in Section 2.3.2, Relationship to Santa Cruz Water Rights Project, the City's water-rights petitions to the SWRCB include the Agreed Flows in addition to modifications to the City's existing water rights and infrastructure improvements.

The changes sought through the Santa Cruz Water Rights Project would enable better use of high winter flows in the San Lorenzo River (primarily diverted from the Tait Street Diversion) to assist recharge of regional aquifers and enable supply reliability. This would provide additional water storage for the City for drought periods and generally support implementation of groundwater sustainability plans in their efforts to protect impacted groundwater basins such as the Santa Margarita and Mid-County Groundwater Basins. The Agreed Flows would be added as minimum flow requirements that must be met before diversions occur in the applicable North Coast Streams and San Lorenzo River. In addition, requirements for fish passage and screening improvements at City diversion facilities would be added to the City's water-rights permits and licenses that authorize diversions at the respective facilities. Minimum flow requirements would be added to the City's pre-1914 water rights in the North Coast Streams through the Santa Cruz City Council's adoption of a resolution amending those rights. Minimum San Lorenzo River flow requirements would be added to the City's Felton water-right permits and its Tait Street Diversion water-right licenses through the City's water-rights petitions to the SWRCB and the SWRCB's approval of those petitions.

The City's approach to water supply, and the required approvals of the pending water rights modifications by the SWRCB, are foundational to regional water supply reliability and the City's ability to effectively implement the ASHCP. The above water rights modifications, including Agreed Flows, support the City's WSAS, which would have a beneficial effect on water supply (City of Santa Cruz 2021d). Additionally, Covered Activities that repair, replace, or enhance the capacity of water supply facilities would also have a beneficial effect on water supply.

The Proposed Project would not include additional residences or businesses that would generate increased demand for water supply. Therefore, the impact of the Proposed Project related to water supply would be less than significant.

c) Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Less-Than-Significant Impact. The Proposed Project would not include construction of any new residential or commercial uses that could generate increased demand for wastewater treatment. Upon implementation, it is estimated that approximately one new employee could be added for implementation of the ASHCP, which would result in negligible increased wastewater flows. With a remaining capacity of 4.0 mgd, the City's WWTF has adequate capacity to serve this minor increase in flows. Therefore, the impact of the Proposed Project on wastewater treatment capacity would be less than significant.

d) Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Less-Than-Significant Impact. Construction activities associated with Covered Activities and elements of the Conservation Strategy would generate solid waste, including vegetation, asphalt, concrete, and other nonhazardous materials, that could be disposed of in a landfill. Excavation during construction would generate spoils, some of which would be expected to be reused on site as fill material. In general, construction projects would not be large in size and would not result in the generation of a substantial amount of waste materials requiring off-site disposal. Earthen spoils that could not be accommodated on site (e.g., for sites that would use new/engineered backfill material rather than native material) could be used as fill for other construction projects in the area or could be hauled to a landfill to be used as intermediate cover.[25] It is expected that the disposal of construction materials would generally be limited, and the majority of construction waste would be recycled and reused due to the cost of disposing of such materials.

As described above, any off-site disposal would be at the City's RRF, which has an expected closure date of January 2062, or the County's Buena Vista Landfill, which has an expected closure date of July 2031. As described above, the City's RRF and the Buena Vista Landfill have remaining capacities of 46% and 23%, respectively, or a total of 7,013,018 cy of solid waste. Daily throughput in 2020 averaged 24% and 31% of the facilities' permitted daily capacities, respectively. Given this, the City's RRF and County's Buena Vista Landfill would have adequate capacity to accommodate solid waste generated by the Proposed Project and the impact would be less than significant.

e) Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Less-Than-Significant Impact. The Proposed Project would be required to comply with all applicable regulations associated with the reduction of solid waste entering landfills, including the California Integrated Waste Management Act, the AB 341 statewide resource recovery goal of diversion of 75% of solid waste, as well as the City's and County's plans, policies, and programs related to recycling/diversion and disposal of solid waste. As previously noted above under criterion (d), during construction, all wastes would be expected to be recycled to the maximum extent possible, in accordance with applicable regulations. All nonhazardous solid waste generated from the Proposed Project once operational would be

[25] As defined in 27 CCR Section 20700, intermediate cover is compacted earthen material of at least 12 inches placed on the surface of a fill where no additional solid waste will be deposited within 180 days. Intermediate cover reduces odors, keeps litter from scattering, and helps deter scavengers.

recycled, with a goal of 75%, in compliance with the Integrated Waste Management Act. Unsalvageable materials generated from the Proposed Project would be disposed of at authorized sites in accordance with all applicable federal, state, and local statutes and regulations. Thus, the Proposed Project would comply with state and local statutes and regulations related to solid waste during construction and operation and the impact would be less than significant.

3.20 Wildfire

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XX. WILDFIRE – If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☒	☐

Wildfire is an integral component of the California landscape, recurring at varying intervals in virtually all of the state's vegetation types. The Plan Area contains widespread densely forested areas, chaparral, and grasslands that experience annual cycles of elevated fire danger. The climate of the Plan Area is Mediterranean in nature, characterized by warm, dry summers and cool, wet winters (CAL FIRE CZU 2022). The Plan Area experiences relatively high temperatures, low humidity, and low precipitation during the summer, which can result in extreme fire conditions when combined with dense vegetation growth, urban development, and drought conditions. The wildfire season typically extends approximately from May into late October or early November. Outside of the City Urban Center, the Plan Area has substantial area in the wildland-urban interface (WUI) where wildfire risks are elevated due to the intermingling of developed areas with forest land and open space (CAL FIRE CZU 2018).

The impacts of wildfire on a community include loss of life, environmental and infrastructure damage, and loss of property. Secondary impacts arising from wildfires include air quality impacts and post-fire debris flows and water

quality degradation. Air quality is a major issue, which can force the closure of schools and businesses as well as limit human activity. Damage to infrastructure such as culverts, roads, and bridges can be difficult to locate and repair in a timely manner. During the rainy season, burned-over areas can be subject to mud slides and debris torrents, which can be exacerbated by infrastructure damage. Sedimentation due to winter rains can destroy fish habitats, which can have a catastrophic effect on the ecosystem (County of Santa Cruz 2021).

Each year, state, local, and volunteer departments throughout the region respond to numerous wildfires. The vast majority of these are held to less than one acre in size. The reasons for this include, but are not limited to: early identification and reporting, large fire suppression response (both local and state agencies), generally good access to fire areas, favorable fuels, favorable fire weather, and air support. However, when ignitions occur during unfavorable weather and/or in areas with poor access, fires can rapidly increase to an unmanageable size prior to fire resources arrival (CAL FIRE CZU 2022).

Fires of significant size and impact have caused injury, death, and property loss in the Plan Area. Prior to about 1950 information on wildfire in Santa Cruz County was limited to verbal history and newspaper accounts. After the Division of Forestry began gathering data in the 1950s, significant wildfires in Santa Cruz and adjacent counties were documented in the early 1960s and again in the 1980s (Lexington fire). The devastating wildfires that occurred in Santa Cruz County in 2008 (Summit, Martin, and Trabing fires) and 2009 (Lockheed and Loma fires) burned a combined area of nearly 14,000 acres and numerous homes and structures (County of Santa Cruz 2021). In 2017, the Bear Fire burned under 400 acres, destroyed seven structures, and threatened hundreds in communities adjacent to Castle Rock State Park (CAL FIRE CZU 2018). Most recently, the CZU Lightning Complex fires, which were ignited by lightning in August 2020, burned over 86,000 acres in Santa Cruz and San Mateo counties and destroyed 1,490 structures (CAL FIRE 2022a), which included approximately 1,000 homes in Santa Cruz County.

A combination of climate, topography, vegetation, and development patterns creates high fire hazard risks throughout the Plan Area, especially in the many areas of WUI located in foothills and mountainous areas. The California Department of Forestry and Fire Protection (CAL FIRE) maps areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors, pursuant to Public Resources Code 4201-4204 and Government Code 51175-51189. These areas are referred to as Fire Hazard Severity Zones (FHSZs) and are identified for federal, state, and local responsibility areas. Local responsibility areas (LRAs) are areas where fire protection is provided by cities, fire protection districts, counties, or by CAL FIRE under contract with local entities. Communities outside of the LRAs are in the state responsibility areas (SRAs) or federal responsibility areas (FRAs) where fire protection is provided by CAL FIRE or federal fire protection agencies. The LRA in the Plan Area consists of incorporated cities and areas immediately surrounding them, as well as along the North Coast south of Highway 1. The remainder of the Plan Area is located within the SRA.

No very high FHSZs are located within the LRA in the Plan Area, including the City Urban Center. The surrounding lands of the San Lorenzo Valley and North Coast are within the SRA and are designated as a mixture of moderate and high FHSZs. A very high FHSZ within the SRA is located in Bonny Doon to the west of the City's Laguna Mount Hermon June beetle off-site mitigation area shown on Figure 1 (CAL FIRE 2022b).

The City's facilities within the Plan Area fall within multiple jurisdictions, including CSA 48 (County Fire) (North Coast Streams and Loch Lomond Reservoir), Felton Fire District (Felton Diversion site), and the City of Santa Cruz (Tait Street Diversion site) (LAFCO 2021). Some of the City's facilities are located within the SRA, and none are located within areas designated as a very high FHSZ.

a) Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

Less-Than-Significant Impact. As previously discussed in Section 3.9, Hazards and Hazardous Materials, and Section 3.17, Transportation, construction activities could require partial road closures or access limitations in public rights-of-way on a temporary and periodic basis. Where construction could take place in public roadways, encroachment permits would need to be obtained in most cases from the applicable local agency. The issuance of encroachment permits requires submission of traffic control plans, as discussed earlier in Section 3.17, Transportation.

Operation, maintenance, and management activities would be similar to current operations of water infrastructure and City facilities in the Plan Area. The upgrade of existing facilities would not impede emergency response. After construction, new or rehabilitated water pipelines would be located subsurface such that existing rights-of-way would not be permanently impeded.

Therefore, the Proposed Project would not physically interfere with an adopted emergency response plan or emergency evacuation plan and the impact would be less than significant.

b) Due to slope, prevailing winds, and other factors, would the project exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Less-Than-Significant Impact. As previously discussed in Section 3.9, Hazards and Hazardous Materials, construction and operation of the Proposed Project would not exacerbate wildfire risks or include habitable structures that could expose people or structures to wildfire. Construction activities could include the use of welding equipment, torching, generators, chainsaws, and chippers, all of which could produce sparks. However, the City's standard construction practices, as described in Appendix C, include fire safety measures that would be implemented during construction on undeveloped sites or sites with surrounding trees and other vegetation, specifically during use of such equipment (Standard Construction Practice #18). Spark arrestors would be required for internal combustion engine equipment, fire suppression equipment would be required on site during use of such mechanical equipment, and construction activities would not be conducted during high fire hazard periods (i.e., red flag warnings).[26] Fire suppression equipment would include items such as fire extinguishers and shovels. Therefore, the impact of the Proposed Project would be less than significant.

c) Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

Less-Than-Significant Impact. The Proposed Project includes installation, rehabilitation, and maintenance of water pipelines. Existing and proposed new pipeline alignments would traverse moderate and high FHSZs throughout the Plan Area and would be located within the SRA and the LRA. Pipeline construction could include the use of welding equipment, torching, generators, chainsaws, and chippers, all of which could produce sparks and potentially put nearby residences and wildland area at risk of fire. However, as previously discussed for criterion (b), with implementation of standard construction practice

[26] Red flag warnings and fire weather watches are issued by CAL FIRE based on weather patterns (low humidity, strong winds, dry fuels, etc.) and listed on its website (https://www.fire.ca.gov/programs/communications/red-flag-warnings-fire-weather-watches/).

#18, fire safety measures for operating equipment would be implemented during construction. Upon completion of construction, the pipelines would be below ground and thus would be buried and disturbed areas would be repaved and/or revegetated. Covered Activities under the Proposed Project include maintenance and decommissioning of existing access roads. During construction activities associated with diversion facility upgrades, new access roads may be required or existing access roads may need to be widened to facilitate access to sites by construction equipment. However, the City's standard construction practice for fire safety and prevention would apply and such activities would not exacerbate fire risk. The Proposed Project would not involve installation of other utilities that would exacerbate fire risk. Therefore, the impact of the Proposed Project would be less than significant.

d) Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Less-Than-Significant Impact. Project-related activities needed to carry out Covered Activities and implement the Conservation Strategy would occur at existing City facilities and around streams. The Proposed Project does not involve grading or construction that would increase risks of downstream flooding or landslides that could lead to post-fire slope instability. In addition to the City's standard construction fire safety practice described above, facilities would be designed in accordance with the California Fire Code and would be required to comply with all applicable regulations for fire safety. The Proposed Project would not include drainage changes or other features that could exacerbate wildfire risk or wildfire-related hazards such as flooding or landslides. Additionally, as the Proposed Project would not include habitable structures, it would not expose project occupants to wildfire risks. Therefore, the Proposed Project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires, and the impact would be less than significant.

3.21 Mandatory Findings of Significance

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XXI. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐

	Potentially Significant Impact	Less-Than-Significant Impact With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☒	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

a) ***Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?***

Less-Than-Significant Impact With Mitigation Incorporated. The underlying purpose of the Proposed Project is to protect Covered Species and conserve and enhance their habitat due to the potential that the City's Covered Activities could result in incidental take of listed species. As indicated in Section 2.4.4, Conservation Strategy, the ASHCP includes a Conservation Strategy that is designed to avoid, minimize, and fully mitigate the effects of Covered Activities on Covered Species and their habitat in support of the long-term viability of these populations within the San Lorenzo River and North Coast Streams in the Plan Area. The Conservation Strategy recognizes that the City's efforts will support and coordinate with overarching efforts to contribute to the conservation of these species within Santa Cruz County and the larger DPS and ESU boundaries. For these reasons, the Proposed Project would not substantially reduce the number or restrict the range of an endangered, rare, or threatened species.

As discussed in Section 3.4, Biological Resources, the Proposed Project could have potentially significant impacts on special-status plant and wildlife species not otherwise addressed by the City's OMHCP. However, with incorporation of MM BIO-1 through MM BIO-3, as well as the City's standard construction practices, all impacts related to biological resources would be less than significant. The Proposed Project would not substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, or threaten to eliminate a plant or animal community.

The Proposed Project would not eliminate important examples of the major periods of California history or prehistory. As discussed in Section 3.5, Cultural Resources, MM CUL-1 would ensure that if any historical resources (such as dams constructed in the late 1800s/early 1900s) are present on construction sites, they would be properly evaluated prior to construction activities and impacts to such resources would be avoided through project design and project-specific mitigation measures. As discussed in Section 3.5,

Cultural Resources, and Section 3.18, Tribal Cultural Resources, MM CUL-2 would ensure that if any new archaeological resources or tribal cultural resources are identified or inadvertently discovered during construction activities, such resources would be protected.

Therefore, with incorporated of mitigation measures identified herein to protect biological and cultural resources, the Proposed Project would not substantially degrade the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Less-Than-Significant Impact With Mitigation Incorporated. Cumulative impacts are defined as two or more individual project effects which, when considered together or in concert with other projects, combine to result in a significant impact within an identified geographic area. Past, [27] current, and probable future projects that are relevant to the analysis of cumulative impacts include projects that could contribute incremental environmental effects on the same resources as the Proposed Project, be located within the defined geographic scope for the cumulative effect, or contribute effects that coincide with effects of the Proposed Project's short-term construction activities or long-term operational activities of the Covered Activities and Conservation Strategy. The geographic and temporal scope for the cumulative effects analysis is the same as for the Plan Area and permit term.

Construction and operations activities associated with implementation of the Proposed Project's Covered Activities and Conservation Strategy over the 30-year permit term would potentially occur at the same time as the following projects: the Santa Cruz Water Rights Project, the City Water Department Capital Investment Program, and other infrastructure and public projects in the Plan Area. The Santa Cruz Water Rights Project consists of proposed modifications to the City's existing water rights to improve flexibility in operation of the City's water system to better use limited water resources and implement Agreed Flows, as well as water supply augmentation components (i.e., ASR and water transfers/exchanges with neighboring districts) and surface water diversion improvements that would be implemented after approval of the water rights modifications. In addition to the Santa Cruz Water Rights Project, the City Water Department Capital Investment Program includes plans and funding for numerous projects, including rehabilitation or replacement projects, upgrades and improvement projects, water supply augmentation components, and water main replacements (City of Santa Cruz 2020a, 2020b). Some of these projects fall under the ASHCP Covered Activities of the Proposed Project. Additionally, the Conjunctive Use Plan for the San Lorenzo River Watershed is being proposed by the San Lorenzo Valley Water District (SLVWD).

Additionally, the City's OMHCP and associated USFWS ITP issued in January 2021 (City of Santa Cruz 2021e) covers six wildlife and four plant species, as described in Section 3.4, Biological Resources. Covered Activities in the OMHCP are equivalent to the Covered Activities in the ASHCP, where relevant to

[27] Past projects are considered part of the existing conditions.

the ASHCP Covered Species. Common measures are included in the Conservation Strategies of both the OMHCP and the ASHCP to provide for consistency, where applicable.

As discussed in this initial study, the Proposed Project would have no impacts related to land use and planning and population and housing; therefore, these topics are not discussed further. Less-than-significant impacts were identified regarding aesthetics, agriculture and forestry resources, air quality, energy, greenhouse gas emissions, hydrology and water quality, mineral resources, public services, recreation, transportation, and wildfire. Less-than-significant impacts with mitigation incorporated were identified regarding biological resources (special-status species), cultural resources (historical built environment resources, unique archaeological resources, and historical resources of an archaeological nature), geology and soils (paleontological resources), hazards and hazardous materials (hazardous materials sites), noise (construction vibration), tribal cultural resources, and utilities and service systems.

As indicated throughout this initial study, implementation of the ASHCP's Conservation Strategy is dependent upon approval of the City's pending water rights modifications in the Santa Cruz Water Rights Project; therefore, the analyses in this initial study already assume implementation of the Santa Cruz Water Rights Project. The City Water Department Capital Investment Program projects are either Covered Activities under the ASHCP and OMHCP or would not be likely to adversely affect the Covered Species. Therefore, such Covered Activities are already considered in the analysis in Section 3.4, Biological Resources.

The other known cumulative project that could affect conditions in the San Lorenzo River is the SLVWD's Conjunctive Use Plan for the San Lorenzo River Watershed. The Conjunctive Use Plan to increase stream baseflow for fish and increase reliability of surface and ground water supplies for the SLVWD would include water rights changes, use of existing interties to move water between service areas, and use of SLVWD's Loch Lomond Reservoir contractual rights for specified quantities of reservoir water. Environmental impacts of the Conjunctive Use Plan are not known at this time, as SLVWD is in the process of preparing an EIR for the project. It is possible that the EIR will find that the Conjunctive Use Plan will have significant effects on aquatic resources, including cumulatively considerable contributions to significant cumulative impacts. It is also possible that, as part of the EIR process, SLVWD will find ways to refine the Conjunctive Use Project, or to formulate mitigation measures, that would avoid any such significant effects. Regardless, the City's Proposed ASHCP Project is intended to improve long-term conditions in the San Lorenzo River for fish by improving baseflows. The ASHCP will therefore result in improvements to existing in-stream environmental conditions, or in some instances maintaining those conditions without worsening them. For this reason, the Proposed Project would not result in cumulatively considerable contributions to any significant cumulative impacts on special-status species that might result from SLVWD's Conjunctive Use Plan or other past, present, and probable future projects. Overall, the incremental impact of the Proposed Project, in combination with past, current, and probable future projects, would be negligible for all resources areas because of the ASHCP Biological Goals and Objectives, AMMs, and other elements of the Conservation Strategy; ongoing implementation of the OMHCP; implementation of the City's standard construction practices; and implementation of several project-specific mitigation measures identified in this initial study. Therefore, the Proposed Project would not result in impacts that are cumulatively considerable.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less-Than-Significant Impact With Mitigation Incorporated. Implementation of the Proposed Project would not directly or indirectly cause substantial adverse effects on human beings, including those related to air quality, hazardous materials, emergency response, proximity to airport activities, noise, or transportation hazards. The implementation of MM HAZ-1 and MM HAZ-2 described in Section 3.9, Hazards and Hazardous Materials, would reduce all potentially significant impacts related to hazardous materials to less than significant. In addition, the City would implement numerous standard construction practices as described throughout this initial study, which would further minimize effects of the Proposed Project on human beings, such as #3 to implement wind erosion (i.e., dust) control measures, #5 regarding containment of hazardous materials and prevention of and response to spills, #17 containing protocols related to nighttime construction noise, #18 addressing wildland fire hazards, and #22 addressing construction noise. Therefore, the Proposed Project would not result in impacts that would cause substantial adverse effects on human beings, either directly or indirectly.

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Appendix A

Minimum Instream Flow Targets

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A Minimum Instream Flow Targets

This appendix provides the minimum instream flow targets at City of Santa Cruz (City) diversion facilities identified in the Anadromous Salmonid Habitat Conservation Plan (ASHCP) (referred to in this document as Agreed Flows). The Agreed Flows comprise a schedule of minimum instream flows (bypass flows) that would avoid and minimize effects on steelhead and coho due to operation of the Laguna Creek, Liddell Spring, Majors Creek, Tait Street, and Felton Diversions, as well as the Loch Lomond Reservoir. The minimum instream flow requirements are those flows needed to maintain habitat for steelhead and coho during all freshwater life stages (migration, spawning, incubation, and rearing) over a range of Hydrologic Condition Types (see Table A-1). The Hydrologic Condition Types are based on the record of cumulative daily average flow by water year (October 1–September 30) at the Big Trees gage on the San Lorenzo River. To develop the Hydrologic Condition Types, cumulative flow was calculated for each month in the record (water years 1937–2015), sorted from lowest to highest, and split into five equal parts representing a range of hydrologic conditions from driest to wettest conditions. Operationally, the Hydrologic Condition Type would be determined each month based on conditions for the preceding month, and the bypass flows would be established based on the month and hydrologic condition as described in Table A-1.

Table A-1. Agreed Flows Hydrologic Condition Types

Month	Flow Ranges Used to Determine Monthly Hydrologic Condition Type[1] (cfs) Using San Lorenzo River End-of-Month Cumulative Daily Flow[2]				
	Hydrologic Condition 5 (driest)	Hydrologic Condition 4 (dry)	Hydrologic Condition 3 (normal)	Hydrologic Condition 2 (wet)	Hydrologic Condition 1 (very wet)
Oct	≤459	460 – 539	540 – 709	710 – 875	>875
Nov	≤1,186	1,187 – 1,497	1,498 – 1,827	1,828 – 2,485	>2,485
Dec	≤2,397	2,398 – 3,134	3,135 – 5,642	5,643 – 10,196	>10,196
Jan	≤4,322	4,323 – 8,456	8,457 – 16,694	16,695 – 28,019	>28,019
Feb	≤8,442	8,443 – 16,368	16,369 – 29,140	29,141 – 42,995	>42,995
Mar	≤13,004	13,005 – 22,948	22,949 – 35,371	35,372 – 57,968	>57,968
Apr	≤14,203	14,204 – 24,491	24,492 – 39,487	39,488 – 67,884	>67,884
May	≤15,448	15,449 – 25,279	25,280 – 41,659	41,660 – 71,412	>71,412
Jun	≤16,005	16,006 – 26,116	26,117 – 43,123	43,124 – 73,420	>73,420
Jul	≤16,364	16,365 – 26,819	26,820 – 44,073	44,074 – 74,718	>74,718
Aug	≤16,653	16,654 – 27,355	27,356 – 44,799	44,800 – 75,591	>75,591
Sep	≤16,978	16,979 – 27,843	27,844 – 45,398	45,399 – 76,368	>76,368

Notes: cfs = cubic feet per second.

1 The Hydrologic Condition Types are based on the record of cumulative daily average flow by water year (water years 1937–2015) at the Big Trees gage on the San Lorenzo River.

2 To implement the Agreed Flows, the Hydrologic Condition type is determined on the first day of each month based upon the previous month's San Lorenzo River end-of-month cumulative flow for the Water Year. Water Year is defined as the 12-month period from October 1 through September 30.

a. The end-of-month cumulative daily flow is calculated by adding the San Lorenzo River daily flows, as measured at the Big Trees Gage, from the first day of the Water Year to the last day of the month.

b. The flow ranges for the month are then reviewed to determine within which Hydrologic Condition type this end-of-month cumulative daily flow falls.

c. This Hydrologic Condition type is used until the first day of the next month to determine bypass flow conditions under the Agreed Flows across all City of Santa Cruz source waters.

Agreed Flows are presented as bypass flows in Tables A-2 through A-7 for each of the City diversions and described in more detail in Section 4.4.2 of the ASHCP. Values in the tables represent a limit for City diversions such that diversions would not reduce flow below these levels. Bypass flow requirements vary by life stage, and the applicable minimum flow is determined by the life stage requiring the highest flow.

All flow above the required level for each time period is available for diversion, up to the diversion capacity for each facility. If the required bypass flow is greater than the available streamflow, then the full streamflow would be bypassed and the City diversion would not operate.

A.1 Laguna Creek Diversion

Laguna Creek was given the highest priority of the North Coast streams for restoration of anadromous species during the development of the ASHCP. It is the largest watershed and has the longest reach of anadromous habitat of the North Coast streams from which the City diverts water. It also has the potential to support coho and has a nearly intact lagoon system that can be very productive for steelhead. Instream flow requirements for Laguna Creek are described below and summarized in Table A-2.

The City would provide the following minimum bypass flows in the anadromous reach of Laguna Creek for steelhead:

- For rearing juvenile steelhead, 2.0 cfs at all times;
- For adult migration, a lower threshold of 11.3 cfs and an upper threshold of 15.5 cfs[1] when flow would be at this level without City diversion during December through March and additionally in April for Hydrologic Conditions 1-3;
- For spawning, 9.4 cfs during December through May for 14 days following any adult migration period;
- For egg incubation, 4.0 cfs during January through May for 60 days after the last spawning day or until May 31, whichever is earliest; and
- For smolt outmigration, 3.8 cfs
    - in Hydrologic Condition Types 1–4, during January through May, and
    - in Hydrologic Condition 5, for at least 3 consecutive days per week in March, April, and May.

The required minimum bypass flow in any given month is determined by the life stage requiring the highest flow.

The point of compliance for minimum bypass flows is the City-maintained stream gage in the anadromous reach of Laguna Creek. Other gages would also be used to ascertain effects of diversions by others on flows and habitat availability in the anadromous reach.

[1] When river flows reach the lower threshold, minimum bypass flows would be as follows: when river flows without City diversion are above the upper threshold, the minimum bypass is the upper threshold; when river flow without City diversion is between the lower and upper threshold, the minimum bypass is the natural flow; and when river flows without City diversion fall below the lower threshold again, adult migration bypass flow requirements cease and required minimum bypass flow is determined by the life stage requiring the next-highest flow.

Table A-2. Agreed Flows for Laguna Creek Diversion, as Measured at the Laguna Creek Anadromous Gage[1]

Month	Rearing (Base Flow) (cfs)					Adult Migration (cfs)	Spawning[2] (cfs)	Egg Incubation[3] (cfs)	Smolt Out-migration[4] (cfs)
	Hydrologic Condition 5 (driest)	Hydrologic Condition 4 (dry)	Hydrologic Condition 3 (normal)	Hydrologic Condition 2 (wet)	Hydrologic Condition 1 (very wet)				
Jan	2.0	2.0	2.0	2.0	2.0	11.3/15.5	9.4	4.0	3.8
Feb	2.0	2.0	2.0	2.0	2.0	11.3/15.5	9.4	4.0	3.8
Mar	2.0	2.0	2.0	2.0	2.0	11.3/15.5	9.4	4.0	3.8
Apr	2.0	2.0	2.0	2.0	2.0	11.3/15.5[5]	9.4	4.0	3.8
May	2.0	2.0	2.0	2.0	2.0	—	9.4	4.0	3.8
Jun	2.0	2.0	2.0	2.0	2.0	—	—	—	—
Jul	2.0	2.0	2.0	2.0	2.0	—	—	—	—
Aug	2.0	2.0	2.0	2.0	2.0	—	—	—	—
Sep	2.0	2.0	2.0	2.0	2.0	—	—	—	—
Oct	2.0	2.0	2.0	2.0	2.0	—	—	—	—
Nov	2.0	2.0	2.0	2.0	2.0	—	—	—	—
Dec	2.0	2.0	2.0	2.0	2.0	11.3/15.5	9.4	—	—

Notes: cfs = cubic feet per second.

1 The required flow is determined by the life stage requiring the highest flow in any given month.
2 Provided for 14-day period after any potential migration event.
3 Provided for 60 days following occurrence of last spawning flow or May 31, whichever occurs first.
4 Provided in Hydrologic Conditions 1–4 and for 3 consecutive days per week in Hydrologic Condition 5 in March, April, and May.
5 April adult migration flows provided in Hydrologic Conditions 1–3.

A.2 Liddell Spring Diversion

The City's diversion is located at Liddell Spring, which feeds Liddell Creek. NMFS and CDFW gave Liddell Creek lower restoration priority for anadromous species than Laguna Creek and the San Lorenzo River due to limited productive capacity for steelhead, unsuitability of habitat for coho, relatively short anadromous reach, and the relatively small size of the City's diversion. While the Liddell Spring diversion is relatively small, it is an important component of the City's water supply because it is used to improve the quality of the blended water treated at the Graham Hill Water Treatment Plant, and as a spring, it is persistent in dry conditions. Productive capacity for anadromous fish is limited in Liddell Creek due to excessive amounts of fine sediment and a lack of a functional lagoon. Instream flow requirements for Liddell Creek are described below and summarized in Table A-3.

The City would provide the following minimum bypass flows in the anadromous reach of Liddell Creek:

- For rearing juvenile steelhead
  - in Hydrologic Conditions 4–5, 0.25 cfs, and
  - in Hydrologic Conditions 1–3, up to 5.2 cfs, as detailed in Table A-3;

- For adult migration, a lower threshold of 4.9 cfs and an upper threshold of 11.3 cfs[2] when flow would be at this level without City diversion during December through April in Hydrologic Conditions 1–3;
- For spawning, 7.4 cfs during December through May in Hydrologic Conditions 1–3 for 14 days following any adult migration period;
- For egg incubation, 2.0 cfs during January through May in Hydrologic Conditions 1–3 for 60 days after the last spawning day or until May 31, whichever is earliest; and
- For smolt outmigration, 2.0 cfs
    - in Hydrologic Conditions 1–3 during January through May and
    - in Hydrologic Conditions 4–5 for at least three consecutive days per week during March through May.

The required minimum bypass flow in any given month is determined by the life stage requiring the highest flow.

The point of compliance for minimum bypass flows is the City-maintained stream gage in the anadromous reach of Liddell Creek. Other gages would also be used to ascertain effects of diversions by others on flows and habitat availability in the anadromous reach.

Table A-3. Agreed Flows for Liddell Spring Diversion, as Measured at the Liddell Creek Anadromous Gage[1]

Month	Rearing (Base Flow) (cfs)					Adult Migration[2] (cfs)	Spawning[3] (cfs)	Egg Incubation[4] (cfs)	Smolt Out-migration[5] (cfs)
	Hydrologic Condition 5 (driest)	Hydrologic Condition 4 (dry)	Hydrologic Condition 3 (normal)	Hydrologic Condition 2 (wet)	Hydrologic Condition 1 (very wet)				
Jan	0.25	0.25	2.9	3.6	4.7	4.9/11.3	7.4	2.0	2.0
Feb	0.25	0.25	4.6	3.9	5.1	4.9/11.3	7.4	2.0	2.0
Mar	0.25	0.25	3.5	4.8	5.2	4.9/11.3	7.4	2.0	2.0
Apr	0.25	0.25	3.0	4.3	4.6	4.9/11.3	7.4	2.0	2.0
May	0.25	0.25	2.6	3.3	4.0	—	7.4	2.0	2.0
Jun	0.25	0.25	2.0	2.4	2.9	—	—	—	—
Jul	0.25	0.25	1.6	1.9	2.2	—	—	—	—
Aug	0.25	0.25	1.4	1.7	1.8	—	—	—	—
Sep	0.25	0.25	1.3	1.5	1.6	—	—	—	—
Oct	0.25	0.25	1.5	1.5	1.6	—	—	—	—
Nov	0.25	0.25	1.8	1.9	1.9	—	—	—	—
Dec	0.25	0.25	2.1	2.6	3.0	4.9/11.3	7.4	—	—

Notes: cfs = cubic feet per second.

1 The required flow is determined by the life stage requiring the highest flow in any given month.
2 Provided in Hydrologic Conditions 1–3 only.
3 Provide for 14-day period after any potential migration event in Hydrologic Conditions 1–3.
4 Provided in Hydrologic Conditions 1–3 for 60-day period following occurrence of last spawning flow or May 31, whichever occurs first
5 Provided in Hydrologic Conditions 1–3, and for 3 consecutive days per week in March, April, and May in Hydrologic Conditions 4–5.

2 When river flows reach the lower threshold, minimum bypass flows would be as follows: when river flows without City diversion are above the upper threshold, the minimum bypass is the upper threshold; when river flow without City diversion is between the lower and upper threshold, the minimum bypass is the natural flow; and when river flows without City diversion fall below the lower threshold again, adult migration bypass flow requirements cease and required minimum bypass flow is determined by the life stage requiring the next-highest flow.

A.3 Majors Creek Diversion

In the development of the ASHCP, NMFS and CDFW gave Majors Creek lower restoration priority for anadromous species than Laguna Creek and the San Lorenzo River due to its relatively short anadromous reach length, unsuitability of habitat for coho, and lack of a developed lagoon. The City also has a relatively small diversion capacity on Majors Creek relative to Laguna Creek and the San Lorenzo River. Instream flow requirements for Majors Creek are described below and summarized in Table A-4.

The City would provide the following minimum bypass flows in the anadromous reach of Majors Creek for steelhead:

- For rearing juvenile steelhead,
  - in Hydrologic Conditions 4–5, 0.25 cfs, and
  - in Hydrologic Conditions 1–3, up to 4.7 cfs, as detailed in Table A-4;
- For adult migration, a lower threshold of 9.0 cfs and an upper threshold of 16.0 cfs[3] when flow would be at this level without City diversion during December through April in Hydrologic Conditions 1–3;
- For spawning, 12.1 cfs during December through May in Hydrologic Conditions 1–3 for 14 days following any adult migration period;
- For egg incubation, 2.9 cfs during January through May in Hydrologic Conditions 1–3 for 60 days after the last spawning day or until May 31, whichever is earliest; and
- For smolt outmigration, 3.4 cfs
  - in Hydrologic Conditions 1–3 during January through May and
  - in Hydrologic Conditions 4–5 during March through May for at least three consecutive days per week.

The required minimum bypass flow in any given month is determined by the life stage requiring the highest flow.

The point of compliance for minimum bypass flows is the City-maintained stream gage in the anadromous reach of Majors Creek. Other gages would also be used to ascertain effects of diversions by others on flows and habitat availability in the anadromous reach.

[3] When river flows reach the lower threshold, minimum bypass flows would be as follows: when river flows without City diversion are above the upper threshold, the minimum bypass is the upper threshold; when river flow without City diversion is between the lower and upper threshold, the minimum bypass is the natural flow; and when river flows without City diversion fall below the lower threshold again, adult migration bypass flow requirements cease and required minimum bypass flow is determined by the life stage requiring the next-highest flow.

Table A-4. Agreed Flows for Majors Creek Diversion, as Measured at the Majors Creek Anadromous Gage[1]

Month	Rearing (Base Flow) (cfs)					Adult Migration[2] (cfs)	Spawning[3] (cfs)	Egg Incubation[4] (cfs)	Smolt Out-migration (cfs)
	Hydrologic Condition 5 (driest)	Hydrologic Condition 4 (dry)	Hydrologic Condition 3 (normal)	Hydrologic Condition 2 (wet)	Hydrologic Condition 1 (very wet)				
Jan	0.25	0.25	2.2	2.7	4.1	9.0/16.0	12.1	2.9	3.4
Feb	0.25	0.25	4.1	3.0	4.4	9.0/16.0	12.1	2.9	3.4
Mar	0.25	0.25	2.4	4.3	4.7	9.0/16.0	12.1	2.9	3.4[5]
Apr	0.25	0.25	1.7	3.1	3.2	9.0/16.0	12.1	2.9	3.4[5]
May	0.25	0.25	1.4	1.8	2.4	—	12.1	2.9	3.4[5]
Jun	0.25	0.25	1.0	1.2	1.6	—	—	—	—
Jul	0.25	0.25	0.8	1.0	1.1	—	—	—	—
Aug	0.25	0.25	0.7	0.8	0.9	—	—	—	—
Sep	0.25	0.25	0.6	0.7	0.7	—	—	—	—
Oct	0.25	0.25	0.8	0.9	0.8	—	—	—	—
Nov	0.25	0.25	1.1	1.2	1.2	—	—	—	—
Dec	0.25	0.25	1.5	1.9	2.1	9.0/16.0	12.1	—	—

Notes: cfs = cubic feet per second.

1 The required flow is determined by the life stage requiring the highest flow in any given month.

2 Provided in Hydrologic Conditions 1–3 only.

3 Provide for 14-day period after any potential migration event in Hydrologic Conditions 1–3.

4 Provided in Hydrologic Conditions 1–3 for 60-day period following occurrence of last spawning flow or May 31, whichever occurs first.

5 Provided in Hydrologic Conditions 1–3, and for 3 consecutive days per week in March, April, and May in Hydrologic Conditions 4–5.

A.4 Tait Street Diversion, San Lorenzo River

NMFS and CDFW gave the San Lorenzo River a high priority for restoration of anadromous species in the development of the ASHCP. It has a large watershed with extensive habitat in both the main stem and its tributaries. The San Lorenzo River supports steelhead and potentially coho. Its lagoon is important for rearing juvenile steelhead. Instream flow requirements for the San Lorenzo River below Tait Street Diversion are described below and summarized in Table A-5.

The City would provide the following minimum bypass flows downstream of Tait Street Diversion on the San Lorenzo River for steelhead and coho:

- For rearing juvenile steelhead,
  - in Hydrologic Conditions 4–5, 8.0 cfs, and
  - in Hydrologic Conditions 1–3, up to 18.5 cfs, as detailed in Table A-5;
- For adult migration, a lower threshold of 17.0. cfs and an upper threshold of 25.2 cfs[4] when flow would be at this level without City diversion in December through April in Hydrologic Conditions 1–3, in December through March in Hydrologic Conditions 4 and 5, and with the following exceptions:

4 When river flows reach the lower threshold, minimum bypass flows would be as follows: when river flows without City diversion are above the upper threshold, the minimum bypass is the upper threshold; when river flow without City diversion is between the

- May be reduced to 3 consecutive days a week if storage levels in Loch Lomond Reservoir fall below the following levels in million gallons (mg): December—1,900 mg, January—2,000 mg, February—2,100 mg, and March—2,200 mg.
- May be reduced to 5 consecutive days after each storm event that exceeds 17 cfs if storage levels in Loch Lomond Reservoir fall below the following levels: December—1,600 mg, January—1,700 mg, February—1,800 mg, and March—1,900 mg.

- For smolt outmigration, 10 cfs
  - in Hydrologic Conditions 1–4 during January through May, and
  - in Hydrologic Condition 5 during March through May for at least 3 consecutive days per week.

The required minimum bypass flow in any given month is determined by the life stage requiring the highest flow.

The point of compliance for minimum bypass flows is the City-funded United States Geological Survey-maintained stream gage in the San Lorenzo River immediately downstream of Tait Street Diversion.

Table A-5. Agreed Flows for Tait Street Diversion on the San Lorenzo River, as Measured at the City Gage immediately downstream of Tait Street Diversion[1]

Month	Rearing (Base Flow) (cfs)					Adult Migration[2] (cfs)	Spawning[3] (cfs)	Egg Incubation[3] (cfs)	Smolt Out-migration (cfs)
	Hydrologic Condition 5 (driest)	Hydrologic Condition 4 (dry)	Hydrologic Condition 3 (normal)	Hydrologic Condition 2 (wet)	Hydrologic Condition 1 (very wet)				
Jan	8.0	8.0	15.8	16.4	17.5	17.0/25.2	—	—	10.0
Feb	8.0	8.0	15.9	16.7	18.0	17.0/25.2	—	—	10.0
Mar	80.	8.0	16.3	17.3	18.2	17.0/25.2	—	—	10.0[4]
Apr	8.0	8.0	17.2	17.9	18.4	17.0/25.2[5]	—	—	10.0[4]
May	8.0	8.0	17.7	18.2	18.5	—	—	—	10.0[4]
Jun	8.0	8.0	16.6	18.1	18.5	—	—	—	—
Jul	8.0	8.0	12.4	15.8	18.2	—	—	—	—
Aug	8.0	8.0	9.8	11.9	16.4	—	—	—	—
Sep	8.0	8.0	9.0	11.1	13.3	—	—	—	—
Oct	8.0	8.0	9.8	11.4	13.3	—	—	—	—
Nov	8.0	8.0	12.5	14.1	16.4	—	—	—	—
Dec	8.0	8.0	15.1	16.2	17.6	17.0/25.2	—	—	—

Notes: cfs = cubic feet per second.

1 The required flow is determined by the life stage requiring the highest flow in any given month.

2 May be reduced to 3 consecutive days a week if storage levels in Loch Lomond fall below the following levels in million gallons (mg): Dec-1900 mg; Jan-2000 mg; Feb-2100 mg; Mar-2200 mg. Further, adult migration flows may be reduced to 5 consecutive days after each storm event that exceeds 17 cfs if storage levels in Loch Lomond fall below the following levels: Dec-1600 mg; Jan-1700 mg; Feb-1800 mg; Mar-1900 mg.

3 No spawning or incubation occurs in this reach.

4 During Hydrologic Conditions 5, provided at least 3 days per week.

5 April adult migration flows provided only in Hydrologic Conditions 1–3.

lower and upper threshold, the minimum bypass is the natural flow; and when river flows without City diversion fall below the lower threshold again, adult migration bypass flow requirements cease and required minimum bypass flow is determined by the life stage requiring the next-highest flow.

A.5 Felton Diversion, San Lorenzo River

As described above, NMFS and CDFW gave the San Lorenzo River a high priority for restoration of anadromous species in the development of the ASHCP. Instream flow requirements for the San Lorenzo River below Felton Diversion are described below and summarized in Table A-6. No diversions are permitted at Felton Diversion during June through August.

The City would provide the following minimum bypass flows downstream of Felton Diversion on the San Lorenzo River for steelhead and coho:

- For rearing juvenile steelhead, egg incubation, and smolt migration
  - during October, 25 cfs,
  - during November through May, 20 cfs, and
  - during September, 10 cfs;
- For adult migration, 40 cfs during December through April when flow would be at this level without City diversion and the river mouth is open; and
- For spawning, 40 cfs during December through May for 14 days after any adult migration period.

The required minimum bypass flow in any given month is determined by the life stage requiring the highest flow.

The point of compliance for minimum bypass flows is the U.S. Geographical Survey–maintained stream gage near Henry Cowell Redwoods State Park entrance (Big Trees Gage).

Table A-6. Agreed Flows for Felton Diversion on the San Lorenzo River, as Measured at the Big Trees Gage[1]

Month	Rearing (Base Flow) (cfs)					Adult Migration[2] (cfs)	Spawning[3] (cfs)
	Hydrologic Condition 5 (driest)	Hydrologic Condition 4 (dry)	Hydrologic Condition 3 (normal)	Hydrologic Condition 2 (wet)	Hydrologic Condition 1 (very wet)		
Jan	20.0	20.0	20.0	20.0	20.0	40.0	40.0
Feb	20.0	20.0	20.0	20.0	20.0	40.0	40.0
Mar	20.0	20.0	20.0	20.0	20.0	40.0	40.0
Apr	20.0	20.0	20.0	20.0	20.0	40.0	40.0
May	20.0	20.0	20.0	20.0	20.0	—	40.0
Jun	No Diversion						
Jul							
Aug							
Sep	10.0	10.0	10.0	10.0	10.0	—	—
Oct	25.0	25.0	25.0	25.0	25.0	—	—
Nov	20.0	20.0	20.0	20.0	20.0	—	—
Dec	20.0	20.0	20.0	20.0	20.0	40.0	40.0

Notes: cfs = cubic feet per second.

1 The required flow is determined by the life stage requiring the highest flow in any given month.

2 Provided when river mouth is open and natural flow would occur at this level without diversion.

3 Provided for 14 days following any potential migration event.

A.6 Newell Creek Diversion

Operation of the Newell Creek Diversion (also referred to as Newell Creek Dam) and Loch Lomond Reservoir alters the natural hydrograph of Newell Creek except during periods when the reservoir is spilling. There is an agreed minimum release of 1 cfs in Newell Creek below Loch Lomond Reservoir. When Loch Lomond Reservoir storage is low enough to result in supply shortages, an exception minimum of 0.25 cfs would be released in place of the 1 cfs. A flow of 1 cfs below Newell Creek Dam exceeds unimpaired flows at certain times. Loch Lomond storage levels that would result in the 0.25 cfs exception minimum bypass flow are provided in Table A-7. Instream flow requirements for Newell Creek below Newell Creek Dam are described below and summarized in Table A-7.

The City would provide the following minimum bypass flows to Newell Creek downstream of Newell Creek Dam for steelhead:

- For rearing juvenile steelhead, 1.0 cfs, unless storage in Loch Lomond Reservoir is insufficient and triggers the exception minimum as detailed in Table A-7.

The point of compliance for minimum bypass flows is the City-maintained stream gage in Newell Creek immediately downstream of Newell Creek Dam.

Table A-7. Agreed Flows for the Newell Creek Dam, as Measured at the City Gage immediately downstream of Newell Creek Dam

Month	Exception Minimum (cfs)[1]	Base Flow (cfs)				
		Hydrologic Condition 5 (driest)	Hydrologic Condition 4 (dry)	Hydrologic Condition 3 (normal)	Hydrologic Condition 2 (wet)	Hydrologic Condition 1 (very wet)
Jan	0.25	1.0	1.0	1.0	1.0	1.0
Feb	0.25	1.0	1.0	1.0	1.0	1.0
Mar	0.25	1.0	1.0	1.0	1.0	1.0
Apr	0.25	1.0	1.0	1.0	1.0	1.0
May	0.25	1.0	1.0	1.0	1.0	1.0
Jun	0.25	1.0	1.0	1.0	1.0	1.0
Jul	0.25	1.0	1.0	1.0	1.0	1.0
Aug	0.25	1.0	1.0	1.0	1.0	1.0
Sep	0.25	1.0	1.0	1.0	1.0	1.0
Oct	0.25	1.0	1.0	1.0	1.0	1.0
Nov	0.25	1.0	1.0	1.0	1.0	1.0
Dec	0.25	1.0	1.0	1.0	1.0	1.0

Notes: cfs = cubic feet per second.

[1] Exception minimum flows are triggered and would supersede base flow requirements when storage in Loch Lomond Reservoir falls below the following level: 2000 million gallons (mg) during January through June, 1800 mg during July, 1500 mg during August through November, or 1700 mg during December.

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Appendix B

Baseline Conditions and Modeling of Effects of the Anadromous Salmonid Habitat Conservation Plan and Santa Cruz Water Rights Project

B Baseline Conditions and Modeling of Effects of the ASHCP and SCWRP

B.1 Introduction

Effects of changes in the City of Santa Cruz water supply operations and water rights including new bypass flows at the City's surface water diversions developed within the Anadromous Salmonid Habitat Conservation Plan (ASHCP or Project), have been evaluated in two different existing conditions or baseline contexts within the ASHCP and the Santa Cruz Water Rights Project (SCWRP) Environmental Impact Report (EIR). The new bypass flows included in both the ASHCP and the SCWRP EIR are referred to as Conservation Flows or Agreed Flows.[1] The Project that was the subject of hydrologic, water supply and fisheries habitat modeling provided in both the ASHCP and the SCWRP EIR is the same and consists of the ASHCP Agreed Flows with the implementation of the proposed water rights modifications and related infrastructure improvements that would result from the modifications and provide for water supply augmentation (e.g., aquifer storage and recovery, water transfers).

This appendix explains the differences in the modeling provided in the ASHCP and the SCWRP EIR in terms of the baseline used to compare the effects of the ASHCP, as well as reviews the results of the modeling. Specifically, as further discussed herein, the ASHCP modeling used a baseline that did not account for any additional[2] bypass flows for fisheries habitat at the City's surface water diversions, whereas the SCWRP EIR modeling used a baseline that accounted for interim bypass flows in place in 2018 when the City initiated the EIR and that continue to be in place today.

B.2 Modeling Background

The ASHCP and the SCWRP EIR used three distinct but interrelated models to evaluate the effects of the ASHCP on water supply and fisheries habitat. As described in the ASHCP Appendix 8 these three models include:

- Hydrologic Model - A hydrologic model that develops the available daily flows in the North Coast streams (specifically Laguna, Liddell, and Majors Creeks), the San Lorenzo River, and Newell Creek available for supply once the Agreed Flows are met.
- Water Supply Model - The Confluence® water supply model, which utilizes available streamflows (generated by the Hydrologic Model) in a particular scenario (e.g., with the Agreed Flows) and with many other system operating assumptions, to evaluate potential operations of the City's water system and the resulting water supply reliability and to calculate the resulting flow left instream for fish habitat below each diversion.
- Fisheries Habitat Effects Model - A fisheries habitat effects model that evaluates the fisheries habitat effects of the residual streamflows left instream after municipal supply demands are met in the Water Supply Model, consistent with the minimum streamflows required in a particular scenario, to develop flow-

1 In the City's petitions for changes to water rights, the minimum instream bypass flows, or Conservation Flows, are called "Agreed Flows" in recognition that they were developed through negotiations with NMFS and CDFW. The minimum instream bypass flows, Conservation Flows, and Agreed Flows are identical.

2 Previous agreements did require minimum bypass flows at the Felton Diversion and a 1 cubic foot per second (cfs) continuous release from Loch Lomond Reservoir to Newell Creek.

based metrics of habitat effects. The effects analysis was primarily focused on the influence of the City's water system operations on instream flows and the related habitat effects.

The fisheries model determines the habitat index value for each salmonid life cycle stage (e.g., rearing). The habitat index may be either the weighted usable area (WUA) value for spawning or rearing, or the number of days with suitable conditions for migration of adult or smolt life stages. See ASHCP Appendix 8 for additional information about these three models.

B.3 Modeling Scenarios

B.3.1 ASHCP

The effects of the Project are compared to an existing operations scenario representing City water supply operations with no additional bypass flows for fisheries habitat. This existing operations scenario was based on Confluence model output using a reconstructed hydrologic database for the period 1937-2015 as input (data generated by Balance Hydrologics from the hydrologic model), and assuming unconstrained City diversions using existing facilities, operating procedures, existing flow agreements with the California Department of Fish and Wildlife (CDFW) (circa 2015), and a 3,200 million gallons per year water demand, based on the City's 2015 Urban Water Management Plan.

The existing operations (No Bypass) scenario used in the ASHCP was the appropriate basis for comparison in that context because the ASHCP Agreed Flows were compared to a condition that did not have any additional flow requirements beyond those established in the circa 2015 flow agreements with CDFW, so that the full effects of the ASHCP Agreed Flows could be evaluated. For ease of reference in this document, the existing operations (No Bypass) scenario used in the ASHCP is referred to herein as the **"ASHCP baseline"** even though this term is not used in the ASHCP.

B.3.2 SCWRP EIR

The effects analysis of the Project conducted for the SCWRP EIR was also based on Confluence model output using the same hydrologic database (1937-2015) and the same water demand but using a different existing operations scenario than in the ASHCP. The existing operations scenario used in the SCWRP EIR assumed City diversions that would occur under a 2018 agreement with CDFW—the conditions that were in place at the time of the publication of the California Environmental Quality Act (CEQA) Notice of Preparation (NOP) for the SCWRP EIR. The 2018 agreement contains interim bypass flow requirements mirroring portions of the Agreed Flows developed as part of the ASHCP. The 2018 interim bypass flows continue to be representative of existing conditions, as the City and CDFW signed a new agreement in 2023 that has the same interim bypass flows as the 2018 agreement. For ease of reference in this document, the existing operations scenario used in the SCWRP EIR is referred to herein as the **"SCWRP baseline."**

The effects analysis in the SCWRP EIR using the interim bypass flows as the SCWRP baseline was the appropriate basis for comparison in the CEQA document, since that was the existing condition at the time the NOP was released in 2018. This analysis approach was consistent with CEQA Guidelines Section 15125, which requires that an EIR include a description of the physical environmental conditions in the vicinity of the project as they exist at the time the NOP is published. However, that analysis does not represent the full effect of the ASHCP since it contains bypass flow requirements that reflect partial implementation of the ASHCP Agreed Flows. Nonetheless, the different baseline scenarios used in the ASHCP and the SCWRP EIR were appropriate within the context of each of those documents, as explained above.

B.3.3 ASHCP CEQA and NEPA Documents

The National Environmental Policy Act (NEPA) and CEQA require environmental documents to include a description of the affected environment (NEPA) or environmental setting (CEQA) to provide a comprehensive understanding of the baseline existing conditions in the project area so that the potential impacts of the proposed project and alternatives on those conditions can be evaluated. Like the effects analysis in the SCWRP EIR, the existing physical environmental conditions that were in place at the time environmental analysis of the ASHCP was commenced include City diversions occurring under the interim bypass flows described above, as agreed by the City and CDFW in the 2018 agreement and updated 2023 agreement. Therefore, the interim bypass flows continue to be representative of existing conditions and are the appropriate baseline upon which to compare the effects of the ASHCP under CEQA and NEPA.

B.4 Modeling Results

B.4.1 ASHCP Modeling Results

Table B-1 shows the modeled effects of the Project on anadromous species habitat indices, including full implementation of the ASHCP Agreed Flows with water rights modifications, compared with the ASHCP baseline. Table B-1 was developed from the same data presented in graphical form in the ASHCP document, as presented in Figures 5-1 through 5-37 (City of Santa Cruz 2022). Table B-1 was developed to provide greater ability to quantitatively assess the habitat changes that would result with the Project, as well as to compare them to the modeling results presented in the SCWRP EIR.

The results of the modeling presented in Table B-1 show that implementation of ASHCP Agreed Flows with the water rights changes results in habitat improvements for both steelhead and coho that are focused in the North Coast streams, especially Laguna Creek, with benefits in the mainstem San Lorenzo River primarily for adult migration. Implementation of ASHCP Agreed Flows in the Confluence operations model result in increased diversions from Loch Lomond Reservoir storage to offset restrictions at the other diversions to meet the Agreed Flows, particularly in drier years. This results in somewhat greater fluctuation in storage in Loch Lomond Reservoir with slight improvement in some habitat indices in normal years and decreases in habitat indices in dry and critical years due to lower frequency and duration of reservoir spill in drier conditions, as compared to the ASHCP baseline. Negative effects to habitat indices in Newell Creek are more than offset by improvement in habitat indices in North Coast streams and the San Lorenzo River compared to the ASHCP baseline. These effects are described more fully in Chapter 5 of the ASHCP.

B.4.2 SCWRP EIR Modeling Results

Table B-2 shows the modeled effects of the Project including full implementation of the ASHCP Agreed Flows with water rights modifications, compared with the SCWRP baseline. As discussed previously, the 2018 interim bypass flows were established as the SCWRP baseline for the SCWRP EIR and reflected portions of the Agreed Flows that were included in the 2018 agreement with CDFW. See Section B.3, Modeling Scenarios, above for additional information.

The major differences between the interim bypass flows and full implementation of Agreed Flows under the ASHCP are as follows.

- The Agreed Flows have a bypass during adult migration in Laguna Creek, Liddell Creek, and Majors Creek in April of 0% to 60% hydrologic conditions; the interim bypass flows do not have bypass flows for adult migration during April in those locations.
- The Agreed Flows have a bypass for adult spawning in Liddell Creek and Majors Creek in December of 0% to 60% hydrologic conditions and in Laguna Creek in December of all hydrologic conditions; the interim bypass flows have no bypass for spawning during December.
- The Agreed Flows have a 1 cfs minimum release to Newell Creek with a 0.25 cfs release during low Loch Lomond Reservoir storage levels; the interim bypass flows have a 1 cfs minimum release to Newell Creek at all times.
- The Agreed Flows have a 40 cfs minimum flow below the Felton Diversion during migration and spawning periods; the interim bypass flows have a 20 cfs minimum during migration and spawning periods below the Felton Diversion.
- The interim bypass flows have an exception year reduced bypass for rearing downstream of the Tait Street Diversion; the Agreed Flows do not have a reduced exception year rearing flow.
- The Agreed Flows have a bypass for adult migration in April of 0% to 60% hydrologic conditions in the San Lorenzo River downstream of the Tait Street Diversion; the interim bypass flows have no bypass for adult migration in April at this location.

Additional migration flows in December and April under the Project result in modest habitat improvement in the North Coast streams in normal and wet years compared to the SCWRP baseline, particularly in Laguna Creek (Table B-2). Higher flows for migration in December and April result in higher than optimum flows for coho rearing and result in a slight decline in the rearing habitat index for coho in wet years (Table B-2). The Project-related increase in minimum flow below the Felton Diversion (from 20 cfs previously to 40 cfs) during steelhead and coho adult migration periods results in improved migration and spawning habitat compared to the SCWRP baseline, particularly in drier year types (Table B-2). Differences in habitat index values in Newell Creek downstream of Newell Creek Dam/Loch Lomond Reservoir are the result of differing reservoir operations between the SCWRP baseline and the Project. Bypass requirements for habitat are the same under the SCWRP baseline and Project in this location, but habitat provided by reservoir spill is altered by operation of the Project. Specifically, the increased capacity of the Graham Hill Water Treatment Plant (GHWTP), (described in Appendix D-2 of the SCWRP EIR), results in the ability to take more water at the Tait Street Diversion, offsetting water that would otherwise be withdrawn from Loch Lomond Reservoir. The effect is most pronounced in dry and critical year types, although, while the differences are large in percentage terms, they are not necessarily large in overall magnitude and biological significance. For example, the 50.5% increase in the steelhead adult migration index in dry years amounts to 3 additional days (from 7 days to 10 days) and therefore the improvement may not be biologically significant (SCWRP EIR Appendix D-3). Habitat index values are low in dry and critical years even with no City diversion (i.e., Loch Lomond Reservoir operations and diversion not present). These effects are more fully detailed in Appendix D-3 of the SCWRP EIR.

B.4.3 Comparison of Modeling Results

Differences between Tables B-1 and B-2 result from comparing the Project to different baselines (ASHCP baseline and SCWRP baseline), as described previously. The differences in North Coast streams are fairly straightforward and have to do primarily with increased bypass flows with the Project relative to both baselines. In Table B-1 the Project includes the full range of bypass flows in the Agreed Flows so improvements relative to the ASHCP baseline are large. In Table B-2 the SCWRP baseline already includes most of the Agreed Flows but December and April

bypass flows are included with the Project and the operations are changed through implementation of the SCWRP. All of the changes in habitat indices in North Coast streams reflected in Table B-2 are the result of addition of the December and April bypass flows in the SCWRP baseline, so the Project improvement in the habitat indices is not as great as that shown in Table B-1.

Differences between B-1 and B-2 in Newell Creek and the San Lorenzo River are a little more complex and primarily involve differences in operation of Loch Lomond Reservoir. In the ASHCP baseline for Table B-1, which has no requirements for bypass flows in the North Coast streams or at the Tait Street Diversion, the City's operational strategy was to keep Loch Lomond Reservoir storage as high as possible at all times by drawing as much as possible from other sources. As a result, the reservoir tended to enter spill conditions earlier in the winter and spill later in the spring or after runoff events. This difference in spill frequency is most notable in drier type years. With the Agreed Flows included in the Project, the reservoir is drawn on during periods when bypass flow requirements preclude diversion from other sources. This results in more frequent occurrence of lower reservoir stage with the Project, which can delay the onset of spill conditions in the winter and end spill conditions earlier in the spring and after runoff events. As a result, habitat indices in Newell Creek for spawning, steelhead rearing, and smolt migration are slightly lower with the Project than under the ASHCP baseline in Table B-1. Change in Reservoir spill is also reflected in flows and habitat conditions in the San Lorenzo River; however increased bypass flows at both the Felton and Tait Street diversions with the Project result in increased habitat indices at these locations with the Project compared to both baselines, neither of which has these bypass flow requirements.

In Table B-2, habitat indices show improvement in Newell Creek with the Project compared to the SCWRP baseline. This is because the SCWRP baseline includes the interim bypass flows and would therefore have similar effects on Loch Lomond Reservoir operations (i.e., reduced spill frequency) as the Project. However, in this case, the Project has components that conserve storage and increase spill frequency relative to the interim bypass flows in the SCWRP baseline (though not to the levels seen in the ASHCP baseline used for Table B-1). The increase in spill frequency with the Project results in increases in habitat indices in Newell Creek relative to the SCWRP baseline. Project components that influence Loch Lomond Reservoir storage and increase spill frequency include taking more water at the Tait Street Diversion, offsetting water that would otherwise be withdrawn from Loch Lomond; and decrease to a 0.25 cfs bypass during low Loch Lomond Reservoir storage conditions.

In Table B-1, increases in the adult migration and spawning indices at Felton Diversion are related to the increased bypass flow from 20 cfs under the ASHCP baseline to 40 cfs with the Project. Under the ASHCP baseline more flow was diverted at the Tait Street Diversion so the 40 cfs bypass had relatively small effect, primarily in dry and critically dry years. The SCWRP baseline included a new bypass requirement at the Tait Street Diversion but kept the old 20 cfs bypass at Felton Diversion. Under the SCWRP baseline more diversion from Felton Diversion to Loch Lomond Reservoir was possible relative to the ASHCP baseline. Inclusion of the new 40 cfs Felton Diversion bypass with the Project therefore results in a greater improvement in migration and spawning indices at Felton Diversion in Table B-2 than the same Project improvements in Table B-1.

Table B-1. Listed Fish Habitat Effects of the Proposed Project Compared to ASHCP Baseline

Stream Reach	Year Type	Steelhead				Coho			
		Adult migration (m)	Spawning/incubation (i)	Rearing (r)	Smolt migration (s)	Adult migration (m)	Spawning/incubation (i)	Rearing (r)	Smolt migration (s)
Laguna Anadromous	Wet	49.7%	24.2%	17.6%	37.1%	28.2%	14.5%	–	37.1%
	Normal	61.9%	39.6%	59.9%	174.2%	58.3%	25.1%	4.8%	174.2
	Dry	38.0%	44.4%	49.5%	180.6%	○	34.8%	8.0%	180.6
	Critically dry	39.5%	43.4%	44.5%	171.1%	○	41.3%	12.0%	171.1
Liddell Anadromous	Wet	18.0%	14.1%	5.7%	3.1%				
	Normal	57.1%	24.6%	10.8%	14.5%				
	Dry	15.0%	10.3%	+	42.2%				
	Critically dry	○	18.2%	3.3%	155.7%				
Majors Anadromous	Wet	2.2%	3.0%	+	13.5%				
	Normal	○	16.8%	25.4%	35.3%				
	Dry	○	24.8%	41.0%	○				
	Critically dry	○	34.1%	41.8%	○				
San Lorenzo below Tait St	Wet	+		–	○	2.8%			○
	Normal	2.5%		–	○	6.2%			○
	Dry	4.5%		–	+	11.2%			+
	Critically dry	4.6%		10.8%	6.6%	14.5%			6.6%
San Lorenzo below Felton	Wet	+	+	–	○	2.5%	–	–	○
	Normal	+	+	–	○	3.5%	–	–	○
	Dry	3.8%	+	–	○	12.5%	–	–	○
	Critically dry	14.0%	5.8%	–	○	19.3%	–	–	○
Newell Anadromous	Wet	○	–	+	○	○	–	–	○
	Normal	3.4%	2.7%	○	3.4%	○	+	–	3.4%
	Dry	○	−4.0%	○	−8.5%	○	−6.2%	–	−8.5%
	Critically dry	○	−13.2%	−3.3%	○	○	−18.7%	–	○

Notes: – = <2% decrease in habitat index; + = <2% increase in habitat index; ○ = no change in habitat index, or change of 1 day or less in migration periods.
Values for coho spawning and rearing below Felton are based on change in flow rather than habitat indices.

Table B-2. Listed Fish Habitat Effects of the Proposed Project Compared to SCWRP Baseline

Stream Reach	Year Type	Steelhead				Coho			
		Adult migration (m)	Spawning/incubation (i)	Rearing (r)	Smolt migration (s)	Adult migration (m)	Spawning/incubation (i)	Rearing (r)	Smolt migration (s)
Laguna Anadromous	Wet	8.5%	5.9%	○	○	○	+	−2.7%	○
	Normal	○	3.3%	○	○	○	+	–	○
	Dry	○	+	○	○	○	+	–	○
	Critically dry	○	+	○	○	○	+	○	○
Liddell Anadromous	Wet	4.1%	3.4%	○	○				
	Normal	5.0%	3.4%	○	○				
	Dry	○	–	–	○				
	Critically dry	○	–	–	○				
Majors Anadromous	Wet	○	+	○	○				
	Normal	○	+	○	○				
	Dry	○	–	–	○				
	Critically dry	○	○	○	○				
San Lorenzo below Tait St	Wet	○		–	○	○			○
	Normal	○		–	○	○			○
	Dry	○		–	○	○			○
	Critically dry	○		–	○	○			○
San Lorenzo below Felton	Wet	+	+	–	○	4.9%	–	–	○
	Normal	+	+	–	○	4.6%	–	–	○
	Dry	8.0%	2.6%	○	○	15.8%	+	○	○
	Critically dry	22.0%	6.4%	○	○	15.3%	–	○	○
Newell Anadromous	Wet	6.3%	4.5%	+	3.4%	15.9%	5.1%	–	3.4%
	Normal	19.9%	10.1%	○	14.0%	19.8%	9.2%	–	14.0%
	Dry	50.5%	27.1%	+	44.5%	○	29.6%	+	44.5%
	Critically dry	○	26.3%	8.6%	○	○	50.0%	2.0%	○

Notes: – = <2% decrease in habitat index; + = <2% increase in habitat index; ○ = no change in habitat index, or change of 1 day or less in migration periods.
Values for coho spawning and rearing below Felton are based on change in flow rather than habitat indices.

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Appendix C
Standard Construction Practices

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C Standard Construction Practices

This appendix provides the City's applicable standard construction practices that are implemented for all planned capital construction projects in conjunction with the Anadromous Salmonid Habitat Conservation Plan (ASHCP) and associated Covered Activities. The City has identified the following standard construction practices that would be implemented by the City or its contractors during construction activities associated with the ASHCP, where relevant.

1. Erosion Control. Implement and maintain effective erosion and sediment control measures at all times of the year. Measures may include:
    a. Install silt fencing, fiber or straw wattles, and/or rice straw bales on slopes and along limits of work/construction areas to break up and filter surface runoff.
    b. Utilize additional erosion control including native duff, jute netting, etc.
    c. Utilize additional sediment control including fencing, dams, barriers, berms, traps, and associated basins.
    d. Cover of stockpiled spoils.
    e. Install rolling dips and revegetation on temporary accessways.
    f. Physical stabilization/revegetation of disturbed or graded areas including staging areas, prioritizing the use of native species for revegetation where appropriate.
    g. Install sediment containment measures for all active and inactive stockpiles, spoil disposal sites, concrete wash sites, stabilization structures, and other debris areas, such as Visqueen plastic sheeting, fiber or straw wattles, gravel bags, and hydroseed.
    h. Locate construction storage areas outside of any stream channel, and a minimum distance of 65 feet away from any jurisdictional aquatic resource.
    i. All erosion and sediment control materials shall avoid the use of plastic mesh.
    j. Prior to and following all rain events, all erosion and sediment control devices shall be inspected for their performance and repaired immediately if they are found to be deficient.
2. Restoration. Implement post-construction restoration on temporarily disturbed areas such as staging, new access routes, or work areas. Post-construction restoration may include:
    a. De-compact soils if necessary.
    b. Restore disturbed natural communities by replanting native species appropriate for the site, such as from native riparian, wetland, or upland communities. Planted material may include native seed mixes, pole cuttings, and/or container stock as appropriate.
3. Wind Erosion Control. Implement wind erosion control measures as necessary to prevent construction-related dust generation. Measures may include:
    a. Water active construction areas to control fugitive dust.
    b. Apply hydroseed and/or non-toxic soil binders to exposed cut and fill areas after cut and fill operations.
    c. Cover inactive storage piles.

d. Cover trucks hauling dirt, sand, or loose materials off site.

e. Install appropriately effective track-out capture methods at the construction site for all exiting vehicles.

4. Trash Control. Implement housekeeping measures to manage trash and debris pollution. These measures may include:

   a. Use covered trash containers.

   b. Remove trash from the work site daily and before an extended period of no construction activity, including weekends.

   c. Ensure all trash and debris is removed from the work area at the end of construction activities.

5. Containment of Work Area (Spill Prevention). Implement hazardous materials containment measures to prevent fuel, oil, or any other substances from polluting aquatic or terrestrial habitats. Measures may include:

   a. Prepare a spill response plan to allow a prompt and effective response to any accidental spills.

   b. Inform all workers of the importance of preventing spills and the appropriate measures to take in the event of a spill.

   c. Ensure emergency spill kits are available on site at all times, including spill skits in all vehicles and heavy equipment.

   d. Locate refueling, maintenance, and staging a minimum distance of 65 feet away from any jurisdictional aquatic resource.

   e. Store hazardous materials within an established containment area and store all gas, oil, or other substance that could be considered hazardous in water-tight containers within secondary containment.

   f. Implement appropriate containment measures to minimize the potential for hazardous spills from heavy equipment such as external grease and oil or from leaking hydraulic fluid, fuel, or oil.

   g. Check all equipment daily for leaks.

6. Worker Training. Conduct a worker environmental awareness program (WEAP), prior to the onset of any mobilization-construction activities within the project work area. All construction personnel shall take the training prior to on-site work, and any additional personnel joining the work crew shall receive the same training before beginning work. All personnel shall sign a sign-in sheet showing that they received the training. Brochures, books, and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions. At a minimum the training or presentation, by a qualified biologist, shall include:

   a. Description of project boundaries.

   b. General provisions of the Migratory Bird Treaty Act, California Fish and Game Code, federal and state Endangered Species Acts, local ordinances and code, and any permits covering the work area.

   c. The necessity for adhering to the provision of these regulations.

   d. General measures for the protection of special-status species, including breeding birds and their nests.

   e. Basic identification and importance of special-status species that may occur on or near the project site.

f. The special-status species habitat and how they may be encountered in the work area.

g. Procedures to follow when they are encountered.

7. Construction Monitoring. Conduct pre-construction clearance surveys, construction monitoring, and delineate work areas as required by species-specific measures in the City's Operations and Maintenance HCP, Anadromous Salmonid HCP, and Mount Hermon June Beetle Low Effect HCP for all sites covered by a respective HCP when there is potential for impact to subject species.

8. Vegetation Protection (Trees). To protect onsite vegetation, implement the following measures:

   a. Minimize the potential for pathogen spread by sanitizing tools and equipment used in vegetation clearing including tree removal operations.

   b. If soil is collected on equipment, rinse equipment on site with to remove soil-borne pathogens and prevent transport to new sites. Alternatively, debris can be cleaned from tools/equipment via brushing, sweeping, or blowing with compressed air.

   c. If importing vegetative material for restoration purposes, ensure that material that has been produced in conformance with the latest horticultural standards in pest and disease avoidance and sanitation.

   d. Where applicable implement Project specific tree protection recommendations from an ISA Certified Arborist or a Registered Professional Forester.

9. Vegetation Protection (Riparian). Minimize impacts to riparian vegetation when working in or adjacent to an active stream channel by implementing avoidance and minimization measures. These measures may include:

   a. Avoid disturbance to and limit pruning of existing vegetation whenever possible.

   b. Minimize removal of overstory trees that provide shade to the stream channel or banks through marking trees that are not to be removed.

   c. Trim vegetation using hand tools and maintain canopy, downed trees, and snags to the extent possible.

   d. Limit management of vegetation that is stabilizing the stream banks to trimming and pruning.

   e. Demarcate temporary access routes to limit extent of impacts.

   f. Restore impacted riparian vegetation with native species appropriate for the site.

10. In-Channel Erosion and Sedimentation Control. Implement streambed and bank protection measures for construction activities that are in or adjacent to streams and drainages. These measures may include:

    a. Avoid activities in any active flowing channels when possible.

    b. Time work during the low flow season (June – October) when possible, to avoid work in a wetted channel.

    c. Utilize equipment or methods that do not require access in the channel.

    d. If work within a wetted channel cannot be avoided, isolate and temporarily bypass flowing water around work area before beginning work.

    e. Select appropriate equipment to minimize disturbances such as tracked or wheeled vehicles depending on site conditions.

    f. Use "floating" platforms to distribute the weight of heavy equipment during mobilization in saturated soils.

11. In-Channel Fish Species Protection. Decontaminate tools and equipment prior to entering waterways.

12. In-Channel Dewatering Measures. Implement dewatering measures for projects that cannot avoid impacts when working in a flowing stream. Measures may include:
    a. Isolate the work area from the stream by diverting the entire streamflow around or through the work area by a pipe or open channel.
    b. The work area shall remain isolated from flowing water until any necessary erosion protection is in place.
    c. Where feasible, techniques shall be used to allow stream flow by gravity.
    d. All diversions shall maintain ambient flows.
    e. All water shall be discharged in a non-erosive manner using energy dissipators such as on:
        i. Gravel or vegetated bars.
        ii. Haybales, plastic, concrete.
        iii. In storm drains when equipped with filtering devices.
    f. All discharged water below the work area shall not be diminished or degraded by the diversion.
    g. Dirt, dust, or potential discharge material in the work area will be contained and prevented from entering the flowing channel.
    h. Removal of all foreign materials and temporary diversion structures such as, temporary fills, access ramps, diversion structures, or coffer dams shall be removed:
        i. When the work is complete.
        ii. As soon as reasonably possible, but no more than 72 hours after work is complete.
    i. Normal flows shall be restored to the affected stream as soon as is feasible or safe after completion.
    j. If water must be pumped around the work area, as gravity flow is not feasible:
        i. Pumps and hoses shall be screened to prevent vertebrate intake.
        ii. Sumps or basins may be used where appropriate to collect water (e.g., in channel with low flows).
    k. If a bypass diversion will be open channel design, the berm confining the channel may be constructed of material from the channel.
    l. Suitable site-specific conditions for a coffer dam installation up and downstream include:
        i. Proximity to the construction zone.
        ii. Type of construction activities to be conducted.
    m. If coffer dams installation is determined to be suitable for the site, construction shall be adequate to prevent seepage into or from the work area to the maximum extent feasible.

13. In-Channel Species Capture and Relocation. Implement aquatic species capture and relocation during temporary water diversion to the extent feasible to minimize the potential for killing or harming native aquatic vertebrates in the work area. If the safety of the biologist conducting the capture may be compromised or if the equipment or gear is not reasonably effective for the operation, relocation is not required. Measures may include:

a. Work area may be isolated using fine mesh or block nets.

b. Methods of removal will be determined based on the site conditions but may include electrofishing, dipnet, or seine.

c. Relocation shall be done by a qualified biologist.

d. Relocation shall be in a nearby suitable habitat.

e. Handling and holding time will be minimized to the maximum extent practicable.

f. As the work site is de-watered, the remaining pools will be inspected for presence of aquatic species suitable for relocation.

14. In-Channel Restoration. Implement post-construction streambed and bank measures unless the pre-existing condition was detrimental to the channel condition as determined by a qualified biologist or hydrologist. Measures may include:

    a. Return streambed to as close to pre-project condition as possible.

    b. Return stream contours to original condition.

15. Archaeological Resources. Any unrecorded archaeological resources (sites, features, and/or artifacts) exposed during construction are subject to protection and consideration under CEQA and the California Public Resources Code (PRC) as well as Section 106 of the National Historic Preservation Act (NHPA) as detailed in the Code of Federal Regulations (CFR). The CEQA Guidelines Section 15064.5(f) specifically addresses provisions the City of Santa Cruz will make regarding accidental discovery of historical or unique archaeological resources during construction. The responsibilities of the lead federal agency to avoid, minimize or mitigate adverse effects to a "historic property" (36 CFR Section 800.16) are detailed in 36 CFR Section 800.13[b] and would be applicable for a project with federal involvement by way of funding, permitting, approval authority, or other means. In general, the implementation procedures under CEQA and the NHPA in the case of an inadvertent archaeological discovery during construction are similar and are as follows:

    a. If archaeological resources are exposed immediately stop any construction work occurring within 100 feet which may further disturb the find. NOTE – This is a general guideline for the initial response, the exclusion zone may be contracted or expanded depending on the nature of discovery and type of construction activity proposed in the vicinity of the find. The duration of the exclusion zone will be determined by the City and the federal lead agency and is contingent on the approved course of action in response to the discovery.

    b. Immediately notify the City Project Manager who shall immediately notify the Water Department Deputy Director/Engineering Manager.

    c. A qualified archaeologist meeting the Secretary of the Interior's Professional Qualification Standards will evaluate the state and federal significance of the find for eligibility to the California Register of Historical Resources (CRHR) and the National Register of Historic Places (NRHP) in coordination with City staff.

    d. The City will notify the lead federal agency within 24 hours of discovery. The notification shall describe the assessment of the NRHP eligibility of the resource, specify the NRHP criteria used to evaluate the property's eligibility, and propose actions to resolve any adverse effects.

    e. The federal lead agency will contact the State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation (ACHP), and any interested locally affiliated Native American tribes. The SHPO, ACHP, and Native American tribes will respond within 48 hours of the notification. The federal lead agency shall

consider any recommendations regarding National Register eligibility and proposed actions and notify the City of the appropriate actions. The federal lead agency official shall provide the SHPO and the ACHP a report of the actions when they are completed.

f. Avoidance and/or minimization of impacts/effects is the preferred course of actions under both state and federal guidelines. If preservation in place is not possible because the Water Director determines that preservation in place would preclude the construction of important structures or infrastructure, or require exorbitant expenditures, additional study will likely be required. In coordination with the lead federal agency, the City will prepare a data recovery/treatment plan for retrieving important archaeological data relevant to the site's significance. The data recovery/treatment plan will be submitted to participating tribes and agencies for review and comment prior to implementation.

g. If the inadvertent discovery location cannot be avoided, and continuing work would have an adverse effect on the site, the federal agency, in coordination with the City, SHPO, and Native American tribes as appropriate, will need to draft and finalize a Memorandum of Agreement for the treatment of the historic property before work can proceed.

h. Implementation of the data recovery/treatment plan may include archaeological excavations, technical and laboratory analysis, and further consultation and coordination with Native American tribal representatives.

i. A full written report will be prepared to include the results of all technical analyses and special studies will be provided to participating tribes and agencies for review and comment. The report will be filed with the Northwest Information Center and will also provide for the permanent curation of recovered materials.

16. Archaeological Resources (Human Remains). In California, the illegal possession of human remains is a felony, punishable by imprisonment (California Penal Code Section 1170[h]; Public Resources Code 5097.99[a] and [b]). Inadvertent discoveries of human remains exposed during construction on non-federal lands are subject to protection under CEQA and the NHPA. In accordance with Section 7050.5 of the California Health and Safety Code and the NHPA, if potential human remains are found, immediately notify the City, the lead federal agency, and the Santa Cruz County Coroner of the discovery. The Santa Cruz County Coroner will provide a determination within 48 hours of notification. No further excavation or disturbance of the identified material, or any area reasonably suspected to overlie additional remains, can occur until a determination has been made.

    a. If human remains are exposed immediately stop any construction work occurring within 100 feet which may further disturb the find. NOTE – This is a general guideline for the initial response, the exclusion zone may be contracted or expanded depending on the nature of discovery and type of construction activity proposed in the vicinity of the find. The duration of the exclusion zone is contingent on the course of action mandated by the City and lead federal agency.

    b. If the Santa Cruz County Coroner determines that the remains are, or are believed to be, Native American, the coroner will notify the Native American Heritage Commission (NAHC) within 24 hours and all the actions described in these Standard Construction Practices regarding Inadvertent Archaeological Discoveries shall be followed.

    c. In accordance with California Public Resources Code, Section 5097.98 and Section 106 of the NHPA, the NAHC must immediately notify those persons it believes to be the Most Likely Descendant (MLD) from the deceased Native American.

    d. Within 48 hours of this notification, the MLD will recommend to the City and lead federal agency her/his preferred treatment of the remains and associated grave goods.

e. The ultimate disposition of the remains will be coordinated between the City, the federal agency, the MLD, the landowner, and the NAHC (if necessary).

f. The lead federal agency will have additional government-to-government consultation requirements per the requirements of Section 106 [36 CFR § 800.2(c)(2)(ii)] which cannot be delegated to non-federal entities.

17. Nighttime Construction. For nighttime construction projects, notify adjacent property owners of nighttime construction schedules and identify a Construction Noise Coordinator. The contact number for the Construction Noise Coordinator will be included on notices distributed to neighbors regarding planned nighttime construction activities. The Construction Noise Coordinator will be responsible for responding to any local complaints about construction noise. When a complaint is received, the Construction Noise Coordinator shall notify the City within 48 hours of the complaint, determine the cause of the noise complaint, and implement as possible reasonable measures to resolve the complaint, as deemed acceptable by the City.

18. Fire Suppression. For construction in wildlands or in the wildland-urban interface, internal combustion engine equipment shall include spark arrestors, fire suppression equipment (e.g. fire extinguishers and shovels) shall be stored on site during use of such mechanical equipment, and construction activities shall not be conducted during red flag warnings issued by the California Department of Forestry and Fire Protection (CAL FIRE) unless adequate fire protection measures are implemented in compliance with federal, state, and local fire prevention and protection regulations and guidance. Fire safety measures will be detailed in a Fire Safety Program on a project-by-project basis. Red flag warnings and fire weather watches are issued by CAL FIRE based on weather patterns (low humidity, strong winds, dry fuels, etc.) and listed on their website (https://www.fire.ca.gov/programs/communications/red-flag-warnings-fire-weather-watches/).

19. Preconstruction Nesting Bird Surveys. Vegetation removal activities shall be conducted outside the bird nesting season (February 1 through August 31) as possible to avoid direct impacts to nesting birds. For construction and vegetation removal activities occurring during the nesting season, a preconstruction survey of the work areas for active bird nests shall be conducted by a qualified wildlife biologist no more than seven days prior to the start of vegetation removal or construction activities. Once construction has started, if there is a break in activities that exceeds seven days, another survey shall be conducted. If at any time during construction or vegetation removal activities an active bird nest is found, the nest shall be flagged and the biologist shall determine an appropriate no-disturbance buffer based on the species' sensitivity to disturbance. The buffer shall be avoided until the nest is vacated or the young have fledged. The no-disturbance buffer shall be demarcated in the field with flagging and stakes or construction fencing as determined appropriate by the biologist.

20. Standard Sensitivity Training. The City shall include a standard clause in every construction contract that requires cultural resource sensitivity training for workers prior to conducting earth disturbance in the vicinity of a documented cultural-resource-sensitive area, should one be identified in the future. Prior to site mobilization or construction activities, a qualified archaeologist with training and experience in California prehistory and historical-period archaeology shall conduct the cultural resources awareness training for all construction personnel. The training format may be in person, virtual, or a video recording. The training shall address the identification of buried cultural deposits, including Native American and historical-period archaeological deposits and potential tribal cultural resources, and cover identification of typical prehistoric archaeological site components including midden soil, lithic debris, and dietary remains as well as typical historical-period remains such as glass and ceramics. The training must also explain procedures for stopping work if suspected

resources are encountered. Any personnel joining the work crew subsequent to the training shall also receive the same training before beginning work.

21. Standard Paleontological Clauses in Construction Contracts. The City shall include standard clauses in construction contracts for projects located in areas with moderate to high paleontological sensitivity. A standard clause shall be included that requires paleontological resource sensitivity training for workers prior to conducting earth disturbance activities. A standard inadvertent discovery clause shall also be included that indicates that in the event that paleontological resources (e.g., fossils) are unearthed during grading, the paleontological monitor will temporarily halt and/or divert grading activity to allow recovery of paleontological resources. The area of discovery will be roped off with a 50-foot-radius buffer. Once documentation and collection of the find is completed, the monitor will allow grading to recommence in the area of the find.

22. Construction Noise. The following measures shall be implemented during construction activities:

- Restrict construction activities and use of equipment that have the potential to generate significant noise levels (e.g., use of concrete saw, mounted impact hammer, jackhammer, rock drill, etc.) to between the hours of 8:00 a.m. and 5:00 p.m., unless specifically identified work outside these hours is authorized by the City's Water Director as necessary to allow for safe access to a construction site, safe construction operations, efficient construction progress, and/or to account for prior construction delays outside of a contractor's control (e.g., weather delays).
- Construction activities requiring operations continuing outside of the standard work hours of 8:00 a.m. and 5:00 p.m. (e.g., borehole drilling operations) shall locate noise generating equipment as far as possible from noise-sensitive receptors, and/or within an acoustically rated enclosure (meeting or exceeding Sound Transmission Class [STC] 27), shroud or temporary barrier as needed to prevent the propagation of sound into the surrounding areas in excess of the 60 dBA nighttime (10:00 p.m. to 8:00 a.m.) and 75 dBA daytime (8:00 a.m. to 10:00 p.m.) criteria at the nearest sensitive receptor. Noisy construction equipment, such as temporary pumps that are not submerged, aboveground conveyor systems, and impact tools will likely require location within such an acoustically rated enclosure, shroud or barrier to meet these above criteria. Impact tools, in particular, shall have the working area/impact area shrouded or shielded whenever possible, with intake and exhaust ports on power equipment muffled or suppressed. Impact tools may necessitate the use of temporary or portable, application-specific noise shields or barriers to achieve compliance.
- Portable and stationary site support equipment (e.g., generators, compressors, and cement mixers) shall be located as far as possible from nearby noise-sensitive receptors.
- Construction equipment and vehicles shall be fitted with efficient, well-maintained mufflers that reduce equipment noise emission levels at the project site. Internal-combustion-powered equipment shall be equipped with properly operating noise suppression devices (e.g., mufflers, silencers, wraps) that meet or exceed the manufacturer's specifications. Mufflers and noise suppressors shall be properly maintained and tuned to ensure proper fit, function, and minimization of noise.
- Construction equipment shall not be idled for extended periods of time (i.e., 5 minutes or longer) in the immediate vicinity of noise-sensitive receptors.

Appendix D

Special-Status Plant and Wildlife Species Evaluated

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Table D-1. Special-Status Plant Species Evaluated

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Analyzed under CEQA	Rationale
Blasdale's bent grass	*Agrostis blasdalei*	None/None/1B.2	Coastal bluff scrub, Coastal dunes, Coastal prairie/ perennial rhizomatous herb/ May–July/0–490	N	The Plan Area supports suitable habitat but activities are not expected to adversely affect the species or its habitat.
bent-flowered fiddleneck	*Amsinckia lunaris*	None/None/1B.2	Cismontane woodland, Coastal bluff scrub, Valley and foothill grassland/ annual herb/Mar–June/10–1,640	N	The Plan Area supports suitable habitat but activities are not expected to adversely affect the species or its habitat.
Anderson's manzanita	*Arctostaphylos andersonii*	None/None/1B.2	Broadleafed upland forest, Chaparral, North Coast coniferous forest; Edges, Openings/perennial evergreen shrub/Nov–May/ 195–2,490	N	The Plan Area supports suitable habitat but activities are not expected to adversely affect the species or its habitat.
Schreiber's manzanita	*Arctostaphylos glutinosa*	None/None/1B.2	Chaparral, Closed-cone coniferous forest/perennial evergreen shrub/Mar–Apr(Nov)/560–2,245	N	The Plan Area supports suitable habitat but activities are not expected to adversely affect the species or its habitat.
Ohlone manzanita	*Arctostaphylos ohloneana*	None/None/1B.1	Closed-cone coniferous forest, Coastal scrub/ evergreen shrub/Feb–Mar/ 1,475–1,735	N	The Plan Area is outside of the elevation range.
Bonny Doon manzanita	*Arctostaphylos silvicola*	None/None/1B.2	Chaparral, Closed-cone coniferous forest, Lower montane coniferous forest/ perennial evergreen shrub/ Jan–Mar/395–1,965	Y	The Plan Area supports suitable habitat and CNDDB occurrence no. 1 (CDFW 2022) overlaps the existing City pipeline near Felton. Activities in this area could have minor adverse effects on the species and its habitat.

Table D-1. Special-Status Plant Species Evaluated

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Analyzed under CEQA	Rationale
marsh sandwort	*Arenaria paludicola*	FE/SE/1B.1	Marshes and swamps; Openings, Sandy/perennial stoloniferous herb/May–Aug/10–560	N	The Plan Area does not support suitable habitat. The only extant occurrence near the Plan Area is a 2013 reintroduction into Wilder State Park (CDFW 2022).
Humboldt County milk-vetch	*Astragalus agnicidus*	None/SE/1B.1	Broadleafed upland forest, North Coast coniferous forest; Disturbed areas, Openings, Roadsides (sometimes)/perennial herb/ Apr–Sep/395–2,620	N	The Plan Area supports suitable habitat but activities are not expected to adversely affect the species or its habitat. The only regional occurrence is a May 15, 2022 observation of a disjunct population at the north end of Wilder Ranch State Park (CDFW 2022; Occurrence No. 80); this species was formerly only known from Humboldt and Mendocino Counties.
Santa Cruz Mountains pussypaws	*Calyptridium parryi* var. *hesseae*	None/None/1B.1	Chaparral, Cismontane woodland; Gravelly (sometimes), Openings, Sandy (sometimes)/annual herb/May–Aug/1,000–5,015	N	The Plan Area does not support suitable habitat and is outside of the elevation range.
swamp harebell	*Campanula californica*	None/None/1B.2	Bogs and fens, Closed-cone coniferous forest, Coastal prairie, Marshes and swamps, Meadows and seeps, North Coast coniferous forest; Mesic/ perennial rhizomatous herb/ June–Oct/5–1,325	N	The Plan Area supports suitable habitat but the only nearby occurrence is a 1944 observation in a bog near Camp Evers that has since been extirpated (CDFW 2022).

Table D-1. Special-Status Plant Species Evaluated

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Analyzed under CEQA	Rationale
deceiving sedge	*Carex saliniformis*	None/None/1B.2	Coastal prairie, Coastal scrub, Marshes and swamps, Meadows and seeps; Mesic/perennial rhizomatous herb/June (July)/10–755	Y	The Plan Area supports suitable mesic habitat and a 2000 occurrence in "slightly disturbed soil and partial shade" on the upper UC Santa Cruz Campus (CDFW 2022; Occurrence No. 16) resembles conditions that may occur in areas affected by activities.
Ben Lomond spineflower	*Chorizanthe pungens* var. *hartwegiana*	FE/None/1B.1	Lower montane coniferous forest/annual herb/Apr–July/295–2,000	Y	OMHCP Covered Species.
Monterey spineflower	*Chorizanthe pungens* var. *pungens*	FT/None/1B.2	Chaparral, Cismontane woodland, Coastal dunes, Coastal scrub, Valley and foothill grassland; Sandy/ annual herb/Apr–June (July–Aug)/10–1,475	N	The Plan Area is outside the known geographic range.
Scotts Valley spineflower	*Chorizanthe robusta* var. *hartwegii*	FE/None/1B.1	Meadows and seeps, Valley and foothill grassland/ annual herb/Apr–July/755–805	N	Although the Plan Area overlaps a 1959 occurrence between Felton and Olympia (CDFW 2022; Occ.F2 No. 4), the exact location of this occurrence is unknown and the species is endemic to grasslands in the Scotts Valley region, which is outside the Plan Area.
robust spineflower	*Chorizanthe robusta* var. *robusta*	FE/None/1B.1	Chaparral, Cismontane woodland, Coastal dunes, Coastal scrub; Gravelly (sometimes), Sandy (sometimes)/annual herb/ Apr–Sep/10–985	Y	OMHCP Covered Species.

Table D-1. Special-Status Plant Species Evaluated

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Analyzed under CEQA	Rationale
San Francisco collinsia	*Collinsia multicolor*	None/None/1B.2	Closed-cone coniferous forest, Coastal scrub; Serpentinite (sometimes)/ annual herb/(Feb)Mar–May/ 100–900	N	The Plan Area supports suitable habitat but activities are not expected to adversely affect the species or its habitat.
tear drop moss	*Dacryophyllum falcifolium*	None/None/1B.3	North Coast coniferous forest; Carbonate/moss/ 165–900	N	The Plan Area supports suitable habitat but activities are not expected to adversely affect the species or its habitat.
Ben Lomond buckwheat	*Eriogonum nudum* var. *decurrens*	None/None/1B.1	Chaparral, Cismontane woodland, Lower montane coniferous forest; Sandy/ perennial herb/June–Oct/ 165–2,620	Y	The Plan Area supports suitable sandhills habitat that overlaps the existing City pipeline near Felton. Activities in this area could have minor adverse effects on the species and its habitat.
Santa Cruz wallflower	*Erysimum teretifolium*	FE/SE/1B.1	Chaparral, Lower montane coniferous forest/perennial herb/Mar–July/395–2,000	Y	The Plan Area supports suitable sandhills habitat that overlaps the existing City pipeline near Felton. Activities in this area could have minor adverse effects on the species and its habitat.
minute pocket moss	*Fissidens pauperculus*	None/None/1B.2	North Coast coniferous forest/moss/N.A./35–3,355	Y	The Plan Area supports suitable habitat. Activities in redwood forest could have minor adverse effects on this species and its habitat, if present.

Table D-1. Special-Status Plant Species Evaluated

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Analyzed under CEQA	Rationale
Santa Cruz cypress	*Hesperocyparis abramsiana* var. *abramsiana*	FT/SE/1B.2	Chaparral, Closed-cone coniferous forest, Lower montane coniferous forest; Granitic (sometimes), Sandstone (sometimes)/ perennial evergreen tree/ 920–2,620	N	The Plan Area supports suitable habitat but activities are not expected to adversely affect the species or its habitat.
Loma Prieta hoita	*Hoita strobilina*	None/None/1B.1	Chaparral, Cismontane woodland, Riparian woodland; Mesic, Serpentinite (usually)/ perennial herb/May–July(Aug–Oct)/100–2,820	N	The Plan Area does not support suitable habitat and there are no nearby occurrences.
Santa Cruz tarplant	*Holocarpha macradenia*	FT/SE/1B.1	Coastal prairie, Coastal scrub, Valley and foothill grassland; Clay (often), Sandy/annual herb/June–Oct/35–720	Y	OMHCP Covered Species.
Kellogg's horkelia	*Horkelia cuneata* var. *sericea*	None/None/1B.1	Chaparral, Closed-cone coniferous forest, Coastal dunes, Coastal scrub; Gravelly (sometimes), Openings, Sandy (sometimes)/perennial herb/ Apr–Sep/35–655	N	The Plan Area does not support suitable habitat. Most regional occurrences are historic.
Point Reyes horkelia	*Horkelia marinensis*	None/None/1B.2	Coastal dunes, Coastal prairie, Coastal scrub; Sandy/perennial herb/May–Sep/15–2,475	N	The Plan Area supports suitable grassland habitat but activities are not expected to adversely affect the species or its habitat. All known occurrences are outside pipeline rights-of-way.

Table D-1. Special-Status Plant Species Evaluated

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Analyzed under CEQA	Rationale
perennial goldfields	*Lasthenia californica* ssp. *macrantha*	None/None/1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub/ perennial herb/Jan–Nov/ 15–1,705	N	The Plan Area does not support suitable habitat and there are no extant occurrences in the region.
arcuate bush-mallow	*Malacothamnus arcuatus*	None/None/1B.2	Chaparral, Cismontane woodland/perennial deciduous shrub/Apr–Sep/ 50–1,160	N	The Plan Area supports suitable habitat but there are no nearby occurrences. The only occurrence in the County is an undated and unspecified location "in the vicinity of Mt. Banche Road" (CDFW 2022; Occ. No. 5), well outside the Plan Area.
marsh microseris	*Microseris paludosa*	None/None/1B.2	Cismontane woodland, Closed-cone coniferous forest, Coastal scrub, Valley and foothill grassland/ perennial herb/Apr–June(July)/15–1,160	N	The Plan Area supports suitable habitat but there are only three historic occurrences in the region, none of which are mapped to greater than 3/5-mile-radius accuracy (CDFW 2022).
northern curly-leaved monardella	*Monardella sinuata* ssp. *nigrescens*	None/None/1B.2	Chaparral, Coastal dunes, Coastal scrub, Lower montane coniferous forest; Sandy/annual herb/ (Apr)May–July(Aug–Sep)/0–985	N	The Plan Area supports suitable habitat but activities are not expected to adversely affect the species or its habitat.
woodland woollythreads	*Monolopia gracilens*	None/None/1B.2	Broadleafed upland forest, Chaparral, Cismontane woodland, North Coast coniferous forest, Valley and foothill grassland; Serpentinite/annual herb/ (Feb)Mar–July/330–3,935	N	The Plan Area supports suitable habitat but activities are not expected to adversely affect the species or its habitat.

Table D-1. Special-Status Plant Species Evaluated

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Analyzed under CEQA	Rationale
Dudley's lousewort	*Pedicularis dudleyi*	None/SR/1B.2	Chaparral, Cismontane woodland, North Coast coniferous forest, Valley and foothill grassland/perennial herb/Apr–June/195–2,950	N	The Plan Area supports suitable habitat but the only two occurrences in Santa Cruz County are over 100 years old (CDFW 2022).
Santa Cruz Mountains beardtongue	*Penstemon rattanii* var. *kleei*	None/None/1B.2	Chaparral, Lower montane coniferous forest, North Coast coniferous forest/ perennial herb/May–June/ 1,310–3,605	N	The Plan Area supports suitable habitat and there is a known occurrence on the City's Laguna Creek watershed property (Berry, pers. comm.) but activities are not expected to adversely affect the species or its habitat.
white-rayed pentachaeta	*Pentachaeta bellidiflora*	FE/SE/1B.1	Cismontane woodland, Valley and foothill grassland/ annual herb/Mar–May/115–2,030	N	The Plan Area supports suitable habitat but there are only three historic occurrences in the region, two of which are "possibly extirpated" and none of which are mapped to greater than 3/5-mile-radius accuracy (CDFW 2022).
Monterey pine	*Pinus radiata*	None/None/1B.1	Cismontane woodland, Closed-cone coniferous forest/perennial evergreen tree/N.A./80–605	N	The Plan Area is outside the known geographic range. This species is widely naturalized along the California coast; CRPR 1B only applies to native stands growing on the Monterey Peninsula.

Table D-1. Special-Status Plant Species Evaluated

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Analyzed under CEQA	Rationale
white-flowered rein orchid	*Piperia candida*	None/None/1B.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest; Serpentinite (sometimes)/ perennial herb/(Mar)May–Sep/100–4,295	N	The Plan Area supports suitable habitat but the only regional occurrence is a non-specific 1966 (CDFW 2022) observation in the vicinity of Boulder Creek, outside the Plan Area.
Choris' popcornflower	*Plagiobothrys chorisianus* var. *chorisianus*	None/None/1B.2	Chaparral, Coastal prairie, Coastal scrub; Mesic/annual herb/Mar–June/10–525	Y	The Plan Area supports suitable native grassland habitat in the Laguna and Majors Creek watersheds and Moore Creek Preserve. Covered Activities in these areas could have adverse effects on the species and its habitat.
San Francisco popcornflower	*Plagiobothrys diffusus*	None/SE/1B.1	Coastal prairie, Valley and foothill grassland/annual herb/Mar–June/195–1,180	Y	OMHCP Covered Species.
Scotts Valley polygonum	*Polygonum hickmanii*	FE/SE/1B.1	Valley and foothill grassland/annual herb/ May–Aug/690–820	N	The Plan Area is outside the known geographic range of this species, which is endemic to the grasslands of the Scotts Valley area.
chaparral ragwort	*Senecio aphanactis*	None/None/2B.2	Chaparral, Cismontane woodland, Coastal scrub; Alkaline (sometimes)/annual herb/Jan–Apr(May)/50–2,620	N	The Plan Area is outside the known geographic range.

Table D-1. Special-Status Plant Species Evaluated

Common Name	Scientific Name	Status (Federal/State/CRPR)	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet)	Analyzed under CEQA	Rationale
Santa Cruz microseris	*Stebbinsoseris decipiens*	None/None/1B.2	Broadleafed upland forest, Chaparral, Closed-cone coniferous forest, Coastal prairie, Coastal scrub, Valley and foothill grassland; Openings, Serpentinite (sometimes)/annual herb/ Apr–May/35–1,640	N	The Plan Area is outside the known geographic range.
Santa Cruz clover	*Trifolium buckwestiorum*	None/None/1B.1	Broadleafed upland forest, Cismontane woodland, Coastal prairie; Gravelly/ annual herb/Apr–Oct/ 345–2,000	Y	The Plan Area supports suitable native grassland habitat in the Laguna and Majors Creek watersheds and Moore Creek Preserve. Activities in these areas could have adverse effects on the species and its habitat.
Pacific Grove clover	*Trifolium polyodon*	None/SR/1B.1	Closed-cone coniferous forest, Coastal prairie, Meadows and seeps, Valley and foothill grassland; Granitic (sometimes), Mesic/ annual herb/Apr–June(July)/ 15–1,390	N	The Plan Area supports suitable grassland habitat but activities are not expected to adversely affect the species or its habitat. All known occurrences are outside pipeline rights-of-way.

Notes:
Status Legend:
FE: Federally listed as endangered
FT: Federally listed as threatened
SE: State listed as endangered
SR: State Rare
CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere
CRPR 2B: Plants rare, threatened, or endangered in California but more common elsewhere
.1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 Moderately threatened in California (20–80% occurrences threatened / moderate degree and immediacy of threat)
.3 Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

Table D-2. Special-Status Wildlife Species Evaluated

Common Name	Scientific Name	Status (Federal/State)	Habitat	Analyzed under CEQA	Rationale
Invertebrates					
Bay checkerspot butterfly	*Euphydryas editha bayensis*	FT/None	Serpentine grassland in Santa Clara and San Mateo Counties. Primary host plant is native plantain (*Plantago erecta*) with two secondary host plants: purple owl's-clover (*Castilleja densiflora*) and exserted paintbrush (*Castilleja exserta*).	N	The Plan Area is outside the known geographic range.
Monarch butterfly (California overwintering population)	*Danaus plexippus*	FC/None	Wind-protected tree groves with nectar sources and nearby water sources.	N	The Plan Area supports suitable habitat but activities are not expected to adversely affect the species or its habitat.
Mount Hermon (=barbate) June beetle	*Polyphylla barbata*	FE/None	Known only from Zayante sandhills in Santa Cruz County, where may occur in any habitat where sandy soils of the Zayante series are present, including transitional soils and associated habitat.	Y	OMHCP Covered Species.
Ohlone tiger beetle	*Cicindela ohlone*	FE/None	Remnant native grasslands with California oatgrass (*Danthonia californica*) and purple needlegrass (*Stipa pulchra*) in Santa Cruz County.	Y	OMHCP Covered Species.
San Bruno elfin butterfly	*Callophrys mossii bayensis*	FE/None	Restricted to San Mateo County; known colonies occur at San Bruno Mountain, the Montara Mountain region, and Milagra Ridge. Within these areas it occurs in coastal grasslands and low scrub on north-facing slopes that support stonecrop (*Sedum sphathulifolium*), its only known larval host plant.	N	The Plan Area is outside the known geographic range.

Table D-2. Special-Status Wildlife Species Evaluated

Common Name	Scientific Name	Status (Federal/State)	Habitat	Analyzed under CEQA	Rationale
Smith's blue butterfly	*Euphilotes enoptes smithi*	FE/None	Restricted to Monterey and Santa Cruz Counties, where they occur in coastal sand dunes, coastal sage scrub, chaparral, grassland, and their ecotones.	N	The Plan Area does not support suitable habitat. Regional occurrences limited to two historic CNDDB occurrences at Mount Hermon in 1983 and along Loma Prieta Road in 1999 (CDFW 2022), neither of which overlap the Plan Area.
western bumble bee, southern subspecies	*Bombus occidentalis occidentalis*	None/None	Once common and widespread, species has declined precipitously from central California to southern British Columbia, perhaps from disease. Current known locations are high elevation sites in northern California and a few sites on the northern California coast. Nests underground in squirrel burrows, in mouse nests, and in open west-southwest facing slopes bordered by trees.	N	The Plan Area is outside of this subspecies' current known geographic range. There are 13 CNDDB occurrences in the region but most are historic and lack specific locality information.
Zayante band-winged grasshopper	*Trimerotropis infantilis*	FE/None	Known only from Zayante sandhills and adjacent transitional soils in Santa Cruz County, where it occurs in sparsely vegetated ponderosa pine and chaparral habitat with sandy soils of the Zayante series derived from marine deposits.	Y	The Plan Area supports moderately suitable Zayante sandhills habitat and activities could adversely affect the species or its habitat.

Table D-2. Special-Status Wildlife Species Evaluated

Common Name	Scientific Name	Status (Federal/State)	Habitat	Analyzed under CEQA	Rationale
Fishes					
coho salmon - central California coast ESU	*Oncorhynchus kisutch pop. 4*	FE/SE	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.	Y	Covered Species. Historically documented throughout the Laguna, Liddell, Majors, San Lorenzo, and Soquel watersheds (CDFW 2022), occasionally observed in Liddell and Majors watersheds in recent years.
eulachon	*Thaleichthys pacificus*	FT/None	Found in Klamath River, Mad River, and Redwood Creek and in small numbers in Smith River and Humboldt Bay tributaries.	N	The Plan Area is outside the known geographic range.
Monterey roach	*Lavinia symmetricus subditus*	None/SSC	Tributaries to Monterey Bay, specifically the Salinas, Pajaro, & San Lorenzo drainages. Generally found in small, intermittent streams, where dense populations are often observed in isolated pools.	Y	The Plan Area supports suitable stream habitat and activities could adversely affect the species or its habitat. There are several CNDDB occurrences of this species in the San Lorenzo River (CDFW 2022).
Pacific lamprey	*Entosphenus tridentatus*	None/SSC	Freshwater habitat includes lakes, rivers, and creeks; soft substrates in shallow areas along banks.	Y	OMHCP Covered Species.

Table D-2. Special-Status Wildlife Species Evaluated

Common Name	Scientific Name	Status (Federal/State)	Habitat	Analyzed under CEQA	Rationale
steelhead - central California coast DPS	*Oncorhynchus mykiss irideus* pop. 8	FT/None	Spawns in streams from the Russian River, Sonoma County, to Aptos Creek, Santa Cruz County, California (inclusive). Also occur in drainages tributary to 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.	Y	Covered Species. Documented throughout the Laguna, Liddell, Majors, San Lorenzo and other watersheds (CDFW 2022).
steelhead - south-central California coast DPS	*Oncorhynchus mykiss irideus* pop. 9	FT/None	Coastal basins from Redwood Creek south to the Gualala River, inclusive; does not include summer-run steelhead.	N	The Plan Area is outside the known geographic range.
tidewater goby	*Eucyclogobius newberryi*	FE/SSC	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County, to the mouth of the Smith River.	Y	OMHCP Covered Species.

Table D-2. Special-Status Wildlife Species Evaluated

Common Name	Scientific Name	Status (Federal/State)	Habitat	Analyzed under CEQA	Rationale
Amphibians					
California giant salamander	*Dicamptodon ensatus*	None/SSC	Known from wet coastal forests and chaparral near streams and seeps from Mendocino Co. south to Monterey Co. and east to Napa Co. Aquatic larvae found in cold, clear streams, occasionally in lakes and ponds. Adults known from wet forests under rocks and logs near streams and lakes.	Y	The Plan Area supports suitable stream and riparian habitat and activities could adversely affect the species or its habitat. Many CNDDB occurrences for this species have been documented in coniferous and riparian forests in the region, including the North Coast watersheds (CDFW 2022).
California red-legged frog	*Rana draytonii*	FT/SSC	Lowland streams, wetlands, riparian woodlands, livestock ponds; dense, shrubby or emergent vegetation associated with deep, still or slow-moving water; uses adjacent uplands.	Y	OMHCP Covered Species.
California tiger salamander	*Ambystoma californiense*	FT/ST	Annual grassland, valley–foothill hardwood, and valley–foothill riparian habitats; vernal pools, other ephemeral pools, and (uncommonly) along stream courses and man-made pools if predatory fishes are absent.	N	The Plan Area does not support suitable habitat. Regional occurrences limited to seasonal ponds west of Watsonville (CDFW 2022).
foothill yellow-legged frog - Central Coast DPS	*Rana boylii*	PT/SE, SSC	Rocky streams and rivers with open banks in forest, chaparral, and woodland.	N	The Plan Area does not support suitable habitat. Regional occurrence limited to the Soquel Creek watershed outside and east of Plan Area.

Table D-2. Special-Status Wildlife Species Evaluated

Common Name	Scientific Name	Status (Federal/State)	Habitat	Analyzed under CEQA	Rationale
Santa Cruz black salamander	*Aneides flavipunctatus niger*	None/SSC	Restricted to mesic forests in the fog belt of the outer Coast Range of San Mateo, Santa Cruz, and Santa Clara counties. Mixed deciduous and coniferous woodlands and coastal grasslands. Occurs in moist streamside microhabitats and is found under rocks, talus, and damp woody debris.	Y	The Plan Area supports suitable stream and riparian habitat and activities could adversely affect the species or its habitat. Many CNDDB occurrences for this species have been documented in coniferous and riparian forests in the region (CDFW 2022).
Santa Cruz long-toed salamander	*Ambystoma macrodactylum croceum*	FE/FP, SE	Temporary ponds for breeding and adjacent riparian vegetation, coastal scrub, and oak woodland during the nonbreeding season. This subspecies is restricted to southern Santa Cruz and northern Montery Counties. Its entire distribution spans no more than 15 miles.	N	The Plan Area is outside the known geographic range.
Reptiles					
San Francisco garter snake	*Thamnophis sirtalis tetrataenia*	FE/SE, FP	Endemic to San Francisco Peninsula from northern San Mateo County along eastern Santa Cruz Mountains and west to Point Ano Nuevo. Most commonly associated with emergent vegetation along the borders of ponds, marshes, and lakes. Rodent burrows in adjacent uplands are an important habitat component as they provide hibernation sites and escape cover.	N	The Plan Area is outside the known geographic range.

Table D-2. Special-Status Wildlife Species Evaluated

Common Name	Scientific Name	Status (Federal/State)	Habitat	Analyzed under CEQA	Rationale
western pond turtle	*Emys (=Actinemys) marmorata*	None/SSC	Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter.	Y	OMHCP Covered Species.
Birds					
American peregrine falcon (nesting)	*Falco peregrinus anatum*	None/FP	Nests on cliffs, buildings, and bridges; forages in wetlands, riparian, meadows, croplands, especially where waterfowl are present.	N	The Plan Area supports suitable habitat and species has been observed foraging at Loch Lomond Reservoir but activities are not expected to result in take of active nests.
bald eagle (nesting & wintering)	*Haliaeetus leucocephalus*	BGEPA/SE, FP	Nests in forested areas adjacent to large bodies of water, including seacoasts, rivers, swamps, large lakes; winters near large bodies of water in lowlands and mountains.	N	The Plan Area supports suitable nesting and foraging habitat and species has been observed foraging at Loch Lomond Reservoir but activities are not expected to result in take of the species.
bank swallow (nesting)	*Riparia riparia*	None/ST	Nests in riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with sandy soils; open country and water during migration.	N	The Plan Area does not support suitable habitat.
black swift (nesting)	*Cypseloides niger*	None/SSC	Nests in moist crevices, caves, and cliffs behind or adjacent to waterfalls in deep canyons; forages over a wide range of habitats.	N	The Plan Area supports suitable habitat and species has been observed foraging adjacent to the North Coast pipeline downstream of the Laguna Creek Diversion but activities are not expected to result in take of active nests.

Table D-2. Special-Status Wildlife Species Evaluated

Common Name	Scientific Name	Status (Federal/State)	Habitat	Analyzed under CEQA	Rationale
burrowing owl	*Athene cunicularia*	None/SSC	Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows.	N	The Plan Area supports suitable grassland habitat in the North Coast Watersheds and the species is known to winter on the UC Santa Cruz campus (CNDDB 2022; Occ. Nos. 76 and 225). Activities are not expected to adversely affect these or potential future wintering locations because they would occur outside the winter period when the species would be absent.
California black rail	*Laterallus jamaicensis coturniculus*	None/FP, ST	Tidal marshes, shallow freshwater margins, wet meadows, and flooded grassy vegetation; suitable habitats are often supplied by canal leakage in Sierra Nevada foothill populations.	N	The Plan Area is outside the known geographic range.
California condor	*Gymnogyps californianus*	FE/FP, SE	Nests in rock formations, deep caves, and occasionally in cavities in giant sequoia trees (*Sequoiadendron giganteus*); forages in relatively open habitats where large animal carcasses can be detected.	N	The Plan Area is outside the known geographic range. None of the experimental reintroduction sites along the Central Coast are within the Plan Area.
California least tern (nesting colony)	*Sternula antillarum browni*	FE/FP, SE	Forages in shallow estuaries and lagoons; nests on sandy beaches or exposed tidal flats.	N	The Plan Area is outside the known geographic range.
California Ridgway's rail	*Rallus obsoletus obsoletus*	FE/SE, FP	Tidal salt marshes of the San Francisco Estuary.	N	The Plan Area is outside the known geographic range.

Table D-2. Special-Status Wildlife Species Evaluated

Common Name	Scientific Name	Status (Federal/State)	Habitat	Analyzed under CEQA	Rationale
golden eagle (nesting & wintering)	*Aquila chrysaetos*	BGEPA/FP	Nests and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, open desert rimrock terrain; nests in large trees and on cliffs in open areas and forages in open habitats.	N	The Plan Area supports suitable habitat and has been observed flying at Loch Lomond Reservoir but activities are not expected to result in take of the species.
grasshopper sparrow (nesting)	*Ammodramus savannarum*	None/SSC	Nests and forages in moderately open grassland with tall forbs or scattered shrubs used for perches.	Y	The Plan Area supports suitable grassland habitat in the North Coast watersheds, where there are many eBird observations during the nesting season (eBird 2022). Vegetation management activities in this area could have adverse effects on the species or its habitat.
least Bell's vireo (nesting)	*Vireo bellii pusillus*	FE/SE	Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season.	N	The Plan Area is outside the known geographic range.
long-eared owl (nesting)	*Asio otus*	None/SSC	Nests in riparian habitat, live oak thickets, other dense stands of trees, edges of coniferous forest; forages in nearby open habitats.	N	The Plan Area supports suitable habitat but Activities are not expected to result in take of active nests.

Table D-2. Special-Status Wildlife Species Evaluated

Common Name	Scientific Name	Status (Federal/State)	Habitat	Analyzed under CEQA	Rationale
marbled murrelet (nesting)	*Brachyramphus marmoratus*	FT/SE	Nests in old-growth coastal forests, forages in subtidal and pelagic habitats.	N	The Plan Area supports suitable habitat in the North Coast watersheds but local nesting areas are well-known (e.g., upper Fall Creek canyon in Henry Cowell Redwoods State Park, Big Creek) and none are in or near the Plan Area (CDFW 2022, Singer 2017). Activities are not expected to result in adverse effects on the species or its habitat because no work potentially resulting in adverse indirect effects (e.g., disturbance from noise or human presence) would occur in these nesting areas.
olive-sided flycatcher (nesting)	*Contopus cooperi*	None/SSC	Nests in mixed-conifer, montane hardwood–conifer, Douglas-fir, redwood, red fir, and lodgepole pine habitats; usually close to water.	N	The Plan Area supports suitable forest habitat and there are many eBird observations of this species during the nesting season in the region (eBird 2022). However, activities are not expected to result in take of active nests.

Table D-2. Special-Status Wildlife Species Evaluated

Common Name	Scientific Name	Status (Federal/State)	Habitat	Analyzed under CEQA	Rationale
purple martin (nesting)	*Progne subis*	None/SSC	Nests and forages in woodland habitats including riparian, coniferous, and valley foothill and montane woodlands.	N	The Plan Area supports suitable forest habitat and there are many eBird observations of this species during the nesting season in the region (eBird 2022). Nesting has also been observed at the City's Bonny Doon Ecological Reserve (Berry, pers. comm. 2022). However, activities are not expected to result in take of active nests.
short-tailed albatross	*Phoebastria albatrus*	FE/SSC	Nests on isolated, windswept islands of the western Pacific; extremely rare in migration offshore along the California coast.	N	The Plan Area is outside the known geographic range.
southwestern willow flycatcher (nesting)	*Empidonax traillii extimus*	FE/SE	Nests in dense riparian habitats along streams, reservoirs, or wetlands; uses variety of riparian and shrubland habitats during migration.	N	The Plan Area is outside the known geographic range.
tricolored blackbird (nesting colony)	*Agelaius tricolor*	None/ST, SSC	Nests in freshwater, emergent wetlands with cattails or tules, but also in Himalayan blackberrry; forages in grasslands, woodland, and agriculture.	N	The Plan Area supports suitable pond wetland habitat along Highway 1 but activities in this area are not expected to adversely affect the species or its habitat.

Table D-2. Special-Status Wildlife Species Evaluated

Common Name	Scientific Name	Status (Federal/State)	Habitat	Analyzed under CEQA	Rationale
western snowy plover (nesting)	*Charadrius alexandrinus nivosus*	FT/SSC	On coasts nests on sandy marine and estuarine shores; in the interior nests on sandy, barren or sparsely vegetated flats near saline or alkaline lakes, reservoirs, and ponds.	N	The Plan Area supports marginal habitat along the coast but two of the three CNDDB occurrences overlapping the City limits are considered extirpated and the remaining occurrence is from 1978 (CDFW 2022). Activities are not expected to adversely affect the species or its habitat.
white-tailed kite (nesting)	*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.	N	The Plan Area supports suitable habitat but activities are not expected to result in take of active nests.
yellow warbler (nesting)	*Setophaga petechia*	None/SSC	Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine, and mixed-conifer habitats.	N	The Plan Area supports suitable habitat but activities are not expected to result in take of active nests.
yellow-breasted chat	*Icteria virens (nesting)*	None/SSC	Nests and forages in dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush.	N	The Plan Area supports suitable habitat but activities are not expected to result in take of active nests.

Table D-2. Special-Status Wildlife Species Evaluated

Common Name	Scientific Name	Status (Federal/State)	Habitat	Analyzed under CEQA	Rationale
yellow rail	*Coturnicops noveboracensis*	None/SSC	Occurs year-round in California as a very local breeder in the northeastern interior and a winter visitor on the coast and in the Suisun Marsh region. Breeds in sedge marshes/meadows with moist soil or shallow standing water, winters in tidal marshes.	N	The Plan Area supports suitable habitat but the only CNDDB occurrence is a non-specific 1905 museum specimen collected "in the vicinity of Santa Cruz" (CNDDB 2022). There is an October 15, 2003 record of this species at Harkins Slough (Morlan 2011) but this species is otherwise very rare along the Central Coast.
Mammals					
American badger	*Taxidea taxus*	None/SSC	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils.	Y	The Plan Area supports suitable grassland habitat in the North Coast watersheds, where the species is known to occur in areas around the North Coast pipeline near Laguna Creek (Berry, pers. comm.). Vegetation management activities in this area could have adverse effects on the species or its habitat.
pallid bat	*Antrozous pallidus*	None/SSC	Grasslands, shrublands, woodlands, forests; most common in open, dry habitats with rocky outcrops for roosting, but also roosts in man-made structures and trees.	N	The Plan contains suitable woodland and forest habitat with dense stands of trees for foraging and roosting, however rocky outcrops, the preferred roosting substrate for this species, are absent. Activities are not expected to result in the removal of active roost sites.

Table D-2. Special-Status Wildlife Species Evaluated

Common Name	Scientific Name	Status (Federal/State)	Habitat	Analyzed under CEQA	Rationale
ringtail	*Bassariscus astutus*	None/FP	Forests and shrublands associated with rocky areas or riparian habitat. Nests in rock recesses, hollow trees, logs, snags, abandoned burrows, or woodrat nests.	Y	The Plan Area supports suitable forest habitat and vegetation management activities could adversely affect the species if active nests present in pipeline rights-of-way.
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*	None/SSC	Forest habitats with a moderate canopy and moderate to dense understory, where they build stick nests typically at the base of trees and shrubs, but sometimes in the low to mid-level canopy of a tree.	Y	The Plan Area supports suitable woodland and forest habitat and vegetation management activities could adversely affect the species if active nests present in pipeline rights-of-way.
southern sea otter	*Enhydra lutris nereis*	FT/SSC, FP	Nearshore marine environments.	N	The Plan Area does not include the nearshore marine environment where this species occurs.
Townsend's big-eared bat	*Corynorhinus townsendii*	None/SSC	Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, man-made structures, and tunnels.	N	The Plan Area supports suitable roosting habitat but Covered Activities are not expected to result in the removal of active roosts.
Western mastiff bat	*Eumops perotis californicus*	None/SSC	Chaparral, coastal scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees, and tunnels	N	The Plan Area supports suitable roosting habitat but Covered Activities are not expected to result in the removal of active roosts.

Table D-2. Special-Status Wildlife Species Evaluated

Common Name	Scientific Name	Status (Federal/State)	Habitat	Analyzed under CEQA	Rationale
Western red bat	*Lasiurus blossevillii*	None/SSC	Winter range in California includes western lowlands and coastal regions south of San Francisco Bay. Roosts primarily in trees, typically adjacent to open fields or streams, which are protected above and open below for foraging; prefers habitat edges and mosaics with trees.	N	The Plan Area supports suitable roosting habitat but Covered Activities are not expected to result in the removal of active roosts.

Notes:
Status Legend
FE: Federally Endangered
FT: Federally Threatened
BGEPA: Bald and Golden Eagle Protection Act
SSC: California Species of Special Concern
FP: California Fully Protected Species
SE: State Endangered
ST: State Threatened
HCP: Habitat Conservation Plan
NCCP: Natural Community Conservation Plan

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