PROPOSED
MITIGATED NEGATIVE DECLARATION
AND INITIAL STUDY

Castella Water Intake Replacement Project
Shasta County, California

Prepared for:

Shasta County
1855 Placer St.
Redding, CA 96001-1759

December 2022
32-71

ENPLAN
3179 Bechelli Lane Suite 100
Redding, CA 96002

PROPOSED MITIGATED NEGATIVE DECLARATION

LEAD AGENCY:	Shasta County
PROJECT PROPONENT:	Shasta County
PROJECT NAME:	**Castella Water Intake Replacement Project**
PROJECT SUMMARY:	The proposed project includes improvements to the Shasta County Service Area No. 3 Water Treatment Plant (WTP). Improvements include replacing an existing water intake structure within Castle Creek with an instream infiltration gallery, rehabilitation of an existing clearwell, installation of a new chemical injection vault, and replacing the existing electrical control system equipment with new efficient models. A new post-filter chlorination metering pump and day tank would be installed inside the WTP building, along with a new air compressor, new grating, and new filter and backwash control valves; a new post-filter chlorination vault and appurtenances would be installed to the north of the WTP building. A new surge tank would be installed on the east side of the building, and a new emergency generator and automatic transfer switch would be installed to the south of the WTP building. The purpose of the proposed project is to replace aging infrastructure, and ensure a safe and reliable potable water supply for residents within Shasta County Service Area No. 3.
LOCATION:	The project is located within the unincorporated community of Castella in northern Shasta County, generally north of Lake Shasta and south of the City of Dunsmuir. *See **Figure 1** of the Initial Study.*

Findings / Determination

As documented in the Initial Study, project implementation could result in potential effects to special-status wildlife species and their habitats, disturbance of nesting migratory birds (if present), impacts resulting from riparian habitat and tree removal, the introduction and spread of noxious weeds during construction, possible impacts on wetlands and/or other waters of the U.S./State, impacts to cultural resources and tribal cultural resources (if present), temporarily increased air emissions, and temporarily increased noise and vibration levels.

Design features incorporated into the project would avoid or reduce certain potential environmental impacts, as would compliance with existing regulations and permit conditions. Remaining impacts can be reduced to levels that are less than significant through implementation of the mitigation measures presented in Section 1.10 of the Initial Study. Because the County will adopt mitigation measures as conditions of project approval and will be responsible for ensuring their implementation, it has been determined that the project will not have a significant adverse impact on the environment.

The final Mitigated Negative Declaration was adopted by the Shasta County Board of Supervisors on _____, 2023.

INITIAL STUDY

CASTELLA WATER INTAKE REPLACEMENT PROJECT

SHASTA COUNTY SERVICE AREA NO. 3

SHASTA COUNTY, CALIFORNIA

December 2022

LEAD AGENCY:

Shasta County
1855 Placer St.
Redding, CA 96001-1759
530.225.5661

PREPARED BY:

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530.221.0440

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SECTION 1.0 INTRODUCTION

1.1 PROJECT SUMMARY

Project Title:	**Castella Water Intake Replacement Project**
Lead Agency Name and Address:	**Shasta County** 1855 Placer St. Redding, CA 96001-1759
Contact Person and Phone Number:	**Venton Trotter, Supervising Engineer** 530.245.6811
Lead Agency's Environmental Consultant:	**ENPLAN** 3179 Bechelli Lane, Suite 100 Redding, CA 96002

1.2 PURPOSE OF STUDY

Shasta County (County), as Lead Agency, has prepared this Initial Study to provide the general public and interested public agencies with information about the potential environmental impacts of the proposed Castella Water Intake Replacement Project (project). Details about the proposed project are included in Section 3.0 (Project Description) of this Initial Study.

This Initial Study has been prepared in accordance with the California Environmental Quality Act (CEQA) of 1970 (as amended), codified in California Public Resources Code (PRC) §21000 et seq., and the State CEQA Guidelines in the Code of Regulations, Title 14, Division 6, Chapter 3. Pursuant to these regulations, this Initial Study identifies potentially significant impacts and, where applicable, includes mitigation measures that would reduce all identified environmental impacts to less-than-significant levels. This Initial Study supports a Mitigated Negative Declaration (MND) pursuant to CEQA Guidelines §15070.

The County intends to apply for funding through the State Water Resources Control Board (SWRCB) Drinking Water State Revolving Fund (DWSRF) Program, partially funded by the U.S. Environmental Protection Agency (USEPA). In accordance with the Operating Agreement between the SWRCB and USEPA, and the State Environmental Review Process, this Initial Study has been prepared to address certain federal environmental regulations (federal cross-cutters), including regulations guiding the General Conformity Rule for the Clean Air Act (CAA), the federal Endangered Species Act (FESA), and the National Historic Preservation Act (NHPA). These requirements are addressed in Section 4.3 (Air Quality), Section 4.4 (Biological Resources), and Section 4.5 (Cultural Resources) of this Initial Study (IS).

1.3 EVALUATION TERMINOLOGY

The environmental analysis in Section 4.0 is patterned after the Initial Study Checklist recommended in the State CEQA Guidelines. For the evaluation of potential impacts, the questions in the Initial Study Checklist are stated and an answer is provided according to the analysis undertaken as part of the Initial Study. The analysis considers the long-term, direct, indirect, and cumulative impacts of the proposed project. To each question, there are four possible responses:

- **No Impact.** The proposed project will not have any measurable environmental impact on the environment.
- **Less-Than-Significant Impact.** The proposed project has the potential to impact the environment; however, this impact will be below established thresholds of significance.
- **Potentially Significant Impact Unless Mitigation Incorporated.** The proposed project has the potential to generate impacts which may be considered a significant effect on the environment;

however, mitigation measures or changes to the proposed project's physical or operational characteristics can reduce these impacts to levels that are less than significant.

- **Potentially Significant Impact**. The proposed project will have significant impacts on the environment, and additional analysis is required to determine if it is feasible to adopt mitigation measures or project alternatives to reduce these impacts to less than significant levels.

1.4 ORGANIZATION OF THE INITIAL STUDY

This document is organized into the following sections:

Section 1.0: **Introduction:** Describes the purpose, contents, and organization of the document and provides a summary of the proposed project.

Section 2.0: **CEQA Determination:** Identifies the determination of whether impacts associated with development of the proposed project are significant, and what, if any, additional environmental documentation may be required.

Section 3.0: **Project Description:** Includes a detailed description of the proposed project.

Section 4.0: **Environmental Impact Analysis (Checklist):** Contains the Environmental Checklist from CEQA Guidelines Appendix G with a discussion of potential environmental effects associated with the proposed project. Mitigation measures, if necessary, are noted following each impact discussion.

Section 5.0: **List of Preparers**

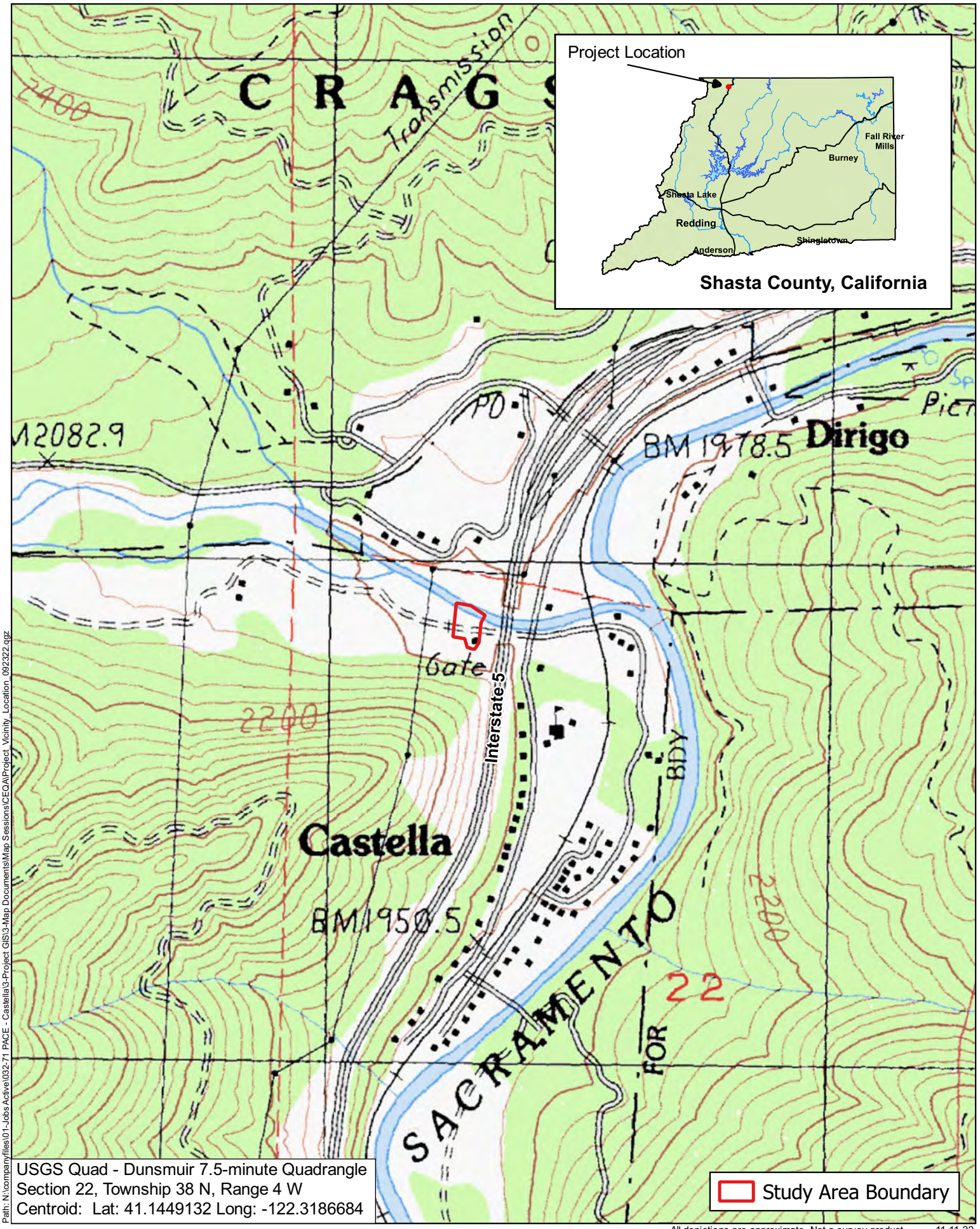
Section 6.0: **Abbreviations and Acronyms**

Appendices: Contains information to supplement Section 4.0.

1.5 PROJECT LOCATION

As shown in **Figure 1**, Project Location and Vicinity Map, the proposed project is located within the unincorporated community of Castella in northern Shasta County; approximately 50 miles north of Redding and 5 miles south of Dunsmuir in Section 22, Township 38 North, Range 4 West of the U.S. Geological Survey (USGS) Dunsmuir 7.5-minute quadrangle. Latitude 41°08' 41 "N; Longitude 122°19' 07 "W (centroid).

As shown in **Figure 2** and **Figure 3**, improvements would occur on the west side of Interstate 5 (I-5) at the Shasta County Service Area (CSA) No. 3 Water Treatment Plant (WTP) and within the streambed of Castle Creek. The WTP is located on two discontiguous County-owned lots and an intervening access corridor. The two County-owned lots are identified as a single parcel: Shasta County Assessor's Parcel Number (APN) 014-600-016, which totals approximately 1.2 acres. The 80-foot-wide access corridor is a portion of APN 014-600-015, a ±40.7-acre parcel owned by Eugene Ammirati. Temporary staging of construction materials and equipment would occur at the WTP; no physical improvements are needed to establish the staging area.



Path: N:\companyfiles\01-Jobs Active\032-71 PACE - Castella\3-Project GIS\3-Map Documents\Map Sessions\CEQA\Project_Vicinity_Location_092322.qgz

USGS Quad - Dunsmuir 7.5-minute Quadrangle
Section 22, Township 38 N, Range 4 W
Centroid: Lat: 41.1449132 Long: -122.3186684

All depictions are approximate. Not a survey product. 11.11.22

0 400 800 Feet

Figure 1

Project Vicinity and Location

ENPLAN

Path: N:\companyfiles\01-Jobs Active\032-71 PACE - Castella\3-Project GIS\3-Map Documents\Map Sessions\CEQA\Project Boundary_070522.aprx

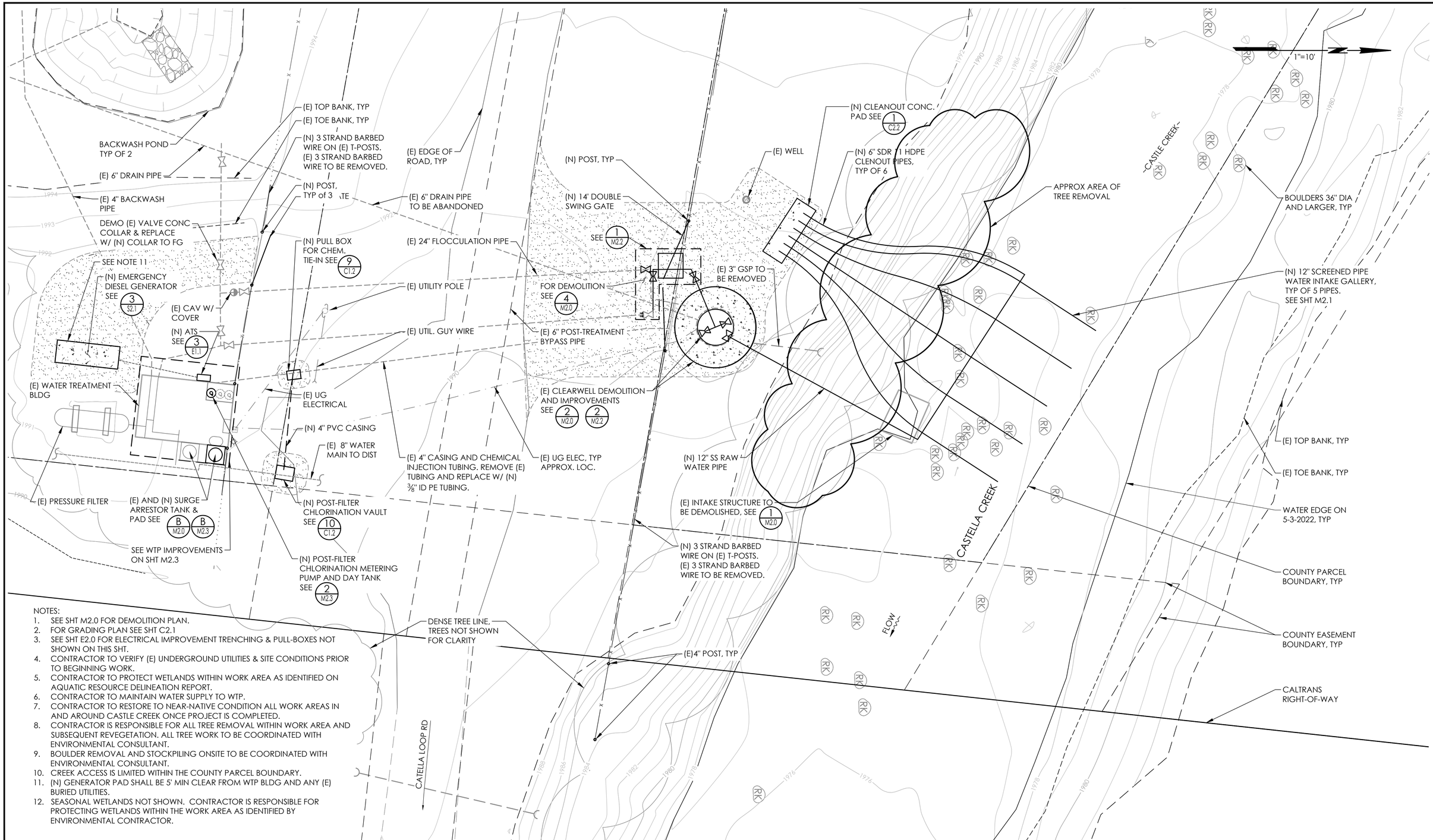
All depictions are approximate. Not a survey product. 11.11.22

0 100 Feet

Figure 2

Study Area Boundary

ENPLAN



NOTES:

1. SEE SHT M2.0 FOR DEMOLITION PLAN.
2. FOR GRADING PLAN SEE SHT C2.1
3. SEE SHT E2.0 FOR ELECTRICAL IMPROVEMENT TRENCHING & PULL-BOXES NOT SHOWN ON THIS SHT.
4. CONTRACTOR TO VERIFY (E) UNDERGROUND UTILITIES & SITE CONDITIONS PRIOR TO BEGINNING WORK.
5. CONTRACTOR TO PROTECT WETLANDS WITHIN WORK AREA AS IDENTIFIED ON AQUATIC RESOURCE DELINEATION REPORT.
6. CONTRACTOR TO MAINTAIN WATER SUPPLY TO WTP.
7. CONTRACTOR TO RESTORE TO NEAR-NATIVE CONDITION ALL WORK AREAS IN AND AROUND CASTLE CREEK ONCE PROJECT IS COMPLETED.
8. CONTRACTOR IS RESPONSIBLE FOR ALL TREE REMOVAL WITHIN WORK AREA AND SUBSEQUENT REVEGETATION. ALL TREE WORK TO BE COORDINATED WITH ENVIRONMENTAL CONSULTANT.
9. BOULDER REMOVAL AND STOCKPILING ONSITE TO BE COORDINATED WITH ENVIRONMENTAL CONSULTANT.
10. CREEK ACCESS IS LIMITED WITHIN THE COUNTY PARCEL BOUNDARY.
11. (N) GENERATOR PAD SHALL BE 5' MIN CLEAR FROM WTP BLDG AND ANY (E) BURIED UTILITIES.
12. SEASONAL WETLANDS NOT SHOWN. CONTRACTOR IS RESPONSIBLE FOR PROTECTING WETLANDS WITHIN THE WORK AREA AS IDENTIFIED BY ENVIRONMENTAL CONTRACTOR.

90% DRAFT

BAR IS ONE INCH ON ORIGINAL DRAWING
0" 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REVISIONS

NO	DATE	DESCRIPTION

PACE ENGINEERING

DES	DD	CKD	GH	JOB NO.
DRN	DD	DATE	9/30/2022	199.106

SIGNED

SHASTA COUNTY CSA NO. 3 CASTELLA
INTAKE REPLACEMENT PROJECT

FIGURE 3 - SITE PLAN

SHEET
C2.0
PG 5 OF 26

Plot Date: October 14, 2022 - 6:14 pm Login Name: ddeleon
File Name: M:\Land Projects\199\106 Castella Intake Replacement Project\DWG\CIVIL - Site Plan\dwg Layout: SITE PLAN

1.6 ENVIRONMENTAL SETTING

General Plan Designations:	Public Land (PUB) and Rural Residential A (RA)
Zoning:	Public Facility (PF) and Rural Residential (R-R)
Surrounding Land Uses:	Land uses surrounding the project site include forested land to the north, south, and west, and the I-5 to the east. An electrical substation and low-density residential housing are located approximately 300 feet northwest of the project site.
Topography:	The project site is located approximately 2,000 feet above sea level. The study area is relatively flat, with the overall topographical gradient sloping gradually north toward Castle Creek.
Plant Communities/Wildlife Habitats:	Habitat types in the study area include stream/riverine, montane hardwood - conifer, annual grassland, barren, and montane riparian. Stream/riverine habitat includes Castle Creek, an upper perennial stream tributary to the Sacramento River. Montane hardwood – conifer habitat is present in uplands, within the stream terrace of Castle Creek. Representative plant species in the montane hardwood – conifer habitat are ponderosa pine, Douglas fir, California black oak, and tanoak scrub. Annual grassland habitat is present along the boundaries of the access road and other previously disturbed areas in the study area. The barren habitat occurs as a graveled access road and is not considered a sensitive natural community. Montane riparian occurs as a narrow zone following along the bank of Castle Creek. *See Section 4.4 (Biological Resources)*
Climate:	The study area is characterized by a Mediterranean climate with cool, wet winters and hot, dry summers. The average annual temperature is about 55 degrees Fahrenheit (°F). Monthly mean maximum temperatures range from a high of 90.0° F in July to a low of 29.9° F in January. Daily high temperatures commonly exceed 90° F during the summer. Precipitation is about 63.64 inches per year.

1.7 TRIBAL CULTURAL RESOURCES CONSULTATION

Public Resources Code (PRC) §21084.2 (AB 52, 2014) establishes that *"a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment."* Pursuant to PRC §21080.3.1, in order to determine whether a project may have such an effect, a lead agency is required to consult with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project if the tribe requested to be informed through formal notification of proposed projects in the geographical area; and the tribe responds, in writing, within 30 days of receipt of the formal notification and requests the consultation.

The Wintu Tribe of Northern California & Toyon-Wintu Center have requested in writing to be notified of proposed projects in Shasta County. Project information was mailed to the Tribe on March 2, 2022. According to the County, as of June 21, 2022, the Tribe had not responded to the County's formal notification. Because the Tribe did not request consultation within 30 days of receipt of the formal notification, no further consultation with the Tribe is required under AB 52.

As discussed in Section 4.5, in response to ENPLAN's request for information, the NAHC conducted a review of their Sacred Land File, with negative results for the project area. The NAHC also provided a list of Native American contacts who may have further knowledge of the area. On April 11, 2022, ENPLAN contacted the Native American representatives affiliated with the project area and requested information on cultural resources in the project area. Follow-up telephone calls were placed on May 3, 2022, to these representatives.

Responses were received from Mark Miyoshi of the Winnemem Wintu Tribe, and Kelli Hayward and Michelle Radcliff Garcia of the Wintu Tribe of Northern California. Mark Myoshi did not receive the original consultation letter; the letter, map, site plan, photos, and a detailed project description were subsequently sent to Mark Myoshi. Kelli Hayward provided contact information for Michelle Radcliff Garcia; the letter, map, site plan, photos, and a detailed project description were subsequently sent to Michelle Radcliff Garcia. Michelle Radcliff Garcia called for directions and visited the project site on May 3, 2022; she responded by email on May 3, 2022, and stated that the Wintu Tribe of Northern California is not aware of any known cultural resources in the project area, and was sure that care would be taken when working around Castle Creek.

No other comments or concerns were reported by any Native American representatives or organizations.

1.8 REGULATORY REQUIREMENTS

Permits and approvals that may be necessary for construction and operation of the proposed project are identified below.

Shasta County

- Adoption of a Mitigated Negative Declaration pursuant to CEQA.
- Adoption of a Mitigation Monitoring and Reporting Program for the project that incorporates the mitigation measures identified in this Initial Study.

U.S. Department of the Army, Corps of Engineers:

- Issuance of a Section 404 Permit under the Federal Clean Water Act.

State Water Resources Control Board (SWRCB)/Central Valley Regional Water Quality Control Board (CVRWQCB):

- Issuance of a Section 401 Water Quality Certification and/or Report of Waste Discharge (or waiver).
- If construction dewatering activities result in the direct discharge of relatively pollutant-free wastewater, coverage under CVRWQCB General Order R5-2016-0076-01 (NPDES NO. CAG995002) Waste Discharge Requirements - Limited Threat Discharges to Surface Water. This Order includes specific requirements for monitoring, reporting, and implementing BMPs for construction dewatering activities.

California Department Fish and Wildlife:

- Issuance of a Section 1600 Lake and Streambed Alteration Agreement.

California Department of Forestry and Fire Protection:

- Issuance of a Timberland Conversion Exemption and/or approval of a Timber Harvest Plan for tree removal on non-federal lands.

California Office of Historic Preservation, State Historic Preservation Officer (SHPO)

- Because a Department of the Army permit is required for the proposed project, consultation regarding potential impacts to cultural resources is required pursuant to Section 106 of the National Historic Preservation Act (NHPA).

1.9 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by the proposed project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages. Impacts to these resources are evaluated using the checklist included in Section 4.0. The proposed project was determined to have a less-than-significant impact or no impact without mitigation on unchecked resource areas.

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

1.10 SUMMARY OF MITIGATION MEASURES

The following mitigation measures are proposed to reduce impacts of the proposed project to less than significant levels.

AIR QUALITY

MM 4.3.1 The following measures shall be implemented throughout construction:

a. All material excavated, stockpiled, or graded shall be covered or sufficiently watered to prevent fugitive dust from leaving property boundaries and causing a public nuisance or a violation of ambient air quality standards. Watering shall occur at least twice daily with complete site coverage, preferably in the mid-morning and after work is completed each day.

b. All material transported offsite shall be either sufficiently watered or securely covered to prevent a public nuisance.

c. All areas (other than paved roads) with vehicle traffic shall be watered periodically or have dust palliatives applied for stabilization of dust emissions.

d. All on-site vehicles shall be limited to a speed of 15 miles per hour on unpaved roads.

e. All land clearing, grading, earth moving, and excavation activities on the project site shall be suspended when winds are causing excessive dust generation.

f. All trucks hauling dirt, sand, soil, or other loose materials shall be covered or shall maintain at least two feet of free board in accordance with the requirements of Section 23114 of the California Vehicle Code. This provision is enforced by local law enforcement agencies.

g. Paved streets in and adjacent to the construction site shall be swept or washed at the end of the day to remove excessive accumulations of silt and/or mud resulting from activities on the development site.

h. When not in use, motorized construction equipment shall not be left idling for more than five minutes.

BIOLOGICAL RESOURCES

MM 4.4.1 To avoid impacts to the Pacific tailed frog and the foothill yellow-legged frog, the following shall be implemented:

- On each day in which in-stream work would occur, a qualified biologist shall conduct a pre-construction survey for the Pacific tailed frog and foothill yellow-legged frog. Surveys are not required for work occurring in the dewatered portion of the stream channel.
- Should juveniles or adults of the Pacific tailed frog or foothill yellow-legged frog be observed during the surveys, or by construction personnel at any time, all work shall be stopped within 50 feet of the animal until a qualified biologist can relocate the individuals. Should eggs of either species be observed, a qualified biologist shall identify and flag an area of avoidance; if full avoidance is not possible, the egg masses shall be relocated outside of the work area by the qualified biologist.

MM 4.4.2 Impacts to water quality in Castle Creek shall be minimized by implementing the following measures:

- In-water construction activities shall take place between June 1 and October 31, when there is minimal chance of precipitation and flows are near their lowest; the in-water work period may be extended if weather conditions allow and if authorized by permitting agencies.
- Construction activities that include earth disturbance shall involve the use of Best Management Practices (BMPs) to prevent erosion, sedimentation, and accidental spills from entering Castle Creek.
- Prior to the start of in-water work, the dewatering/diversion plan shall be reviewed and accepted by the California Department of Fish and Wildlife, U.S. Army Corps of Engineers, and Regional Water Quality Control Board. The final plan shall be implemented by the project contractor and the diversion shall be properly maintained throughout the course of in-water construction.

MM 4.4.3 Impacts to seasonal wetland shall be minimized by implementing the following measures:

- High-visibility fencing, flagging, or other markers shall be installed along the outer edges of the construction zone adjacent to wetlands and other waters designated for avoidance. The fencing location shall be determined by a qualified biologist in consultation with the project engineer and the Shasta County Department of Public Works. No construction activities (e.g., clearing, grading, trenching, etc.), including vehicle parking and materials stockpiling, shall occur within the fenced area. The exclusionary fencing shall be periodically inspected during the construction period to ensure the fencing is properly maintained. The fencing shall be removed upon completion of work.
- If vehicles and/or equipment must enter wetlands, or if the wetlands are to be used as a staging area, the wetlands shall be protected through installation of temporary wood slabs, swamp mats, HDPE mats, geotextile fabric with a layer of gravel, or similar protective materials approved by the County. The protective materials shall be removed upon completion of construction.
- If excavation of wetlands cannot be avoided, mitigation shall be achieved by restoring the pre-existing topography of the wetlands upon completion of construction or through purchase of mitigation credits at an agency-approved mitigation bank at a minimum 1:1 ratio, or as may otherwise be required through permits issued by CDFW, USACE, and RWQCB.

MM 4.4.4 Loss of riparian habitat shall be minimized by implementing the following measures:

- Minimize the construction disturbance to riparian habitat through careful preconstruction planning.
- Install high-visibility fencing, flagging, or other markers along the outer edges of the construction zone where needed to prevent accidental entry into surrounding riparian habitat planned for retention.
- Stockpile equipment and materials outside of riparian habitat, in the designated staging areas.
- Prune any riparian plants at ground level where feasible (as opposed to mechanically removing the entire plant and root system) in temporary use areas, which will promote regeneration from the root systems.

MM 4.4.5 Any unavoidable loss of riparian habitat shall be offset by the following measures:

- Prior to any earth disturbance, the County shall purchase stream-side riparian habitat mitigation credits at a minimum 1:1 ratio from a CDFW-approved mitigation bank. Alternatively, the County shall pay in-lieu fees to the USACE. Proof of purchase shall be provided to CDFW prior to the start of work.
- Following project completion, the bank of Castle Creek shall be restored per the project description and riparian vegetation shall be replanted in accordance with the revegetation plan provided in the Biological Study Report (Appendix D of this Initial Study), and as may be modified in accordance with specification of permits issued by CDFW, USACE, and/or RWQCB.

MM 4.4.6 The potential for introduction and spread of noxious weeds shall be avoided/minimized by:

- Using only certified weed-free erosion control materials, mulch, and seed;
- Limiting any import or export of fill material to material that is known to be weed free; and
- Requiring the construction contractor to thoroughly wash all equipment at a commercial wash facility prior to entering the job site and upon leaving the job site.

MM 4.4.7 To avoid impacts to nesting birds and raptors protected under the federal Migratory Bird Treaty Act and California Fish and Game Code §3503 and §3503.5, including their nests and eggs, one of the following shall be implemented (removal of raptor nests at any time of year is prohibited unless appropriate permits are obtained):

- Vegetation removal and other ground-disturbance activities associated with construction shall occur between September 1 and January 31, when birds are not nesting; or
- If vegetation removal or ground disturbance activities occur during the nesting season (February 1 – August 31), a pre-construction nesting survey shall be conducted by a qualified biologist to identify active nests in and adjacent to the work area.

  The survey shall consider acoustic impacts and line-of-sight disturbances occurring as a result of the project in order to determine a sufficient survey radius to avoid nesting birds. At a minimum, the survey report shall include a description of the area surveyed, date and time of the survey, ambient conditions, bird species observed in the area, a description of any active nests observed, any evidence of breeding behaviors (e.g., courtship, carrying nest materials or food, etc.), and a description of any outstanding conditions that may have impacted the survey results (e.g., weather conditions, excess noise, the presence of predators, etc.).

  The results of the survey shall be submitted electronically to the California Department of Fish and Wildlife at R1CEQARedding@wildlife.ca.gov upon completion. The survey shall be conducted no more than one week prior to the initiation of construction. If construction activities are delayed or suspended for more than one week after the pre-construction survey, the site shall be resurveyed.

If active nests are found, appropriate actions shall be implemented to ensure compliance with the Migratory Bird Treaty Act and California Fish and Game Code. Compliance measures may include, but are not limited to, exclusion buffers, sound-attenuation measures, seasonal work closures based on the known biology and life history of the species identified in the survey, as well as ongoing monitoring by biologists.

CULTURAL RESOURCES

MM 4.5.1 In the event of any inadvertent discovery of cultural resources (i.e., burnt animal bone, midden soils, projectile points or other humanly modified lithics, historic artifacts, etc.), all work within 50 feet of the find shall be halted until a professional archaeologist can evaluate the significance of the find in accordance with PRC §21083.2(g) and §21084.1, and CEQA Guidelines §15064.5(a). If any find is determined to be significant by the archaeologist, Shasta County staff shall meet with the archaeologist to determine the appropriate course of action. If necessary, a Treatment Plan prepared by an archeologist outlining recovery of the resource, analysis, and reporting of the find shall be prepared. The Treatment Plan shall be reviewed and approved by the Shasta County prior to resuming construction.

MM 4.5.2 In the event that human remains are encountered during construction activities, Shasta County shall comply with §15064.5 (e) (1) of the CEQA Guidelines and PRC §7050.5. All project-related ground disturbance within 50 feet of the find shall be halted until the County coroner has been notified. If the coroner determines that the remains are Native American, the coroner will notify the NAHC to identify the most likely descendants of the deceased Native Americans. Project-related ground disturbance in the vicinity of the find shall not resume until the process detailed in §15064.5 (e) has been completed.

NOISE

Implementation of Mitigation Measure MM 4.3.1(h).

MM 4.13.1 Construction activities (excluding activities that would result in a safety concern to the public or construction workers) shall be limited to between the daytime hours of 7:00 A.M. and 7:00 P.M., Monday through Saturday. Construction activities shall be prohibited on Sundays and federal/state recognized holidays. Exceptions to these limitations may be approved by the County for activities that require interruption of utility services to allow work during low demand periods, or to alleviate traffic congestion and safety hazards.

MM 4.13.2 Construction equipment shall be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations. Equipment engine shrouds shall be closed during equipment operation.

MM 4.13.3 Stationary construction equipment (generators, compressors, etc.) shall be located at the furthest practical distance from nearby noise-sensitive land uses.

TRIBAL CULTURAL RESOURCES

Implementation of **Mitigation Measures MM 4.5.1** and **MM 4.5.2.**

SECTION 2.0 CEQA DETERMINATION

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 has been 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 significant effect(s) 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, if the effect is a "potentially significant impact" or "potentially significant unless mitigated." 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 EIR or Negative Declaration pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or Negative Declaration, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Venton Trotter Date
Supervising Engineer
Shasta County

SECTION 3.0 PROJECT DESCRIPTION

3.1 PROJECT BACKGROUND, NEED, AND OBJECTIVES

Prior to 1976, the privately-owned Castella Water Company provided water to the community of Castella. The water was diverted from Castle Creek by gravity, which then flowed into an open ditch, through a cow pasture, and into a pit of sand covered by a wooden shed. The water was filtered through the sand and then flowed into the town pipeline. However, the community experienced severe water quality problems, and droughts made diverting surface water from Castle Creek very difficult. These issues lead to the formation of CSA No.3 in 1976, and the construction of the CSA No.3 WTP and water distribution system in 1980. As part of this work, a water intake structure was installed in Castle Creek, which is still being used as the primary source of water for CSA No. 3 today.

According to the State Water Resources Control Board (SWRCB) Division of Drinking Water (DDW) 2018 Annual Inspection Report (AIR), CSA No. 3 currently serves potable water to ±250 people in a ±397-acre service area. The CSA serves 90 active metered connections, primarily single-family residences, small businesses, an elementary school, and a fire station, with about 20 to 30 connections being seasonal.

At the Castle Creek inlet, water supply infrastructure consists of a water intake structure, a clearwell, two 25-horsepower submersible turbine pumps, a 10-inch gate valve, and a 12-inch galvanized steel corrugated metal pipe (CMP). The existing water treatment system includes a water treatment building, pressure filter, surge tank, chemical injection feed line, flocculation pipe, drain pipes, backwash ponds, and a 200,000-gallon storage reservoir.

Since construction of the WTP and distribution system, repairs and improvements have been made to the infrastructure as necessary. In 2005, the SWRCB issued a Water Quality Failure Notice for failure to meet minimum disinfection contact time prior to the first service connection. In addition, the CSA has experienced increased maintenance costs due to leaking and broken distribution lines. In order to address these issues, improvements to the clearwell and water distribution system were completed in 2008; however, no improvements were made to the water intake structure within Castle Creek.

The intake structure is over 40 years old and the galvanized steel CMPs that serve as the water inlet piping are corroding. According to a 2020 Alternative Analysis prepared by PACE Engineering, Inc., if the pipes fail, CSA customers would be without drinking water as there is no secondary source available. In addition, the filter fabric around the intake structure has deteriorated, allowing sediment to collect and causing the intake pumps to lose suction. Furthermore, the top of the intake structure is exposed during low creek flows when the creek shifts during summer months, forcing CSA staff to build a rock dam in an attempt to keep the intake structure submerged.

PACE identified four alternatives to replace the current water intake system: 1) Instream Infiltration Gallery, 2) Instream Diversion Structure, 3) Surface Water Well, and 4) Groundwater Well. The “No Project “alternative and a consolidation alternative were also reviewed, but found to be infeasible. ENPLAN prepared an Environmental Alternatives Analysis in November 2020 and identified the construction of a deep groundwater well as the environmentally preferred alternative, with a surface water well ranking in a close second place. However, a hydrogeologic evaluation conducted by Lawrence & Associates indicated that a deep groundwater well would yield minimal water. The surface water well alternative was explored via a test well installed in May 2021; however, excessive drawdown was observed in a short period, which rendered this alternative infeasible. The instream diversion structure received the lowest ranking from both environmental and engineering perspectives. Therefore, PACE Engineering identified installation of a new instream infiltration gallery (the current project proposal) as the best feasible alternative.

Additional improvements needed at the WTP were identified in the Preliminary Engineering Report prepared by PACE Engineering. Currently, the CSA utilizes pre-filtration chlorination;

however, pre-filtration chlorination increases haloacetic acid (five) (HAA5) generation. To reduce the need for pre-filtration chlorination, the 2018 Annual Inspection Report recommended the addition of post-filtration chlorination. Installation of post-filtration chlorination would ensure adequate minimum disinfection contact time prior to the first service connection.

In addition, the existing control system at the WTP is severely antiquated and needs to be replaced and upgraded to provide a reliable monitoring and control system ensuring CSA staff can respond quickly to issues when they arise. Furthermore, future Pacific Gas and Electric (PG&E) Public Safety Power Shutoff (PSPS) events are expected due to frequent dry, hot, windy conditions in the area and with the WTP being located in a heavily treed location. Installation of a permanent emergency generator with an automatic transfer switch would ensure that adequate water can still be provided to residents during a fire, as well as provide a more reliable water source for fighting fire.

The purpose of the proposed project is to replace aging infrastructure, and ensure a safe and reliable potable water supply for residents within Shasta County CSA No. 3. A detailed description of the proposed improvements is provided in Section 3.2 (Project Components/ Physical Improvements).

Depending on the availability of funding, work is anticipated to commence in the summer of 2026 and would be completed in approximately six months. For purposes of this Initial Study, "study area" and "project site" shall mean the project footprint, which includes access roads, staging areas, and areas in which improvements are proposed.

3.2 PROJECT COMPONENTS / PHYSICAL IMPROVEMENTS

This section describes the proposed improvements that are the subject of this Initial Study. As shown in **Figure 3**, the project includes replacing the existing water intake structure with an instream infiltration gallery. The gallery would be located within the streambed of Castle Creek, just upstream of the current intake structure. The proposed system would consist of horizontal infiltration piping buried in the streambed. Instream excavation and temporary dewatering would be required for installation of the infiltration gallery.

While ultimately the responsibility of the Contractor, dewatering is anticipated to require a cofferdam and two bypass pipelines to be temporarily installed within Castle Creek. The cofferdam would be installed beginning on the south bank of Castle Creek and ending at the bypass pipelines; the bypass pipelines would run adjacent to the north bank of Castle Creek. If needed during dewatering, a staging area would be set aside at the WTP for temporary settling tanks or filter bags. A temporary raw water intake would be installed upstream of the cofferdam to continuously provide water to CSA customers during construction of the infiltration gallery. The temporary raw water intake would be equipped with a fish screen.

Vegetation removal on the south bank of Castle Creek would be necessary to install new underground piping between the infiltration gallery and the existing clearwell. Upon project completion, the bed and bank of Castle Creek would be restored to near-native conditions, with riprap being used to stabilize the steep stream bank.

Additional improvements at the WTP include rehabilitation of the existing clearwell and installation of a new chemical injection vault. A new post-filter chlorination metering pump and day tank would be installed inside the WTP building, along with a new air compressor, new grating, and a new filter and backwash control valves; a new post-filter chlorination vault and appurtenances would be installed to the north of the WTP building; a new surge tank would be installed on the east side of the WTP building; the electrical control system would be replaced with new efficient equipment; and a new emergency generator and automatic transfer switch would be installed south of the WTP building.

Access to the work areas would be from paved public roads and a private driveway. Temporary staging of construction equipment and materials would occur at the WTP; no physical improvements are needed to establish the staging area.

SECTION 4.0 ENVIRONMENTAL IMPACT ANALYSIS

4.1 AESTHETICS

Except as provided in Public Resources Code §21099 (Transit-Oriented Infill Projects), would the project:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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 a 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 that would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

REGULATORY CONTEXT

There are no federal or local regulations pertaining to aesthetic that apply to the proposed project.

STATE

California Scenic Highway Program

The California Scenic Highway Program, administered by the California Department of Transportation (Caltrans), was established in 1963 to preserve and protect the natural beauty of scenic highway corridors in the State. The Scenic Highway System includes a list of highways that have been designated as scenic highways as well as a list of highways that are eligible for designation as scenic highways. Local jurisdictions can nominate scenic highways for official designation by identifying and defining the scenic corridor of the highway and adopting a Corridor Protection Program that includes measures that strictly limit development and control outdoor advertising along the scenic corridor.

DISCUSSION OF IMPACTS

Questions A and C

Scenic vistas are defined as expansive views of highly valued landscapes from publicly accessible viewpoints. Scenic vistas include views of natural features such as mountains, hills, valleys, water courses, outcrops, and natural vegetation, as well as man-made scenic structures. Scenic resources in the study area include views of Castle Creek, Castle Crags, trees and other vegetation, and forested hills. The WTP and existing water intake structure are located on the west side of I-5 and are surrounded by forested land. The project site is partially visible to southbound travelers on nearby I-5 for a very brief duration.

Construction activities would include use of heavy equipment in and adjacent to the stream for vegetation removal, installation of the dewatering system, excavation, intake construction, and

installation of riprap for post-construction bank stabilization. However, this is a temporary impact and would cease when the project is complete.

Pipeline improvements would be subsurface and most other improvements would not be visible from public viewpoints. The only project component that could potentially result in a long-term visual impact would be the instream infiltration gallery. Vegetation removal and installation of riprap to stabilize the stream bank following construction of the improvements would result in a long-term change in visual conditions. Although **Mitigation Measure MM 4.4.3** requires that the bed and bank of Castle Creek be restored to near-native conditions upon completion of construction, the construction scar may be visible to perceptive observers for a period of two to three years, until new growth can cover the riprap. The gap in the tree canopy lining the creek would remain for a longer duration, but would not be readily recognizable as a human-induced feature. In addition, the speed limit on I-5 in the project area is 65 miles per hour, and travelers on I-5 would have only a one- to two-second view of the construction scar and gap in the tree canopy. With respect to the intake structure itself, the infiltration gallery would not be visible because it would consist primarily of subsurface piping.

Aesthetic impacts would be less than significant because the project does not include any components that could impede the view of a scenic vista; the project site would only be visible to travelers on the I-5 for a very short period of time, and impacts during construction would be temporary and cease at completion of the project. In addition, **MM 4.4.3** would ensure that natural areas disturbed during construction are restored to pre-construction conditions.

Question B

The nearest officially designated State Scenic Highway is Route 151 (Shasta Dam Boulevard), located approximately 30.5 miles south of the project area. The scenic route commences at the intersection of SR 151 and Lake Boulevard and continues to Shasta Dam. Due to the distance from the scenic route, the proposed project would have no impact to scenic resources within a designated State Scenic Highway.

Question D

The project does not include the installation of any new permanent exterior lighting. Any temporary lighting needed during construction would be required to comply with Shasta County Code (SCC) §17.84.050, which states*: "All lighting, exterior and interior, shall be designed and located so as to confine direct lighting to the premises. A light source shall not shine upon or illuminate directly on any surface other than the area required to be lighted. No lighting shall be of the type or in a location such that [it] constitutes a hazard to vehicular traffic, either on private property or on abutting streets."*

Compliance with SCC §17.84.050 ensures that the proposed project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. Impacts would be less than significant.

CUMULATIVE IMPACTS

As documented above, the proposed project does not include any features that would result in a significant permanent change to the visual character of the area. The proposed project would include only temporary construction activity and lighting that would cease at the completion of construction. In addition, there are no other closely related past, present, and reasonably foreseeable future projects in the area that would result in impacts to aesthetics. Therefore, the project's aesthetic impacts would not be cumulatively considerable.

MITIGATION

None necessary.

DOCUMENTATION

Shasta County. 2021. Shasta County Code, Chapter 17.84 (General Development Standards). https://library.municode.com/ca/shasta_county/codes/code_of_ordinances?nodeId=CD_ORD_TIT17ZO_CH17.84GEDEST_17.84.050LI. Accessed February 2022.

Caltrans. 2022. California State Scenic Highway Mapping System. Shasta County. https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways. Accessed February 2022.

4.2 AGRICULTURE AND FOREST RESOURCES

Would the project:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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 §12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code §51104(g)) or result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☒	☐
d. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	☒

REGULATORY CONTEXT

There are no federal regulations pertaining to agriculture or forest resources that apply to the proposed project.

STATE

California Farmland Mapping and Monitoring Program (FMMP)

The FMMP was established in 1982 to provide data to decision makers to assist them in making informed decisions for the best utilization of California's farmland. Under the FMMP, the Department of Conservation (DOC) is responsible for mapping, monitoring, and reporting on the conversion of the State's farmland to and from agricultural use. Important Farmland Maps are updated and released every two years. The following mapping categories, which are determined based on soil qualities and current land use information, are included in the FMMP: prime farmland, farmland of statewide importance, unique farmland, farmland of local importance, grazing land, urban and built-up land, other land, and water.

Williamson Act

The Williamson Act (California Land Conservation Act of 1965) was enacted as a means to protect agricultural uses in the State. Under the Williamson Act, local governments can enter into contracts with private landowners to ensure that specific parcels are restricted to agricultural and related open space uses. In return, landowners receive reduced property tax assessments. The minimum term for a Williamson Act contract is ten years, and the contract is automatically renewed for one-year terms unless the landowner files a notice of nonrenewal or a petition for cancellation.

Forest Land and Timberland

PRC §12220(g) defines Forest Land as *"land that can support 10% native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits."* PRC §4526 defines timberland as *"land, other than land owned by the federal government, which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees."* Government Code §51104(g) defines Timberland Production Zone as *"an area which has been zoned pursuant to [Government Code] §51112 or §51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, as defined in subdivision (h)."*

LOCAL

Shasta County

The County's General Plan includes the following Objective and Policy that apply to the proposed project:

Chapter 6.1, Agricultural Lands		
Objective:	AG-5	Protection of agricultural lands from development pressures and or uses which will adversely impact or hinder existing or future agricultural operations.
Policy:	AG-h	The site planning, design, and construction of on-site and off-site improvements for nonagricultural development in agricultural areas shall avoid unmitigable short- and long-term adverse impacts on facilities, such as irrigation ditches, used to supply water to agricultural operations.

DISCUSSION OF IMPACTS

Questions A, B, and D

According to the California Department of Conservation, the project area was not surveyed for inclusion in the FMMP. A review of the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) records identified one soil type in the project site: Xerofluvents-Riverwash association, 0 to 20 percent slopes. NRCS shows that this soil type is not designated as prime farmland. In addition, the land capability classification, which identifies the suitability of soils for most field crops, is 6, indicating that the soil has severe limitations that makes the land generally unsuitable for cultivation and restricts use to mainly pasture, rangeland, forestland, or wildlife habitat. Further, none of the properties adjacent to the project site are zoned for or used for agricultural production, nor are they subject to a Williamson Act contract. Because the proposed project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance and would not conflict with agricultural zoning or a Williamson Act contract, there would be no impact.

Question C

According to the County's General Plan and County Zoning Map, there are no Timberland Production (TP) zones, Timberland (TL) zones, or Timber (T) zones in the project area. The closest T and TP zone is ±0.25 miles east of the project site and the closest TL zone is ±0.8 miles south of the project

site. The project does not involve any work in or adjacent to timberlands; therefore, the project would have no impact on timberland.

As stated under Regulatory Context above, "forest land" is defined in PRC §12220(g) as land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. The project site meets the definition of forest land and installation of proposed improvements would require the removal of mature trees; the exact number of trees to be removed is unknown and will be determined at a later date dependent on future site plans. Because the site is defined as "forest land", the project is subject to the California Forest Practices Rules (CAL FIRE, 2020), including the requirement to obtain a Timberland Conversion Permit (TCP), a Conversion Exemption, approval of a Timber Harvest Plan (THP), and/or other related approvals by the California Department of Forestry and Fire Protection (CAL FIRE) prior to earth disturbance.

According to the Shasta County General Plan, there were ±2,428,000 acres of timberland in the County as of 2004. The project's conversion of up to ±0.09 acres of land represents ±0.0000037 percent of land in the County identified as timberland.

Therefore, the project's impact to timberland and forest land would be less than significant because the amount of land that would be converted represents a negligible amount of the total forest land in the County. Further, work would be subject to the conditions of a TCP, THP, and/or other related approvals from CAL FIRE.

CUMULATIVE IMPACTS

As documented above, the proposed project would not convert prime farmland, unique farmland, or farmland of statewide importance, would not conflict with zoning or a Williamson Act contract, and does not include any components that would have an indirect effect on farmland. Therefore, the impact of the proposed project on farmland would not be cumulatively considerable.

Project implementation would result in the removal of mature trees from the study area. These trees are in an area that meets the definition of forest land under PRC §12220(g). However, the magnitude of tree removal for the proposed project is low in relation to the distribution and availability of forest land in the region, and tree removal would be subject to the requirements of CAL FIRE. In addition, there are no other closely related past, present, and reasonably foreseeable future projects in the area that would result in impacts to forestry resources. Therefore, cumulative impacts of the proposed project on timberland and forest land would be less than significant.

MITIGATION

None necessary.

DOCUMENTATION

Shasta County. 2022. Shasta County Zoning Map. https://maps.co.shasta.ca.us/ShastaCountyMap/. Accessed March 2022.

____. Shasta County. 2004. Shasta County General Plan. https://www.co.shasta.ca.us/index/drm/planning/general-plan. Accessed March 2022.

State of California, Department of Conservation. 2016. Important Farmland Finder. https://maps.conservation.ca.gov/dlrp/ciff/ . Accessed March 2022.

4.3 AIR QUALITY

Would the project:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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 in 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?	☐	☐	☒	☐

REGULATORY CONTEXT

FEDERAL

Federal Ambient Air Quality Standards

The U.S. Environmental Protection Agency (USEPA), under the federal Clean Air Act (CAA), establishes maximum ambient concentrations for criteria air pollutants (CAPs), known as the National Ambient Air Quality Standards (NAAQS). The NAAQS were established to protect the health and welfare of the populace with a reasonable margin of safety. **Table 4.3-1** identifies the CAPs as well as characteristics, health effects and typical sources for each CAP:

TABLE 4.3-1
Federal Criteria Air Pollutants

Pollutant	Characteristics	Primary Effects	Major Sources
Ozone (O_3)	Ozone is a colorless or bluish gas formed through chemical reactions between two major classes of air pollutants: reactive organic gases (ROG) and oxides of nitrogen (NO_X). These reactions are stimulated by sunlight and temperature; thus, ozone occurs in higher concentrations during warmer times of the year.	• Respiratory symptoms. • Worsening of lung disease leading to premature death. • Damage to lung tissue. • Crop, forest, and ecosystem damage. • Damage to a variety of materials, including rubber, plastics, fabrics, paints, and metals.	Motor vehicle exhaust, industrial emissions, gasoline storage and transport, solvents, paints, and landfills.
Carbon Monoxide (CO)	Carbon monoxide is an odorless, colorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline and wood. Because CO is emitted directly from internal combustion engines, motor	• Chest pain in patients with heart disease. • Headache. • Light-headedness. • Reduced mental alertness.	Motor vehicle exhaust, combustion of fuels, combustion of wood in woodstoves and fireplaces.

	vehicles operating at slow speeds are the primary source of carbon monoxide.		
Nitrogen Dioxide (NO_2)	Nitrogen dioxide is a reddish-brown gas formed when nitrogen (N_2) combines with oxygen (O_2). Nitrogen oxides are typically created during combustion processes and are major contributors to smog formation and acid deposition. Of the seven types of nitrogen oxide compounds, NO_2 is the most abundant in the atmosphere and is related to traffic density.	• Respiratory symptoms. • Damage to lung tissue. • Worsening of cardiovascular disease. • Precursor to ozone and acid rain. • Contributes to global warming and nutrient overloading which deteriorates water quality. • Causes brown discoloration of the atmosphere.	Automobile and diesel truck exhaust, petroleum-refining operations, industrial sources, aircraft, ships, railroads, and fossil-fueled power plants.
Sulfur Dioxide (SO_2)	Sulfur dioxide is a colorless, nonflammable gas that results mainly from burning high-sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries.	• Respiratory symptoms. • Worsening of cardiovascular disease. • Damage to a variety of materials, including marble, iron, and steel. • Damages crops and natural vegetation. • Impairs visibility. • Precursor to acid rain.	Petroleum refineries, cement manufacturing, metal processing facilities, locomotives, and large ships, and fuel combustion in diesel engines.
Particulate Matter ($PM_{2.5}$ and PM_{10})	This pollutant consists of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols that are small enough to remain suspended in the air for a long period of time. Particulate matter with a diameter of 10 microns or less (PM_{10}) is inhalable into the lungs and can induce adverse health effects. Fine particulate matter is defined as particles that are 2.5 microns or less in diameter ($PM_{2.5}$). Therefore, $PM_{2.5}$ comprises a portion of PM_{10}.	• Premature death. • Hospitalization for worsening of cardiovascular disease. • Hospitalization for respiratory disease • Asthma-related emergency room visits. • Increased symptoms, increased inhaler usage	Dust- and fume-producing construction activities, power plants, steel mills, chemical plants, unpaved roads and parking lots, woodburning stoves and fireplaces, wildfires, motor vehicles, and other combustion sources. Also a result of photochemical processes.
Lead	A heavy metal that occurs both naturally in the environment and in manufactured products.	• Impaired mental functioning in children • Learning disabilities in children • Brain and kidney damage. • Reproductive disorders. • Osteoporosis.	Lead-based industrial production (e.g., battery production and smelters), recycling facilities, combustion of leaded aviation gasoline by piston-driven aircraft, and crustal weathering of soils followed by fugitive dust emissions.

Clean Air Act - Federal General Conformity Rule

The General Conformity Rule of the CAA requires that all federally funded projects conform to the applicable State Implementation Plan (SIP). The Conformity Rule applies to projects in areas that are designated as nonattainment or maintenance areas for any of the six federal criteria air pollutants when the total direct and indirect emissions of the criteria pollutant (or its precursors) are at or above the de-minimis thresholds listed in Code of Federal Regulations (CFR) Title 40, §93.153(b).

Because Shasta County is designated as attainment or unclassified areas for all federal air quality standards, federal conformity requirements do not apply to the proposed project.

STATE

State Ambient Air Quality Standards

The California CAA establishes maximum concentrations for the seven federal CAPs, as well as the four additional air pollutants identified below. The four additional standards are intended to address regional air quality conditions, not project-specific emissions. These maximum concentrations are known as the California Ambient Air Quality Standards (CAAQS). The California Air Resources Board (CARB) has jurisdiction over local air districts and has established its own standards for each CAP under the CAAQS. For areas within the State that have not attained air quality standards, the CARB works with local air districts to develop and implement attainment plans to obtain compliance with both federal and State air quality standards.

Visibility-Reducing Particles. Visibility-reducing particles vary greatly in shape, size, and chemical composition, and come from a variety of natural and manmade sources. Major sources include wildfires, residential fireplaces and woodstoves, windblown dust, ocean sprays, biogenic emissions, dust and fume-producing construction, industrial and agricultural operations, and fuel combustion. Primary effects include visibility impairment, respiratory symptoms, and worsening of cardiovascular disease.

Sulfate (SO_4). Sulfate is oxidized to sulfur dioxide (SO_2) during the combustion process and is subsequently converted to sulfate compounds in the atmosphere. Major sources include industrial processes and the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. Primary effects include respiratory symptoms, worsening of cardiovascular disease, damage to a variety of materials, including marble, iron, and steel, damage to crops and natural vegetation, and visibility impairment.

Hydrogen Sulfide (H_2S). Hydrogen sulfide is a colorless gas with the odor of rotten eggs. Major sources include geothermal power plants, petroleum refineries, and wastewater treatment plants. Primary effects include eye irritation, headache, nausea, and nuisance odors.

Vinyl Chloride (chloroethene). Vinyl chloride, a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. It is also listed as a toxic air contaminant because of its carcinogenicity. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites due to microbial breakdown of chlorinated solvents. Primary effects include dizziness, drowsiness, headaches, and liver damage.

Table 4.3-2 provides the federal and State ambient air quality standards:

TABLE 4.3-2
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards
Ozone (O_3)	8 Hour	0.070 ppm (137µg/m^3)	0.070 ppm (137µg/m^3)
	1 Hour	0.09 ppm (180 µg/m^3)	–
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)
Sulfur Dioxide (SO_2)	24 Hour	0.04 ppm (105 µg/m^3)	0.14
	3 Hour	–	–
	1 Hour	0.25 ppm (665 µg/m^3)	75 ppb (196 µg/m^3)
	Annual Arithmetic Mean	–	0.030 ppm
Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	–
	24 Hour	50 µg/m^3	150 µg/m^3
Particulate Matter – Fine ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m^3	12 µg/m^3
	24 Hour	–	35 µg/m^3
Sulfates	24 Hour	25 µg/m^3	–
Lead	Calendar Quarter	–	1.5 µg/m^3
	30 Day Average	1.5 µg/m^3	–
	Rolling 3-Month Average	None	0.15 µg/m^3
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	–
Vinyl Chloride (chloroethene)	24 Hour	0.01 ppm (26 µg/m^3)	–
Visibility-Reducing Particles	8 Hour	–	–

Source: CARB 2016. Notes: mg/m^3=milligrams per cubic meter; ppm=parts per million; ppb=parts per billion; µg/m^3=micrograms per cubic meter

Toxic Air Contaminants

In addition to the California CAPs, Toxic Air Contaminants (TACs) are another group of pollutants regulated under the California CAA. TACs are less pervasive in the urban atmosphere than CAPs, but are linked to short-term (acute) and long-term (chronic or carcinogenic) adverse human health effects, including cancer, birth defects, neurological damage, and death. Sources of TACs include industrial processes, commercial operations (e.g., gasoline stations and dry cleaners), grading and demolition of structures (asbestos), and diesel-motor vehicle exhaust. Under Assembly Bill 2588, the Air Toxics "Hot Spots" Information and Assessment Act of 1987, facilities found to release high volumes of toxic air pollution are required to conduct a detailed health risk assessment that estimates emission impacts to the neighboring community and recommends mitigation to minimize TACs.

LOCAL

Shasta County Air Quality Management District (SCAQMD):

The SCAQMD has the responsibility of enforcing federal and state air quality regulations in Shasta County. The SCAQMD adopts and enforces controls on stationary sources of air pollutants through its permit and inspection programs, and it regulates agricultural burning. All projects in Shasta County are subject to applicable SCAQMD rules and regulations in effect at the time of construction. Descriptions of specific rules applicable to the proposed project may include, but are not limited to:

- SCAQMD Rule 3-2, Specific Air Contaminants, states that no person shall discharge contaminants from any single source into the atmosphere above the amounts designated in the Rule.

- Cutback and emulsified asphalt application shall be conducted in accordance with SCAQMD Rule 3-15, Cutback and Emulsified Asphalt.
- SCAQMD Rule 3-16, Fugitive, Indirect, or Non-Traditional Sources, controls the emission of fugitive dust during earth-moving, construction, demolition, bulk storage, and conditions resulting in wind erosion.
- Architectural coatings and solvents shall be compliant with SCAQMD Rule 3-31, Architectural Coatings.

Shasta County is currently designated as a non-attainment – transitional area for State ozone standards; the County is designated as an attainment or unclassified area for all other federal and State ambient air quality standards.

Northern Sacramento Valley Planning Area (NSVPA) 2021 Triennial Air Quality Attainment Plan (AQAP)

The SCAQMD, along with other air districts in the Northern Sacramento Valley Air Basin (NSVAB), jointly prepared an Air Quality Attainment Plan (AQAP) for the purpose of achieving and maintaining healthful air quality throughout the air basin. The Northern Sacramento Valley Planning Area (NSVPA) 2021 Triennial AQAP constitutes the region's State Implementation Plan (SIP). The NSVPA 2021 AQAP, adopted by the SCAQMD Board on April 5, 2022, includes updated strategies and regulations for the three-year period of 2012 through 2024. Shasta County has determined that the County's primary emphasis in implementing the 2021 Attainment Plan is to attempt to reduce emissions from mobile sources through public education and grant programs.

As shown in **Table 4.3-3**, Shasta County has adopted air quality thresholds for emissions of Reactive Organic Gases (ROG), Oxides of Nitrogen (NO_X), and Particulate Matter, 10 microns in size (PM_{10}) to determine the level of significance for projects subject to CEQA review (Shasta County Rule 2:1, New Source Review, Part 300).

TABLE 4.3-3
Thresholds of Significance for Criteria Pollutants of Concern

Level	ROG	NOx	PM_{10}
Level A: Indirect Source	25 lbs/day	25 lbs/day	80 lbs/day
Level B: Indirect Source	137 lbs/day	137 lbs/day	137 lbs/day
Direct Sources	25 tons/year	25 tons/year	25 tons/year

Source: 2004 Shasta County General Plan, Chapter 6.5 (Air Quality).

All discretionary projects in Shasta County are required to implement Standard Mitigation Measures (SMMs) to achieve the highest feasible reduction in emissions and contribute to a reduction in cumulative impacts. Projects that generate unmitigated emissions above Level A must implement Best Available Mitigation Measures (BAMM) in addition to the SMMs. If a project is not able to reduce emissions below the Level B threshold, emissions offsets are required. If after applying the emissions offsets, the project emissions still exceed the Level B threshold, an Environmental Impact Report is required.

Shasta County

The County's General Plan includes the following Objective and Policies related to air quality:

Chapter 6.5, Air Quality		
Objective:	AQ-2	To meet the requirements of the: (1) Federal Clean Air Act, and (2) the California Clean Air Act as soon as feasible.
Policy:	AQ-2b	Work to accurately determined and fairly mitigate the local and regional air quality impacts of projects proposed in the unincorporated portions of Shasta County.

	AQ-2c	New projects shall be required to reduce their respective air quality impacts to below levels of significance, or proceed as indicated in Policy AQ-2e.
	AQ-2d	Ensure that air quality impacts identified during CEQA review are; (1) consistently and fairly mitigated, and (2) mitigation measures are feasible.
	AQ-2e	Cooperate with the AQMD in assuring that new projects with stationary sources of emissions of non-attainment pollutants or their precursors that exceed 25 tons per year shall provide appropriate emission offsets. A comparable program which offsets indirect emissions of these pollutants exceeding 25 tons per year from development projects shall also be utilized to mitigate air pollution impacts. An Environmental Impact Report will be required for all projects that have unmitigated emissions of non-attainment pollutants exceeding 25 tons per year.
	AQ-2f	Require appropriate Standard Mitigation Measures and Best Available Mitigation Measures on all discretionary land use applications as recommended by the AQMD in order to mitigate both direct and indirect emissions of non-attainment pollutants.

DISCUSSION OF IMPACTS

Questions A and B

As discussed under Regulatory Context, for areas within the State that have not attained air quality standards, the CARB works with local air districts to develop and implement attainment plans to obtain compliance with both federal and State air quality standards. The NSVAB 2021 AQAP serves as the air quality plan for the region.

The project would result in the temporary generation of ROG, NO_X, PM_{10}, and other regulated pollutants during construction. ROG and NO_X emissions are associated with employee vehicle trips, delivery of materials, and construction equipment exhaust. PM_{10} is generated during site preparation, excavation, road paving, and from exhaust associated with construction equipment.

Project emissions were estimated using Version 2022.1.0 of the California Emissions Estimator Model (CalEEMod). CalEEMod reports both maximum daily emissions (pounds per day) and overall annual emissions (tons per year) for both construction and operational emissions. CalEEMod does not directly calculate ozone (O_3) emissions. Instead, emissions of ozone precursors are calculated. Ozone precursors are quantified as ROG and NO_X which, when released, interact in the atmosphere and produce ozone.

Output files, as well as all site-specific inputs and assumptions, are provided in **Appendix A**.

Site-specific inputs and assumptions include, but are not limited to, the following. CalEEMod provides default values when site-specific inputs are not available.

- Emissions from construction are based on all construction-related activities, including but not limited to grading, site preparation, use of construction equipment, material hauling, trenching, and paving.
- Construction would start in the summer of 2026 and occur over a period of approximately 6 months.
- Total land disturbance would be approximately 1 acre; 700 cubic yards (CY) of fill material would be imported; 700 CY would be exported.
- The total weight of demolition debris to be removed from the project site would be approximately 12 tons.

- The project would implement SCAQMD rules, regulations, and standard mitigation measures.

In addition, the proposed project is subject to the In-Use Off-Road Diesel Vehicle Regulation adopted by CARB. The off-road regulation imposes limits on idling, requires all vehicles be reported to CARB and subsequently labeled, restricts adding older vehicles into fleets, and requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (VDECS) (i.e., exhaust retrofits). Large and medium fleets have annual compliance deadlines through 2023. Small fleets have compliance deadlines each year from 2019-2028.

Table 4.3-4 shows the highest daily levels of project construction emissions regardless of construction phase. Because the County is applying for funding through the DWSRF Program, which is partially funded by the USEPA, **Table 4.3-4** also shows estimated emissions in tons per year in accordance with DWSRF requirements.

TABLE 4.3-4
Projected Construction Emissions

Year	Pollutants of Concern											
	ROG		NOx		PM_{10}		$PM_{2.5}$		CO		SO_2	
	Maximum lbs/day	Tons/ year	Maximum lbs/day	Tons/ year	Maximum lbs/day	Tons/ year	Maximum lbs/day	Tons/ year	Maximum lbs/day	Tons/ year	Maximum lbs/day	Tons/ year
2026	1.02	0.04	9.19	0.38	5.83	0.10	2.98	0.05	11.1	0.50	0.02	Trace

Source: CalEEMod, 2022.

As shown in **Table 4.3-4,** construction of the proposed project would not exceed the County's Level A or Level B thresholds shown in **Table 4.3-3**. In addition, the Federal General Conformity Rule does not apply to the proposed project because Shasta County is designated as attainment or unclassified for all federal ambient air quality standards.

As indicated in **Appendix A**, the proposed project would generate only trace amounts of criteria pollutants and would not exceed the SCAQMD thresholds. Therefore, operational impacts would be less than significant. For both construction and operational emissions, the proposed project would not result in significant impacts associated with ozone (O_3), lead (Pb), hydrogen sulfide (H_2S), vinyl chloride, or visibility reducing particles as discussed below.

Ozone. CalEEMod does not directly calculate ozone emissions. Instead, the emissions associated with ozone precursors (ROG and NO_X) are calculated. Because project construction would generate relatively low amounts of both ROG and NO_X, the potential for ozone production/emissions is less than significant.

Lead. Elevated levels of airborne lead at the local level are usually found near industrial operations that process materials containing lead, such as smelters and battery manufacturing/ recycling facilities. As these conditions are not applicable to the proposed project, there is no potential for lead emissions.

Hydrogen Sulfide. Hydrogen sulfide is formed during the decomposition of organic material in anaerobic environments, including sewage treatment processes. The proposed project would not result in an increase in wastewater generation; therefore, there is no potential for an increase in hydrogen sulfide emissions.

Vinyl Chloride. Vinyl chloride is used to manufacture PVC plastic and other vinyl products. Approximately 98 percent of vinyl chloride produced in the United States is used during the manufacture of PVC. Additionally, vinyl chloride is produced during the microbial breakdown of chlorinated solvents (e.g., engine cleaner, degreasing agent, adhesive solvents, paint removers, etc.). The potential for vinyl chloride exposure is primarily limited to areas in close proximity to PVC production facilities. Because PVC manufacturing facilities are absent from the project area,

and project implementation would not result in an increase of chlorinated solvents, there is no potential for vinyl chloride emissions.

Visibility-Reducing Pollutants. Visibility-reducing pollutants generally consist of sulfates, nitrates, organics, soot, fine soil dust, and coarse particulates. These pollutants contribute to the regional haze that impairs visibility, in addition to affecting public health. According to the California Regional Haze Management Plan (RHMP), natural wildfires and biogenic emissions are the primary contributors to visibility-reducing pollutants. For the proposed project, visibility-reducing pollutants (e.g., $PM_{2.5}$ and PM_{10}), would be generated only during construction activities. Because only relatively low amounts of particulates would be generated, potential impacts with respect to visibility-reducing pollutants are less than significant.

The proposed project would not exceed the SCAQMD thresholds during construction, does not have any components that would increase long-term operational emissions, and would not result in significant impacts associated with O_3, Pb, H_2S, vinyl chloride, or visibility-reducing particles. Therefore, the proposed project would be in conformance with the NSVPA 2021 Triennial AQAP and impacts would be less than significant.

Question C

See discussion under Questions A and B above. Sensitive receptors are individuals or groups of people that are more affected by air pollution than others, including young children, elderly people, and people weakened by disease or illness. Locations that may contain high concentrations of sensitive receptors include residential areas, schools, playgrounds, childcare centers, hospitals, convalescent homes, and retirement homes. The nearest sensitive receptors to the WTP are located ±440 feet to the east on Main Street, on the opposite side of I-5; and ±600 feet to the northwest, on the opposite side of Castle Creek. Therefore, given the considerable distance from the project site, sensitive receptors would not be substantially exposed to pollutant concentrations. In addition, compliance with federal, state, and local regulations, and implementation of **MM 4.3.1** would reduce impacts to a less-than-significant level.

Question D

The project does not include any components that would result in the generation of long-term odors or similar emissions adversely affecting a substantial number of people. Construction activities that have the potential to emit odors and similar emissions include operation of diesel equipment and generation of fugitive dust. Odors and similar emissions from construction are intermittent and temporary, and generally would not extend beyond the construction area. Due to the temporary and intermittent nature of construction odors, impacts during construction would be less than significant.

CUMULATIVE IMPACTS

Past, present, and future development projects contribute to a region's air quality conditions on a cumulative basis; therefore, by its very nature, air pollution is largely a cumulative impact. If a project's individual emissions contribute toward exceedance of the NAAQS or the CAAQS, then the project's cumulative impact on air quality would be considered significant.

The proposed project combined with future development within the project area could lead to cumulative impacts to air quality. However, as stated under Regulatory Context, SMMs apply to all discretionary projects in Shasta County in order to reduce cumulative impacts (refer to **Mitigation Measure MM 4.3.1**). In addition, as discussed above, emissions resulting from the proposed project would not exceed Shasta County thresholds, and construction would be in conformance with CARB and the applicable SIP developed to address cumulative emissions of criteria air pollutants in the NSVAB. Therefore, the proposed project would have a less-than-significant cumulative impact on local and regional air quality with implementation of **Mitigation Measure MM 4.3.1**.

MITIGATION

MM 4.3.1 The following measures shall be implemented throughout construction:

a. All material excavated, stockpiled, or graded shall be covered or sufficiently watered to prevent fugitive dust from leaving property boundaries and causing a public nuisance or a violation of ambient air quality standards. Watering shall occur at least twice daily with complete site coverage, preferably in the mid-morning and after work is completed each day.

b. All material transported offsite shall be either sufficiently watered or securely covered to prevent a public nuisance.

c. All areas (other than paved roads) with vehicle traffic shall be watered periodically or have dust palliatives applied for stabilization of dust emissions.

d. All on-site vehicles shall be limited to a speed of 15 miles per hour on unpaved roads.

e. All land clearing, grading, earth moving, and excavation activities on the project site shall be suspended when winds are causing excessive dust generation.

f. All trucks hauling dirt, sand, soil, or other loose materials shall be covered or shall maintain at least two feet of free board in accordance with the requirements of Section 23114 of the California Vehicle Code. This provision is enforced by local law enforcement agencies.

g. Paved streets in and adjacent to the construction site shall be swept or washed at the end of the day to remove excessive accumulations of silt and/or mud resulting from activities on the development site.

h. When not in use, motorized construction equipment shall not be left idling for more than five minutes.

DOCUMENTATION

California Air Resources Control Board. 2022. Air Toxics Program Website. https://ww2.arb.ca.gov/our-work/programs/air-toxics-program/resources. Accessed July 2022.

_____. 2021. Maps and Tables of Area Designations for State and National Ambient Air Quality Standards. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/sad2022/appc.pdf Accessed November 2022.

_____. 2020. Area Designations Maps—State and National. http://www.arb.ca.gov/desig/adm/adm.htm. Accessed July 2022.

_____. 2009. California Regional Haze Plan. https://www.arb.ca.gov/planning/reghaze/final/rhplan_final.pdf. Accessed July 2022.

_____. 2016. In-Use Off-Road Diesel-Fueled Fleets Regulation Overview. https://ww3.arb.ca.gov/msprog/ordiesel/faq/overview_fact_sheet_dec_2010-final.pdf. Accessed July 2022.

Sacramento Valley Air Quality Engineering and Enforcement Professionals (SVAQEEP). 2021. Northern Sacramento Valley Planning Area 2021 Triennial Air Quality Attainment Plan. https://www.co.shasta.ca.us/docs/libraries/resource-management-docs/aq-docs/2021_nsvaq_attainment_plan.pdf. Accessed July 2022.

Shasta County. 2004. Shasta County General Plan, Chapter 6.5 (Air Quality). http://www.co.shasta.ca.us/index/drm_index/planning_index/plng_general_plan.aspx . Accessed July 2022.

Shasta County Air Quality Management District. 2006. Air Quality Management District Rules and Regulations. https://www.co.shasta.ca.us/index/drm/air-quality/district-rules-regulations. Accessed July 2022.

U.S. Environmental Protection Agency. 2022. Criteria Air Pollutants. https://www.epa.gov/criteria-air-pollutants. Accessed July 2022.

_____. 2020. Nitrogen Oxide Emissions. http://www3.epa.gov/climatechange/ghgemissions/gases/n2o.html. Accessed July 2022.

4.4 BIOLOGICAL RESOURCES

Would the project:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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 Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community, including oak woodland, identified in local or regional plans, policies, or 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 wetlands, 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?	☐	☐	☐	☒

REGULATORY CONTEXT

FEDERAL

Federal Clean Water Act

Section 404

Under Section 404 of the Clean Water Act (CWA), the U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged and fill material into wetlands and waters of the U.S. The USACE requires that a permit be obtained prior to the placement of structures within, over, or under navigable waters and/or

prior to discharging dredged or fill material into waters below the ordinary high-water mark (OHWM). There are several types of permits issued by the USACE that are based on the project's location and/or level of impact. Regional general permits are issued for recurring activities at a regional level. Nationwide permits (NWPs) authorize a wide variety of minor activities that have minimal effects. Projects that are not covered under a regional general permit and do not qualify for a NWP are required to obtain a standard permit (e.g., individual permit or letter of permission).

Section 401

Under Section 401 of the CWA, a project requiring a USACE Section 404 permit is also required to obtain a State Water Quality Certification (or waiver) to ensure that the project will not violate established State water quality standards. The Regional Water Quality Control Board (RWQCB) regulates waters of the State and has a policy of no-net-loss of wetlands. The RWQCB typically requires mitigation for impacts to wetlands before it will issue a water quality certification.

Federal Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973 requires that all federal agencies ensure that any action they authorize, fund, or carry out will not likely jeopardize the continued existence of federally listed species or result in the destruction or adverse modification of critical habitat. Projects that would result in "take" of any federally listed species are required to obtain authorization from National Marine Fisheries Service (NMFS) and/or U.S. Fish and Wildlife Service (USFWS) through either Section 7 (interagency consultation) or Section 10(a) (incidental take permit) of FESA, depending on whether the federal government is involved in permitting or funding the project.

Federal Migratory Bird Treaty Act

Under the Migratory Bird Treaty Act (MBTA) of 1918, as amended, migratory bird species listed in the Code of Federal Regulations (CFR) Title 50, §10.13, including their nests and eggs, are protected from injury or death, and any project-related disturbances. The MBTA applies to over 1,000 bird species, including geese, ducks, shorebirds, raptors, and songbirds, some of which were near extinction before MBTA protections were put in place in 1918. The MBTA provides protections for nearly all native bird species in the U.S., including non-migratory birds.

Fish and Wildlife Conservation Act

Under the Fish and Wildlife Conservation Act of 1980, as amended, the USFWS maintains lists of migratory and non-migratory birds that, without additional conservation action, are likely to become candidates for listing under the FESA. These species are known as Birds of Conservation Concern and represent the highest conservation priorities.

Bald and Golden Eagle Protection Act

This Act provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession, and commerce of such birds and their occupied and unoccupied nests.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), also known as the Sustainable Fisheries Act, requires the identification of Essential Fish Habitat (EFH) for federally managed fishery species and implementation of appropriate measures to conserve and enhance EFH that could be affected by project implementation. All federal agencies must consult with NMFS on projects authorized, funded, or undertaken by that agency that may adversely affect EFH for species managed under the MSFCMA.

STATE

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (California Water Code §13000 *et seq.*) is the principal law governing water quality in California. It establishes a comprehensive program to protect water quality and the beneficial uses of waters of the State. The Porter-Cologne Act applies to surface waters, wetlands,

and groundwater, and to both point and non-point sources of pollution. The Act requires a Report of Waste Discharge for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface or groundwater of the state. The RWQCBs enforce waste discharge requirements (WDRs) identified in the Report.

Water Quality Control Plan (Basin Plans)

The CVRWQCB adopted a Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins, Fifth Edition, in May 2018, as well as subsequent amendments to the Plan. The Basin Plan identifies beneficial uses to be protected for both surface water and groundwater and establishes water quality criteria designed to protect those uses. WDRs were adopted in order to attain the beneficial uses identified in the Basin Plan. Water quality affects municipal, industrial, agricultural, and in-stream water uses as well as the health of terrestrial habitats. Because changes in water quality can indicate changes in other watershed processes or components, measurements of water quality are a favored, non-biological indicator of watershed condition.

State Water Resources Control Board (SWRCB)/CVRWQCB

Wetland Riparian Area Protection Policy and Water Quality Certification Program

In 2019, the State Water Resources Control Board (SWRCB) adopted a State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Procedures) (SWRCB, 2021a, 2021b). The Procedures consist of four major elements:

1. A wetland definition;
2. A framework for determining if a wetland feature is a water of the State;
3. Wetland delineation procedures; and
4. Procedures for the submittal, review, and approval of applications for Water Quality Certifications and Waste Discharge Requirements for dredge or fill activities.

The Water Quality Certification Program regulates the removal or placement of materials in wetlands and waterways in the State. The Program protects all waters, but has special responsibility for wetlands, riparian areas, and headwaters because these waterbodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs.

The State's Water Quality Certification is issued pursuant to Section 401 of the Clean Water Act to certify that the project approved by the USACE Section 404 permit will also meet State water quality requirements. The Program implements the State's no net loss policy for wetlands to ensure no overall net loss and long-term gain in the quantity, quality, and permanence of wetland acreage and values. Mitigation for the loss of wetlands could include creating new wetlands and/or preserving/restoring existing wetlands and enhancing their functionality.

California Endangered Species Act

Under the California Endangered Species Act (CESA), the Fish and Game Commission is responsible for listing and delisting threatened and endangered species, including candidate species for threatened or endangered status. The California Department of Fish and Wildlife (CDFW) provides technical support to the Commission and may submit listing petitions and assist with the evaluation process. CDFW maintains documentation on listed species, including occurrence records. In addition, CDFW maintains a list of fully protected species, most of which are also listed as threatened or endangered. CDFW also maintains a list of species of special concern (SSC). SSC are vulnerable to extinction but are not legally protected under CESA; however, impacts to SSC are generally considered significant under CEQA.

CESA prohibits the take of State-listed threatened and endangered species, but CDFW has the authority to issue incidental take permits under special conditions when it is demonstrated that impacts are minimized and mitigated. Fully protected species may not be taken or possessed at any time, and no licenses or permits may be issued for their take. One exception allows the collection of fully protected species for scientific research.

California Fish and Game Code §1600-1616 (Streambed Alteration)

California Fish and Game Code §1600 *et seq.*, requires that a project proponent enter into a Streambed Alteration Agreement (SAA) with CDFW prior to any work that would divert or obstruct the natural flow of any river, stream, or lake; change the bed, channel, or bank of any river, stream, or lake; use material from any river, stream, or lake; and/or deposit or dispose of material into any river, stream, or lake. An SAA will typically include conditions that minimize/avoid potentially significant adverse impacts to riparian habitat and waters of the State.

California Fish and Game Code §3503 and 3503.5 (Nesting Bird Protections)

These sections of the Code provide regulatory protection to resident and migratory birds and all birds of prey within the State and make it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the Code.

California Fish and Game Code §1900-1913 (Native Plant Protection Act)

The Native Plant Protection Act (NPPA) includes measures to preserve, protect, and enhance native plants that are listed as rare and endangered under the CESA. The NPPA states that no person shall take, possess, sell, or import into the state, any rare or endangered native plant, except in compliance with provisions of the Act.

Oak Woodlands Conservation (SB 1334, 2004)

SB 1334 pf 2004 added §21083.4 to CEQA to require counties to determine whether a project within the county's jurisdiction may result in the conversion of oak woodlands that would have a significant effect on the environment. If a county determines that there may be a significant effect on oak woodlands, the county must require mitigation to minimize/offset the conversion of oak woodlands.

LOCAL

Shasta County

The County's General Plan includes the following Objective and Policy that apply to the proposed project:

Chapter 6.7, Fish and Wildlife		
Objective:	FW-1	Protection of significant fish, wildlife and vegetation resources.
Policy:	FW-c	Projects that contain or may impact endangered and/or threatened plant or animal species, as officially designated by the California Fish and Game Commission and/or the U. S. Fish and Wildlife Service, shall be designed or conditioned to avoid any net adverse project impacts on those species.

DISCUSSION OF IMPACTS

Questions A and B

The evaluation of potential impacts on special-status plant and animal species entailed records searches and field evaluations conducted by ENPLAN and documented in the Biological Study Report (BSR) prepared for the project (see **Appendix B**). **Appendix B** includes the following:

- California Natural Diversity Database (CNDDB) Query Summary
- California Native Plant Society (CNPS) Query Summary
- U.S. Fish and Wildlife Service List of Threatened and Endangered Species and Critical Habitats
- ENPLAN's evaluation of the potential for special-status species to occur on the project site

- A list of vascular plants observed during the botanical survey.
- Revegetation Plan

The records searches included a review of CNDDB records for special-status plants and wildlife; CNPS records for special-status plant species; federal records for listed, proposed, and candidate plant and wildlife species under jurisdiction of the USFWS; and critical habitat data maintained by the USFWS. The National Marine Fisheries Service (NMFS) does not maintain species lists for the project quadrangle because Castle Creek is tributary to the upper Sacramento River, and Shasta and Keswick Dams prevent anadromous salmonids from migrating to the upper Sacramento River and Castle Creek.

To determine the presence/absence of special-status plant and animal species in the study area, ENPLAN biologists conducted botanical and wildlife surveys on October 5, 2020, November 12, 2021, and May 30, 2022. Additionally, a tree survey was conducted on August 3, 2022. Most of the special-status plant species potentially occurring in the study area would have been evident at the time the fieldwork was conducted. Most of the special-status wildlife species potentially occurring in the project area would not have been evident at the time the fieldwork was conducted. However, determination of the potential presence of the species that would not have been detectable at the time of the field surveys could readily be made based on observed habitat characteristics. The USFWS records do not identify any critical habitat as occurring in the project area.

Special-Status Plant Species

The potential for each special-status plant species identified in the records searches to occur in the project site is evaluated in **Appendix B**. As documented in Appendix B, no special-status plants were observed during the botanical survey, nor are any expected to be present. Therefore, the proposed project would have no impact on special-status plant species.

Special-Status Animal Species

The potential for each special-status animal species identified in the records searches to occur in the project site is evaluated in **Appendix B**. As documented in Appendix B, the study area has the potential to support the following special-status animal species:

Special-status frogs

As documented in Appendix B, there is potential for the foothill yellow-legged frog, north coast DPS (*Rana boylii*; State Species of Special Concern) and the Pacific tailed frog (*Ascaphus truei*, State Species of Special Concern) to be present in Castle Creek in the project area. If present the species could be directly and indirectly impacted during instream work in Castle Creek. As documented in the BSR, field surveys did not observe the species in the project area.

BMPs for sediment control and spill prevention would be implemented in accordance with **MM 4.4.2** and State Water Resources Control Board (SWRCB) requirements, which would avoid/minimize the potential for indirect impacts to the foothill yellow-legged frog and the Pacific tailed frog.

The breeding season for both species (April 1 to October 31) coincides with the proposed in-stream construction period and there is no way to fully avoid work during the breeding season; therefore, **MM 4.4.1** will be implemented to minimize potential impacts to special-status frogs:

- On each day in which in-stream work would occur, a qualified biologist shall conduct a pre-construction survey for the Pacific tailed frog and foothill yellow-legged frog. Surveys are not required for work occurring in the dewatered portion of the stream channel.

- Should individuals of the Pacific tailed frog or foothill yellow-legged frog species be observed during surveys or at any point during construction, work within 50

feet of the animal should be stopped until a qualified biologist can relocate the individuals. Should eggs of either species be observed, a qualified biologist shall identify and flag an area of avoidance; if full avoidance is not possible, the egg masses shall be relocated outside of the work area by the qualified biologist.

Special-status bats

As documented in Appendix B, suitable foraging habitat for the western mastiff bat (*Eumops perotis californicus*; SSSC) and the spotted bat (*Euderma maculatum*; SSSC) is present in the project area and vicinity. Although there is no roosting habitat present on the project site, there is potential for both bat species to roost 200 feet east of the project boundary at the Interstate 5 (I-5) bridge over Castle Creek. Because roosting habitat would not be affected due to project implementation, individuals of these species would not be directly affected. Additionally, due to the high level of traffic from I-5, combined with the noise of the perennial flowing water in Castle Creek, it is unlikely that additional noise during project construction would indirectly affect bats should they be present near the project site. Therefore, no mitigation measures are necessary.

Wetlands and Other Sensitive Natural Communities

Three sensitive natural communities are present in the project area: stream/riverine, seasonal wetlands, and montane riparian habitat. Castle Creek provides stream/riverine habitat. The dominant instream substrate is cobbles and boulders; a band of riparian habitat is present along each bank. Castle Creek is tributary to the Sacramento River north of Shasta Dam, a barrier to fish migration; therefore, there is no potential for anadromous fish species to be present in the study area. Resident fish species such as rainbow trout may be present; however, none of the fish species with potential to be present in Castle Creek within the study area are considered special-status species. An estimated 0.30 acres of Castle Creek would be disturbed during the installation of the new water infiltration gallery. These direct, temporary impacts would result from implementation of a water diversion and dewatering system, and excavation for intake pipe installation. Additionally, indirect temporary downstream impacts could result from increased turbidity due to bed and bank work. **MM 4.4.2** requires preparation of a diversion/dewatering plan; use of appropriate best management practices (BMPs) to prevent spills, instream sedimentation, and erosion; and seasonal restrictions on in-water work. With implementation of this measure, impacts on stream/riverine habitat would be less-than-significant.

Project construction could also result in disturbance of the three on-site seasonal wetlands, which provide ~0.053 acres of wetland habitat; the extent of direct and indirect impacts to the wetlands will depend on constructions plans to be determined by the contractor. **MM 4.4.3** provides various measures to avoid, minimize, and offset wetland impacts. Implementation of **MM 4.4.3** would ensure that impacts to the wetlands are less than significant.

Approximately 0.09 acres of riparian habitat are present along the southern bank of Castle Creek; it is conservatively assumed that all the on-site riparian habitat may be temporarily impacted due to project implementation. As documented in Appendix B, the project site contains 60 trees with a diameter at breast height (DBH) of 5 inches or greater; 36 of these trees occur within the onsite riparian habitat. The exact number of trees to be removed is dependent on construction plans. **MM 4.4.4** provides measures to minimize the disturbance to riparian habitat to the extent feasible. A revegetation plan is included in Appendix B, and would ensure regrowth following project completion; **MM 4.4.5** has been included to ensure implementation of the revegetation plan. With implementation of these measures, impacts on montane riparian habitat would be less-than-significant.

Introduction and Spread of Noxious Weeds

The introduction and spread of noxious weeds during construction activities also has the potential to adversely affect sensitive habitats. Each noxious weed identified by the California Department of Food and Agriculture (CDFA) receives a rating which reflects the importance of the pest, the likelihood that eradication or control efforts would be successful and the present distribution of the pest within the state. Four noxious weeds with a CDFA weed rating of Category C were identified

in the project area. Noxious weeds observed in the project area are of widespread distribution in the County, and further spread of these weeds is not anticipated. However, other noxious weeds could be introduced into the project area during construction if unwashed construction vehicles are not properly washed before entering the project site.

Soil import/export and use of certain erosion-control materials such as straw can also result in the spread of noxious weeds. As required by **MM 4.4.6,** the potential for introduction and spread of noxious weeds can be avoided/minimized by using only certified weed-free erosion control materials, mulch, and seed; limiting any import or export of fill material to material that is known to be weed free; and requiring the construction contractor to thoroughly wash all construction vehicles and equipment at a commercial wash facility before entering and upon leaving the job site. Implementation of **MM 4.4.6** reduces potential impacts related to the introduction and spread of noxious weeds to a less-than-significant level.

Therefore, implementation of **MM 4.4.1** through **MM 4.4.6** ensures that direct and indirect impacts to special-status species and sensitive natural habitats would be less than significant.

Question C

ENPLAN conducted field investigations on October 5, 2020, November 12, 2021, and May 30, 2022, to identify wetlands and other waters of the U.S. and State. The field investigation was conducted in accordance with technical methods outlined in the *Corps of Engineers Wetlands Delineation Manual* (U.S. Department of the Army, Corps of Engineers, 1987), *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Valleys, Mountains, and Coast Region* (USACE, 2010), and the *Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar et al., 2018).

As a result of the field delineation effort, three seasonal wetlands (totaling ~0.053 acres) and ~0.30 acres of "other waters of the United States" (i.e., stream) were mapped in the study area. Because the proposed project would unavoidably affect such waters, work would be subject to conditions of a CWA Section 404 permit as required by the USACE. A project requiring a USACE Section 404 permit is also required to obtain a State Water Quality Certification (or waiver) to ensure that the project will not violate established State water quality standards. A Streambed Alteration Agreement from CDFW would also be required.

Compliance with the conditions of resource agency permits and implementation of **MM 4.4.3** would reduce the project's potential impacts on wetlands and other waters of the U.S. and State to a less-than-significant level.

Question D

Construction work would occur in and adjacent to stream/riverine and riparian habitats that have the potential to serve as wildlife migration corridors. Temporary impacts to wildlife could occur due to increased human activity, increased noise levels, and temporary loss of vegetation that may provide food and shelter for wildlife. However, the project does not include installation of fencing or other permanent structures that could impede the movement of wildlife.

Daytime movement of terrestrial wildlife species along the stream corridor throughout the study area may be temporarily affected during construction activities; however, this impact is not significant because wildlife species would alter their routes to move around the construction areas or use the stream corridors during non-working hours. Additionally, the work area would be returned to near native conditions following project completion

With respect to nursery areas, there is a potential for the foothill yellow-legged frog, Pacific tailed frog, and other aquatic species to breed in Castle Creek. Construction within the ordinary high-water mark of Castle Creek has the potential to affect these species and their breeding habitats. However, implementation of **MM 4.4.1, 4.4.2, MM 4.4.4** and **MM 4.4.5** would minimize impacts to aquatic and riparian habitats that contribute to wildlife breeding habitats.

The project area is located within the Pacific Flyway, and it is possible that birds could nest in or adjacent to the study area. Nesting birds, if present, could be directly or indirectly affected by construction activities. Direct effects could include mortality resulting from tree removal and/or construction equipment operating in an area with an active nest with eggs or chicks. Indirect effects could include nest abandonment by adults in response to loud noise levels or human encroachment, or a reduction in the amount of food available to young birds due to changes in feeding behavior by adults.

Construction activities, particularly those involving vegetation removal at Castle Creek, have the potential to directly impact nesting birds, if present. In the local area, most birds nest between February 1 and August 31. As required by **MM 4.4.7**, the potential for adversely affecting nesting birds can be greatly minimized by removing vegetation and conducting construction activities either before February 1 or after August 31. If this is not possible, a nesting survey would be conducted within one week prior to removal of vegetation and/or the start of construction.

If active nests are found in the project site, the County would implement measures to comply with the Migratory Bird Treaty Act and California Fish and Game Code. Compliance measures may include, but are not limited to, exclusion buffers, sound-attenuation measures, seasonal work closures based on the known biology and life history of the species identified in the survey, as well as ongoing monitoring by biologists.

Any activities that may impede the movement of wildlife would be temporary and would cease at the completion of the project. With implementation of **MM 4.4.1, MM 4.4.2, MM 4.4.4, MM 4.4.5,** and **MM 4.4.7** potential impacts to wildlife movement and nursery areas would be less than significant.

Question E

As identified under Regulatory Context, the County's General Plan includes goals, objectives, policies, and programs related to the conservation of natural resources. Implementation of **MM 4.4.1** through **MM 4.4.7** and compliance with resource-agency permits ensures consistency with local policies that protect biological resources. With implementation of these measures, the potential for conflicts with local policies and ordinances protecting biological resources would be less than significant.

Question F

A Habitat Conservation Plan (HCP) is a federal planning document that is prepared pursuant to Section 10 of the FESA when a project results in the "take" of threatened or endangered wildlife. Regional HCPs address the "take" of listed species at a broader scale to avoid the need for project-by-project permitting. A Natural Community Conservation Plan (NCCP) is a state planning document administered by CDFW. There are no HCPs, NCCPs or other habitat conservation plans that apply to the proposed project. Therefore, there would be no impact.

CUMULATIVE IMPACTS

Cumulative projects in the site vicinity, including growth resulting from build-out of the County's General Plan, are anticipated to permanently remove plant and wildlife resources. Continued conversion of existing open space to urban development may result in the loss of sensitive plant and wildlife species native to the region, habitats for such species, wetlands, wildlife migration corridors, and nursery sites.

The conversion of plant and wildlife habitat on a regional level as a result of cumulative development would potentially result in a regionally significant cumulative impact on special-status species and their habitats. Implementation of **MM 4.4.1** through **MM 4.4.7** and compliance with resource agency permits ensures that the project's contribution to cumulative regional impacts is less than significant.

MITIGATION

MM 4.4.1 To avoid impacts to the Pacific tailed frog and the foothill yellow-legged frog, the following shall be implemented:

- On each day in which in-stream work would occur, a qualified biologist shall conduct a pre-construction survey for the Pacific tailed frog and foothill yellow-legged frog. Surveys are not required for work occurring in the dewatered portion of the stream channel.
- Should juveniles or adults of the Pacific tailed frog or foothill yellow-legged frog be observed during the surveys, or by construction personnel at any time, all work shall be stopped within 50 feet of the animal until a qualified biologist can relocate the individuals. Should eggs of either species be observed, a qualified biologist shall identify and flag an area of avoidance; if full avoidance is not possible, the egg masses shall be relocated outside of the work area by the qualified biologist.

MM 4.4.2 Impacts to water quality in Castle Creek shall be minimized by implementing the following measures:

- In-water construction activities shall take place between June 1 and October 31, when there is minimal chance of precipitation and flows are near their lowest; the in-water work period may be extended if weather conditions allow and if authorized by permitting agencies.
- Construction activities that include earth disturbance shall involve the use of Best Management Practices (BMPs) to prevent erosion, sedimentation, and accidental spills from entering Castle Creek.
- Prior to the start of in-water work, the dewatering/diversion plan shall be reviewed and accepted by the California Department of Fish and Wildlife, U.S. Army Corps of Engineers, and Regional Water Quality Control Board. The final plan shall be implemented by the project contractor and the diversion shall be properly maintained throughout the course of in-water construction.

MM 4.4.3 Impacts to seasonal wetland shall be minimized by implementing the following measures:

- High-visibility fencing, flagging, or other markers shall be installed along the outer edges of the construction zone adjacent to wetlands and other waters designated for avoidance. The fencing location shall be determined by a qualified biologist in consultation with the project engineer and the Shasta County Department of Public Works. No construction activities (e.g., clearing, grading, trenching, etc.), including vehicle parking and materials stockpiling, shall occur within the fenced area. The exclusionary fencing shall be periodically inspected during the construction period to ensure the fencing is properly maintained. The fencing shall be removed upon completion of work.
- If vehicles and/or equipment must enter wetlands, or if the wetlands are to be used as a staging area, the wetlands shall be protected through installation of temporary wood slabs, swamp mats, HDPE mats, geotextile fabric with a layer of gravel, or similar protective materials approved by the County. The protective materials shall be removed upon completion of construction.
- If excavation of wetlands cannot be avoided, mitigation shall be achieved by restoring the pre-existing topography of the wetlands upon completion of construction or through purchase of mitigation credits at an agency-approved mitigation bank at a minimum 1:1 ratio, or as may otherwise be required through permits issued by CDFW, USACE, and RWQCB.

MM 4.4.4 Loss of riparian habitat shall be minimized by implementing the following measures:

- Minimize the construction disturbance to riparian habitat through careful preconstruction planning.
- Install high-visibility fencing, flagging, or other markers along the outer edges of the construction zone where needed to prevent accidental entry into surrounding riparian habitat planned for retention.
- Stockpile equipment and materials outside of riparian habitat, in the designated staging areas.
- Prune any riparian plants at ground level where feasible (as opposed to mechanically removing the entire plant and root system) in temporary use areas, which will promote regeneration from the root systems.

MM 4.4.5 Any unavoidable loss of riparian habitat shall be offset by the following measures:

- Prior to any earth disturbance, the County shall purchase stream-side riparian habitat mitigation credits at a minimum 1:1 ratio from a CDFW-approved mitigation bank. Alternatively, the County shall pay in-lieu fees to the USACE. Proof of purchase shall be provided to CDFW prior to the start of work.
- Following project completion, the bank of Castle Creek shall be restored per the project description and riparian vegetation shall be replanted in accordance with the revegetation plan provided in the Biological Study Report (Appendix D of this Initial Study), and as may be modified in accordance with specification of permits issued by CDFW, USACE, and/or RWQCB.

MM 4.4.6 The potential for introduction and spread of noxious weeds shall be avoided/minimized by:

- Using only certified weed-free erosion control materials, mulch, and seed;
- Limiting any import or export of fill material to material that is known to be weed free; and
- Requiring the construction contractor to thoroughly wash all equipment at a commercial wash facility prior to entering the job site and upon leaving the job site.

MM 4.4.7 To avoid impacts to nesting birds and raptors protected under the federal Migratory Bird Treaty Act and California Fish and Game Code §3503 and §3503.5, including their nests and eggs, one of the following shall be implemented (removal of raptor nests at any time of year is prohibited unless appropriate permits are obtained):

- Vegetation removal and other ground-disturbance activities associated with construction shall occur between September 1 and January 31, when birds are not nesting; or
- If vegetation removal or ground disturbance activities occur during the nesting season (February 1 – August 31), a pre-construction nesting survey shall be conducted by a qualified biologist to identify active nests in and adjacent to the work area.

  The survey shall consider acoustic impacts and line-of-sight disturbances occurring as a result of the project in order to determine a sufficient survey radius to avoid nesting birds. At a minimum, the survey report shall include a description of the area surveyed, date and time of the survey, ambient conditions, bird species observed in the area, a description of any active nests observed, any evidence of breeding behaviors (e.g., courtship, carrying nest materials or food, etc.), and a description of any outstanding conditions that may have impacted the survey results (e.g., weather conditions, excess noise, the presence of predators, etc.).

  The results of the survey shall be submitted electronically to the California Department of Fish and Wildlife at R1CEQARedding@wildlife.ca.gov upon completion. The survey shall be conducted no more than one week prior to the

initiation of construction. If construction activities are delayed or suspended for more than one week after the pre-construction survey, the site shall be resurveyed.

If active nests are found, appropriate actions shall be implemented to ensure compliance with the Migratory Bird Treaty Act and California Fish and Game Code. Compliance measures may include, but are not limited to, exclusion buffers, sound-attenuation measures, seasonal work closures based on the known biology and life history of the species identified in the survey, as well as ongoing monitoring by biologists.

DOCUMENTATION

California Department of Fish and Wildlife. 2019. California Regional Conservation Plans. https://wildlife.ca.gov/Conservation/Planning/NCCP. Accessed August 2022.

California Department of Fish and Wildlife. 2022. CNDDB Maps and Data (ca.gov). California Natural Diversity Database, June 2022 data.

California Invasive Plant Council (Cal-IPC). 2022. The Cal-IPC Inventory. <https://www.cal-ipc.org/plants/inventory/>. Accessed October 2022.

California Native Plant Society, Rare Plant Program. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). www.rareplants.cnps.org. Accessed June 2022.

Shasta County. 2004. Shasta County General Plan. https://www.co.shasta.ca.us/index/drm/planning/general-plan. Accessed August 2022.

Lichvar, R.W. and S.M. McColley. 2008. *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States*. ERDC/CRREL TR-08-12. Hanover, New Hampshire.

U.S. Fish and Wildlife Service. Region 8 Habitat Conservation Plans. https://ecos.fws.gov/ecp0/conservationPlan/region/summary?region=8&type=HCP. Accessed August 2022.

_____. 2022. IPaC: Home (fws.gov). Official Species List. Accessed June 2022.

4.5 CULTURAL RESOURCES

Would the project:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☒	☐	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c. Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

REGULATORY CONTEXT

FEDERAL

Section 106 of the National Historic Preservation Act (NHPA)

Section 106 of the NHPA and its implementing regulations require federal agencies to take into account the effects of their activities and programs on historic properties. A historic property is any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register of Historic Places (NRHP), including artifacts, records, and material remains related to such a property (NHPA Sec. 301[5]). A resource is considered eligible for listing in the NRHP if it meets the following criteria as defined in CFR Title 36, §60.4:

> *The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:*
>
> - *That are associated with events that have made a significant contribution to the broad patterns of our history;*
> - *That are associated with the lives of persons significant in our past;*
> - *That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or*
> - *That has yielded, or may be likely to yield, information important to prehistory or history.*

Sites younger than 50 years, unless of exceptional importance, are not eligible for listing in the NRHP. In addition to meeting at least one of the criteria outlined above, the property must also retain enough integrity to enable it to convey its historic significance. To retain integrity, a property will always possess several, and usually most, of the seven aspects of integrity noted above. If a site is determined to be an eligible or historic property, impacts are assessed in terms of "effects." An undertaking is considered to have an adverse effect if it results in any of the following:

1. Physical destruction or damage to all or part of the property;
2. Alteration of a property;
3. Removal of the property from its historic location;
4. Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
5. Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features; and
6. Neglect of a property that causes its deterioration; and the transfer, lease, or sale of the property.

If a project will adversely affect a historic property, feasible mitigation measures must be incorporated. The State Historic Preservation Officer (SHPO) must be provided an opportunity to review and comment on these measures prior to commencement of the proposed project.

STATE

California Environmental Quality Act (CEQA)

CEQA requires that projects financed by or requiring the discretionary approval of public agencies in California be evaluated to determine potential adverse effects on historical and archaeological resources (California Code of Regulations [CCR], §15064.5). Historical resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance. Pursuant to §15064.5 of the CCR, a property may qualify as a historical resource if it meets any of the following criteria:

1. The resource is listed in or determined eligible for listing in the California Register of Historical Resources (CRHR).
2. The resource is included in a local register of historic resources, as defined in §5020.1(k) of the Public Resources Code (PRC), or is identified as significant in a historical resources survey that

meets the requirements of §5024.1(g) of the PRC (unless the preponderance of evidence demonstrates that the resource is not historically or culturally significant).

3. The lead agency determines that the resource may be a historical resource as defined in PRC §5020.1(j), or §5024.1, or may be significant as supported by substantial evidence in light of the whole record. Pursuant to PRC §5024.1, a resource may be eligible for inclusion in the CRHR if it:

    - Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
    - Is associated with the lives of persons important in our past;
    - Embodies the distinctive characteristics of a type, period, region, or method of construction, represents the work of an important creative individual, or possesses high artistic values; or
    - Has yielded, or may be likely to yield, information important in prehistory or history.

Resources must retain integrity to be eligible for listing on the CRHR. Resources that are listed in or formally determined eligible for listing in the NRHP are included in the CRHR, and thus are significant historical resources for the purposes of CEQA (PRC §5024.1(d)(1)).

A unique archaeological resource means an artifact, object, or site that meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

LOCAL

Shasta County

The County's General Plan includes the following Objective and Policy that apply to the proposed project:

Chapter 6.10, Heritage Resources		
Objective:	HER-1	Protection of significant prehistoric and historic cultural resources.
Policy:	HER-a	Development projects in areas of known heritage value shall be designed to minimize degradation of these resources. Where conflicts are unavoidable, mitigation measures which reduce such impacts shall be implemented. Possible mitigation measures may include clustering, buffer or nondisturbance zones, and building siting requirements.

DISCUSSION OF IMPACTS

Questions A and B

A Cultural Resources Inventory (CRI) was completed for the proposed project by ENPLAN in May 2022. The study included a records search, Native American consultation, and field evaluation. The records search included review of records at the Northeast Information Center of the California Historical Resources Information System at California State University, Chico (NEIC/CHRIS); National Register of Historic Places (NRHP); California Register of Historical Resources (CRHR); California Inventory of Historic Resources; California Historical Landmarks; California Points of Historical Interest; Native American Heritage Commission (NAHC); and historical maps and aerial photographs.

Archaeological fieldwork took place on April 3, 2022. The entire Area of Potential Effects (APE) was surveyed to identify cultural or historical resources that would be potentially affected by the proposed project.

Area of Potential Effects (APE)

The APE boundaries were devised in consultation with PACE Engineering, based on the project design. The APE includes areas for staging and construction access, as well as sufficient area for construction. The APE encompasses the banks of Castle Creek, the terrace above Castle Creek and the infrastructure for the water intake and treatment plant.

The vertical APE (i.e., associated with the potential for buried cultural resources) is based on the engineering design of the project and reflects the planned depths of the excavations associated with the project. The vertical APE extends approximately 18 feet below ground surface.

Records Search

Research at the NEIC was conducted on March 18, 2022, and covered an approximate quarter-mile radius around the APE for previously recorded archaeological sites and for previously conducted surveys. The size and scope of the search area was determined to be sufficient based on the results.

The records search revealed the that seven cultural resources surveys have been previously conducted within a quarter-mile radius of the project APE, two of which encompassed portions of the APE. One of the surveys was conducted for upgrades to the District's WTP; no cultural resources were found.

There are eight previously recorded sites in the search radius; however, none of the sites are within the project's APE. Review of the NRHP, the CRHR, California Historical Landmarks, and California Points of Historical Interest did not identify any additional resources within the APE.

Native American Consultation

In response to ENPLAN's request for information, the NAHC conducted a review of their Sacred Land File, with negative results for the project area. The NAHC also provided a list of Native American contacts who may have further knowledge of the area. On April 11, 2022, ENPLAN contacted the Native American representatives affiliated with the project area and requested information on cultural resources in the project area. Follow-up telephone calls were placed on May 3, 2022, to these representatives.

Responses were received from Mark Miyoshi of the Winnemem Wintu Tribe, and Kelli Hayward and Michelle Radcliff Garcia of the Wintu Tribe of Northern California. Mark Myoshi did not receive the original consultation letter; the letter, map, site plan, photos, and a detailed project description were subsequently sent to Mark Myoshi. Kelli Hayward forwarded additional contact information for Michelle Radcliff Garcia; the letter, map, site plan, photos, and a detailed project description were subsequently sent to Michelle Radcliff Garcia. Michelle Radcliff Garcia called for directions and visited the project site on May 3, 2022; she responded by email on May 3, 2022, and stated that the Wintu Tribe of Northern California is not aware of any known cultural resources in the immediate area, and was sure that care would be taken when working around Castle Creek.

No other comments or concerns were reported by any Native American representatives or organizations.

Field Survey

Archaeological fieldwork took place on April 3, 2022. No cultural resources were observed in the APE.

Conclusions

The cultural resources evaluation concluded that there are no known cultural resources in the APE. However, there is always some potential for previously unknown cultural resources to be encountered

during project excavation. **Mitigation Measure MM 4.5.1** addresses the inadvertent discovery of cultural resources and ensures that impacts are less than significant.

Question C

The project area does not include any known cemeteries, burial sites, or human remains. However, it is possible human remains may be unearthed during construction activities. **Mitigation Measure MM 4.5.2** ensures that if human remains are discovered, there shall be no further excavation or disturbance of the site until the County coroner has been contacted and has made the necessary findings as to origin and disposition in accordance with §15064.5(e) of the CEQA Guidelines. Therefore, impacts are less than significant.

CUMULATIVE IMPACTS

Cumulative projects in the vicinity of the project area have the potential to impact cultural resources. Archaeological and historic resources are afforded special legal protections designed to reduce the cumulative effects of development. Cumulative projects and the proposed project are subject to the protection of cultural resources afforded by the CEQA Guidelines §15064.5 and related provisions of the PRC. In addition, projects with federal involvement would be subject to Section 106 of the NHPA.

Given the non-renewable nature of cultural resources, any impact to protected sites could be considered cumulatively considerable. As discussed above, **Mitigation Measures MM 4.5.1 and MM 4.5.2** address the inadvertent discovery of cultural resources and/or human remains during construction. Because all development projects in the State are subject to the same measures pursuant to PRC §21083.2 and CEQA Guidelines §15064.5., the proposed project's cumulative impact to cultural resources is less than significant.

MITIGATION

MM 4.5.1 In the event of any inadvertent discovery of cultural resources (i.e., burnt animal bone, midden soils, projectile points or other humanly modified lithics, historic artifacts, etc.), all work within 50 feet of the find shall be halted until a professional archaeologist can evaluate the significance of the find in accordance with PRC §21083.2(g) and §21084.1, and CEQA Guidelines §15064.5(a). If any find is determined to be significant by the archaeologist, Shasta County staff shall meet with the archaeologist to determine the appropriate course of action. If necessary, a Treatment Plan prepared by an archeologist outlining recovery of the resource, analysis, and reporting of the find shall be prepared. The Treatment Plan shall be reviewed and approved by the Shasta County prior to resuming construction.

MM 4.5.2 In the event that human remains are encountered during construction activities, Shasta County shall comply with §15064.5 (e) (1) of the CEQA Guidelines and PRC §7050.5. All project-related ground disturbance within 50 feet of the find shall be halted until the County coroner has been notified. If the coroner determines that the remains are Native American, the coroner will notify the NAHC to identify the most likely descendants of the deceased Native Americans. Project-related ground disturbance in the vicinity of the find shall not resume until the process detailed in §15064.5 (e) has been completed.

DOCUMENTATION

Shasta County. 2004. Shasta County General Plan, Chapter 6.1 Heritage Resources. https://www.co.shasta.ca.us/docs/libraries/resource-management-docs/docs/6_10heritage.pdf?sfvrsn=5407829_0. Accessed June 2022.

ENPLAN. 2022. Cultural Resources Inventory Report: Castella Water Intake Replacement Project, Shasta County, California. Confidential document on file at NEIC/CHRIS.

4.6 ENERGY

Would the project:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

REGULATORY CONTEXT

There are no federal or local regulations pertaining to energy that apply to the proposed project.

STATE

California Environmental Quality Act (CEQA)

Section 15126.2(b) of the CEQA Guidelines states that if analysis of a project's energy use reveals that the project may result in significant environmental effects due to wasteful, inefficient, or unnecessary use of energy, or wasteful use of energy resources, the effects must be mitigated. The Guidelines provide suggestions of topics that may be included in the energy analysis, including identification of energy supplies that would serve the project and energy use for all project phases and components. In addition to building code compliance, other relevant considerations may include the project's size, location, orientation, equipment use and any renewable energy features that could be incorporated into the project. The energy use analysis may be included in related analyses of air quality, greenhouse gas (GHG) emissions, transportation, or utilities at the discretion of the lead agency.

DISCUSSION OF IMPACTS

Questions A and B

As discussed in Section 3.1, Project Background, the existing intake structure is old and failing, requiring CSA staff to frequently visit the WTP in order to make repairs. The proposed improvements would eliminate the need for CSA staff to travel to the WTP beyond routine maintenance, resulting in a reduction in energy use associated with maintenance vehicles.

Energy use associated with operation of the proposed project would be limited to electricity used to power the pumps and equipment, and fuel for the generator, which would be operated only in the event of an emergency. The existing clearwell pumps have lost suction due to the intake structure being clogged with sediment; therefore, a decrease in energy use would occur from the replacement of the intake structure with a new intake. Energy used for operation of the proposed project would not be considered wasteful, inefficient, or unnecessary.

Energy consumption during construction would occur from diesel and gasoline used for construction equipment, haul trucks, and construction workers traveling to and from the work site. Construction equipment would comply with regulations that restrict idling when not in use (see **Mitigation Measure MM 4.3.1(h)**). Construction equipment must also comply with State regulations that require the use of fuel-efficient equipment. Therefore, impacts would be less than significant.

CUMULATIVE IMPACTS

Completion of the proposed project and other potential cumulative projects in the region, including growth resulting from build-out of the County's General Plan, could result in potentially significant impacts due to the wasteful, inefficient, or unnecessary consumption of energy resources. However, all new development projects in the State are required to comply with State regulations that require the use of fuel-efficient equipment during construction. Compliance with State regulations ensures that the project's contribution to cumulative impacts on energy resources is less than significant.

MITIGATION

Implementation of **Mitigation Measure MM 4.3.1(h).**

DOCUMENTATION

California Air Resources Board. 2016. In-Use Off-Road Diesel-Fueled Fleets Regulation Overview. https://ww3.arb.ca.gov/msprog/ordiesel/faq/overview_fact_sheet_dec_2010-final.pdf. Accessed March 2022.

_____. 2016. Mobile Source Strategy. https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf. Accessed March 2022.

4.7 GEOLOGY AND SOILS

Would the project:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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 wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

REGULATORY CONTEXT

FEDERAL

National Earthquake Hazards Reduction Act (NEHRA)

The National Earthquake Hazards Reduction Act (NEHRA) was passed in 1977 to reduce the risks to life and property from future earthquakes in the United States. The Act established the National Earthquake Hazards Reduction Program, which was most recently amended in 2004. The Federal Emergency Management Agency (FEMA) is designated as the lead agency of the program. Other NEHRA agencies include the National Institute of Standards and Technology, National Science Foundation, and the U.S. Geological Survey (USGS).

STATE

California Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (PRC §2621 *et seq.*) was passed in 1972 to reduce the risk to life and property from surface faulting in California. The Act prohibits the siting of most structures intended for human occupancy on the surface trace of active faults. Before a project can be permitted in

a designated Alquist-Priolo Fault Study Zone, a geologic investigation must be prepared to demonstrate that proposed buildings would not be constructed across active faults.

California Seismic Hazards Mapping Act

The California Seismic Hazards Mapping Act (SHMA) of 1990 (PRC §2690–2699.6) addresses non-surface fault rupture earthquake hazards, including strong ground shaking, liquefaction and seismically induced landslides. The SHMA also addresses expansive soils, settlement, and slope stability. Under the SHMA, cities and counties may withhold development permits for sites within seismic hazard areas until geologic/geotechnical investigations have been completed and measures to reduce potential damage have been incorporated into development plans.

California Building Standards Code

Title 24 of the CCR, also known as the California Building Standards Code (CBSC), provides minimum standards for building design and construction, including excavation, seismic design, drainage, and erosion control. The CBSC is based on the International Building Code (IBC) used widely throughout the country. The CBSC has been modified for California conditions to include more detailed and/or more stringent regulations.

LOCAL

Shasta County General Plan

The County's General Plan includes the following Objectives and Policy that apply to the proposed project:

Chapter 5.1, Seismic and Geologic Hazards		
Objectives:	SG-1	Protection of all development from seismic hazards by developing standards for the location of development relative to these hazards; and protection of essential or critical structures, such as schools, public meeting facilities, emergency services, high-rise and high-density structures, by developing standards appropriate for such protection.
	SG-2	Protection of development on unstable slopes by developing standards for the location of development relative to these hazards.
	SG-3	Protection of development from other geologic hazards, such as volcanoes, erosion, and expansive soils.
	SG-4	Protection of waterways from adverse water quality impacts caused by development on highly erodible soils.
Policy:	SG-e	When soil tests reveal the presence of expansive soils, engineering design measures designed to eliminate or mitigate their impacts shall be employed.

DISCUSSION OF IMPACTS

Question A
i and ii)

The Alquist-Priolo Earthquake Fault Zoning Maps show that the closest Special Study Zone is the Stephens Pass Fault in the Cedar Mountain Fault System, ±30 miles northeast of the project area. The California Geological Survey identifies two potentially active unnamed faults ±12 northeast of the project area. One is a north-south trending fault running through the top of Mount Shasta; the other is an east-west trending fault that runs from the top of Mount Shasta to just north of Black Butte. Although these fault lines could produce low to moderate ground shaking, earthquake activity has not been a serious hazard in the area, and no significant damage or loss of life due to earthquakes has occurred near or in the County. Further, the project does not include any components that would increase the likelihood of a seismic event or

increase the exposure of people or structures to risks associated with a seismic event; therefore, impacts would be less than significant.

iii)

Liquefaction results from an applied stress on the soil, such as earthquake shaking or other sudden change in stress condition, and is primarily associated with saturated, cohesionless soil layers located close to the ground surface. During liquefaction, soils lose strength and ground failure may occur. This is most likely to occur in alluvial (geologically recent, unconsolidated sediments) and stream channel deposits, especially when the groundwater table is high.

As shown in **Table 4.7-1**, the landform and parent material for Xerofluvents-Riverwash association is alluvial fans and alluvium, respectively; therefore, it is possible that liquefaction could occur in some areas of the project site. However, improvement plans for the proposed project would be prepared by a registered professional engineer to ensure special design and/or construction methods are implemented to reduce or eliminate potential impacts. With implementation of standard engineering design measures, the potential for liquefaction is less than significant.

Table 4.7-1
Soil Type and Characteristics

Soil Name	Acres	Landform and Parent Material	Depth to Weathered Bedrock	Depth to Water Table	Erosion Potential	Shrink-Swell Potential
Xerofluvents-Riverwash association, 0 to 20 percent slopes.	0.8	Alluvial fans; alluvium	Over 80 inches	Over 80 inches	Moderate	Low

Sources: U.S. Department of Agriculture, Natural Resources Conservation Service, 2021; USDA, Soil Conservation Service and Forest Service, Soil Survey of Shasta-Trinity National Forest Area, California, 1983.

iv)

According to the 2017 Shasta County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) landslides occur throughout Shasta County but are more prevalent in the eastern and northern portions of the County. Landslides are more likely to occur in steep areas with weak rocks where the soil is saturated from heavy rains or snowmelt. Although the proposed project includes extensive grading on the steep streambank of Castle Creek, the pre-existing topography would be restored upon completion of the work, with riprap being used to stabilize the disturbed streambank. In addition, improvement plans for the proposed project would be prepared by a registered professional engineer to ensure that any needed special design or construction methods are implemented to minimize or avoid potential impacts. Therefore, impacts would be less than significant.

Question B

Construction of the proposed project would involve excavation, grading activities, vegetation removal, and installation of project components, which would result in the temporary disturbance of soil and would expose disturbed areas to potential storm events. This could generate accelerated runoff, localized erosion, and sedimentation. In addition, construction activities could expose soil to wind erosion that could adversely affect on-site soils and the revegetation potential of the area. As shown in **Table 4.7-1**, the soil on the project site, Xerofluvents-Riverwash association, has a moderate potential for erosion.

As discussed under Section 3.2, Project Components, the bed and bank of Castle Creek would be restored to near-native conditions, with riprap being used to stabilize the steep stream bank. Additionally, potential impacts associated with construction activities will be minimized/avoided by implementing BMPs for erosion control in accordance with **MM 4.4.2**. Measures that may be implemented to minimize erosion include, but are not limited to, limiting construction to the dry season; use of straw wattles, silt fences, and/or gravel berms to prevent sediment from discharging off-site; and revegetating temporarily disturbed sites upon completion of construction. Because

BMPs for erosion and sediment control would be implemented, the potential for soil erosion and loss of topsoil would be less than significant.

Questions C and D

See discussion under Question A(iii) and (iv) and Question B above. Unstable soils consist of loose or soft deposits of fine grain soils saturated with water in excess of their liquid limit, low density fine sands or silts, and expansive soils. In the project area, unstable soils can occur near streams and creeks. Some soils have a potential to swell when they absorb water and shrink when they dry out. These expansive soils generally contain clays that expand when moisture is absorbed into the crystal structure. As shown in **Table 4.7-1**, Xerofluvents-Riverwash association has a very low shrink-swell potential. In addition, improvement plans for the proposed project would be prepared by a registered professional engineer to ensure that any needed special design or construction methods are implemented to minimize or avoid potential impacts. Therefore, impacts would be less than significant.

Question E

The proposed project does not include the installation or use of alternative wastewater disposal systems. Therefore, there would be no impact.

Question F

Paleontological resources include fossils and the deposits that contain fossils. Fossils are evidence of ancient life preserved in sediments and rock, such as the remains of animals, animal tracks, plants, and other organisms. Fossils are found primarily embedded in sedimentary rocks, mostly shale, limestone, and sandstone. With rare exceptions, metamorphic and igneous rocks have undergone too much heat and pressure to preserve fossils; however, when ash from volcanic eruptions buries the surrounding area, the ash sometimes encapsulates organisms.

According to the Hydrogeologic Evaluation of Alternatives for the Water Intake Structure prepared by Lawrence & Associates in 2020, the geology of the project site consists of alluvium in the Castle Creek channel, and gabbroic and dioritic rocks in the remaining area. Gabbro and diorite are igneous rocks and alluvium is geologically young; therefore, paleontological resources are unlikely to be found in the project site. In addition, there is no record of paleontological resources in the project area (U.C. Berkeley, 2022), and the project area has no unique geological features. Therefore, impacts would be less than significant.

CUMULATIVE IMPACTS

Completion of the proposed project and other potential cumulative projects in the region could result in increased erosion and soil hazards and could expose additional structures and people to seismic hazards.

As discussed above, the project is required to implement BMPs to control construction-related erosion and sedimentation. In addition, pursuant to existing State regulations, incorporation of standard seismic safety and engineering design measures is required for all public utility projects. Therefore, the proposed project's cumulative impacts are less than significant.

MITIGATION

None necessary.

DOCUMENTATION

California Department of Conservation. 2020. Alquist-Priolo Earthquake Fault Zoning Act. http://www.conservation.ca.gov/CGS/rghm/ap/. Accessed March 2022.

_____. 2015. Fault Activity Map of California. http://maps.conservation.ca.gov/cgs/fam/. Accessed March 2022.

_____. 2015. Geologic Map of California. https://maps.conservation.ca.gov/cgs/gmc/. Accessed March 2022.

_____. 1997. Special Publication 42, Fault-Rupture Hazard Zones in California. http://www.lib.berkeley.edu/EART/UCONLY/CDMG/north/sp42.pdf. Accessed March 2022.

Lawrence & Associates. 2020. Hydrogeologic Evaluation of Alternatives for Water-intake Structure, Castella, California.

Shasta County. 2004. Shasta County General Plan. https://www.co.shasta.ca.us/index/drm/planning/general-plan. Accessed March 2022.

_____. 1989. Erosion and Sediment Control Design Standards Design Manual. https://www.co.shasta.ca.us/docs/libraries/public-works-docs/devstdmanual/Erosion_Control_Manu.pdf?sfvrsn=0. Accessed March 2022.

U.C. Berkeley, Museum of Paleontology. 2022. Berkeley Mapper. https://berkeleymapper.berkeley.edu/?ViewResults=tab&tabfile=http://miomap.berkeley.edu/all_miomap.xls&configfile=http://miomap.berkeley.edu/miomap.xml. Accessed March 2022.

University of Southern California, Southern California Earthquake Center. 1999. Recommended Procedures for Implementing DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction Hazards in California. https://www.tugraz.at/fileadmin/user_upload/Institute/IAG/Files/33_Liquefaction_Mitigation-DMG_SP117.pdf. Accessed March 2022.

U.S. Department of Agriculture, Natural Resource Conservation Service. 2021. Web Soil Survey. http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed March 2022.

_____. 1983. Soil Survey of Shasta-Trinity National Forest Area, California.

4.8 GREENHOUSE GAS EMISSIONS

Would the project:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

REGULATORY CONTEXT

FEDERAL

U.S. Environmental Protection Agency

On April 2, 2007, in *Massachusetts v. EPA,* 549 U.S. 497 (2007), the Supreme Court found that greenhouse gas emissions (GHG) are air pollutants covered by the federal Clean Air Act (CAA). In reaching its decision, the Court also acknowledged that climate change is caused, in part, by human activities. The Supreme Court's ruling paved the way for the regulation of GHG emissions by the U.S. Environmental Protection Agency (EPA) under the CAA. The USEPA has enacted regulations that address GHG emissions, including, but not limited to, mandatory GHG reporting requirements, carbon pollution standards for power plants, and air pollution standards for oil and natural gas production.

STATE

California Executive Order (EO) S-3-05

EO S-03-05 was signed by the Governor on June 1, 2005, and established the goal of reducing statewide GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

Assembly Bill 32 (Global Warming Solutions Act of 2006)

As required by Assembly Bill (AB) 32 (2006), California Air Resources Board (CARB) adopted the initial Climate Change Scoping Plan in 2008 that identified the State's strategy to achieve the 2020 GHG emissions limit via regulations, market-based mechanisms, and other actions. AB 32 requires that the Scoping Plan be updated every five years. CARB's first update to the Climate Change Scoping Plan (2014) addressed post-2020 goals and identified the need for a 2030 mid-term target to establish a continuum of actions to maintain and continue reductions. Executive Order B-30-15 (2015) extended the goal of AB 32 and set a GHG reduction goal of 40 percent below 1990 levels by 2030. In December 2017, CARB adopted the second update to the Scoping Plan that includes strategies to achieve the 2030 mid-term target and substantially advance toward the 2050 climate goal to reduce GHG emissions by 80 percent below 1990 levels.

The 2017 Scoping Plan Update recommends that local governments aim to achieve a community-wide goal of no more than 6 MT carbon dioxide equivalent (CO_2e) per capita by 2030 and no more than 2 MT CO_2e per capita by 2050, which is consistent with the State's long-term goals.

Senate Bill 32/Assembly Bill 197

These two bills were signed into legislation on September 8, 2016. As set forth in EO B-30-15, Senate Bill (SB) 32 requires CARB to reduce GHG emissions to 40 percent below the 1990 levels by 2030. AB 197 requires that GHG emissions reductions be achieved in a manner that benefits the state's most

disadvantaged communities. AB 197 requires CARB to prioritize direct GHG emission reductions in a manner that benefits the state's most disadvantaged communities and to consider social costs when adopting regulations to reduce GHG emissions. AB 197 also provides more legislative oversight of CARB by adding two new legislatively appointed non-voting members to the CARB Board and limiting the term length of Board members to six years.

Renewables Portfolio Standard

In 2002, SB 1078 was passed to establish the State's Renewables Portfolio Standard (RPS) Program, with the goal of increasing the amount of electricity generated and sold to retail customers from eligible renewable energy resources. The initial goal was to increase the percentage of renewable energy in the state's electricity mix to 20 percent of retail sales by 2017. SB 350 (2015) codified a target of 50 percent renewable energy by 2030, and requires California utilities to develop integrated resource plans that incorporate a GHG emission reduction planning component beginning January 1, 2019. SB100 (2018) codified targets of 60 percent renewable energy by 2030 and 100 percent renewable energy by 2045.

California Executive Order B-55-18

EO B-55-18 was issued by the Governor on September 10, 2018. It sets a statewide goal to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. This goal is in addition to the existing statewide GHG reduction targets.

Senate Bill 375 (Sustainable Communities and Climate Protection Act of 2008)

Under SB 375, the CARB sets regional targets for the reduction of GHG emissions from passenger vehicles and light duty trucks. Each Metropolitan Planning Organization (MPO) in the State, or Regional Transportation Planning Agency for regions without a MPO, must include a Sustainable Communities Strategy (SCS) in the applicable Regional Transportation Plan that demonstrates how the region will meet the GHG emissions reduction targets.

Mobile Source Strategy

CARB's Mobile Source Strategy, adopted in 2016, describes the State's strategy for containing air pollutant emissions from vehicles, and quantifies growth in vehicle miles traveled that is compatible with achieving state climate targets. The Strategy demonstrates how the State can simultaneously meet air quality standards, achieve GHG emission reduction targets, decrease health risks from transportation emissions, and reduce petroleum consumption over the next fifteen years.

Senate Bill 210 (2019), Heavy-Duty Vehicle Inspection and Maintenance Program

Under SB 210, heavy-duty diesel trucks will have to pass a smog check to ensure vehicle emission controls are maintained in order to register or operate in California. Upon implementation of the Program, CARB must provide mechanisms for out-of-state owners of heavy-duty vehicles to establish and verify compliance with State regulations for heavy-duty diesel trucks prior to entering the State.

Senate Bill 44 (2019), Medium- and Heavy-Duty Vehicles: Comprehensive Strategy

SB 44 requires CARB to update the State's Mobile Source Strategy no later than January 1, 2021, to include a comprehensive strategy to reduce emissions from medium- and heavy-duty vehicles in order to meet federal ambient air quality standards and reduce GHG emissions from this sector. The Bill also requires CARB to establish emission reduction goals for 2030 and 2050 for medium- and heavy-duty vehicles.

CEQA Guidelines

§15064.4 of the CEQA Guidelines states that the lead agency should focus its GHG emissions analysis on the reasonably foreseeable incremental contribution of the project's emissions to the effects of climate change. A lead agency has the discretion to determine whether to use a model or methodology to quantify GHG emissions or to rely on a qualitative or performance-based standard.

The GHG analysis should consider: 1) the extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting, 2) whether the project emissions exceed

a threshold of significance that the lead agency determines applies to the project, and 3) the extent to which the project complies with any regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an Environmental Impact Report (EIR) must be prepared for the project. To determine transportation-generated greenhouse gas emissions in particular, lead agencies may determine that it is appropriate to use the same method used to determine the transportation impacts associated with a project's VMT.

In *Center for Biological Diversity v. California Department of Fish and Wildlife* (2015) 62 Cal.4th 204, which involved the Newhall Ranch project, the California Supreme Court concluded that a legally appropriate approach to assessing the significance of GHG emissions was to determine whether a project was consistent with "'*performance based standards' adopted to fulfill 'a statewide . . . plan for the reduction or mitigation of greenhouse gas emissions' (CEQA Guidelines §15064.4(a)(2), (b)(3)… §15064(h)(3) [determination that impact is not cumulatively considerable may rest on compliance with previously adopted plans or regulations, including 'plans or regulations for the reduction of greenhouse gas emissions'].)"* (62 Cal.4th at p. 229.)

Greenhouse Gases Defined

Table 4.8-1 provides descriptions of the GHGs identified in California Health and Safety Code §38505(g).

TABLE 4.8-1
Greenhouse Gases

Greenhouse Gas	Description
Carbon dioxide (CO_2)	Carbon dioxide (CO_2) is the primary greenhouse gas emitted through human activities. In 2014, CO_2 accounted for about 80.9 percent of all U.S. greenhouse gas emissions from human activities. The main human activity that emits CO_2 is the combustion of fossil fuels (coal, natural gas, and oil) for energy and transportation, although certain industrial processes and land-use changes also emit CO_2.
Methane (CH_4)	Methane (CH_4) is the second most prevalent greenhouse gas emitted in the United States from human activities. Methane is emitted by natural sources such as wetlands, as well as human activities such as the raising of livestock; the production, refinement, transportation, and storage of natural gas; methane in landfills as waste decomposes; and in the treatment of wastewater.
Nitrous oxide (N_2O)	In 2014, nitrous oxide (N_2O) accounted for about 6 percent of all U.S. greenhouse gas emissions from human activities. Nitrous oxide is naturally present in the atmosphere as part of the Earth's nitrogen cycle. Human activities such as agricultural soil management (adding nitrogen to soil through use of synthetic fertilizers), fossil fuel combustion, wastewater management, and industrial processes are also increasing the amount of N_2O in the atmosphere.
Hydrofluorocarbons (HFCs)	Hydrofluorocarbons (HFCs) are man-made chemicals, many of which have been developed as alternatives to ozone-depleting substances for industrial, commercial, and consumer products such as refrigerants, aerosol propellants, solvents, and fire retardants. They are released into the atmosphere through leaks, servicing, and disposal of equipment in which they are used.
Perfluorocarbons (PFCs)	Perfluorocarbons (PFCs) are colorless, highly dense, chemically inert, and nontoxic. There are seven PFC gases: perfluoromethane (CF_4), perfluoroethane (C_2F_6), perfluoropropane (C_3F_8), perfluorobutane (C_4F_{10}), perfluorocyclobutane (C_4F_8), perfluoropentane (C_5F_{12}), and perfluorohexane (C_6F_4). Perfluorocarbons are produced as a byproduct of various industrial processes associated with aluminum production and the manufacturing of semiconductors.

Greenhouse Gas	Description
Sulfur hexafluoride (SF_6)	Sulfur hexafluoride (SF_6) is an inorganic compound that is colorless, odorless, nontoxic, and generally nonflammable. SF_6 is primarily used in magnesium processing and as an electrical insulator in high voltage equipment. The electric power industry uses roughly 80 percent of all SF_6 produced worldwide.
Nitrogen trifluoride (NF_3)	Nitrogen trifluoride is a colorless, odorless, nonflammable gas that is highly toxic by inhalation. It is one of several gases used in the manufacture of liquid crystal flat-panel displays, thin-film photovoltaic cells and microcircuits.

LOCAL

Shasta County

Shasta County developed a draft Shasta Regional Climate Action Plan in August 2012 (RCAP). The RCAP includes GHG inventories and projections for each jurisdiction in Shasta County for 2008, 2020, 2035, and 2050. The plan also shows that the County would achieve a reduction in GHG emissions in the year 2020 below 2008 business as usual (BAU) emissions with the implementation of state and federal reduction measures. The County has not adopted thresholds of significance for greenhouse gases. According to SCAQMD staff, the District's greenhouse gas policy is to quantify, minimize, and mitigate greenhouse gas emissions, as feasible.

DISCUSSION OF IMPACTS

Question A

Gases that trap heat in the atmosphere create a greenhouse effect that results in global warming and climate change. These gases are referred to as greenhouse gases (GHGs). As described in **Table 4.8-1**, some GHGs occur both naturally and as a result of human activities, and some GHGs are exclusively the result of human activities.

The atmospheric lifetime of each GHG reflects how long the gas stays in the atmosphere before natural processes (e.g., chemical reactions) remove it. A gas with a long lifetime can exert more warming influence than a gas with a short lifetime. In addition, different GHGs have different effects on the atmosphere. For this reason, each GHG is assigned a global warming potential (GWP) which is a measure of the heat-trapping potential of each gas over a specified period of time.

Gases with a higher GWP absorb more heat than gases with a lower GWP, and thus have a greater effect on global warming and climate change. The GWP metric is used to convert all GHGs into CO_2 equivalent (CO_2e) units, which allows policy makers to compare impacts of GHG emissions on an equal basis. The GWPs and atmospheric lifetimes for each GHG are shown in **Table 4.8-2**.

TABLE 4.8-2
Greenhouse Gases: Global Warming Potential and Atmospheric Lifetime

GHG	GWP (100-year time horizon)	Atmospheric Lifetime (years)
CO_2	1	50 -200
CH_4	25	12
N_2O	298	114
HFCs	Up to 14,800	Up to 270
PFCs:	7,390-12,200	2,600 – 50,000
SF_6	22,800	3,200
NF_3	17,200	740

Source: *U.S. Environmental Protection Agency, 2020.*

Thresholds of Significance

As stated under Regulatory Context, §15064.4 of the CEQA Guidelines gives lead agencies the discretion to determine whether to use a model or other method to quantify GHG emissions and/or to rely on a qualitative or performance-based standard.

For a quantitative analysis, a lead agency could determine a less-than-significant impact if a project did not exceed an established numerical threshold. For a qualitative/performance-based threshold, a lead agency could determine a less-than-significant impact if a project complies with State, regional, and/or local programs, plans, policies and/or other regulatory strategies to reduce GHG emissions.

If a qualitative approach is used, lead agencies should still quantify a project's construction and operational GHG emissions to determine the amount, types, and sources of GHG emissions resulting from the project. Quantification may be useful in indicating to the lead agency and the public whether emissions reductions are possible, and if so, from which sources. For example, if quantification reveals that a substantial portion of a project's emissions result from mobile sources (automobiles), a lead agency may consider whether design changes could reduce the project's vehicle miles traveled (OPR, 2018).

Neither the County nor SCAQMD have adopted numerical thresholds of significance or performance-based standards for GHG emissions. Numerical thresholds that have been referenced for other projects in the region range from 900 MT/year CO_2e (Tehama County) to 1,100 MT/year CO_2e for both construction and operational emissions and 10,000 MT/year CO_2e for stationary sources (various communities in the Sacramento Valley and Northeast Plateau air basins).

The proposed project does not include any components that would result in a permanent increase in GHG emissions above existing levels, either directly or indirectly; therefore, only GHGs associated with construction activities were considered. For this project, the County has determined that a conservative threshold of 900 MT/year CO_2e for construction emissions is appropriate.

Project GHG Emissions

GHG emissions for the proposed project were estimated using the CalEEMod.2022.1.0 software. CalEEMod is a statewide model designed to quantify GHG emissions from land use projects. The model quantifies direct GHG emissions from construction and operation (including vehicle use), as well as indirect GHG emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use.

Site-specific inputs and assumptions for the proposed project include, but are not limited to, the following. Output files, as well as site-specific inputs and assumptions, are provided in **Appendix A**.

- Emissions from construction are based on all construction-related activities associated with proposed and future uses, including but not limited to grading, use of construction equipment, material hauling, trenching, and site preparation.
- Demolition activities would generate approximately 12 tons of solid waste.
- 700 cubic yards of fill material would be imported, and 700 cubic yards of fill material would be exported.
- Construction would commence in the summer of 2026 and would be completed in approximately six months.

Construction Emissions

Construction of the proposed project would emit GHG emissions as shown in **Table 4.8-3**, primarily from the combustion of diesel fuel in heavy equipment.

TABLE 4.8-3
Construction-Related Greenhouse Gas Emissions

Total Construction Emissions (Metric Tons)				
Year	**Carbon Dioxide (CO_2)**	**Methane (CH_4)**	**Nitrous Oxide (N_2O)**	**Carbon Dioxide Equivalent (CO_2e)**
2026	82.0	Trace	Trace	82.2

Source: CalEEMod, 2022.

As stated above, neither the County nor SCAQMD have adopted numerical thresholds for GHG emissions. As indicated in **Table 4.8-3**, the project's GHG emissions would not exceed the referenced numerical thresholds stated above 900 MT/year of CO_2e.

GHG emissions during construction are associated with energy consumption from diesel and gasoline used for construction equipment, haul trucks, and construction workers traveling to and from the work site. Construction equipment is required to comply with regulations that restrict idling when not in use (**MM 4.3.1(h)**). Construction equipment must also comply with State regulations that require the use of fuel-efficient equipment.

Operational Emissions

As stated in Section 4.3 (Air Quality) under Questions A and B, the proposed project includes the replacement of old inefficient clearwell pumps, which are being clogged with sediment, and the replacement of old inefficient electrical controls equipment. The replacement of the clearwell pumps and electrical controls equipment with new efficient models would result in a decrease in operational energy use. The decrease in energy use would result in a reduction of indirect operational GHG emissions associated with power consumption at the WTP.

The project does not include an increase in capacity in the water system that could potentially lead to population growth. As documented in Section 4.17 (Transportation), the project does not include any components that would increase VMT or result in permanent mobile source emissions over existing levels.

Therefore, impacts would be less than significant because contractors would be required to comply with State regulations that require the use of fuel-efficient equipment during construction; the old clearwell pumps would be replaced; the old electrical controls equipment would be replaced with new efficient models; no increase in permanent VMT would occur as a result of the project; and the project does not have growth-inducing impacts that could result in increased GHG emissions.

Question B

See discussion under Regulatory Context and Question A above. There are no adopted local plans associated with GHG emissions. The County would ensure compliance with applicable State regulations adopted for the purpose of reducing GHG emissions through contractual obligations. Therefore, the project would not conflict with a plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

CUMULATIVE IMPACTS

GHG emissions and global climate change are, by nature, cumulative impacts. Unlike criteria pollutants, which are pollutants of regional and local concern, GHGs are global pollutants and are not limited to the area in which they are generated. As discussed under Regulatory Context above, the State legislature has adopted numerous programs and regulations to reduce statewide GHG emissions. As documented above, construction-related GHG emissions would not exceed the referenced numerical threshold of 900 MT/year CO_2e, and there would be no increase in VMT, energy use, or GHG emissions as a result of project operation. Therefore, the proposed project's contribution to cumulative GHG emissions would be less than significant.

MITIGATION

None necessary.

DOCUMENTATION

California Environmental Protection Agency, Air Resources Board. 2017. California Global Warming Solutions Act of 2006 (AB 32) Scoping Plan Website. https://www.arb.ca.gov/cc/scopingplan/scopingplan.htm. Accessed July 2022.

California Natural Resources Agency. 2018. Safeguarding California Plan: 2018 Update. http://resources.ca.gov/docs/climate/safeguarding/update2018/safeguarding-california-plan-2018-update.pdf. Accessed July 2022.

California Office of Planning and Research. 2018. Discussion Draft: CEQA and Climate Change Advisory. http://opr.ca.gov/docs/20181228-Discussion_Draft_Climate_Change_Adivsory.pdf. Accessed July 2022.

Shasta County. 2012. Draft Shasta Regional Climate Action Plan. http://www.co.shasta.ca.us/index/drm_index/aq_index/programs/RCAP/Draft_RCAP.aspx. Accessed July 2022.

United States Environmental Protection Agency. 2020. Overview of Greenhouse Gases. https://www.epa.gov/ghgemissions/overview-greenhouse-gases#f-gases. Accessed July 2022.

_____. 2022. Understanding Global Warming Potentials. https://www.epa.gov/ghgemissions/understanding-global-warming-potentials. Accessed July 2022.

University of California, Berkeley Law. 2021. California Climate Policy Dashboard. https://www.law.berkeley.edu/research/clee/research/climate/climate-policy-dashboard/. Accessed July 2022.

4.9 HAZARDS AND HAZARDOUS MATERIALS

Would the project:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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 which is included on a list of hazardous materials sites compiled pursuant to Government Code §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 area or, where such a plan has not been adopted, within two miles of a public airport or a public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
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?	☐	☐	☒	☐

REGULATORY CONTEXT

FEDERAL

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) is the primary federal law for the regulation of solid waste and hazardous waste in the United States and provides for the “cradle-to-grave” regulation that requires businesses, institutions, and other entities that generate hazardous waste to track such waste from the point of generation until it is recycled, reused, or properly disposed of. The USEPA has primary responsibility for implementing the RCRA.

USEPA’s Risk Management Plan

Section 112(r) of the federal CAA (referred to as the USEPA’s Risk Management Plan) specifically covers “extremely hazardous materials” which include acutely toxic, extremely flammable, and highly explosive substances. Facilities involved in the use or storage of extremely hazardous materials must implement a Risk Management Plan (RMP), which requires a detailed analysis of potential accident factors and implementation of applicable mitigation measures.

Federal Occupational Safety and Health Administration (OSHA)

The Occupational Safety and Health Act (OSHA) prepares and enforces occupational health and safety regulations with the goal of providing employees a safe working environment. OSHA regulations apply to the work place and cover activities ranging from confined space entry to toxic chemical exposure.

U.S. Department of Transportation (USDOT)

The USDOT regulates the interstate transport of hazardous materials and wastes through implementation of the Hazardous Materials Transportation Act. This act specifies driver-training requirements, load labeling procedures, and container design and safety specifications. Transporters of hazardous wastes must also meet the requirements of additional statutes such as RCRA, discussed previously.

STATE

California Code of Regulations (CCR), Title 22, Definition of Hazardous Material

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, State, or local agency, or if it has characteristics defined as hazardous by such an agency. A hazardous material is defined in Title 22, §66260.10, of the CCR as: *"A substance or combination of substances which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may either (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 of or otherwise managed."*

Department of Toxic Substances Control

The California Department of Toxic Substances Control (DTSC) regulates the generation, transportation, treatment, storage, and disposal of hazardous waste under the RCRA and the State Hazardous Waste Control Law. Both laws impose "cradle-to-grave" regulatory systems for handling hazardous waste in a manner that protects human health and the environment.

California Occupational Safety and Health Administration (Cal/OSHA)

The California Occupational Safety and Health Administration (Cal/OSHA) has primary responsibility for developing and enforcing state workplace safety regulations, including requirements for safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation.

Regional Water Quality Control Board (RWQCB)

The SWRCB and RWQCBs regulate hazardous substances, materials, and wastes through a variety of state statutes, including the Porter-Cologne Water Quality Control Act and underground storage tank cleanup laws. The Regional Boards regulate all pollutant or nuisance discharges that may affect either surface water or groundwater. Any person proposing to discharge waste within the State must file a report of waste discharge with the appropriate regional board. The proposed project is located within the jurisdiction of the Central Valley RWQCB (CVRWQCB).

Hazardous Materials Emergency Response/Contingency Plan

Chapter 6.95, §25503, of the California Health and Safety Code requires businesses that handle/store a hazardous material or a mixture containing a hazardous material to establish and implement a Business Plan for Emergency Response (Business Plan). A Business Plan is required when the amount of hazardous materials exceeds 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases. A Business Plan is also required if federal thresholds for extremely hazardous substances are exceeded. The Business Plan includes procedures to deal with emergencies following a fire, explosion, or release of hazardous materials that could threaten human health and/or the environment.

California Accidental Release Prevention Program (CalARP)

The goal of the California Accidental Release Prevention Program (CalARP) is to prevent accidental releases of substances that pose the greatest risk of immediate harm to the public and the environment. Facilities are required to prepare a Risk Management Plan in compliance with CCR Title 19, Division 2, Chapter 4.5, if they handle, manufacture, use, or store a federally regulated substance in amounts above established federal thresholds; or if they handle a State-regulated substance in amounts greater than State thresholds and have been determined to have a high potential for accident risk.

California Public Resources Code (Wildland Fires)

In areas of the State designated by CAL FIRE as being within a Very High Fire Hazard Severity Zone (VHFHSZ), construction contractors are required to comply with the following provisions of the California Public Resources Code (PRC):

- PRC §4427. On days when burning permits are required, flammable materials shall be removed within ten feet of equipment that could create a spark, fire, or flame. In addition, a round point shovel no less than 46-inches in length, and one backpack pump water-type fire extinguisher shall be provided for use at the immediate work area.
- PRC §4431. On days when burning permits are required, portable tools powered by a gasoline-fueled internal combustion engine shall not be used within 25 feet of any flammable material without providing a round point shovel no less than 46-inches in length, or one serviceable fire extinguisher for use at the immediate work area.
- PRC §4442. Earthmoving and portable equipment with internal combustion engines must be equipped with a spark arrestor to reduce the potential for igniting a wildland fire.

LOCAL

Shasta County

The County's General Plan includes the following Objectives that apply to the proposed project:

Chapter 5.6, Hazardous Materials		
Objectives:	HM-1	Protection of life and property from contact with hazardous materials through site design and land use regulations and storage and transportation standards.
	HM-2	Protection of life and property in the event of the accidental release of hazardous materials through emergency preparedness planning.
Chapter 5.4, Fire Safety and Sheriff Protection		
Objective:	FS-1	Protect development from wildland and non-wildland fires by requiring new development projects to incorporate effective site and building design measures commensurate with level of potential risk presented by such a hazard and by discouraging and/or preventing development from locating in high risk fire hazard areas.

Shasta County Hazardous Materials Area Plan (HMAP), 2018

The Shasta County Hazardous Materials Area Plan (HMAP) establishes policies, responsibilities, and procedures required to protect the health and safety of Shasta County's citizens, the environment, and public and private property from the effects of hazardous materials emergency incidents.

The HMAP establishes the emergency response organization for hazardous materials incidents occurring within Shasta County including the cities of Redding, Anderson, and Shasta Lake. This Plan documents the operational and general response procedures for the Shasta-Cascade Hazardous Materials Response Team, which is the primary hazardous materials response group for Shasta County.

DISCUSSION OF IMPACTS

Questions A and B

The project would result in the continued use of chlorine for water treatment and the installation of a new backup generator. The storage of chemicals associated with the water system, and installation and storage of the generator would occur at the water treatment building and would be in accordance with applicable federal, State, and local regulations, as would the transport and use of such chemicals and fuel.

The project would not result in any long-term impacts related to the transport of hazardous materials. During construction, limited quantities of hazardous substances, such as gasoline, diesel fuel, hydraulic fluid, solvents, oils, etc., may temporarily be brought into areas where improvements are proposed. There is a possibility of accidental release of hazardous substances into the environment, such as spilling petroleum-based fuels used for construction equipment. Construction contractors would be required to comply with applicable federal and state environmental and workplace safety laws. Additionally, construction contractors are required to implement BMPs for the storage, use, and transportation of hazardous materials. Therefore, impacts would be less than significant.

Question C

According to the Shasta County Office of Education, the schools nearest to the project site are Castle Rock Elementary School (kindergarten through 8th grade) and Castle Rock Community Preschool, located approximately 0.13 miles southeast of the project site on Main Street.

As described under Questions A and B above, although the project includes the use and transport of chlorine and propane, and project construction would involve temporary use of relatively small quantities of materials such as gasoline, diesel fuel, hydraulic fluid, solvents, oils, etc., potential impacts associated with hazardous materials would be less than significant with compliance with existing laws and regulations, and no mitigation measures are required.

Question D

The following databases were reviewed to locate hazardous waste facilities, land designated as hazardous waste property, and hazardous waste disposal sites in accordance with California Government Code §65962.5:

- List of Hazardous Waste and Substances sites from the DTSC EnviroStor Database.
- SWRCB GeoTracker Database
- List of solid waste disposal sites identified by SWRCB with waste constituents above hazardous waste levels outside the waste management unit.
- List of active Cease and Desist Orders and Clean-Up and Abatement Orders from the SWRCB.

Review of the above records did not identify any active clean-up sites within a one-mile radius of the project site. Therefore, there would be no impact.

Question E

According to the Shasta County General Plan, the project area is not within an airport land use plan area. According to the Federal Aviation Administration (FAA), the nearest public airport is Dunsmuir Municipal-Mott Airport, approximately 8.25 miles north of the project site. The proposed project does not include any components that would introduce people to the area in the long-term or create a safety hazard associated with an airport; therefore, there would be no impact.

Question F

The proposed project does not involve a use or activity that could interfere with long-term emergency response or emergency evacuation plans for the area. Although a temporary increase in traffic could occur during construction and could interfere with emergency response times, construction-related traffic would be minor due to the overall scale of the construction activities. Further, construction-related traffic would be spread over the duration of the construction schedule and would be minimal on a daily basis. Therefore, impacts during construction would be less than significant.

Question G

The proposed project does not include any development or improvements that would increase the long-term risk of wildland fires or expose people or structures to wildland fires. However, equipment used during construction activities may create sparks that could ignite dry grass. Also, the use of power tools may increase the risk of wildland fire hazard. As discussed under Regulatory Context, the project is located within a VHFSZ and therefore is subject to PRC regulations that require earthmoving and portable equipment with internal combustion engines to be equipped with a spark arrestor to reduce the potential for igniting a wildland fire. In addition, the contractor must clear work areas of dried vegetation or other materials that could serve as fire fuel, and appropriate fire-fighting equipment must be provided in the immediate work area. Compliance with existing regulations ensures that the potential for impacts associated with fires is less than significant.

CUMULATIVE IMPACTS

As documented above, the proposed project does not include any components that would result in long-term risks associated with hazards or hazardous materials.

The storage and use of hazardous materials during construction must be conducted in accordance with State and local regulations, and steps must be taken during construction to reduce potential impacts associated with wildland fires. These regulations ensure that impacts are less than significant and that activities do not result in impacts that would be cumulatively considerable.

MITIGATION

None necessary.

DOCUMENTATION

California Environmental Protection Agency. 2022. Cortese List Data Resources. https://calepa.ca.gov/sitecleanup/corteselist/. Accessed March 2022.

California Department of Forestry and Fire Protection. 2022. Fire Hazard Severity Zone Viewer. https://egis.fire.ca.gov/FHSZ/. Accessed March 2022.

Federal Aviation Administration. 2021. Airport Facilities Data. Aviation Data & Statistics (faa.gov). Accessed March 2022.

Shasta County. 2021. Office of Education Map. https://maps.co.shasta.ca.us/portal/apps/webappviewer/index.html?id=62fcdff972e64675a724e8fa43235b98. Accessed March 2022.

_____. January 2018. Hazardous Materials Area Plan. https://www.co.shasta.ca.us/docs/libraries/resource-management-docs/ehd-docs/areaplan. Accessed March 2022.

_____. 2004. Shasta County General Plan, Chapter 5.6 (Hazardous Materials). https://www.co.shasta.ca.us/docs/libraries/resource-management-docs/docs/56hazmat.pdf?sfvrsn=d6132daa_0. Accessed March 2022.

4.10 HYDROLOGY AND WATER QUALITY

Would the project:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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 offsite;	☐	☐	☒	☐
(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?	☐	☐	☒	☐

REGULATORY CONTEXT

FEDERAL

Clean Water Act (CWA)

The CWA (33 USC §1251-1376), as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality and was established to *"restore and maintain the chemical, physical, and biological integrity of the Nation's waters."* Pertinent sections of the Act are as follows:

1. Sections 303 and 304 provide for water quality standards, criteria, and guidelines.
2. Section 401 (Water Quality Certification) requires an applicant for any federal permit that would authorize a discharge to waters of the U.S to obtain certification from the state that the discharge will comply with other provisions of the Act.
3. Section 402 establishes the NPDES, a permitting system for the discharge of any pollutant (except for dredged or fill material) into waters of the U.S. This permit program is administered by the SWRCB and is discussed in detail below.
4. Section 404, jointly administered by the USACE and USEPA, establishes a permit program for the discharge of dredged or fill material into waters of the U.S.

Federal Anti-Degradation Policy

The federal Anti-Degradation Policy is part of the CWA (Section 303(d)) and is designed to protect water quality and water resources. The policy directs states to adopt a statewide policy that protects designated uses of water bodies (e.g., fish and wildlife, recreation, water supply, etc.). The water quality necessary to support the designated use(s) must be maintained and protected.

Safe Drinking Water Act (SDWA)

Under the 1974 Safe Drinking Water Act (SDWA), most recently amended in 1996, USEPA regulates contaminants of concern to domestic water supply, which are those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are classified as either primary or secondary Maximum Contaminant Levels (MCLs). MCLs and the process for setting these standards are reviewed triennially.

Federal Emergency Management Agency (FEMA)

FEMA is responsible for mapping flood-prone areas under the National Flood Insurance Program (NFIP). Communities that participate in the NFIP are required to adopt and enforce a floodplain management ordinance to reduce future flood risks related to new construction in a flood hazard area. In return, property owners have access to affordable federally funded flood insurance policies.

National Pollutant Discharge Elimination System (NPDES)

Under Section 402(p) of the CWA, the USEPA established the NPDES to enforce discharge standards for both point-source and non-point-source pollution. Dischargers can apply for individual discharge permits, or apply for coverage under the General Permits that cover certain qualified dischargers. Point-source discharges include municipal and industrial wastewater, stormwater runoff, combined sewer overflows, sanitary sewer overflows, and municipal separate storm sewer systems. NPDES permits impose limits on discharges based on minimum performance standards or the quality of the receiving water, whichever type is more stringent in a given situation.

STATE

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (California Water Code §13000 *et seq.*) is the principal law governing water quality regulation in California. It establishes a comprehensive program to protect water quality and the beneficial uses of waters of the State. The Porter-Cologne Act applies to surface waters, wetlands, and groundwater, and to both point and non-point sources of pollution. The Act requires a Report of Waste Discharge for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface or groundwater of the state. The RWQCBs enforce waste discharge requirements identified in the Report.

State Anti-Degradation Policy

In 1968, as required under the Federal Anti-Degradation Policy, the SWRCB adopted an Anti-Degradation Policy, formally known as the *Statement of Policy with Respect to Maintaining High Quality Waters in California* (State Water Board Resolution No. 68-16). Under the Anti-Degradation Policy, any actions that can adversely affect water quality in surface or ground waters must be consistent with the maximum benefit to the people of the State, not unreasonably affect present and anticipated beneficial use of the water, and not result in water quality less than that prescribed in water quality plans and policies.

National Pollution Discharge Elimination System

Pursuant to the federal CWA, the responsibility for issuing NPDES permits and enforcing the NPDES program was delegated to the SWRCB and the nine RWQCBs. In California, NPDES permits are also referred to as waste discharge requirements (WDRs), and are issued to regulate discharges to waters of the United States. Below is a description of relevant NPDES general permits.

Construction Activity and Post-Construction Requirements

Discharges from construction sites that disturb one acre or more of total land area are subject to the NPDES permit for *Discharges of Storm Water Runoff associated with Construction Activity* (currently Order No. 2022-0057-DWQ, NPDES No. CAS000002), also known as the Construction General Permit. The permitting process requires the development and implementation of an effective Storm Water Pollution Prevention Plan (SWPPP). Coverage under the Construction General Permit is obtained by submitting a Notice of Intent (NOI) to the SWRCB and preparing the SWPPP prior to the beginning of construction. The SWPPP must include BMPs to reduce pollutants and any more stringent controls necessary to meet water quality standards. Dischargers must also comply with water quality objectives (WQOs) as defined in the applicable Basin Plan.

The Construction General Permit includes post-construction requirements for areas in the State not covered by a Standard Urban Storm Water Management Plan (SUSWMP) or a Phase I or Phase II Small Municipal Separate Storm Sewer Systems (MS4) Permit. These requirements are intended to ensure that the post-construction conditions at the project site do not cause or contribute to direct or indirect water quality impacts (i.e., pollution and/or hydromodification) upstream or downstream.

Where applicable, the SWPPP submitted to the SWRCB with the NOI must include a description of all post-construction stormwater management measures. The SWRCB SMARTS (Stormwater Multiple Application and Report Tracking System) post-construction calculator or similar method would be used to quantify the runoff reduction resulting from implementation of the measures. The applicant must also submit a plan for long-term maintenance with the NOI. The maintenance plan must be designed for a minimum of five years and must describe the procedures to ensure that the post-construction stormwater management measures are adequately maintained.

Dewatering Activities (Discharges to Surface Waters and Storm Drains)

Construction dewatering activities that involve the direct discharge of relatively pollutant-free wastewater that poses little or no threat to the water quality of waters of the U.S. are subject to the provisions of CVRWQCB Order R5-2022-0006 (NPDES No. CAG995002), *Waste Discharge Requirements, Limited Threat Discharges to Surface Water*, as amended. WDRs for this order include discharge prohibitions, receiving water limitations, monitoring, and reporting, etc. Coverage is obtained by submitting a NOI to the applicable RWQCB.

Dewatering Activities (Discharges to Land)

Construction dewatering activities that are contained on land and do not discharge to waters of the U.S. are authorized under SWRCB Water Quality Order No. 2003-003-DWQ if the discharge is of a quality as good as or better than the underlying groundwater, and there is a low risk of nuisance.

Water Quality Control Plans (Basin Plans)

Each of the State's RWQCBs is responsible for developing and adopting a basin plan for all areas within its region. The Plans identify beneficial uses to be protected for both surface water and groundwater. WQOs for all waters addressed through the plans are included, along with implementation programs and policies to achieve those objectives. WDRs were adopted in order to attain the beneficial uses listed for the Basin Plan areas.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA), enacted in September 2014, established a framework for groundwater resources to be managed by local agencies in areas designated by the Department of Water Resources as "medium" or "high" priority basins. Basins were prioritized based, in part, on groundwater elevation monitoring conducted under the California Statewide Groundwater Elevation Monitoring (CASGEM) program.

The SGMA requires local agencies in medium- and high-priority basins to form Groundwater Sustainability Agencies (GSAs) and be managed in accordance with locally developed Groundwater Sustainability Plans (GSPs). Medium- and high-priority basins must be managed under a GSP by January 31, 2022. Under SGMA, these basins should reach sustainability within 20 years of implementing their sustainability plans.

LOCAL

Shasta County Code

Chapter 18.10 (Storm Water Quality Management and Discharge Control) of the Shasta County Code (SCC) was enacted to control non-storm water discharges to the County's storm water conveyance system and reduce pollutants in storm water discharges to the maximum extent practicable. This Chapter is also intended to assist in protecting and enhancing the water quality of watercourses and water bodies pursuant to the Clean Water Act and Porter-Cologne Water Quality Control Act.

SCC §18.10.090 states that it is unlawful for any person to discharge any pollutant or non-storm water discharge to the County storm water conveyance system or to receiving waters. For public works projects, the County ensures through contractual obligations (i.e., requiring preparation and implementation of an Erosion Control Plan) that the contractor implements BMPs throughout construction to minimize potential impacts associated with construction activities and to ensure compliance with the County's discharge prohibitions.

SCC §18.10.160(F) states that persons implementing BMPs must establish, document, and conduct a maintenance program, subject to approval by the County resource management or public works director, for all BMPs required by the County and for BMPs that were voluntarily installed.

Shasta County General Plan

The Shasta County General Plan includes the following Objective and Policies that apply to the proposed project:

Chapter 5.2, Flood Protection		
Objective:	FL-1	Protection of public health and safety, both on-site and downstream, from flooding through floodplain management which regulates the types of land uses which may locate in the floodplain, prescribes construction designs for floodplain development, and requires mitigation measures for development which would impact the floodplain by increasing runoff quantities.
Policies:	FL-c	Whenever possible, flood control measures should consist of channel diversions or limited floodplain designs which avoid alteration of creeks and their immediate environs.
	FL-h	The impacts of new development on the floodplain or other downstream areas due to increased runoff from that development shall be mitigated. In the case of the urban or suburban areas, and in the urban and town centers, the County may require urban or suburban development to pay fees which would be used to make improvements on downstream drainage facilities in order to mitigate the impacts of upstream development.
Chapter 6.6, Water Resources and Water Quality		
Objective:	W-a	Sedimentation and erosion from proposed developments shall be minimized through grading and hillside development ordinances and other similar safeguards as adopted and implemented by the County.

DISCUSSION OF IMPACTS

Questions A and E

The proposed project has the potential to temporarily degrade water quality due to increased erosion during project construction; however, as discussed under Regulatory Context above, and in Section 4.7 under Question B, potential impacts associated with construction activities will be minimized/ avoided by implementing BMPs for erosion control and spill prevention.

In addition, as discussed under Regulatory Context above, the CVRWQCB regulates dewatering activities that result in direct discharges to storm drains and surface waters, as well as discharges to land. The County would be subject to the provisions of the appropriate dewatering permit. The dewatering permit would include specific requirements for the proposed project (e.g., monitoring, reporting, BMPs, etc.).

In accordance with conditions of the CVRWQCB Section 401 permit, continuous visual surface water monitoring must be conducted during active construction periods to detect accidental discharge of construction-related pollutants (e.g., oil and grease, turbidity plume, uncured concrete, etc.). In addition, surface water sampling may be required when performing in-water work, and/or if construction activities result in materials reaching surface waters or if activities create a visible plume in surface waters. If the impact thresholds of the permit are exceeded, the County must immediately implement corrective actions to ensure compliance. Corrective actions may include implementation of additional soil stabilization and/or sediment control measures.

As discussed under Regulatory Context above, the SGMA established a framework for groundwater resources to be managed by local agencies in areas designated by the Department of Water Resources as medium or high priority basins. The project site is not located in a medium or high priority basin, and there is not a sustainable groundwater management plan that applies to the proposed project. Implementation of BMPs and compliance with CVRWQCB requirements ensures that the project would not violate any water quality standards or waste discharge requirements or conflict with or obstruct implementation of a water quality control plan. Impacts would be less than significant.

Question B

The proposed project would not use groundwater for construction or operation. Additionally, the proposed project would not increase the amount of impervious surface in the area in a manner that would prevent the infiltration of water into the soil. Thus, the project would not impede sustainable groundwater management of the basin. There would be no impact.

Question C

The proposed project includes the replacement of the water intake structure with an instream infiltration gallery. The gallery would be located within the streambed of Castle Creek, just upstream of the current intake structure. The proposed system would consist of infiltration piping buried in the streambed and new subsurface piping between the infiltration gallery and the existing clearwell. Upon project completion, the bed and bank of Castle Creek would be restored to near-native conditions and preconstruction contours in accordance with resource agency permit conditions, with riprap being used to stabilize the steep stream bank. Additional improvements include rehabilitation of the clearwell and installation of a new chemical injection vault. A new post-filter chlorination metering pump and day tank would be installed inside the WTP building, along with a new air compressor, new grating, and a new filter and backwash control valves; a new post-filter chlorination vault and appurtenances would be installed to the north of the WTP building; a new surge tank would be installed on the east side of the WTP building; the electrical control system would be replaced with new efficient equipment; and a new emergency generator and automatic transfer switch would be installed south of the WTP building. Flood flows would not be permanently impeded or redirected.

The project does not include the addition of new impervious surfacing that would increase the rate or amount of surface runoff or otherwise affect drainage patterns in the area. In addition, as discussed under Question A, BMPs would be implemented throughout construction to minimize erosion and runoff in accordance with existing regulations; therefore, impacts would be less than significant.

Question D

A tsunami is a wave generated in a large body of water (typically the ocean) by fault displacement or major ground movement. The project area is located approximately 100 miles east of the Pacific Ocean, and there is no risk of tsunami.

A seiche is a large wave generated in an enclosed body of water in response to ground shaking. Seiches could potentially be generated in Lake Siskiyou due to very strong ground-shaking; however, as discussed in Section 4.7 under Question A, the closest potentially active faults are two unnamed faults ±12 northeast of the project a site. In addition, Lake Siskiyou is small and is located ±9 miles north of the proposed project site. Although these fault lines could produce low to moderate ground shaking, it is not likely that such ground shaking would cause a seiche large enough to affect the project site.

According to the FEMA Flood Insurance Rate Maps (Panel 06089C0050G, effective March 17, 2011), work would occur in and adjacent to the 100-year flood hazard zone of Castle Creek (see **Figure 4.10-1**).

The potential for release of pollutants due to flooding is less than significant. As discussed above, disturbed areas would be restored to preconstruction contours in accordance with resource agency permit conditions. Additionally, the new chemical injection vault and other above-ground structures that have a potential to be affected by flood flows would be installed outside the 100-year flood hazard zone of Castle Creek.

CUMULATIVE IMPACTS

The proposed project and other potential cumulative projects in the region, including growth resulting from build-out of the County's General Plan, could result in degradation of water quality, adverse impacts to groundwater supplies and groundwater recharge, and an increased risk of flooding due to additional surface runoff generated by the projects. However, the project is required to implement BMPs for erosion/sediment control and spill prevention and to comply with conditions of the regulatory agency permits. Compliance with existing resource agency requirements ensures that the proposed project's cumulative impacts to hydrology and water quality are less than significant.

MITIGATION

None necessary.

DOCUMENTATION

California Department of Water Resources. 2022. Sustainable Groundwater Management Act, Basin Prioritization Dashboard. https://gis.water.ca.gov/app/bp-dashboard/final/. Accessed March 2022.

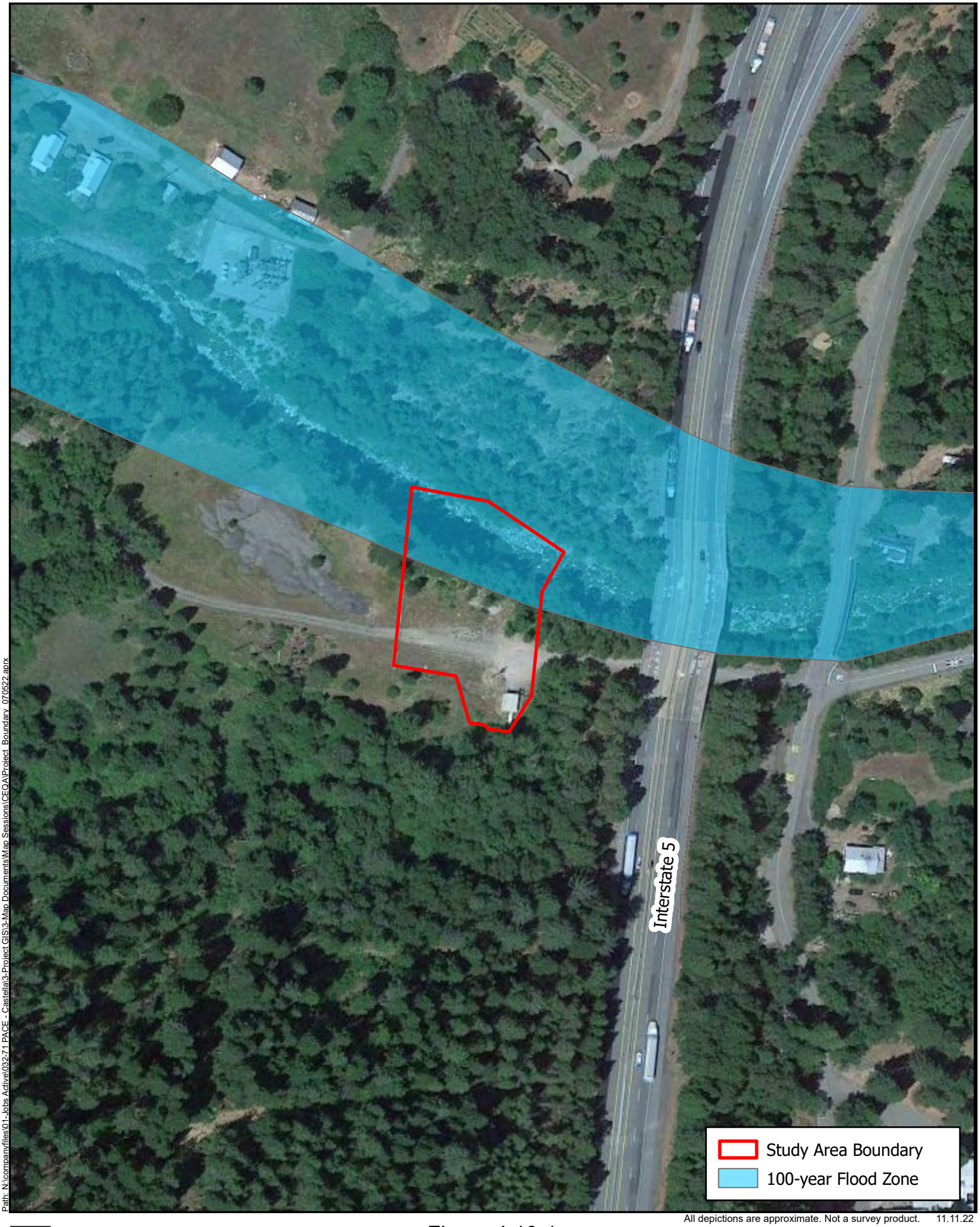
_____. 2022. Groundwater Information System (GAMA). https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/default.asp?CMD=runreport&myaddress=40.6804279%2C+-122.37084190000002&zl=15. Accessed March 2022.

Central Valley Regional Water Quality Control Board. 2018. Water Quality Control Plan for the Sacramento and San Joaquin River Basins. sacsjr_201805.pdf (ca.gov). http://www.swrcb.ca.gov/rwqcb5/water_issues/basin_plans/ Accessed March 2022.

Shasta County. 2021. Shasta County Code of Ordinances, Chapter 12.12 (Grading, Excavating, and Filling). https://library.municode.com/ca/shasta_county/codes/code_of_ordinances?nodeId=CD_ORD_TIT12STSIPUPL_CH12.12GREXFI_12.12.010PU. Accessed March 2022.

_____. 1989. Shasta County Erosion and Sediment Control Standards Design Manual. https://www.co.shasta.ca.us/docs/libraries/public-works-docs/devstdmanual/Erosion_Control_Manu.pdf?sfvrsn=0.

Federal Emergency Management Agency. 2022. National Flood Hazard Map (Panel 06089C0050G, effective March 17, 2011). https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd. Accessed March 2022.



Path: N:\companyfiles\01-Jobs Active\032-71 PACE - Castella\3-Project GIS\3-Map Documents\Map Sessions\CEQA\Project Boundary_070522.aprx

All depictions are approximate. Not a survey product. 11.11.22

0 150 Feet

Figure 4.10-1

100-year Flood Hazard Zone

ENPLAN

4.11 LAND USE AND PLANNING

Would the project:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Physically divide an established community?	☐	☐	☐	☒
b. Cause a significant environmental impact due to a conflict with any applicable land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

REGULATORY CONTEXT

FEDERAL

There are no federal regulations pertaining to land use and planning that apply to the proposed project.

STATE

California Government Code

California Government Code (CGC) §65300 *et seq.* contains many of the State laws pertaining to the regulation of land uses by cities and counties. These regulations include requirements for general plans, specific plans, subdivisions, and zoning. State law requires that all cities and counties adopt General Plans that include seven mandatory elements: land use, circulation, conservation, housing, noise, open space, and safety. A General Plan is defined as a comprehensive long-term plan for the physical development of the county or city, and any land outside its boundaries that is determined to bear relation to its planning. A development project must be found to be consistent with the General Plan prior to project approval.

LOCAL

Shasta County

The County's General Plan includes objectives and policies designed for the purpose of avoiding or minimizing impacts to the natural environment. The General Plan recognizes that major factors of the natural environment are landforms, water, climate, minerals, soils, vegetation, and wildlife. The Shasta County Code (SCC) implements the County's General Plan. The purpose of the land use and planning provisions of the Code (Title 17, Zoning) is to provide for the orderly and efficient application of regulations and to implement and supplement related laws of the state of California, including but not limited to the CEQA.

DISCUSSION OF IMPACTS

Question A

Land use impacts are considered significant if a proposed project would physically divide an existing community (a physical change that interrupts the cohesiveness of the neighborhood). The proposed project does not include any components that would create a barrier for existing or planned development; therefore, there would be no impact.

Question B

As discussed in each resource section of this Initial Study, the proposed project is consistent with applicable Policies and Objectives of the Shasta County General Plan and regulations of the regulatory agencies identified in Section 1.8 of this Initial Study. Where necessary, mitigation measures are included to reduce impacts to less than significant levels. Therefore, with implementation of the mitigation measures identified in Section 1.9, the proposed project would not conflict with any plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. No additional mitigation measures are necessary.

CUMULATIVE IMPACTS

Cumulative projects in the vicinity of the project area, including population growth resulting from build-out of the County's General Plan, would be developed in accordance with local and regional planning documents. Thus, cumulative impacts associated with land use compatibility are expected be less than significant. In addition, with implementation of the recommended mitigation measures, the proposed project is consistent with the General Plan land use designations, goals, and policies, and would not contribute to the potential for adverse cumulative land use effects.

MITIGATION

No additional mitigation necessary.

DOCUMENTATION

Shasta County. 2004. Shasta County General Plan. https://www.co.shasta.ca.us/index/drm_index/planning_index/plng_general_plan.aspx. Accessed March 2022.

_____. 2021. Shasta County Code of Ordinances. Title 17, Zoning. https://www.municode.com/library/ca/shasta_county/codes/code_of_ordinances?nodeId=CD_ORD_TIT17ZO. Accessed March 2022.

4.12 MINERAL RESOURCES

Would the project:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

REGULATORY CONTEXT

There are no federal or local regulations pertaining to mineral resources that apply to the project.

STATE

Surface Mining and Reclamation Act of 1975

The Surface Mining and Reclamation Act (SMARA), Chapter 9, Division 2 of the PRC, provides a comprehensive surface mining and reclamation policy to ensure that adverse environmental impacts are

minimized and that mined lands are reclaimed to a usable condition. Mineral Resource Zones (MRZs) are applied to sites determined by the California Geological Survey (CGS) as being a resource of regional significance, and are intended to help maintain mining operations and protect them from encroachment of incompatible uses. The Zones indicate the potential for an area to contain significant mineral resources.

DISCUSSION OF IMPACTS

Questions A and B

According to the CGS, a SMARA mineral land classification study of alluvial sand and gravel, crushed stone, volcanic cinders, limestones, and diatomite has been conducted in Shasta County. However, the CGS does not identify any active mines or Mineral Resource Zones within five miles of the project area. In addition, the project area is not zoned for mineral resource extraction, and there are no known mineral resources of value in the project area. Therefore, there would be no impact on mineral resources.

CUMULATIVE IMPACTS

As stated above, the proposed project would not result in impacts to mineral resources; therefore, the proposed project would not contribute to adverse cumulative impacts to mineral resources.

MITIGATION

None necessary.

DOCUMENTATION

California Department of Conservation, Division of Mine Reclamation. 2016. Mines Online Maps. https://maps.conservation.ca.gov/mol/index.html. Accessed March 2022.

California Department of Conservation, California Geological Survey. 2015. Mineral Land Classification. https://maps.conservation.ca.gov/cgs/informationwarehouse/. Accessed March 2022.

Shasta County. 2021. Shasta County General Plan and Zoning Maps. https://maps.co.shasta.ca.us/ShastaCountyMap/. Accessed March 2022.

4.13 NOISE

Would the project result in:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. 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 of applicable standards of other agencies?	☐	☒	☐	☐
b. Generation of excessive groundborne vibration or groundborne noise levels?	☐	☒	☐	☐
c. For a project located within the vicinity of a private airstrip or an airport land use plan area or, where such a plan has not been adopted, within two miles of a public airport or a public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

NOISE FUNDAMENTALS

Commonly used technical acoustical terms are defined as follows:

Acoustics The science of sound.

Ambient Noise The distinctive pre-project acoustical characteristics of a given area consisting of all noise sources audible at that location.

A-Weighting The sound level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.

Decibel, or dB The fundamental unit of measurement that indicates the intensity of a sound, defined as ten times the logarithm of the ratio of the sound pressure squared over the reference pressure squared.

REGULATORY CONTEXT

FEDERAL

There are no federal regulations pertaining to noise that apply to the proposed project.

STATE

California Government Code §65302(f)

California Government Code §65302(f) requires a Noise Element to be included in all city and county General Plans. The Noise Element must identify and appraise major noise sources in the community (e.g., highways and freeways, airports, railroad operations, local industrial plants, etc.). A noise contour diagram depicting major noise sources must be prepared and used as a guide for establishing land use patterns to minimize the exposure of residents to excessive noise. The Noise Element must include implementation measures and possible solutions that address existing and foreseeable noise levels.

LOCAL

Shasta County

The County's General Plan contains the following Objectives and Policies that pertain to this project:

Chapter 5.5, Noise		
Objectives:	N-1	To protect County residents from the harmful and annoying effects of exposure to excessive noise.
	N-2	To protect the economic base of the County by preventing incompatible land uses from encroaching upon existing or programmed land uses likely to create significant noise impacts.
Policies:	N-b	Noise likely to be created by a proposed non-transportation land use shall be mitigated so as not to exceed the noise level standards of Table N-IV as measured immediately within the property line of adjacent lands designated as noise-sensitive. Noise generated from existing or proposed agricultural operations conducted in accordance with generally accepted agricultural industry standards and practices is not required to be mitigated.
	N-i	Where noise mitigation measures are required to achieve the standards of Tables N-IV and N-VI, the emphasis of such measures shall be placed upon site planning project design. The use of noise barriers shall be considered a means of achieving compliance with the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project.

Table N-IV

Noise Level Performance Standards for New Projects Affected By Or Including Non-Transportation Sources

Noise Level Descriptor	L_{eq}, or energy-equivalent noise level (hourly average)
Daytime (7:00 AM – 10:00 PM):	55 decibels
Nighttime (10:00 PM – 7:00 AM):	50 decibels

DISCUSSION OF IMPACTS

Question A

Some individuals and groups of people are considered more sensitive to noise than others and are more likely to be affected by the existence of noise. A sensitive receptor is defined as any living entity or aggregate of entities whose comfort, health, or well-being could be impaired or endangered by the existence of noise. Locations that may contain high concentrations of noise-sensitive receptors include residential areas, schools, parks, churches, hospitals, and long-term care facilities.

Operational Noise

The only improvement with the potential to increase operational noise levels above existing levels is the emergency backup generator. The generator would be tested on a monthly basis and would be used to power critical components of the WTP only in the event of a power outage. Additionally, the

generator would be placed inside an enclosure. The nearest sensitive receptors to the WTP are located ±440 feet to the east on Main Street, on the opposite side of I-5; and ±600 feet to the northwest, on the opposite side of Castle Creek. Given the proximity of I-5 and Castle Creek, both potentially overriding noise sources, and the absence of sensitive receptors in the immediate vicinity, impacts from operational noise would be less than significant.

Construction Noise

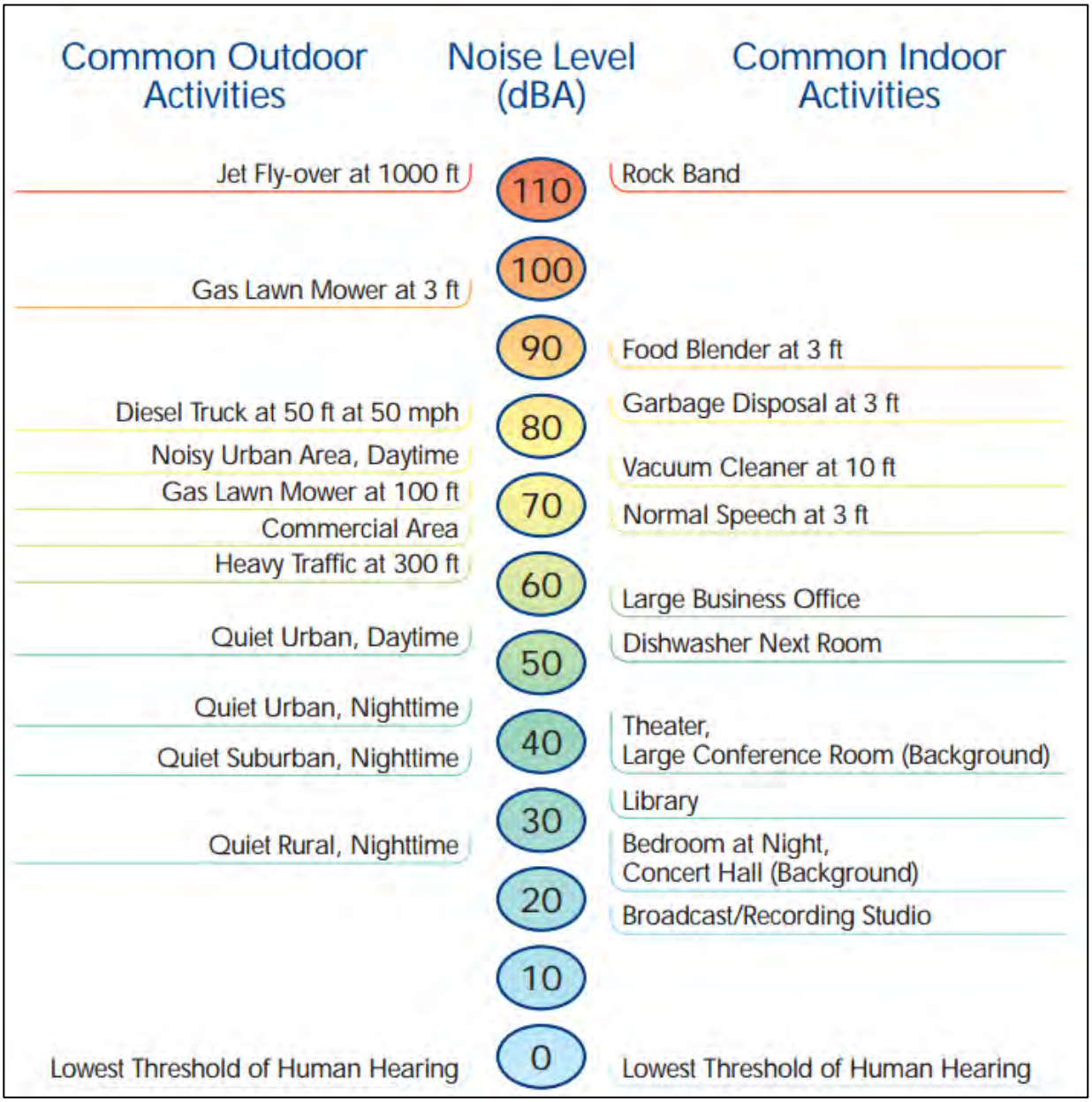
Construction activities associated with the project would temporarily increase noise levels in the project area. As discussed above, the closest sensitive receptors are located ±440 feet to the east and ±600 feet to the northwest. However, the I-5 and Castle Creek are intervening noise sources that may override any noise generated during construction.

Temporary noise impacts would occur from an increase in traffic from construction crews and delivery of construction equipment and materials to the project site. However, most heavy equipment would remain on-site for the duration of the construction season, and it is not anticipated that worker commutes would significantly increase daily traffic volumes.

Noise impacts resulting from construction activities would depend on: 1) the noise generated by various pieces of construction equipment; 2) the timing and duration of noise-generating activities; 3) the distance between construction noise sources and noise-sensitive receptors; and 4) existing ambient noise levels. **Figure 4.13-1** shows noise levels of common activities to enable the reader to compare construction-noise with common activities.

Noise levels from construction-related activities would fluctuate, depending on the number and type of construction equipment operating at any given time. As shown in **Table 4.13-1**, construction equipment anticipated to be used for project construction typically generates maximum noise levels ranging from 74 to 89 decibels (dBA) at a distance of 50 feet.

Figure 4.13-1
Noise Levels of Common Activities



Source: Caltrans, 2016.

TABLE 4.13-1
Examples of Construction Equipment
Noise Emission Levels

Equipment	Typical Noise Level (dBA) 50 feet from Source
Roller	74
Concrete Vibrator	76
Pump	76
Saw	76
Backhoe	80
Air Compressor	81
Generator	81
Compactor	82
Concrete Pump	82
Compactor (ground)	83
Crane, Mobile	83
Concrete Mixer	85
Dozer	85
Excavator	85
Grader	85
Loader	85
Jack Hammer	88
Truck	88
Paver	89
Scraper	89

Sources: U.S. Department of Transportation, Federal Transit Administration, 2018. Federal Highway Administration, 2019.

Noise from construction activities generally attenuates at a rate of 6 dBA (on hard and flat surfaces) to 7.5 dBA (on soft surfaces, such as uneven and/or vegetated terrain) per doubling of distance. If the receptor is far from the noise source, other factors come into play. For example, barriers such as fences or buildings that break the line of sight between the source and the receiver typically reduce sound levels by at least 5 dBA, which if the case in the project area. Likewise, wind can reduce noise levels by 20 to 30 dBA over long distances.

At an attenuation rate of 6 dBA, 74 to 89 dBA noise levels would drop to 55 to 70 dBA at a distance of 440 feet, and 52 to 67 dBA at a distance of 600 feet.

Because it is a logarithmic unit of measurement, a decibel cannot be added or subtracted arithmetically. The combination of two or more identical sound pressure levels at a single location involves the addition of logarithmic quantities as shown in **Table 4.13.2.** A doubling of identical sound sources results in a sound level increase of approximately 3 dB. Three identical sound sources would result in a sound level increase of approximately 4.8 dB.

For example, if the sound from one backhoe resulted in a sound pressure level of 80 dB, the sound level from two backhoes would be 83 dB, and the sound level from three backhoes would be 84.8 dB.

TABLE 4.13.2
Cumulative Noise: Identical Sources

Number of Sources	Increase in Sound Pressure Level (dB)
2	3
3	4.8
4	6
5	7
10	10
15	11.8
20	13

Sources: U.S. Department of Transportation, Federal Transit Administration, 2018. The Engineering Toolbox, 2018.

In addition, as shown in **Table 4.13.3**, the sum of two sounds of a different level is only slightly higher than the louder level. For example, if the sound level from one source is 80 dB, and the sound level from the second source is 85 dB, the level from both sources together would be 86 dB; if the sound level from one source is 80, and the sound level from the second source is 89 dB, the level from both sources together would be 89.5.

TABLE 4.13.3
Cumulative Noise: Different Sources

Sound Level Difference between two sources (dB)	Decibels to Add to the Highest Sound Pressure Level
0	3
1	2.5
2	2
3	2
4	1.5
5	1
6	1
7	1
8	0.5
9	0.5
10	0.5
Over 10	0

Sources: U.S. Department of Transportation, Federal Transit Administration, 2018. The Engineering Toolbox, 2018.

With two pieces of equipment with a noise level of 89 dBA operating simultaneously noise levels could reach approximately 70 dBA at the exterior of single-family residences within 440 feet of the work area, 67 dBA at 600 feet.

As noted above, assuming typical California construction methods, interior noise levels are about 10 to 15 dBA lower than exterior levels within residential units with the windows partially open, and approximately 20 to 25 decibels lower than exterior noise levels with the windows closed. Interior noise levels could reach 45 to 50 dBA within 440 feet, and 42 to 47 dBA within 600 feet, provided that the windows were closed.

In addition, OSHA regulations (Title 29 CFR, §1926.601(b)(4)(i) and (ii) and §1926.602(a)(9)(ii)) state that no employer shall use any motor vehicle, earthmoving, or compacting equipment that has an obstructed view to the rear unless the vehicle has a reverse signal alarm audible above

the surrounding noise level or the vehicle is backed up only when an observer signals that it is safe to do so. Although these regulations require an alarm to be only at a level that is distinguishable from the surrounding noise level (±5 dB), some construction vehicles are pre-equipped with non-adjustable alarms that range from 97 to 112 dBA at the source.

The exposure to loud noises (above 85 dB) over a long period of time may lead to hearing loss. The longer the exposure, the greater the risk for hearing loss, especially when there is not enough time for the ears to rest between exposures. Hearing loss can also result from a single extremely loud sound at very close range, such as sirens and firecrackers (Centers for Disease Control, 2018). Even when noise is not at a level that could result in hearing loss, excessive noise can affect quality of life, especially during nighttime hours.

Shasta County does not have specific standards or thresholds for construction noise. The California Division of Safety and Health and OSHA have established thresholds for exposure to noise in order to prevent hearing damage. The maximum allowable daily noise exposure is 90 dBA for 8 hours, 95 dBA for 4 hours, 100 dBA for 2 hours, 105 dBA for 1 hour, 110 dBA for 30 minutes, and 115 dBA for 15 minutes (Caltrans, 2013).

In the worst-case scenario, exterior noise levels from construction equipment operation could reach approximately 50 dBA at the exterior of single-family residences within 440 feet of the work areas and could reach approximately 93 dBA if reverse signal alarms are used.

However, construction equipment does not operate continuously throughout the entire work day. In addition, reverse signal alarms are needed only intermittently, and each occurrence involves only seconds of elevated noise levels. Therefore, while construction noise may reach considerable levels for short instances, much of the time the construction noise levels at the nearby residences would be moderate.

In order to minimize impacts from construction noise, **Mitigation Measure MM 4.3.1(h)** prohibits motorized construction equipment to be left idling for more than five minutes when not in use, **MM 4.13.1** restricts construction noise to the daytime hours of 7:00 AM to 7:00 PM, Monday through Saturday, **MM 4.13.2** requires that construction equipment be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds. Further **MM 4.13.3** mandates that stationary equipment, such as generators and compressors, shall be located at the furthest practical distance from nearby noise-sensitive land uses.

Therefore, impacts would be less than significant because the proposed project does not include any components that would result in a permanent increase in ambient noise levels; there is no expectation that noise levels during construction would be at a duration and intensity that would cause hearing loss; and **Mitigation Measures MM 4.3.1(h),** and **MM 4.13.1** through **MM 4.13.3** minimize noise during construction. Further, construction noise is a temporary impact that would cease at completion of the project.

Question B

Excessive vibration during construction occurs only when high vibration equipment (e.g., compactors, large dozers, etc.) are operated. The proposed project may require limited use of equipment with high vibration levels during construction. Potential effects of ground-borne vibration include perceptible movement of building floors, rattling windows, shaking of items on shelves or hangings on walls, and rumbling sounds. In extreme cases, vibration can cause damage to buildings. Both human and structural responses to ground-borne vibration are influenced by various factors, including ground surface, distance between the source and the receptor, and duration.

The most common measure used to quantify vibration amplitude is the peak particle velocity (PPV). PPV is a measurement of ground vibration defined as the maximum speed (measured in inches per second) at which a particle in the ground is moving relative to its inactive state. Although there are no federal, state, or local regulations for ground-borne vibration, Caltrans has developed criteria for evaluating vibration impacts, both for potential structural damage and for

human annoyance. The Caltrans Transportation and Construction Vibration Guidance Manual (2020) was referenced in the analysis of construction-related vibration impacts.

Table 4.13-4 includes the potential for damage to various building types as a result of ground-borne vibration. Transient sources include activities that create a single isolated vibration event, such as blasting. Continuous, frequent, or intermittent sources include jack hammers, bulldozers, and vibratory rollers.

TABLE 4.13-4
Structural Damage Thresholds from Ground-Borne Vibration

Structure Type	Vibration Level (Inches per Second PPV)	
	Transient Sources	Continuous/ Frequent/ Intermittent Sources
Older residential structures	0.5	0.3
Newer residential structures	1.0	0.5
Historic and some old buildings	0.5	0.25
Newer industrial/commercial buildings	2.0	0.5

Source: Caltrans, 2020

Table 4.13-5 indicates the potential for annoyance to humans as a result of ground-borne vibration.

TABLE 4.13-5
Human Response to Ground-Borne Vibration

Human Response	Vibration Level (Inches per Second PPV)	
	Transient Sources	Continuous/ Frequent/ Intermittent Sources
Barely Perceptible	0.04	0.01
Distinctly Perceptible	0.25	0.04
Strongly Perceptible	0.9	0.10
Disturbing	2.0	0.4

Source: Caltrans, 2020

Table 4.13-6 indicates vibration levels for various types of construction equipment that may be used for the proposed project.

TABLE 4.13-6
Examples of Construction Equipment Ground-Borne Vibration

Equipment Type	Inches per Second PPV at 25 feet
Bulldozer (small)	0.003
Bulldozer (large)	0.089
Jackhammer	0.035
Loaded trucks	0.076
Vibratory roller	0.210

Source: Caltrans Transportation and Construction Vibration Guidance Manual, 2020.

Vibration levels from construction equipment use at varying distances from the source can be calculated using the following formula:

$$PPV_{Equipment} = PPV_{Ref} \times (25/D)^n$$

In this equation, PPV_{Ref} = reference PPV at 25 feet, D = distance from equipment to the receiver in feet, and n = 1.1 (the value related to the attenuation rate through ground).

Based on this equation, a vibratory roller at a distance of 440 feet would generate a PPV of 0.0089 inches per second, while a large bulldozer would generate a PPV of up to 0.0038 inches per second. As shown in **Table 4.13-5**, these vibration levels would be barely perceptible.

In addition, as shown in **Table 4.13-4**, vibration levels would not be at a level that would cause structural damage. Therefore, because increased ground-borne vibration is temporary and would cease at completion of the project, impacts would be less than significant.

Question C

See discussion in Section 4.9 under Question E. The nearest public airport is Dunsmuir Municipal-Mott Airport, approximately 8.25 miles north of the project site. The proposed project does not have any components that would increase use of the airstrip or airports, nor would it expose people residing or working in the project area to excessive noise levels associated with an airport or private airstrip; there would be no impact.

CUMULATIVE IMPACTS

As documented above, the project would not result in a permanent increase in noise or groundborne vibration levels. A temporary increase in daytime noise levels would occur during construction activities; however, with implementation of **Mitigation Measures MM 4.13.1 through MM 4.13.3** and **MM 4.3.1,** the proposed project's contribution to cumulative noise impacts would be less than significant.

MITIGATION

Implementation of Mitigation Measure MM 4.3.1(h).

MM 4.13.1 Construction activities (excluding activities that would result in a safety concern to the public or construction workers) shall be limited to between the daytime hours of 7:00 A.M. and 7:00 P.M., Monday through Saturday. Construction activities shall be prohibited on Sundays and federal/state recognized holidays. Exceptions to these limitations may be approved by the County for activities that require interruption of utility services to allow work during low demand periods, or to alleviate traffic congestion and safety hazards.

MM 4.13.2 Construction equipment shall be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations. Equipment engine shrouds shall be closed during equipment operation.

MM 4.13.3 Stationary construction equipment (generators, compressors, etc.) shall be located at the furthest practical distance from nearby noise-sensitive land uses.

DOCUMENTATION

California Department of Transportation. 2020. Transportation and Construction Vibration Guidance Manual. Microsoft Word - 0_CVM_April_2020_03-19-30 (ca.gov). Accessed March 2022.

_____. 2013. Technical Noise Supplement to the Traffic Noise Analysis Protocol. Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol. Accessed March 2022.

Centers for Disease Control and Prevention. 2019. Hearing Loss Prevention Website. https://www.cdc.gov/nceh/hearing_loss/default.html. Accessed March 2022.

Engineering Toolbox. 2019. Logarithmic Decibel Scale. https://www.engineeringtoolbox.com/adding-decibel-d_63.html. Accessed March 2022.

Federal Aviation Administration. 2021. Airport Facilities Data. https://www.faa.gov/airports/airport_safety/airportdata_5010/. Accessed March 2022.

Federal Highway Administration. 2017. Construction Noise Handbook. https://www.fhwa.dot.gov/Environment/noise/construction_noise/handbook/handbook09.cfm. Accessed March 2022.

Shasta County. 2004. Shasta County General Plan, Chapter 5.5 (Noise). https://www.co.shasta.ca.us/docs/libraries/resource-management-docs/docs/55noise.pdf?sfvrsn=631fbd43_0. Accessed March 2022.

4.14 POPULATION AND HOUSING

Would the project:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	☐	☒
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

REGULATORY CONTEXT

There are no federal, State, or local regulations pertaining to population or housing that apply to the proposed project.

DISCUSSION OF IMPACTS

Question A

A project would induce unplanned population growth if it conflicted with a local land use plan (e.g., a General Plan) and induced growth in areas that aren't addressed in a General Plan or other land use plan. As stated in Section 3.1 (Project Background, Need, and Objectives), the purpose of the proposed project is to replace aging infrastructure, and ensure a safe and reliable potable water supply for residents in CSA No. 3. The project includes the replacement of an existing water intake structure and additional improvements to the WTP; no increase in capacity is proposed. Thus, growth is not anticipated in the CSA No.3 service area beyond that identified in the Shasta County General Plan. There would be no impact.

Question B

No structures for human occupancy would be demolished to accommodate the proposed improvements; therefore, there would be no impact.

CUMULATIVE IMPACTS

As documented above, the proposed project would not directly or indirectly induce substantial unplanned population growth in the area and would not directly or indirectly displace housing or people. Therefore, the proposed project would not contribute to cumulative impacts associated with population or housing.

MITIGATION

None necessary

DOCUMENTATION

Shasta County. 2004. Shasta County General Plan, Chapter 7.1 (Community and Organization and Development Pattern). https://www.co.shasta.ca.us/docs/libraries/resource-management-docs/docs/7-1-communityorganizationamended-08-26-2014-gpa10-002.pdf?sfvrsn=ca1ef89_2. Accessed March 2022.

4.15 PUBLIC SERVICES

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 following public services:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Fire protection?	☐	☐	☐	☒
b. Police protection?	☐	☐	☐	☒
c. Schools?	☐	☐	☐	☒
d. Parks?	☐	☐	☐	☒
e. Other public facilities?	☐	☐	☐	☒

REGULATORY CONTEXT

There are no federal, State, or local regulations pertaining to public services that apply to the proposed project.

DISCUSSION OF IMPACTS

Questions A through E

The proposed project does not include the construction of houses or businesses that would increase the number of residents in the area. In addition, as discussed in Section 4.14 under Question A, the proposed project would not induce substantial unplanned population growth in the area. Therefore, the proposed project would not result in the need for new or physically altered governmental facilities; there would be no impact.

CUMULATIVE IMPACTS

As described above, the proposed project would not increase the demand for long-term public services; therefore, no cumulatively considerable impacts would occur.

MITIGATION

None necessary

DOCUMENTATION

Shasta County. 2004. Shasta County General Plan, Chapter 7.1 (Community and Organization and Development Pattern). https://www.co.shasta.ca.us/docs/libraries/resource-management-docs/docs/7-1-communityorganizationamended-08-26-2014-gpa10-002.pdf?sfvrsn=ca1ef89_2. Accessed March 2022.

4.16 RECREATION

Would the project:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. 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. Include recreational facilities, or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☐	☐	☒

REGULATORY CONTEXT

There are no federal, State, or local regulations pertaining to recreation that apply to the proposed project.

DISCUSSION OF IMPACTS

Questions A and B

The proposed project does not include the construction of houses or businesses that would increase the number of residents in the area. In addition, as discussed in Section 4.14 under Question A, the proposed project would not induce substantial unplanned population growth in the area, either directly or indirectly. Therefore, the proposed project would not result in an increased use of existing recreational facilities or require the construction or expansion of recreational facilities. There would be no impact.

CUMULATIVE IMPACTS

As stated above, the proposed project would not impact recreational facilities or require the construction or expansion of recreational facilities; therefore, no cumulatively considerable impacts would occur.

MITIGATION

None necessary

DOCUMENTATION

Shasta County. 2004. Shasta County General Plan. https://www.co.shasta.ca.us/docs/libraries/resource-management-docs/docs/7-1-communityorganizationamended-08-26-2014-gpa10-002.pdf?sfvrsn=ca1ef89_2. Accessed March 2022.

4.17 TRANSPORTATION

Would the project:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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(b) (criteria for analyzing transportation impacts – vehicle miles traveled)?	☐	☐	☐	☒
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?	☐	☐	☒	☐

REGULATORY CONTEXT

There are no federal or local regulations pertaining to transportation/traffic that apply to the proposed project.

STATE

California Streets and Highways Code

California Streets and Highways Code §660 *et seq.* requires that an encroachment permit be obtained from Caltrans prior to the placement of structures or fixtures within, under, or over State highway right-of-way (ROW). This includes, but is not limited to, utility poles, pipes, ditches, drains, sewers, or other aboveground or underground structures.

CEQA Guidelines

SB 743 of 2013 (CEQA Guidelines §15064.3 *et seq.*) was enacted as a means to balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions (GHGs). Pursuant to SB 743, traffic congestion is no longer considered a significant impact on the environment under CEQA. The new metric bases the traffic impact analysis on vehicle miles traveled (VMT). VMT refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and non-motorized travel. A lead agency has discretion to choose the most appropriate methodology to evaluate a project's VMT, including whether to express the change in absolute terms, per capita, per household, or in any other measure.

DISCUSSION OF IMPACTS

Questions A through C

The proposed project does not include the construction of housing or commercial/industrial development that would cause a permanent increase in traffic or VMT in the area. Although an increase in VMT would occur during construction, this is a temporary impact that would cease at completion of the project. The proposed project does not include any components that would remove or change the location of any sidewalk, bicycle lane, trail, or public transportation facility, or increase the potential for hazards due to a design feature or incompatible uses. Because the project would not result in a permanent increase in VMT, and no permanent impacts to the circulation system would occur, there would be no impact.

Question D

As discussed in Section 4.9 under Question F, there would be short-term increases in traffic in the area associated with construction workers and equipment, and this increased traffic could interfere with emergency response times. However, construction-related traffic would be minor due to the overall scale of the construction activities. Therefore, impacts would be less than significant.

CUMULATIVE IMPACTS

The proposed project would not result in a permanent increase in traffic and would not conflict with programs, plans, ordinances, or policies addressing the circulation system. Further, the project would not permanently increase hazards due to design features or incompatible uses.

There would be a temporary increase in traffic associated with construction workers and equipment during construction. However, no concurrent construction activities near the project site are anticipated. If a concurrent project does occur, temporary traffic control during completion of activities that require work in the public road ROW is required and must adhere to the procedures, methods and guidance given in the current edition of the California Manual on Uniform Traffic Control Devices (MUTCD). In addition, construction traffic is a temporary impact that would cease at completion of the project; therefore, the project's transportation-related impacts would not be cumulatively considerable.

MITIGATION

None necessary.

DOCUMENTATION

California Department of Transportation. 2021. California Manual on Uniform Traffic Control Devices. https://dot.ca.gov/programs/safety-programs/camutcd. Accessed March 2022.

Shasta Regional Transportation Agency. 2018 (Updated August 2019). GoShasta Regional Active Transportation Plan. https://www.srta.ca.gov/DocumentCenter/View/4773/GoShasta_Regional_ATP_with_appendices_8-2019. Accessed March 2022.

4.18 TRIBAL CULTURAL RESOURCES

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC 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:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
a. A resource listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC §5020.1(k)?	☐	☒	☐	☐
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 PRC §5024.1? In applying the criteria set forth in subdivision (c) of PRC §5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

REGULATORY CONTEXT

There are no federal or local regulations pertaining to tribal cultural resources that apply to the proposed project.

STATE

California Environmental Quality Act

Assembly Bill 52 of 2014 (PRC §21084.2) establishes that *"a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment."* In order to determine whether a project may have such an effect, a lead agency is required to consult with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project if:

1. The tribe requested to the lead agency, in writing, to be informed through formal notification of proposed projects in the geographical area; and

2. The tribe responds, in writing, within 30 days of receipt of the formal notification and requests the consultation.

The consultation must take place prior to the release of a negative declaration, mitigated negative declaration, or environmental impact report. Pursuant to PRC §21084.3, lead agencies must, when feasible, avoid damaging effects to a tribal cultural resource and must consider measures to mitigate any identified impact.

PRC §21074 defines "tribal cultural resources" as either of the following:

1. Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either included or determined to be eligible for inclusion in the CRHR; or are included in a local register of historical resources as defined in PRC §5020.1(k).

   A historical resource described in §21084.1, a unique archaeological resource as defined in §21083.2(g), or a "nonunique archaeological resource" as defined in §21083.2(h) may also be a tribal cultural resource if it meets this criterion.

2. A resource determined by the lead agency, taking into consideration the significance of the resource to a California Native American tribe, to be significant pursuant to criteria set forth in PRC §5024.1(c).

DISCUSSION OF IMPACTS

Questions A and B

See discussion in Section 1.7 (Tribal Cultural Resources Consultation) and Section 4.5 under Questions A and B.

Mitigation Measures MM 4.5.1 and 4.5.2 address the inadvertent discovery of cultural resources. These measures ensure that impacts to tribal cultural resources are less than significant.

CUMULATIVE IMPACTS

Cumulative projects in the vicinity of the project area have the potential to impact tribal cultural resources. Tribal cultural resources are afforded special legal protections designed to reduce the cumulative effects of development. Potential cumulative projects and the proposed project would be subject to the protection of tribal cultural resources afforded by PRC §21084.3. Given the non-renewable nature of tribal cultural resources, any impact to tribal cultural sites, features, places, landscapes, or objects could be considered cumulatively considerable. As discussed above, no cultural resources of significance to a California Native American tribe were identified within the project area. In addition, **Mitigation Measures MM 4.5.1 and 4.5.2** address the inadvertent discovery of cultural resources; therefore, the proposed project would have less than significant cumulative impacts to tribal cultural resources.

MITIGATION

Implementation of **Mitigation Measures MM 4.5.1 and 4.5.2.**

DOCUMENTATION

ENPLAN. 2022. Cultural Resources Inventory Report: Castella Water Intake Replacement Project, Shasta County, California. Confidential document on file at NEIC/CHRIS.

4.19 UTILITIES AND SERVICE SYSTEMS

Would the project:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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 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 that 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?	☐	☐	☐	☒

REGULATORY CONTEXT

There are no federal or local regulations pertaining to utilities and service systems that apply to the proposed project.

STATE

California Integrated Waste Management Act of 1989

The California Integrated Waste Management Act (CIWMA) of 1989 is designed to increase landfill life and conserve other resources through increased source reduction and recycling. Goals of the CIWMA include diverting approximately 50 percent of solid waste from landfills and identifying programs to stimulate local recycling in manufacturing and the purchase of recycled products. The CIWMA requires cities and counties to prepare Solid Waste Management Plans and Source Reduction and Recycling Elements to implement CIWMA goals

DISCUSSION OF IMPACTS

Question A

As discussed in Section 4.14 under Question A, the proposed project would not induce population growth in the area, either directly or indirectly. Therefore, other than the improvements analyzed in this Initial Study (Section 3.2, Project Components/ Physical Improvements), the proposed project would not result in the need for new or expanded water, wastewater treatment, electric power, natural gas, or telecommunications facilities. In addition, no water, wastewater treatment, electric power, natural gas, or telecommunications facilities would need to be relocated to accommodate the proposed project. Therefore, there would be no impact.

Questions B and C

Relatively small amounts of water would be used during project construction, but this is a temporary impact. In addition, the project would have no demand for wastewater treatment. Therefore, there would be no impact.

Questions D and E

The proposed project would not result in a long-term demand for additional solid waste services. Solid waste would be generated during construction, mainly from removal of the existing water intake structure. Construction debris would be disposed of at the Anderson Landfill in Anderson, California. According to CalRecycle, the design capacity of the Anderson Landfill is 16,353,000 cubic yards. As of January 1, 2015, the remaining capacity was 10,409,132 cubic yards, and the landfill's estimated closure year was 2093. As discussed under Section 4.3, Air Quality, solid waste to be removed from the project site would be approximately 12 tons. Compared to the landfill's capacity, solid waste generated by the proposed project would be a minimal amount.

The construction contractor would be responsible for disposing of all construction waste. The County would ensure through contractual obligations that the contractor complies with all federal, State, and local statutes related to solid waste disposal. Therefore, impacts would be less than significant.

CUMULATIVE IMPACTS

Utility and service systems in the area would not experience a permanent increase in demand for services over existing conditions. Although solid waste would be generated during construction, no permanent increase in solid waste generation would occur. Therefore, the proposed project would have less than significant cumulative impacts to utility and service systems.

MITIGATION

None necessary.

DOCUMENTATION

CalRecycle. n.d. Facility Details: Anderson Landfill, Inc. (45-AA-0020). https://www2.calrecycle.ca.gov/SolidWaste/Site/Summary/3457. Accessed March 2022.

Shasta County. 2004. Shasta County General Plan, Chapter 7.5 (Public Facilities). http://www.co.shasta.ca.us/docs/Resource_Management/docs/75pubfac.pdf?sfvrsn=0. Accessed March 2022.

4.20 WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

REGULATORY CONTEXT

FEDERAL

There are no federal regulations pertaining to wildfire that apply to the proposed project.

STATE

California Department of Forestry and Fire Protection (CAL FIRE)

The Bates Bill (AB 337), enacted in 1992, required CAL FIRE to work with local governments to identify high fire hazard severity zones throughout each county in the State. CAL FIRE adopted Fire Hazard Severity Zone (FHSZ) Maps for State Responsibility Areas (SRAs) in November 2007. Pursuant to California Government Code §51175-51189, CAL FIRE also recommended FHSZs for Local Responsibility Areas (LRAs). Over the years, CAL FIRE has updated the maps and provided new recommendations to local governments based on fire hazard modeling.

The fire hazard model considers wildland fuels (natural vegetation that burns during the wildfire); topography (fires burn faster as they burn up-slope); weather (fire burns faster and with more intensity when air temperature is high, relative humidity is low, and winds are strong); and ember production and movement (how far embers move and how receptive the landing site is to new fires). The model recognizes that some areas of California have more frequent and severe wildfires than other areas.

California Public Resources Code (Wildland Fires)

In areas of the State designated by CAL FIRE as being within a Very High Fire Hazard Severity Zone (VHFHSZ), construction contractors are required to comply with the following provisions of the California Public Resources Code (PRC):

- PRC §4427. On days when burning permits are required, flammable materials shall be removed within ten feet of equipment that could create a spark, fire, or flame. In addition, a round point

shovel no less than 46-inches in length, and one backpack pump water-type fire extinguisher shall be provided for use at the immediate work area.

- PRC §4431. On days when burning permits are required, portable tools powered by a gasoline-fueled internal combustion engine shall not be used within 25 feet of any flammable material without providing a round point shovel no less than 46-inches in length, or one serviceable fire extinguisher for use at the immediate work area.
- PRC §4442. Earthmoving and portable equipment with internal combustion engines must be equipped with a spark arrestor to reduce the potential for igniting a wildland fire.

California Fire Code

California Fire Code, Part 9, Chapter 49 (Wildland-Urban Interface Fire Areas), and California Building Code Chapter 7A (Materials and Construction Methods for Exterior Wildfire Exposure) include standards for new construction in Wildland-Urban Interface Fire Areas (fire hazard severity zones). The purpose of the standards is to prevent a building from being ignited by flying embers that can travel as much as a mile away from a wildfire and to contribute to a systematic reduction in fire-related losses through the use of performance and prescriptive requirements.

LOCAL

Shasta County

The County's General Plan includes the following Objective and Policy that apply to the proposed project:

Chapter 5.6, Hazardous Materials; Chapter 5.4, Fire Safety and Sheriff Protection		
Objective:	FS-1	Protect development from wildland and non-wildland fires by requiring new development projects to incorporate effective site and building design measures commensurate with level of potential risk presented by such a hazard and by discouraging and/or preventing development from locating in high risk fire hazard areas.
Policy:	FS-a	All new land use projects shall conform to the County Fire Safe Standards.

DISCUSSION OF IMPACTS

According to FHSZ maps prepared by CAL FIRE, the project area is located within a VHFHSZ in a State Responsibility Area.

Question A

See discussion in Section 4.9 under Question F. The proposed project does not involve a use or activity that could interfere with long-term emergency response or emergency evacuation plans for the area. Although a temporary increase in traffic could occur during construction and could interfere with emergency response times, construction-related traffic would be minor due to the overall scale of the construction activities. Therefore, impacts would be less than significant.

Questions B and C

The proposed project includes the replacement of an existing water intake structure with an instream infiltration gallery. The proposed system would consist of infiltration piping buried in the streambed and new subsurface piping between the infiltration gallery and the existing clearwell. Additional improvements include rehabilitation of the clearwell and installation of a new chemical injection vault. A new post-filter chlorination metering pump and day tank would be installed inside the WTP building, along with a new air compressor, new grating, and a new filter and backwash control valves; a new post-filter chlorination vault and appurtenances would be installed to the north of the WTP building; a

new surge tank would be installed on the east side of the WTP building; the electrical control system would be replaced with new efficient equipment; and a new emergency generator and automatic transfer switch would be installed south of the WTP building. These improvements would not exacerbate fire risk in the long term but would rather improve fire flows in the area.

The project area is sparsely developed and surrounded by dense vegetation. However, the proposed project would not construct new public roads or otherwise intrude into natural spaces in a manner that would increase wildlife hazards in the long term, and would not require construction of fuel breaks, installation of emergency water sources, or other fire prevention/suppression infrastructure.

As stated in Section 4.9 under Question G, the project is located within a VHFSZ and is subject to PRC regulations that require earthmoving and portable equipment with internal combustion engines to be equipped with a spark arrestor to reduce the potential for igniting a wildland fire. In addition, the contractor must clear work areas of dried vegetation or other materials that could serve as fire fuel, and appropriate fire-fighting equipment must be provided in the immediate work area. Compliance with existing regulations would avoid/minimize the risk of wildfires and the exposure of people and structures to wildland fires; impacts would be less than significant.

Question D

Although the project site is located near the bottom of a steep hill, the project site and surrounding areas have not been subject to past or recent wildfire burns such that improvements in downslope areas would be affected. In addition, the proposed project does not include any improvements that would expose people or structures to significant risks. Therefore, impacts would be less than significant.

CUMULATIVE IMPACTS

Although a temporary increase in traffic could occur during construction of the proposed project and could interfere with emergency response times, construction-related traffic would be minor due to the overall scale of the construction activities. In addition, cumulative projects must implement temporary traffic control measures (i.e., signs, cones, flaggers, etc.) to ensure that emergency response vehicles are not hindered by construction activities. Therefore, there would be no cumulative impact even if more than one project were under construction at the same time.

Although project construction activities may result in temporarily increased wildfire risk, compliance with existing regulations adequately minimizes such risks. In the long term, the proposed project would not contribute individually or cumulatively to increased risks of wildfire, effects of fire prevention/suppression infrastructure, or post-fire hazards.

MITIGATION

None necessary.

DOCUMENTATION

California Department of Forestry and Fire Protection (CAL FIRE). 2022. Fire Hazard Severity Zone Map Viewer. https://egis.fire.ca.gov/FHSZ/. Accessed March 2022.

Shasta County. 2004. Shasta County General Plan, Chapter 5.4 (Fire Safety and Sheriff Protection). https://www.co.shasta.ca.us/docs/libraries/resource-management-docs/docs/54firesafety.pdf?sfvrsn=204962bd_0. Accessed March 2022.

4.21 MANDATORY FINDINGS OF SIGNIFICANCE

Issues and Supporting Evidence	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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 rare or endangered plants or animals, 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.	☐	☒	☐	☐
c. Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

DISCUSSION OF IMPACTS

Question A

As discussed in Section 4.4 (Biological Resources), the proposed project could result in possible impacts on special-status wildlife species and riparian habitat, disturbance of nesting birds (if present), the introduction and spread of noxious weeds during construction, possible impacts on wetlands and/or other waters of the U.S./State. Additionally, as discussed in Section 4.5 (Cultural Resources) and 4.18 (Tribal Cultural Resources), the proposed project could result in possible impacts on cultural and tribal cultural resources due to inadvertent discovery during construction. However, as identified in Section 4.4 and Section 4.5, mitigation measures are included to reduce all potential impacts to a less-than-significant level.

Question B

The potential cumulative impacts of the proposed project have been analyzed within the discussion of each environmental resource section above. The mitigation measures identified in Section 1.10 reduce all potential impacts to a less than significant level.

Question C

As discussed in the applicable environmental resource sections above, the proposed project could result in adverse effects on human beings due to temporarily increased risk of wildfires, temporarily increased air emissions, and temporarily increased noise. However, mitigation measures are included to reduce all potential impacts to a less than significant level.

SECTION 5.0 LIST OF PREPARERS

ENPLAN

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Carla L. Thompson, AICP ..... Senior Environmental Planner
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Shasta County

Venton Trotter ..... Supervising Engineer

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Laurie McCollum, P.E. ..... Project Manager/Principal Civil Engineer
Garett Hattenhauer, P.E. ..... Project Engineer/Senior Civil Engineer

SECTION 6.0 ABBREVIATIONS AND ACRONYMS

AB	Assembly Bill
AQAP	Air Quality Attainment Plan
APE	Area of Potential Effects
BAMM	Best Available Mitigation Measures
BAU	Business as Usual
BMP	Best Management Practice
BSR	Biological Study Report
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalARP	California Accidental Release Prevention Program
CalEEMod	California Emissions Estimator Model
CAL FIRE	California Department of Forestry and Fire Protection
Cal/OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CAP	Criteria Air Pollutants
CARB	California Air Resources Board
CASGEM	California Statewide Groundwater Elevation Monitoring
CBSC	California Building Standards Code
CCR	California Code of Regulations
CCV	California Central Valley
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CGS	California Geological Survey
CH_4	Methane
CIWMA	California Integrated Waste Management Act
CNDDB	California Natural Diversity Data Base
CNPS	California Native Plant Society
CMP	Corrugated Metal Pipe
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
County	Shasta County
CRHR	California Register of Historical Resources
CRI	Cultural Resources Inventory and Evaluation Report
CSA	County Service Area
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
CY	Cubic Yards

dBA	Decibels
DOC	Department of Conservation
DTSC	California Department of Toxic Substances Control
DWSRF	Drinking Water State Revolving Fund
EFH	Essential Fish Habitat
EO	Executive Order
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Act
FESA	Federal Endangered Species Act
FHSZ	Fire Hazard Severity Zone
GHG	Greenhouse Gas Emissions
GSP	Groundwater Sustainability Plan
GWP	Global Warming Potential
H_2S	Hydrogen Sulfide
HCP	Habitat Conservation Plan
HFC	Hydrofluorocarbon
HMAP	Hazardous Materials Area Plan
I-5	Interstate 5
IBC	International Building Code
IS	Initial Study
LRA	Local Responsibility Area
LUP	Linear Underground/Overhead Projects
MBTA	Migratory Bird Treaty Act
MCL	Maximum Contaminant Level
mg/m^3	Milligrams per Cubic Meter
MND	Mitigated Negative Declaration
MPO	Metropolitan Planning Organization
MRZ	Mineral Resource Zone
MS4s	Small Municipal Separate Storm Sewer Systems
MUTCD	California Manual on Uniform Traffic Control Devices
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NEIC/CHRIS	Northeast Information Center of the California Historical Resources Information System
NEHRA	National Earthquake Hazards Reduction Act

NF_3	Nitrogen Trifluoride
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
N_2	Nitrogen
N_2O	Nitrous Oxide
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NO_X	Oxides of Nitrogen
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSVAB	Northern Sacramento Valley Air Basin
NSVPA	Northern Sacramento Valley Planning Area
NWP	Nationwide Permit
O_2	Oxygen
O_3	Ozone
OHWM	Ordinary High Water Mark
OSHA	Occupational Safety and Health Act
Pb	Lead
PF	Public Facilities
PFC	Perfluorocarbon
$PM_{2.5}$	Particulate Matter, 2.5 microns in size
PM_{10}	Particulate Matter, 10 microns in size
PPB	Parts per Billion
PPM	Parts per Million
PRC	Public Resources Code
Project	Castella Water Intake Replacement Project
PVC	Polyvinyl Chloride
RCAP	Regional Climate Action Plan
RCRA	Resource Conservation and Recovery Act
RHMP	Regional Haze Management Plan
RMP	Risk Management Plan
ROG	Reactive Organic Gases
ROW	Right-of-Way
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SB	Senate Bill
SCAQMD	Shasta County Air Quality Management District

SCC	Shasta County Code
SCHMRT	Shasta-Cascade Hazardous Materials Response Team
SCS	Sustainable Communities Strategy
SDWA	Safe Drinking Water Act
SF_6	Sulfur Hexafluoride
SGMA	Sustainable Groundwater Management Act
SHPO	State Historic Preservation Officer
SMM	Standard Mitigation Measure
SIP	State Implementation Plan
SMARA	Surface Mining and Reclamation Act
SMARTS	Stormwater Multiple Application and Report Tracking System
SO_2	Sulfur Dioxide
SO_4	Sulfates
SO_X	Sulfur Oxides
SRA	State Responsibility Area
SSC	Species of Special Concern
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
SVAQEEP	Sacramento Valley Air Quality Engineering and Enforcement Professionals
TAC	Toxic Air Contaminant
TL	Timberland
TP	Timberland Production
USACE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VDECS	Verified Diesel Emission Control Strategies
VHFHSZ	Very High Fire Hazard Severity Zone
VMT	Vehicle Miles Traveled
WDR	Waste Discharge Requirement
WQO	Water Quality Objective
WTP	Water Treatment Plant
$\mu g/m^3$	Micrograms per Cubic Meter

Appendix A

CalEEMod.2022.1.0 Emissions Reports

Castella Intake Replacement Project Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Castella Intake Replacement Project
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	1.20
Precipitation (days)	37.0
Location	41.145098223269855, -122.31871981833883
County	Shasta
City	Unincorporated
Air District	Shasta County AQMD
Air Basin	Sacramento Valley
TAZ	156
EDFZ	0-F
Electric Utility	PacifiCorp
Gas Utility	—

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Other Non-Asphalt Surfaces	1.00	Acre	1.00	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-10-C	Water Unpaved Construction Roads
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.22	1.02	9.19	11.1	0.02	0.42	5.41	5.83	0.39	2.59	2.98	—	1,714	1,714	0.07	0.01	—	1,720
Mit.	1.22	1.02	9.19	11.1	0.02	0.42	5.41	5.83	0.39	2.59	2.98	—	1,714	1,714	0.07	0.01	—	1,720
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.59	22.8	4.81	6.91	0.01	0.19	0.13	0.30	0.17	0.03	0.19	—	1,304	1,304	0.05	0.01	—	1,309
Mit.	0.59	22.8	4.81	6.91	0.01	0.19	0.13	0.30	0.17	0.03	0.19	—	1,304	1,304	0.05	0.01	—	1,309
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.27	0.22	2.09	2.71	< 0.005	0.09	0.45	0.54	0.08	0.21	0.29	—	495	495	0.02	< 0.005	—	497

Mit.	0.27	0.22	2.09	2.71	< 0.005	0.09	0.45	0.54	0.08	0.21	0.29	—	495	495	0.02	< 0.005	—	497
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.05	0.04	0.38	0.50	< 0.005	0.02	0.08	0.10	0.01	0.04	0.05	—	82.0	82.0	< 0.005	< 0.005	—	82.2
Mit.	0.05	0.04	0.38	0.50	< 0.005	0.02	0.08	0.10	0.01	0.04	0.05	—	82.0	82.0	< 0.005	< 0.005	—	82.2
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.22	1.02	9.19	11.1	0.02	0.42	5.41	5.83	0.39	2.59	2.98	—	1,714	1,714	0.07	0.01	—	1,720
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.59	0.49	4.81	6.91	0.01	0.19	0.00	0.19	0.17	0.00	0.17	—	1,304	1,304	0.05	0.01	—	1,309
2027	0.58	22.8	4.56	6.90	0.01	0.17	0.13	0.30	0.15	0.03	0.19	—	1,304	1,304	0.05	0.01	—	1,309
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.27	0.22	2.09	2.71	< 0.005	0.09	0.45	0.54	0.08	0.21	0.29	—	495	495	0.02	< 0.005	—	497
2027	< 0.005	0.13	0.02	0.03	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.54	5.54	< 0.005	< 0.005	—	5.56
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.05	0.04	0.38	0.50	< 0.005	0.02	0.08	0.10	0.01	0.04	0.05	—	82.0	82.0	< 0.005	< 0.005	—	82.2
2027	< 0.005	0.02	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.92	0.92	< 0.005	< 0.005	—	0.92

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.22	1.02	9.19	11.1	0.02	0.42	5.41	5.83	0.39	2.59	2.98	—	1,714	1,714	0.07	0.01	—	1,720
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.59	0.49	4.81	6.91	0.01	0.19	0.00	0.19	0.17	0.00	0.17	—	1,304	1,304	0.05	0.01	—	1,309
2027	0.58	22.8	4.56	6.90	0.01	0.17	0.13	0.30	0.15	0.03	0.19	—	1,304	1,304	0.05	0.01	—	1,309
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.27	0.22	2.09	2.71	< 0.005	0.09	0.45	0.54	0.08	0.21	0.29	—	495	495	0.02	< 0.005	—	497
2027	< 0.005	0.13	0.02	0.03	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.54	5.54	< 0.005	< 0.005	—	5.56
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.05	0.04	0.38	0.50	< 0.005	0.02	0.08	0.10	0.01	0.04	0.05	—	82.0	82.0	< 0.005	< 0.005	—	82.2
2027	< 0.005	0.02	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.92	0.92	< 0.005	< 0.005	—	0.92

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.22	0.22	1.04	1.15	0.01	0.13	0.02	0.15	0.12	< 0.005	0.12	0.00	121	121	< 0.005	< 0.005	0.00	121
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	0.22	0.22	1.04	1.15	0.01	0.13	0.02	0.15	0.12	< 0.005	0.12	0.00	121	121	< 0.005	< 0.005	0.00	121
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.01	0.03	0.04	0.03	< 0.005	0.02	0.02	0.03	0.01	< 0.005	0.01	0.00	22.7	22.7	< 0.005	< 0.005	0.00	22.7
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	< 0.005	0.01	0.01	0.01	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.00	3.76	3.76	< 0.005	< 0.005	0.00	3.77

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.00	0.02	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Stationary	0.22	0.20	1.03	1.15	< 0.005	0.12	—	0.12	0.12	—	0.12	—	101	101	< 0.005	< 0.005	—	101
Vegetation	—	0.01	0.01	—	< 0.005	0.02	0.02	0.03	< 0.005	< 0.005	0.01	—	20.0	20.0	—	—	—	20.0
Total	0.22	0.22	1.04	1.15	0.01	0.13	0.02	0.15	0.12	< 0.005	0.12	0.00	121	121	< 0.005	< 0.005	0.00	121
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	—	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Stationary	0.22	0.20	1.03	1.15	< 0.005	0.12	—	0.12	0.12	—	0.12	—	101	101	< 0.005	< 0.005	—	101
Vegetation	—	0.01	0.01	—	< 0.005	0.02	0.02	0.03	< 0.005	< 0.005	0.01	—	20.0	20.0	—	—	—	20.0
Total	0.22	0.22	1.04	1.15	0.01	0.13	0.02	0.15	0.12	< 0.005	0.12	0.00	121	121	< 0.005	< 0.005	0.00	121
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.00	0.02	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Stationary	0.01	0.01	0.03	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.76	2.76	< 0.005	< 0.005	—	2.77
Vegetation	—	0.01	0.01	—	< 0.005	0.02	0.02	0.03	< 0.005	< 0.005	0.01	—	20.0	20.0	—	—	—	20.0
Total	0.01	0.03	0.04	0.03	< 0.005	0.02	0.02	0.03	0.01	< 0.005	0.01	0.00	22.7	22.7	< 0.005	< 0.005	0.00	22.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.00	< 0.005	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Stationary	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.46	0.46	< 0.005	< 0.005	—	0.46
Vegetation	—	< 0.005	< 0.005	—	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	3.31	3.31	—	—	—	3.31

Total	< 0.005	0.01	0.01	0.01	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.00	3.76	3.76	< 0.005	< 0.005	0.00	3.77

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.00	0.02	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Stationary	0.22	0.20	1.03	1.15	< 0.005	0.12	—	0.12	0.12	—	0.12	—	101	101	< 0.005	< 0.005	—	101
Vegetation	—	0.01	0.01	—	< 0.005	0.02	0.02	0.03	< 0.005	< 0.005	0.01	—	20.0	20.0	—	—	—	20.0
Total	0.22	0.22	1.04	1.15	0.01	0.13	0.02	0.15	0.12	< 0.005	0.12	0.00	121	121	< 0.005	< 0.005	0.00	121
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	—	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Stationary	0.22	0.20	1.03	1.15	< 0.005	0.12	—	0.12	0.12	—	0.12	—	101	101	< 0.005	< 0.005	—	101
Vegetation	—	0.01	0.01	—	< 0.005	0.02	0.02	0.03	< 0.005	< 0.005	0.01	—	20.0	20.0	—	—	—	20.0

Total	0.22	0.22	1.04	1.15	0.01	0.13	0.02	0.15	0.12	< 0.005	0.12	0.00	121	121	< 0.005	< 0.005	0.00	121
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.00	0.02	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Stationary	0.01	0.01	0.03	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.76	2.76	< 0.005	< 0.005	—	2.77
Vegetation	—	0.01	0.01	—	< 0.005	0.02	0.02	0.03	< 0.005	< 0.005	0.01	—	20.0	20.0	—	—	—	20.0
Total	0.01	0.03	0.04	0.03	< 0.005	0.02	0.02	0.03	0.01	< 0.005	0.01	0.00	22.7	22.7	< 0.005	< 0.005	0.00	22.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.00	< 0.005	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Stationary	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.46	0.46	< 0.005	< 0.005	—	0.46
Vegetation	—	< 0.005	< 0.005	—	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	3.31	3.31	—	—	—	3.31
Total	< 0.005	0.01	0.01	0.01	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.00	3.76	3.76	< 0.005	< 0.005	0.00	3.77

3. Construction Emissions Details

3.1. Demolition (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.53	0.44	4.09	5.58	0.01	0.13	—	0.13	0.12	—	0.12	—	852	852	0.03	0.01	—	855
Demolition	—	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.11	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	23.3	23.3	< 0.005	< 0.005	—	23.4
Demolition	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.86	3.86	< 0.005	< 0.005	—	3.88
Demolition	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.2. Demolition (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.53	0.44	4.09	5.58	0.01	0.13	—	0.13	0.12	—	0.12	—	852	852	0.03	0.01	—	855
Demolition	—	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.11	0.15	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	23.3	23.3	< 0.005	< 0.005	—	23.4
Demolition	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.86	3.86	< 0.005	< 0.005	—	3.88
Demolition	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.3. Site Preparation (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.52	0.44	3.74	5.54	0.01	0.19	—	0.19	0.17	—	0.17	—	858	858	0.03	0.01	—	861
Dust From Material Movement	—	—	—	—	—	—	0.53	0.53	—	0.06	0.06	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.8	11.8	< 0.005	< 0.005	—	11.8
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.95	1.95	< 0.005	< 0.005	—	1.95

Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.4. Site Preparation (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.52	0.44	3.74	5.54	0.01	0.19	—	0.19	0.17	—	0.17	—	858	858	0.03	0.01	—	861
Dust From Material Movement	—	—	—	—	—	—	0.53	0.53	—	0.06	0.06	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.01	0.01	0.05	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.8	11.8	< 0.005	< 0.005	—	11.8
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.95	1.95	< 0.005	< 0.005	—	1.95
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.5. Grading (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.22	1.02	9.19	9.69	0.02	0.42	—	0.42	0.39	—	0.39	—	1,714	1,714	0.07	0.01	—	1,720

Dust From Material Movement	—	—	—	—	—	—	5.31	5.31	—	2.57	2.57	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.76	0.80	< 0.005	0.03	—	0.03	0.03	—	0.03	—	141	141	0.01	< 0.005	—	141
Dust From Material Movement	—	—	—	—	—	—	0.44	0.44	—	0.21	0.21	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.14	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	23.3	23.3	< 0.005	< 0.005	—	23.4
Dust From Material Movement	—	—	—	—	—	—	0.08	0.08	—	0.04	0.04	—	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.6. Grading (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.22	1.02	9.19	9.69	0.02	0.42	—	0.42	0.39	—	0.39	—	1,714	1,714	0.07	0.01	—	1,720
Dust From Material Movement	—	—	—	—	—	—	5.31	5.31	—	2.57	2.57	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.08	0.76	0.80	< 0.005	0.03	—	0.03	0.03	—	0.03	—	141	141	0.01	< 0.005	—	141
Dust From Material Movement	—	—	—	—	—	—	0.44	0.44	—	0.21	0.21	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.14	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	23.3	23.3	< 0.005	< 0.005	—	23.4
Dust From Material Movement	—	—	—	—	—	—	0.08	0.08	—	0.04	0.04	—	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.7. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	0.49	4.81	6.91	0.01	0.19	—	0.19	0.17	—	0.17	—	1,304	1,304	0.05	0.01	—	1,309
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	0.49	4.81	6.91	0.01	0.19	—	0.19	0.17	—	0.17	—	1,304	1,304	0.05	0.01	—	1,309
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.12	1.18	1.69	< 0.005	0.05	—	0.05	0.04	—	0.04	—	319	319	0.01	< 0.005	—	320
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.21	0.31	< 0.005	0.01	—	0.01	0.01	—	0.01	—	52.8	52.8	< 0.005	< 0.005	—	53.0
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.8. Building Construction (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	0.49	4.81	6.91	0.01	0.19	—	0.19	0.17	—	0.17	—	1,304	1,304	0.05	0.01	—	1,309
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.59	0.49	4.81	6.91	0.01	0.19	—	0.19	0.17	—	0.17	—	1,304	1,304	0.05	0.01	—	1,309
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.12	1.18	1.69	< 0.005	0.05	—	0.05	0.04	—	0.04	—	319	319	0.01	< 0.005	—	320
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.21	0.31	< 0.005	0.01	—	0.01	0.01	—	0.01	—	52.8	52.8	< 0.005	< 0.005	—	53.0
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.9. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.57	0.48	4.56	6.90	0.01	0.17	—	0.17	0.15	—	0.15	—	1,304	1,304	0.05	0.01	—	1,309
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.55	2.55	< 0.005	< 0.005	—	2.56
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.42	0.42	< 0.005	< 0.005	—	0.42
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.10. Building Construction (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.57	0.48	4.56	6.90	0.01	0.17	—	0.17	0.15	—	0.15	—	1,304	1,304	0.05	0.01	—	1,309
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.55	2.55	< 0.005	< 0.005	—	2.56
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.42	0.42	< 0.005	< 0.005	—	0.42
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.11. Paving (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	0.48	4.15	5.31	0.01	0.17	—	0.17	0.15	—	0.15	—	823	823	0.03	0.01	—	826
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.25	2.25	< 0.005	< 0.005	—	2.26
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.37	0.37	< 0.005	< 0.005	—	0.37
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.12. Paving (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	0.48	4.15	5.31	0.01	0.17	—	0.17	0.15	—	0.15	—	823	823	0.03	0.01	—	826
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.25	2.25	< 0.005	< 0.005	—	2.26
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.37	0.37	< 0.005	< 0.005	—	0.37
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.13. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	22.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.73	0.73	< 0.005	< 0.005	—	0.73
Architectural Coatings	—	0.12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.12	0.12	< 0.005	< 0.005	—	0.12

Architectural	—	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

3.14. Architectural Coating (2027) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	22.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.73	0.73	< 0.005	< 0.005	—	0.73

Architectural	—	0.12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.12	0.12	< 0.005	< 0.005	—	0.12
Architectural Coatings	—	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4.1.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.3. Area Emissions by Source

4.3.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.02	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	22.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	22.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.03	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.3.1. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.02	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectural	—	22.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	22.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.03	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

4.4.1. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

4.5.1. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.22	0.20	1.03	1.15	< 0.005	0.12	—	0.12	0.12	—	0.12	—	101	101	< 0.005	< 0.005	—	101
Total	0.22	0.20	1.03	1.15	< 0.005	0.12	—	0.12	0.12	—	0.12	—	101	101	< 0.005	< 0.005	—	101
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.22	0.20	1.03	1.15	< 0.005	0.12	—	0.12	0.12	—	0.12	—	101	101	< 0.005	< 0.005	—	101
Total	0.22	0.20	1.03	1.15	< 0.005	0.12	—	0.12	0.12	—	0.12	—	101	101	< 0.005	< 0.005	—	101
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.46	0.46	< 0.005	< 0.005	—	0.46
Total	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.46	0.46	< 0.005	< 0.005	—	0.46

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Emergency	0.22	0.20	1.03	1.15	< 0.005	0.12	—	0.12	0.12	—	0.12	—	101	101	< 0.005	< 0.005	—	101
Total	0.22	0.20	1.03	1.15	< 0.005	0.12	—	0.12	0.12	—	0.12	—	101	101	< 0.005	< 0.005	—	101
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.22	0.20	1.03	1.15	< 0.005	0.12	—	0.12	0.12	—	0.12	—	101	101	< 0.005	< 0.005	—	101
Total	0.22	0.20	1.03	1.15	< 0.005	0.12	—	0.12	0.12	—	0.12	—	101	101	< 0.005	< 0.005	—	101
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.46	0.46	< 0.005	< 0.005	—	0.46
Total	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.46	0.46	< 0.005	< 0.005	—	0.46

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Various	—	0.01	< 0.005	—	< 0.005	0.01	0.01	0.02	< 0.005	< 0.005	0.01	—	16.5	16.5	—	—	—	16.5

Subtotal	—	0.01	< 0.005	—	< 0.005	0.01	0.01	0.02	< 0.005	< 0.005	0.01	—	16.5	16.5	—	—	—	16.5
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Various	—	—	—	—	—	—	—	—	—	—	—	—	3.49	3.49	—	—	—	3.49
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	3.49	3.49	—	—	—	3.49
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Various	—	—	0.01	—	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	—	—	—	—	—	—
Subtotal	—	—	0.01	—	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	0.01	0.01	—	< 0.005	0.02	0.02	0.03	< 0.005	< 0.005	0.01	—	20.0	20.0	—	—	—	20.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Various	—	0.01	< 0.005	—	< 0.005	0.01	0.01	0.02	< 0.005	< 0.005	0.01	—	16.5	16.5	—	—	—	16.5
Subtotal	—	0.01	< 0.005	—	< 0.005	0.01	0.01	0.02	< 0.005	< 0.005	0.01	—	16.5	16.5	—	—	—	16.5
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Various	—	—	—	—	—	—	—	—	—	—	—	—	3.49	3.49	—	—	—	3.49
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	3.49	3.49	—	—	—	3.49
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Various	—	—	0.01	—	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	—	—	—	—	—	—
Subtotal	—	—	0.01	—	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	0.01	0.01	—	< 0.005	0.02	0.02	0.03	< 0.005	< 0.005	0.01	—	20.0	20.0	—	—	—	20.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Various	—	< 0.005	< 0.005	—	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.73	2.73	—	—	—	2.73

Subtotal	—	< 0.005	< 0.005	—	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.73	2.73	—	—	—	2.73
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Various	—	—	—	—	—	—	—	—	—	—	—	—	0.58	0.58	—	—	—	0.58
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	0.58	0.58	—	—	—	0.58
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Various	—	—	< 0.005	—	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	—	—	—	—	—	—
Subtotal	—	—	< 0.005	—	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	< 0.005	< 0.005	—	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	3.31	3.31	—	—	—	3.31

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Various	—	0.01	< 0.005	—	< 0.005	0.01	0.01	0.02	< 0.005	< 0.005	0.01	—	16.5	16.5	—	—	—	16.5
Subtotal	—	0.01	< 0.005	—	< 0.005	0.01	0.01	0.02	< 0.005	< 0.005	0.01	—	16.5	16.5	—	—	—	16.5
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Various	—	—	—	—	—	—	—	—	—	—	—	—	3.49	3.49	—	—	—	3.49
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	3.49	3.49	—	—	—	3.49
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Various	—	—	0.01	—	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	—	—	—	—	—	—
Subtotal	—	—	0.01	—	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	0.01	0.01	—	< 0.005	0.02	0.02	0.03	< 0.005	< 0.005	0.01	—	20.0	20.0	—	—	—	20.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Various	—	0.01	< 0.005	—	< 0.005	0.01	0.01	0.02	< 0.005	< 0.005	0.01	—	16.5	16.5	—	—	—	16.5
Subtotal	—	0.01	< 0.005	—	< 0.005	0.01	0.01	0.02	< 0.005	< 0.005	0.01	—	16.5	16.5	—	—	—	16.5
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Various	—	—	—	—	—	—	—	—	—	—	—	—	3.49	3.49	—	—	—	3.49
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	3.49	3.49	—	—	—	3.49
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Various	—	—	0.01	—	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	—	—	—	—	—	—
Subtotal	—	—	0.01	—	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	0.01	0.01	—	< 0.005	0.02	0.02	0.03	< 0.005	< 0.005	0.01	—	20.0	20.0	—	—	—	20.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Various	—	< 0.005	< 0.005	—	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.73	2.73	—	—	—	2.73
Subtotal	—	< 0.005	< 0.005	—	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.73	2.73	—	—	—	2.73
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Various	—	—	—	—	—	—	—	—	—	—	—	—	0.58	0.58	—	—	—	0.58
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	0.58	0.58	—	—	—	0.58
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Various	—	—	< 0.005	—	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	—	—	—	—	—	—
Subtotal	—	—	< 0.005	—	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	< 0.005	< 0.005	—	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	3.31	3.31	—	—	—	3.31

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	7/1/2026	7/14/2026	5.00	10.0	—
Site Preparation	Site Preparation	7/11/2026	7/17/2026	5.00	5.00	—
Grading	Grading	7/18/2026	8/28/2026	5.00	30.0	—
Building Construction	Building Construction	8/29/2026	1/1/2027	5.00	90.0	—
Paving	Paving	1/2/2027	1/4/2027	5.00	1.00	—
Architectural Coating	Architectural Coating	1/5/2027	1/6/2027	5.00	2.00	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Rubber Tired Dozers	Diesel	Average	1.00	1.00	367	0.40
Demolition	Tractors/Loaders/Backhoes	Diesel	Average	2.00	6.00	84.0	0.37
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	6.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	6.00	367	0.40

Grading	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	4.00	367	0.29
Building Construction	Forklifts	Diesel	Average	2.00	6.00	82.0	0.20
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Paving	Cement and Mortar Mixers	Diesel	Average	4.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	7.00	81.0	0.42
Paving	Rollers	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Rubber Tired Dozers	Diesel	Average	1.00	1.00	367	0.40
Demolition	Tractors/Loaders/Backhoes	Diesel	Average	2.00	6.00	84.0	0.37
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	6.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	6.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	4.00	367	0.29
Building Construction	Forklifts	Diesel	Average	2.00	6.00	82.0	0.20

Building Construction	Tractors/Loaders/Backh	Diesel	Average	2.00	8.00	84.0	0.37
Paving	Cement and Mortar Mixers	Diesel	Average	4.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	7.00	81.0	0.42
Paving	Rollers	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	10.0	11.1	LDA,LDT1,LDT2
Demolition	Vendor	—	6.95	HHDT,MHDT
Demolition	Hauling	0.30	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	5.00	11.1	LDA,LDT1,LDT2
Site Preparation	Vendor	—	6.95	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	7.50	11.1	LDA,LDT1,LDT2
Grading	Vendor	—	6.95	HHDT,MHDT
Grading	Hauling	2.93	20.0	HHDT
Grading	Onsite truck	—	—	HHDT

Building Construction	—	—	—	—
Building Construction	Worker	0.00	11.1	LDA,LDT1,LDT2
Building Construction	Vendor	0.00	6.95	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	17.5	11.1	LDA,LDT1,LDT2
Paving	Vendor	—	6.95	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	0.00	11.1	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	6.95	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	10.0	11.1	LDA,LDT1,LDT2
Demolition	Vendor	—	6.95	HHDT,MHDT
Demolition	Hauling	0.30	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	5.00	11.1	LDA,LDT1,LDT2
Site Preparation	Vendor	—	6.95	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT

Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	7.50	11.1	LDA,LDT1,LDT2
Grading	Vendor	—	6.95	HHDT,MHDT
Grading	Hauling	2.93	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	0.00	11.1	LDA,LDT1,LDT2
Building Construction	Vendor	0.00	6.95	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	17.5	11.1	LDA,LDT1,LDT2
Paving	Vendor	—	6.95	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	0.00	11.1	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	6.95	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	1,960	653	2,614

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	12.0	—
Site Preparation	—	—	2.50	0.00	—
Grading	700	700	22.5	0.00	—
Paving	0.00	0.00	0.00	0.00	1.00

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Other Non-Asphalt Surfaces	1.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	1,499	0.03	< 0.005
2027	0.00	1,499	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	1,960	653	2,614

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00

Summer Days	day/yr	180

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Other Non-Asphalt Surfaces	0.00	1,499	0.0330	0.0040	0.00

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Other Non-Asphalt Surfaces	0.00	1,499	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Other Non-Asphalt Surfaces	0.00	0.00

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Other Non-Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Other Non-Asphalt Surfaces	0.00	0.00

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Other Non-Asphalt Surfaces	0.00	0.00

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor
Emergency Generator	Diesel	1.00	24.0	240	5.00	0.73

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type
—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)
Various	-42.0	74,130	129

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)
Various	-42.0	74,130	129

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	23.7	annual days of extreme heat
Extreme Precipitation	28.3	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth

Wildfire	33.4	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	2	0	0	N/A
Extreme Precipitation	5	0	0	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	0	0	N/A
Flooding	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack	N/A	N/A	N/A	N/A
Air Quality	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	2	1	1	3

Extreme Precipitation	5	1	1	4
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	1	1	2
Flooding	1	1	1	2
Drought	1	1	1	2
Snowpack	N/A	N/A	N/A	N/A
Air Quality	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	62.7
AQ-PM	1.06
AQ-DPM	9.17
Drinking Water	50.2
Lead Risk Housing	20.3
Pesticides	18.4
Toxic Releases	3.53
Traffic	20.6

Effect Indicators	—
CleanUp Sites	0.00
Groundwater	0.00
Haz Waste Facilities/Generators	0.00
Impaired Water Bodies	12.5
Solid Waste	91.0
Sensitive Population	—
Asthma	29.5
Cardio-vascular	67.9
Low Birth Weights	75.1
Socioeconomic Factor Indicators	—
Education	36.9
Housing	62.8
Linguistic	—
Poverty	70.8
Unemployment	88.1

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	—
Employed	—
Education	—
Bachelor's or higher	—
High school enrollment	—
Preschool enrollment	—

Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—
Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—
Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—
Health Outcomes	—
Insured adults	—
Arthritis	0.0
Asthma ER Admissions	58.8
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0

Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	2.2
Physically Disabled	1.0
Heart Attack ER Admissions	26.1
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	0.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	63.3
SLR Inundation Area	0.0
Children	90.9
Elderly	11.7
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	46.6
Climate Change Adaptive Capacity	—
Impervious Surface Cover	97.3
Traffic Density	0.0
Traffic Access	0.0

Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	31.0
Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health and Equity Evaluation Scorecard not completed.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Construction schedule provided by PACE Engineering, Inc.

Appendix B

Biological Study Report
Castella Water Intake Replacement Project

BIOLOGICAL STUDY REPORT

Castella Water Intake Replacement Project

Shasta County, California

Prepared for:

PACE Engineering, Inc.

November 2022

032-71

ENPLAN

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APPENDICES

1. INTRODUCTION

Shasta County is proposing to replace Castella's existing in-stream infiltration gallery with a similar system that would be located within the streambed of Castle Creek, just upstream of the current intake structure. The purpose of this biological study report (BSR) is to identify and characterize sensitive biological resources that may occur in the proposed work area or that may be adversely affected by implementation of the proposed project. This BSR is intended to serve as a baseline study to assist in the preparation of subsequent environmental documentation.

ENPLAN is an environmental consulting firm with over 40 years of experience with projects throughout northern California. All work associated with this project was performed by ENPLAN staff: Donald Burk, Environmental Services Manager; Allison Loveless, Environmental Scientist; Sabrina Rouse, Environmental Planner; and Hannah Raab, Environmental Planner. Resumes are provided in **Appendix A**.

Donald Burk received his Master of Science degree in Botany, and Bachelor of Arts degree in Chemistry and Biological Sciences, from California State University, Chico. Having worked in the environmental consulting field since 1981, he has an in-depth background in a broad spectrum of environmental studies. His experience includes managing the preparation of CEQA/NEPA environmental compliance documents, environmental site assessments, wildlife and botanical studies, wetland delineations, reclamation plans, and stream restoration projects. Don was responsible for the botanical surveys for this project and final review of this BSR.

Allison Loveless received her Master of Science degree in Zoology from Oklahoma State University, Stillwater, and Bachelor of Arts degree in Geography (Environmental Studies) from University of California, Los Angeles. Allison has over five years of experience working in environmental services throughout northern California. Her experience includes general wildlife surveys, endangered species surveys, and nesting bird surveys; preparing technical environmental documentation for environmental impact reports; and preparing biological study reports, wetland delineations, biological assessments, and associated GIS mapping. Allison was responsible for the wildlife surveys for this project and drafting this BSR.

Sabrina Rouse received her Bachelor of Science degree in Animal Sciences from Washington State University, Pullman, and Certificate of Study in Environmental and Natural Resources Planning from Cal Poly Humboldt. Sabrina's experience includes preparing CEQA and NEPA compliance documents, GIS mapping, preparing technical reports, assisting with tree surveys, and conducting construction monitoring to ensure compliance with mitigation measures and permit conditions. Sabrina was responsible for conducting the tree survey for this project and drafting portions of the BSR.

Hannah Raab received her Bachelor of Science degree in Environmental Science and Management (Natural Resource Management) from the University of California, Davis. Hannah's experience includes CEQA and NEPA compliance; preparing technical reports; conducting biological records searches; and preparing biological, wetland, and cultural resource maps using GIS. Hannah assisted with the tree survey and map preparation for this project.

2. PROJECT LOCATION

As shown in **Figure 1**, the proposed project is located in the unincorporated community of Castella, Shasta County, California, in Section 22, Township 38N, Range 4W, of the U.S. Geological Survey's (USGS) Dunsmuir, CA 7.5-minute quadrangle (USGS, 1998). Castella is approximately 50 miles north of Redding, and five miles south of Dunsmuir, and lies on the west bank of the Sacramento River, south of Castle Crags State Park. The project access corridor is directly off Main Street, on the south side of Castle Creek.

Project improvements would occur west of Interstate 5 at the Shasta County Service Area (CSA) No. 3 Water Treatment Plant (WTP) on Castle Creek. The project is located on a County-owned parcel and an access corridor that bisects the parcel; the study area totals ~0.96 acres. The County-owned parcel is identified as Shasta County Assessor's Parcel Number (APN) 014-600-016. The 80-foot-wide access corridor is a portion of Shasta County APN 014-600-015. The intake structure is approximately 180 feet upstream of the Interstate 5 bridge over Castle Creek. Temporary staging of construction materials and equipment would take place on the WTP parcel; no physical improvements are needed to establish the staging area.

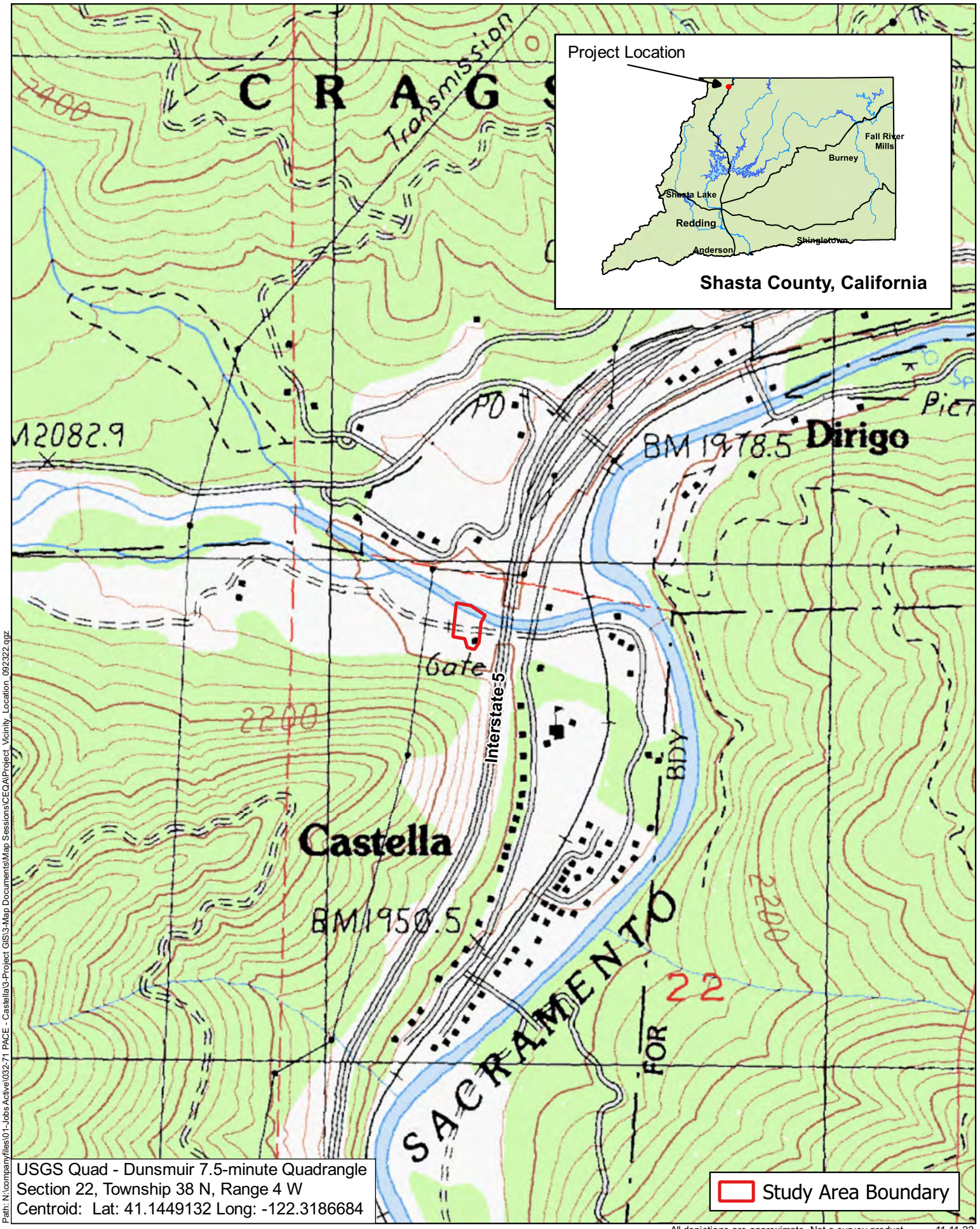


Figure 1

Project Vicinity and Location

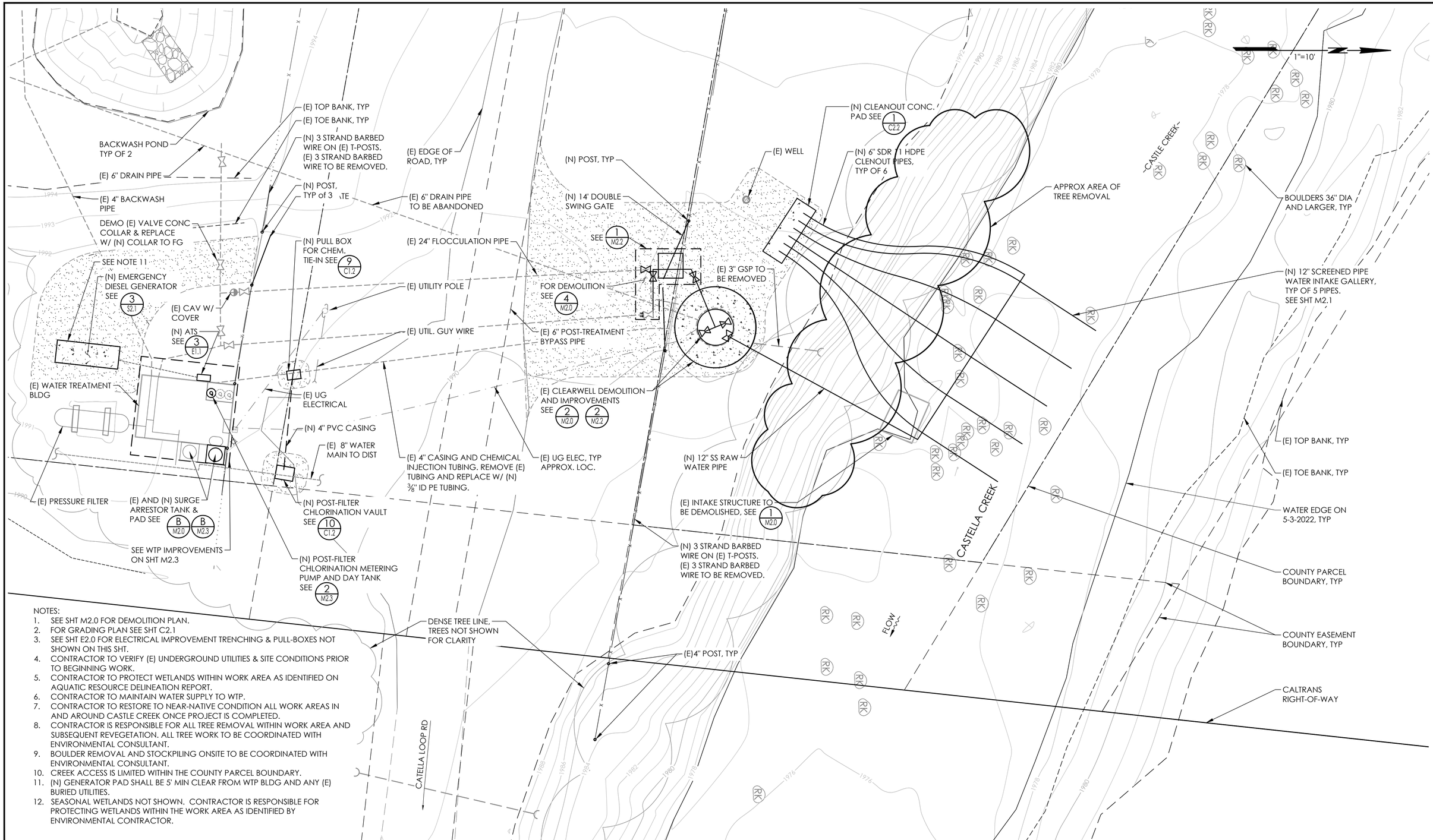
ENPLAN

3. PROJECT DESCRIPTION

Water service for the community of Castella is currently provided by an intake structure within the bed of Castle Creek. From the collection point, water is transported through an underground pipe to a wet well approximately 30 feet south of the creek bank. Additional facilities at the WTP include a water treatment building, pressure filter, surge tank, chemical injection feed line, flocculation pipe, drain pipes, and backwash ponds. The current project proposal includes replacement of the water intake structure in Castle Creek and improvements to the associated treatment system facilities (**Figure 2**).

Constructed in 1980, the water intake structure is over 40 years old and the galvanized steel corrugated metal pipes that serve as the water inlet piping are corroding. In addition, the filter fabric around the intake structure has deteriorated, allowing sediment to collect and causing the intake pumps to lose suction. As part of the current project, the existing intake structure would be replaced with an in-stream infiltration gallery installed within the streambed of Castle Creek, just upstream of the current intake structure. The proposed system would consist of horizontal infiltration piping buried in the streambed. Temporary dewatering and in-stream excavation would be required for installation of the infiltration gallery. Additionally, vegetation removal on the south bank of Castle Creek would be necessary for equipment access and to install new underground piping between the infiltration gallery and the existing clearwell. Upon project completion, the bed and bank of Castle Creek would be restored to near-native conditions, with riprap being used to stabilize the steep stream bank. Other project elements would include:

- Rehabilitation of the existing clearwell;
- Installation of a new chemical injection vault;
- Installation of a post-filter chlorination metering pump and day tank inside the WTP building, in addition to a new air compressor, new grating, and a new filter and backwash control valves;
- Installation of a post-filter chlorination vault and appurtenances to the north of the WTP building;
- Installation of a new surge tank on the east side of the WTP building;



NOTES:

1. SEE SHT M2.0 FOR DEMOLITION PLAN.
2. FOR GRADING PLAN SEE SHT C2.1
3. SEE SHT E2.0 FOR ELECTRICAL IMPROVEMENT TRENCHING & PULL-BOXES NOT SHOWN ON THIS SHT.
4. CONTRACTOR TO VERIFY (E) UNDERGROUND UTILITIES & SITE CONDITIONS PRIOR TO BEGINNING WORK.
5. CONTRACTOR TO PROTECT WETLANDS WITHIN WORK AREA AS IDENTIFIED ON AQUATIC RESOURCE DELINEATION REPORT.
6. CONTRACTOR TO MAINTAIN WATER SUPPLY TO WTP.
7. CONTRACTOR TO RESTORE TO NEAR-NATIVE CONDITION ALL WORK AREAS IN AND AROUND CASTLE CREEK ONCE PROJECT IS COMPLETED.
8. CONTRACTOR IS RESPONSIBLE FOR ALL TREE REMOVAL WITHIN WORK AREA AND SUBSEQUENT REVEGETATION. ALL TREE WORK TO BE COORDINATED WITH ENVIRONMENTAL CONSULTANT.
9. BOULDER REMOVAL AND STOCKPILING ONSITE TO BE COORDINATED WITH ENVIRONMENTAL CONSULTANT.
10. CREEK ACCESS IS LIMITED WITHIN THE COUNTY PARCEL BOUNDARY.
11. (N) GENERATOR PAD SHALL BE 5' MIN CLEAR FROM WTP BLDG AND ANY (E) BURIED UTILITIES.
12. SEASONAL WETLANDS NOT SHOWN. CONTRACTOR IS RESPONSIBLE FOR PROTECTING WETLANDS WITHIN THE WORK AREA AS IDENTIFIED BY ENVIRONMENTAL CONTRACTOR.

90% DRAFT

BAR IS ONE INCH ON ORIGINAL DRAWING
0" 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REVISIONS

NO	DATE	DESCRIPTION

PACE ENGINEERING

DES	DD	CKD	GH	JOB NO.
DRN	DD	DATE	9/30/2022	199.106

SIGNED

SHASTA COUNTY CSA NO. 3 CASTELLA
INTAKE REPLACEMENT PROJECT

SITE PLAN

SHEET
C2.0
PG 5 OF 26

Plot Date: October 14, 2022 - 6:14 pm Login Name: ddeleon
File Name: M:\Land Projects\0199\106 Castella Intake Replacement Project\DWG\CIVIL - Site Plan\dwg Layout: SITE PLAN

- The electrical control system would be replaced with new efficient equipment, a new diesel emergency generator, and automatic transfer switch.

4. AREA CHARACTERISTICS

The terrain in the study area is generally flat with the exception of a short, approximately 35-degree slope along the south bank of Castle Creek. The overall topographical gradient slopes gradually north toward Castle Creek. Elevations in the study area range from approximately 1,900 to 2,005 feet above mean sea level. Lands within and surrounding the project area are primarily undeveloped, with the exception of the water treatment building and associated water intake infrastructure.

The climate of the project area is Mediterranean, with hot, dry summers and cool, wet winters. Annual precipitation averages ~63.64 inches of rainfall at the City of Dunsmuir Wastewater Treatment Plant, which reasonably approximates conditions on the study site (WRCC, 2022).

One soil type is located within the project area: Xerofluvents – Riverwash association, 0-20% slopes. The Xerofluvents soil component is not considered hydric; however, Riverwash is a hydric soil unit (NRCS, 2021).

As a result of the field evaluation, five vegetation communities were identified in the study area: stream/riverine, montane hardwood – conifer, annual grassland, barren, and montane riparian. Each of these communities is briefly described in Section 6. Representative photographs of the project study area are provided in **Appendix B.**

5. RECORDS REVIEW AND FIELD RECONNAISSANCE

5.1. Records Review

Records reviewed for this evaluation consisted of the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) records for special-status plants, animals, and natural communities within a 5-mile radius of the study area (see **Table 1**); California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants present in the Dunsmuir 7.5-minute quadrangle (see **Table 2**); and the U.S. Fish and Wildlife Service (USFWS) records for federally listed, proposed, and candidate plant and animal species with potential to occur in the study area (see **Appendix C**).

5.2. Field Reconnaissance

To determine the presence/absence of special-status species and wetlands, field surveys were conducted by ENPLAN biologists on October 5, 2020, November 12, 2021, and May 30, 2022. Biological field observations extended up to approximately 100 feet beyond the project site boundaries; these off-site areas were inspected where accessible to evaluate potential indirect impacts to special-status species and their habitats. A tree survey was conducted on August 3, 2022.

Most of the special-status plant species potentially occurring in the project area would have been identifiable at the time the botanical surveys were completed, while most special-status animal species potentially occurring in the project area would not have been evident at the time the fieldwork was conducted. However, the potential presence of the species that would not have been detectable at the time of the field surveys could readily be determined based on observed habitat characteristics.

6. NATURAL COMMUNITIES

CNDDB records do not identify any sensitive natural communities within a five-mile radius of the project area. As outlined above, the principal natural communities in the study area are stream/riverine, montane hardwood – conifer, annual grassland, barren, and montane riparian; each habitat type is described below in further detail.

6.1. Habitat Types

Stream/Riverine. Stream/riverine habitat may be utilized by a variety of fish and wildlife species. Pools and backwater areas also provide breeding habitat for amphibians. Waterfowl forage for aquatic plants and invertebrates in slow-moving sections of riverine habitat. Small mammals such as beaver (*Castor canadensis*), river otter (*Lontra canadensis*), and muskrat (*Ondantra zibethicus*) may build nests in or along riverine habitat. Riverine systems may also provide spawning and rearing habitat for various fish species. Numerous species of macroinvertebrates occur in riverine habitats, often beneath submerged rocks (e.g., stoneflies, mayflies, and caddisflies), in mud (e.g., clams and mussels), or at the water surface (e.g., water striders, backswimmers, water boatmen, and mosquito larvae). Stream habitats are often further enriched by the presence of vegetation along their banks. Overhanging trees and

shrubs provide shade and help maintain cool water temperatures. Additionally, roots from trees and fallen vegetation within the stream increase habitat complexity and bank stability, and provide shelter for rearing fish, amphibians, and invertebrates.

In the study area, stream/riverine habitat is provided by Castle Creek, an upper perennial stream tributary to the Sacramento River. Castle Creek flows for approximately 178 feet through the northern portion of the study area and averages 39 feet wide along that distance. The confluence of Castle Creek with the Sacramento River is approximately 1,000 feet downstream of the project site. The dominant in-stream substrate consists of cobbles and boulders; a narrow band of riparian habitat is present along each bank.

Castle Creek is tributary to the Sacramento River north of Shasta Dam, which is a barrier to fish migration; therefore, there is no potential for anadromous fish species to be present in the study area. Resident fish species such as rainbow trout may be present; however, no special-status fish species are expected to be present in Castle Creek within the study area. Stream/riverine habitat is generally considered to be a sensitive natural community.

Montane Hardwood – Conifer. Montane hardwood – conifer habitat is generally composed of various pine, oak, and fir species, among others. This habitat type generally has a dense canopy and relatively open understory. Montane hardwood – conifer habitat supports a variety of wildlife species, including reptiles, amphibians, mammals, and nesting birds.

In the study area, montane/hardwood – conifer habitat is present in uplands, on the terrace above Castle Creek. The dominant plant species of the montane hardwood – conifer habitat in the study area include ponderosa pine (*Pinus ponderosa*), Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*), incense-cedar (*Calocedrus decurrens*), and tanoak scrub (*Notholithocarpus densiflorus* var. *echinoides*). The montane hardwood – conifer habitat mostly closely resembles the *Pinus ponderosa* (*Calocedrus decurrens*) stream terrace alliance (87.010.38) described in the CDFW California Natural Communities Lists, which is not identified as a sensitive natural community.

A total of 60 trees with a diameter at breast height (DBH) above five inches were identified within the project boundary. Twenty-two of these trees are located in the

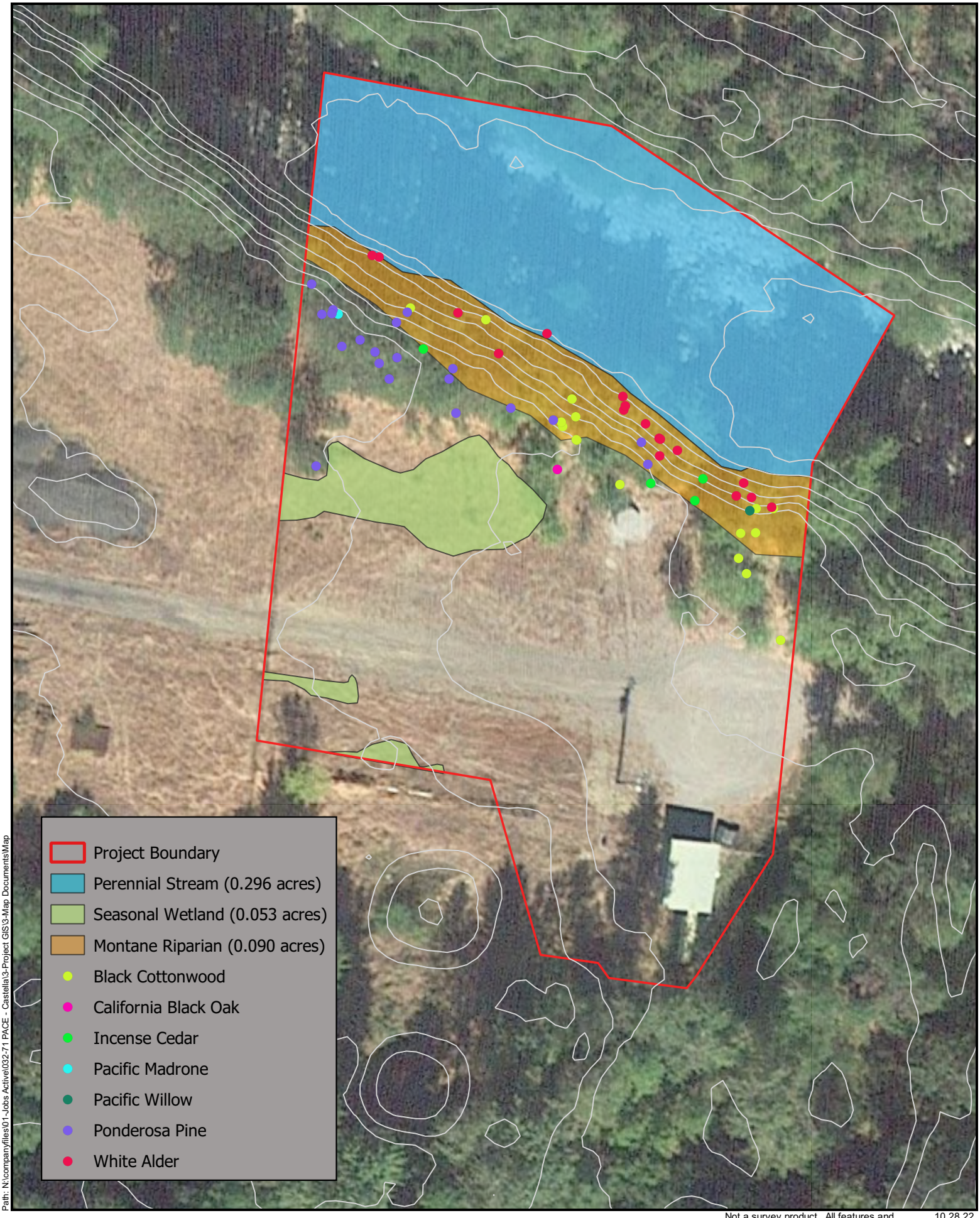
montane hardwood-conifer habitat with diameters ranging from five to 24 inches. Below is a summary of the trees located in the montane hardwood-conifer habitat by species and size. A list of all the surveyed trees is included in **Table 5**; the locations of all trees are depicted on **Figure 3**.

Trees Present in Montane Hardwood–Conifer Habitat, by Size Class

DBH (inches)	Black Cottonwood	California Black Oak	Incense-Cedar	Pacific Madrone	Ponderosa Pine
5-9	4	1	2	1	5
10-14	1	0	0	0	2
15-19	0	0	0	0	3
20-25	0	0	0	0	3
Total:	5	1	2	1	13

Annual grassland. Annual grassland habitat consists primarily of non-native annual species that often outcompete native plant populations. Species composition is largely the result of geographic location and climate. A variety of animals use annual grasslands for foraging and nesting. Such species include the western fence lizard (*Sceloprous occidentalis*), western rattlesnake (*Crotalus viridis*), black-tailed jackrabbit (*Lepus californicus*), California vole (*Microtus californicus*), coyote (*Canus latrans*), short-eared owl (*Asio flammeus*), horned lark (*Eremophila alpestris*), northern harrier (*Circus hudsonius*), and American kestrel (*Falco sparverius*).

In the study area, annual grassland is present primarily along the boundaries of the access road and other previously disturbed areas. The primary species associated with the annual grassland habitat in the study area include annual ragweed (*Ambrosia artemisiifolia*), yellow star-thistle (*Centaurea solstitialis*), bull thistle (*Cirsium vulgare*), rose clover (*Trifolium hirtum*), perennial sweet pea (*Lathyrus latifolius*), bentgrass (*Agrostis* sp.), and medusahead (*Elymus caput-medusae*). This community most closely resembles the *Elymus caput – medusae* alliance (42.020.03) described in the CDFW California Natural Communities Lists, which is not identified as a sensitive natural community. The tree survey identified two trees with a DBH greater than five inches in the on-site annual grassland habitat -- a black cottonwood and a ponderosa pine. A list of all the surveyed trees is included in **Table 5**; the locations of all trees are depicted on **Figure 3**.



Path: N:\companyfiles\01-Jobs Active\032-71 PACE - Castella\3-Project GIS\3-Map Documents\Map

1" = 40'

0 20 40 Feet

Figure 3
Sensitive Habitat Types and Tree Survey Results

Not a survey product. All features and boundaries are preliminary until verified by the Army Corps of Engineers.

10.28.22

ENPLAN

Three seasonal wetlands are present as inclusions in or adjacent to the annual grassland habitat. These features are generally considered sensitive communities due to the uniquely adapted flora and fauna species that may be present in them. Wetlands within the study area are represented by the following species: tall fescue (*Festuca arundinacea*), annual hairgrass (*Deschampsia danthonioides*), Mediterranean barley (*Hordeum marinum*), chicory (*Cichorium intybus*), and Spanish lotus (*Acmispon americanus*).

Barren. Barren habitat is defined by sparse or absent vegetation. The value of barren habitat for wildlife is highly dependent upon structure, substrate, and topography. Many avian species such as killdeer rely on rocks and pebbles to create nests and camouflage their eggs. Cormorants and some hawks use rock ledges as nesting sites, and bank swallows use vertical cliffs to create cavity nests. Similarly, rock crevices provide roosting habitat for many species of bats. Reptiles and ground-dwelling mammals create burrows for protection from prey and for nesting.

In the project site, barren habitat occurs as a graveled access road. No wildlife was observed using this habitat type and barren habitat is not considered a sensitive natural community.

Montane Riparian. Montane riparian habitat usually occurs along streams or wetlands as a narrow band of dense, broad-leaved, deciduous trees, with a sparse understory. Montane riparian habitat has high value for wildlife species due to its vicinity to water sources and because it provides cover, migration corridors, and nesting and foraging opportunities. Montane riparian habitat may be associated with a variety of wetland types and other waters including lakes, ponds, seeps, bogs, meadows, rivers, and springs.

In the project area, a narrow zone of montane riparian habitat borders Castle Creek. Riparian species present include white alder (*Alnus rhombifolia*), American dogwood (*Cornus sericea* subsp. *sericea*), mountain dogwood (*Cornus nuttallii*), common horsetail (*Equisetum arvense*), Oregon ash (*Fraxinus latifolia*), big-leaf maple (*Acer macrophyllum*), black cottonwood (*Populus balsamifera* subsp. *trichocarpa*), and Himalayan blackberry (*Rubus armeniacus*). The tree survey identified 36 trees with a DBH of five inches or greater in the on-site riparian habitat. Below is a summary of the

trees located in the montane riparian habitat by size and species. A list of all the surveyed trees is included in **Table 5**; the locations of all trees are depicted on **Figure 3**. The montane riparian community in the study area most closely resembles the *Populus trichocarpa* alliance (61.120.01), described in the CDFW California Natural Communities List, which is considered a sensitive natural community.

Trees Present in Montane Riparian Habitat, by Size Class

DBH (inches)	Black Cottonwood	Incense Cedar	Pacific Willow	Ponderosa Pine	White Alder
5-9	6	2	1	3	13
10-15	4	0	0	3	4
Total:	10	2	1	6	17

6.2 Impacts to Sensitive Natural Communities, Wetlands, and Other Waters

As described in Section 6.1 above, three sensitive natural communities are present in the project area: stream/riverine, seasonal wetlands, and montane riparian habitat. Potential impacts of the proposed project on sensitive natural communities include direct but temporary impacts to Castle Creek, the bordering montane riparian habitat, and portions of the on-site seasonal wetlands. Potential indirect impacts to downstream aquatic habitats of Castle Creek and to portions of seasonal wetlands are also expected to be temporary. Potential impacts are described in further detail below.

An estimated 0.30 acres of Castle Creek would be disturbed during the installation of the new water intake gallery. These direct, temporary impacts would result from implementation of a water diversion and dewatering system, and excavation for intake pipe installation. Indirect, temporary downstream impacts could result from increased turbidity due to bed and bank work.

A diversion/dewatering plan has been prepared and includes the use of a cofferdam and bypass pipes, water intake and discharge locations, and potential use of settling tanks. Flow rates in Castle Creek are estimated between 33 and 66 cubic feet per second (CFS); the dewatering and diversion methods are designed to accommodate up to 66 CFS. The diversion/dewatering plan is included in **Appendix F**. **Mitigation Measure 1** requires implementation of the diversion/dewatering plan; use of best management practices (BMPs) to prevent spills, instream sedimentation, and

erosion; and compliance with the conditions of regulatory permits to minimize impacts on water quality.

The three on-site seasonal wetlands are expected to be temporarily impacted due to project implementation; the proportion of direct and indirect impacts to the wetlands will depend on construction plans to be determined by the contractor and may result from the inclusion of staging areas and an access route to Castle Creek through wetlands. For the purposes of this report, it is conservatively assumed that all of the wetlands on the site (~0.053 acres) will be directly or indirectly affected by project implementation. **Mitigation Measure 2** includes the installation of high-visibility exclusionary fencing or flagging, the use of wetland mats, and/or the purchase of wetland mitigation credits if temporary or permanent wetland impacts are anticipated. Implementation of this mitigation measure would ensure that impacts to the wetlands are less than significant.

Approximately 0.09 acres of montane riparian habitat are present along the southern side of Castle Creek; for the purposes of this report, it is assumed that all of the riparian habitat on-site would potentially be temporarily impacted due to project implementation. Temporary impacts to riparian habitat may include pruning branches, cutting trees and shrubs at their base, removing root balls, and/or temporarily entering sensitive habitats with equipment. **Mitigation Measure 3** calls for the impacts on riparian habitat to be minimized through careful pre-construction planning, installation of exclusionary fencing to prevent entry to non-impacted riparian areas, and by pruning plants at ground level in temporary use areas to encourage regrowth upon completion of construction.

As noted above, the project site contains 60 trees with a DBH of 5 inches or greater; 36 of these trees occur within the montane riparian habitat of the project area. The surveyed trees are summarized in **Table 5**, and the locations of all trees are depicted on **Figure 3**. An unknown number of riparian trees would be removed to facilitate project construction (e.g., access to Castle Creek). **Appendix D** contains a revegetation plan to be implemented upon project completion. As documented in the revegetation plan, following installation of the new water intake structure, the disturbed stream bank would be stabilized with riprap to prevent erosion. Restoration efforts

would consist of the replanting of cuttings or seedlings of native trees including Oregon ash, black cottonwood, and/or Goodding's black willow. Additionally, the purchase of riparian creation and/or preservation credits at a 1:1 ratio from an approved mitigation bank is proposed as compensatory mitigation. **Mitigation Measure 4** is included in this report to ensure implementation of the revegetation plan.

7. SPECIAL-STATUS SPECIES

7.1. Special-Status Plant Species

Review of the U.S. Fish and Wildlife Service species lists (see **Appendix C**) for the project area did not identify any special-status plant species as having the potential to be affected by the proposed project. The project site does not contain designated critical habitat for federally listed plant species.

Review of California Natural Diversity Data Base (CNDDB) records (**Table 1**) showed that six special-status plants have been reported within a five-mile radius of the study area: Cascade grass-of-Parnassus (*Parnassia cirrata* var. *intermedia*), Castle Crags harebell (*Campanula shetleri*), Castle Crags ivesia (*Ivesia longibracteata*), Oregon fireweed (*Epilobium oreganum*), rattlesnake fern (*Botrypus virginianus*), and Shasta limestone monkeyflower (*Erythranthe taylorii*). One non-status plant, Baker's globe mallow (*Iliamna bakeri*), has also been reported in the five-mile search radius. The CNPS Inventory (**Table 2**) for the Dunsmuir quadrangle identified one additional special-status plants: Klamath fawn lily (*Erythronium klamathense*). Twelve non-status species have also been recorded in the Dunsmuir quadrangle by CNPS.

The potential for each of the special-status plant species to occur on the project site is evaluated in **Table 3.** As documented, none of these or any other special-status plant species were observed during the botanical field survey, nor are any expected to be present. Included as **Appendix E** is a list of vascular plants observed during the botanical surveys.

7.2. Special-Status Wildlife Species

Review of the USFWS species list for the project area (see **Appendix C**) identified the following federally listed animal species and candidates for federal listing as potentially being affected by the proposed project: Franklin's bumble bee (*Bombus*

franklini), monarch butterfly (*Danaus plexippus*), delta smelt (*Hypomesus transpacificus*), longfin smelt (*Spirinchus thaleichthys*), conservancy fairy shrimp (*Branchinecta conservatio*), vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*), northern spotted owl (*Strix occidentalis caurina*), yellow-billed cuckoo (*Coccyzus americanus*), gray wolf (*Canis lupus*), and North American wolverine (*Gulo gulo luscus*). The USFWS does not identify designated critical habitat in the study area for any federally listed animal species.

CNDDB records show that ten special-status animal species have been reported within a five-mile radius of the study area: American peregrine falcon (*Falco peregrinus*), California wolverine (*Gulo gulo*), Cascades frog (*Rana cascadae*), fisher – west coast Distinct Population Segment (DPS; *Pekania pennanti*), foothill yellow-legged frog (*Rana boylii*), northern goshawk (*Accipiter gentilis*), Pacific tailed frog (*Ascaphus truei*), spotted bat (*Euderma maculatum*), western mastiff bat (*Eumops perotis californicus*), and western pond turtle (*Actinemys marmorata*). Additionally, nine non-status animals have been reported in the five-mile search radius.

The potential for each of the above special-status animal species to occur on the project site is further evaluated in **Table 3**. As documented, although no special-status species were observed during the field surveys, potentially suitable habitat occurs in the project area for foothill yellow-legged frog, Pacific tailed frog, and western mastiff bat.

Special-status frogs

The foothill yellow-legged frog (*Rana boylii*; California State Endangered, Species of Special Concern) and the Pacific tailed frog (*Ascaphus truei*; Species of Special Concern) have the potential to be present in Castle Creek in the project area. Both species are found in cold, clear perennial streams or rivers located in forests or woodlands. The foothill yellow-legged frog is present from sea level to approximately 6,000 feet in elevation, and the Pacific tailed frog (PTF) is found from sea level to 8,400 feet in elevation.

Fertilization is external for the foothill yellow-legged frog and mating occurs between April and July. The Pacific tailed frog is one of the few frog species that practices internal fertilization; mating occurs during the fall and fertilized eggs are laid between July and September. Rocky stream substrate is

a habitat requirement for reproduction in both species. Egg masses are commonly found attached to rocks or pebbles as protection from the swift moving water. The Pacific tailed frog lays fewer eggs than the foothill yellow-legged frog; an average of 40 eggs are laid by the Pacific tailed frog, compared to an average of 900 by the foothill yellow-legged frog. Additionally, eggs laid by the Pacific tailed frog take longer to hatch (3-6 weeks), as compared with the foothill yellow-legged frog (5-37 days). Tadpoles use rocks and gravel for cover while foraging for food, and morph into their adult form in three to four months for foothill yellow-legged frog, and one to two years for the Pacific tailed frog.

According to CNDDB records, the nearest known occurrence of the foothill yellow-legged frog to the project area is approximately 0.3 miles west in Castle Creek; this observation was reported in 1995. The nearest documented occurrences of the Pacific tailed frog are approximately 1.5 miles upstream and 1.2 miles downstream of the project area in small tributaries to the Sacramento River; both observations were reported in 1994. Although neither of these frog species were observed during the field surveys, there is a moderate potential for either species to be present.

In-stream work in Castle Creek has the potential to directly and indirectly affect both species of frog should they be present in the project area. The breeding season for both species is from April 1 to October 31. Because the in-stream construction period coincides with the breeding season, there is no way to fully avoid in-water work during the breeding season. Therefore, as called for in **Mitigation Measure 5**, preconstruction surveys shall be conducted by a qualified biologist on each day in which in-water work would occur. If egg masses, juvenile frogs or adults are observed in the work area during the surveys, they shall be relocated by the biologist. Although both species are primarily aquatic, they may occasionally forage terrestrially. Mitigation Measure 5 includes procedures to be followed if frogs are observed by the biologist or construction crew in upland habitats or in the dewatered work zone.

Indirect effects on the frogs may result from water quality degradation associated with construction work and temporary loss of habitat during

construction activities. As discussed in Section 6, BMPs to prevent erosion, sedimentation, and potential accidental spills would be implemented in accordance with permit requirements, which would avoid/minimize the potential for indirect impacts on foothill yellow-legged frog and Pacific tailed frog. The temporary loss of habitat is unavoidable, but is not significant given the availability of suitable habitat upstream and downstream of the work area.

Special-status bats

Two bat species were identified as potentially being present in the project area: the western mastiff bat (*Eumops perotis californicus*; SSSC) and the spotted bat (*Euderma maculatum*; SSSC). The western mastiff bat inhabits a geographic range extending from south American, through central Mexico, and across the western U.S. Preferred habitats include desert scrub, chaparral, oak woodland, and ponderosa pine forests. This species is non-migratory and is nocturnally active year-round. The western mastiff bat is the largest bat species native to the U.S., with long narrow wings adapted for rapid, sustained flight throughout their nocturnal foraging period. Because the bats have limited maneuverability, they forage most successfully in open habitats.

The spotted bat is distributed from southern British Columbia to central Mexico, and inhabits foothill, mountain, and desert regions within their range. This species is nocturnal, can be year-long residents or migratory, and is capable of torpor, possibly entering periods of hibernation in some portions of their range. The spotted bat appears to be a moth specialist; the species uses echolocation to find prey and feed during flight.

Both species use rock crevices as common locations for daytime roosts; however, crevices in man-made structures may also be used. Roosts are almost always located high above the ground; multiple studies indicate that all roosting sites used by the western mastiff bat are located at least vertical 10 feet above the ground (Vaughan 1959, Barbour and Davis 1969). The western mastiff bat may roost solitarily or in small colonies of generally less than 100 individuals, while the spotted bat is generally solitary but may hibernate in groups and forage among other bat species. The western mastiff bat has been observed sharing

roosting sites with other large bat species such as the big brown bat, pallid bat, and Brazilian free-tailed bat (Barbour and Davis 1969).

The western mastiff bat mates during the spring and parturition (birth) takes place during the early to mid-summer (June and July). Unlike most bat species, western mastiff bat maternity colonies may contain both males and females (Krutzsch, 1955). The spotted bat mates in autumn and birth occurs before mid-June. Both species generally produce one young per year.

CNDDB records indicate that the nearest known occurrence of the western mastiff bat to the study area was recorded in 1993 and was approximately five miles to the northeast, near the Sacramento River. The nearest known occurrence of the spotted bat to the study area was recorded in 1994 and was approximately five miles to the northwest. There is a moderate potential for the western mastiff bat and the spotted bat to forage in the project area. The project area does not contain roosting habitat; however, the Interstate 5 bridge over Castle Creek is less than 200 feet east of the project area boundary and has the potential to support roosting bats. Because work would be confined to daytime hours and would not affect roosting habitat, it is unlikely that project implementation would either directly or indirectly affect bats. Therefore, no mitigation measures are necessary with respect to bats.

8. NESTING MIGRATORY BIRDS

Under the Migratory Bird Treaty Act (MBTA) of 1918, migratory birds, their nests, and their eggs are protected from injury or death, and any project-related disturbances during the nesting period. In addition, California Fish and Game Code §3503 provides regulatory protection to resident and migratory birds and all birds of prey within the State.

The USFWS identified the following migratory Birds of Conservation Concern as potentially affected by the proposed project: bald eagle (*Haliaeetus leucocephalus*), evening grosbeak (*Coccothraustes verpertinus*), golden eagle (*Aquila chrysaetos*), olive-sided flycatcher (*Contopus cooperi*), rufous hummingbird (*Selasphorus rufus*), and wrentit (*Chamaea fasciata*). The potential for each of these species to utilize the project

site is evaluated in **Table 4**. Although none of these species were observed during the field surveys, as documented in the table three of the bird species of conservation concern have some potential to nest in the study area: olive-sided flycatcher, rufous hummingbird, and wrentit.

No nests of any bird species were observed during the biological field surveys; however, birds could potentially nest in and adjacent to the study corridor in subsequent years. If present during construction, nesting birds could be directly or indirectly affected by construction activities. Direct effects could include mortality resulting from tree removal or other construction-related disturbance of habitats containing an active nest with eggs or chicks. Indirect effects could include nest abandonment by adults in response to loud noise levels or human encroachment, or a reduction in the amount of food available to young birds due to changes in feeding behavior by adults.

In the local area, most birds nest between February 1 and August 31; the potential for adversely affecting nesting birds can be greatly minimized by conducting vegetation removal before February 1 or after August 31. If this is not possible, a nesting survey should be conducted by a qualified biologist prior to commencement of construction. If active nests are found, the biologist would consult with CDFW and/or the USFWS regarding appropriate action to comply with the Migratory Bird Treaty Act and California Fish and Game Code §3503. Compliance measures may include, but are not limited to, exclusionary buffers, sound attenuation measures, seasonal work closures based on the known biology and life history of the species identified in the survey, as well as ongoing monitoring by biologists (see **Mitigation Measure 6**).

9. NOXIOUS WEEDS

The introduction and spread of noxious weeds during construction activities has the potential to adversely affect natural habitats. A noxious weed is a plant that has been defined as a pest by federal or state law. In California, the California Department of Food and Agriculture (CDFA, 2021) maintains a list of plants that are considered threats to the well-being of the state. Each noxious weed identified by the CDFA receives a rating that reflects the importance of the pest, the likelihood that eradication

or control efforts would be successful, and the present distribution of the pest within the state. Below is a description of ratings categories applied by CDFA:

> **Category A**. A pest of known economic or environmental detriment that is either not known to be established in California or it is present in a limited distribution that allows for the possibility of eradication or successful containment. A-rated pests are prohibited from entering the state because they have been determined to be detrimental to agriculture.
>
> **Category B**. A pest of known economic or environmental detriment and, if present in California, is of limited distribution. B-rated pests are eligible to enter the state if the receiving county has agreed to accept them.
>
> **Category C.** A pest of known economic or environmental detriment and, if present in California, it is usually widespread. C-rated organisms are eligible to enter the state as long as the commodities with which they are associated conform to pest cleanliness standards when found in nursery stock shipments.

According to California Invasive Plant Council (Cal-IPC, 2022) records, four of the plant species observed in the project area during the botanical survey have a California Department of Food and Agriculture weed ranking (in Category C). These species are yellow star-thistle, bull thistle, downy brome, and medusahead. An additional six observed plant species were listed with Cal-IPC invasiveness ratings between “moderate” and “high.” As called for in **Mitigation Measure 7**, the potential for introduction and spread of noxious weeds can be avoided/minimized by using only certified weed-free erosion control materials, mulch, and seed; limiting any import or export of fill material to material that is known to be weed free; and requiring the construction contractor to thoroughly wash all equipment at a commercial wash facility prior to entering and upon leaving the job site.

10. CONCLUSIONS AND RECOMMENDATIONS

Based on the records search results, field observations, and the above analyses, we find that the proposed project could temporarily degrade the water quality of Castle Creek; has the potential to remove up to 0.09 acres of riparian habitat; has the potential to cause direct or indirect effects to three seasonal wetlands (0.053 acres); has the potential to cause direct and indirect effects to special-status wildlife species (Pacific tailed frog and foothill yellow-legged frog); has the potential to affect nesting birds (if

present during the work period); and could result in the introduction or spread of noxious weeds. Implementation of conditions of regulatory agency permits and implementation of the following mitigation measures would reduce the potential impacts of the proposed project on biological resources to a less-than-significant level.

Mitigation Measure 1: Minimize Impacts to Water Quality

Impacts to water quality in Castle Creek shall be minimized by implementing the following measures:

a. In-water construction activities shall take place between June 1 and October 31, when there is minimal chance of precipitation and flows are near their lowest; the in-water work period may be extended if weather conditions allow and if authorized by permitting agencies.

b. Construction activities that include earth disturbance shall involve the use of Best Management Practices (BMPs) to prevent erosion, sedimentation, and accidental spills from entering Castle Creek.

c. Prior to the start of in-water work, the dewatering/diversion plan shall be reviewed and accepted by the California Department of Fish and Wildlife, U.S. Army Corps of Engineers, and Regional Water Quality Control Board. The final plan shall be implemented by the project contractor and the diversion shall be properly maintained throughout the course of in-water construction.

Mitigation Measure 2: Avoid Direct and Indirect Impacts to Wetlands

Impacts to seasonal wetlands shall be minimized by implementing the following measures:

a. High-visibility fencing, flagging, or other markers shall be installed along the outer edges of the construction zone adjacent to wetlands and other waters designated for avoidance. The fencing location shall be determined by a qualified biologist in consultation with the project engineer and the Shasta County Department of Public Works. No construction activities (e.g., clearing, grading, trenching, etc.), including vehicle parking and materials stockpiling, shall occur within the fenced area. The exclusionary fencing shall be periodically inspected during the construction period to ensure the fencing is properly maintained. The fencing shall be removed upon completion of work.

b. If vehicles and/or equipment must enter wetlands, or if the wetlands are to be used as a staging area, the wetlands shall be protected through installation of temporary wood slabs, swamp mats, HDPE mats, geotextile fabric with a layer of gravel, or similar protective materials approved by the County. The protective materials shall be removed upon completion of construction.

c. If excavation of wetlands cannot be avoided, mitigation shall be achieved by restoring the pre-existing topography of the wetlands upon completion of construction or through purchase of mitigation credits at an agency-approved mitigation bank at a minimum 1:1 ratio, or as may otherwise be required through permits issued by CDFW, USACE, and RWQCB.

Mitigation Measure 3: Minimize Loss of Riparian Habitat

Loss of riparian habitat shall be minimized by implementing the following measures:

a. Minimize the construction disturbance to riparian habitat through careful pre-construction planning.

b. Install high-visibility fencing, flagging, or other markers along the outer edges of the construction zone where needed to prevent accidental entry into surrounding riparian habitat planned for retention.

c. Stockpile equipment and materials outside of riparian habitat, in the designated staging areas.

d. Prune any riparian plants at ground level where feasible (as opposed to mechanically removing the entire plant and root system) in temporary use areas, which will promote regeneration from the root systems.

Mitigation Measure 4: Offset the Unavoidable Loss of Riparian Habitat

a. Prior to any earth disturbance, the County shall purchase stream-side riparian habitat mitigation credits at a minimum 1:1 ratio from a CDFW-approved mitigation bank. Alternatively, the County shall pay in-lieu fees to the USACE. Proof of purchase shall be provided to CDFW prior to the start of work.

b. Following project completion, the bank of Castle Creek shall be restored per the project description and riparian vegetation shall be replanted in accordance with the revegetation plan provided in the Biological Study Report (Appendix D of this Initial Study), and as may be modified in accordance with specification of permits issued by CDFW, USACE, and/or RWQCB.

Mitigation Measure 5: Avoid Effects to Special-Status Frogs

To avoid impacts to the Pacific tailed frog and the foothill yellow-legged frog, the following shall be implemented:

a. On each day in which in-stream work would occur, a qualified biologist shall conduct a pre-construction survey for the Pacific tailed frog and foothill yellow-legged frog. Surveys are not required for work occurring in the dewatered portion of the stream channel.

b. Should juveniles or adults of the Pacific tailed frog or foothill yellow-legged frog be observed during the surveys, or by construction personnel at any time, all work shall be stopped within 50 feet of the animal until a qualified biologist can relocate the individuals. Should eggs of either species be observed, a qualified biologist shall identify and flag an area of avoidance; if full avoidance is not

possible, the egg masses shall be relocated outside of the work area by the qualified biologist.

Mitigation Measure 6: Avoid Effects to Nesting Birds

To avoid impacts to nesting birds and raptors protected under the federal Migratory Bird Treaty Act and California Fish and Game Code §3503 and §3503.5, including their nests and eggs, one of the following shall be implemented (removal of raptor nests at any time of year is prohibited unless appropriate permits are obtained):

a. Vegetation removal and other ground-disturbance activities associated with construction shall occur between September 1 and January 31, when birds are not nesting; or

b. If vegetation removal or ground disturbance activities occur during the nesting season (February 1 – August 31), a pre-construction nesting survey shall be conducted by a qualified biologist to identify active nests in and adjacent to the work area.

   The survey shall consider acoustic impacts and line-of-sight disturbances occurring as a result of the project in order to determine a sufficient survey radius to avoid nesting birds. At a minimum, the survey report shall include a description of the area surveyed, date and time of the survey, ambient conditions, bird species observed in the area, a description of any active nests observed, any evidence of breeding behaviors (e.g., courtship, carrying nest materials or food, etc.), and a description of any outstanding conditions that may have impacted the survey results (e.g., weather conditions, excess noise, the presence of predators, etc.).

   The results of the survey shall be submitted electronically to the California Department of Fish and Wildlife at R1CEQARedding@wildlife.ca.gov upon completion. The survey shall be conducted no more than one week prior to the initiation of construction. If construction activities are delayed or suspended for more than one week after the pre-construction survey, the site shall be resurveyed.

   If active nests are found, appropriate actions shall be implemented to ensure compliance with the Migratory Bird Treaty Act and California Fish and Game Code. Compliance measures may include, but are not limited to, exclusion buffers, sound-attenuation measures, seasonal work closures based on the known biology and life history of the species identified in the survey, as well as ongoing monitoring by biologists.

Mitigation Measure 7: Minimize the Introduction and Spread of Noxious Weeds

The potential for introduction and spread of noxious weeds shall be avoided/minimized by:

a. Using only certified weed-free erosion control materials, mulch, and seed;

b. Limiting any import or export of fill material to material that is known to be weed free; and

c. Requiring the construction contractor to thoroughly wash all equipment at a commercial wash facility prior to entering the job site and upon leaving the job site.

11. REFERENCES CITED

Barbour, R. W., and W. H. Davis. 1969. Bats of America. Univ. of Kentucky Press, Lexington. 286pp.

California Invasive Plant Council (Cal-IPC). 2022. The Cal-IPC Inventory. <https://www.cal-ipc.org/plants/inventory/>. Accessed October 2022.

California Department of Fish and Wildlife. 2022. California Natural Diversity Database, October 2022 data.

_____. 2021. California Sensitive Natural Communities. <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153609&inline>. Accessed October 2022.

California Department of Food and Agriculture. 2021. California Noxious Weeds Data Sheets. <https://www.cdfa.ca.gov/plant/IPC/encycloweedia/weedinfo/winfo_table-sciname.html>. Accessed June 2022.

_____. 2022. Encycloweedia: Weed Ratings. <https://www.cdfa.ca.gov/plant/IPC/encycloweedia/winfo_weedratings.html>. Accessed June 2022.

California Native Plant Society (CNPS), Rare Plant Program. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). <://www.rareplants.cnps.org>. Accessed October 2022.

Krutzsch, P. H. 1955. Observations on the Mexican free-tailed bat, Tadarida mexicana. J. Mammal. 36:236-242.

U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). 2022. Web Soil Survey. <http://websoilsurvey.nrcs.usda.gov/app/>. Accessed June 2022.

United States Fish and Wildlife Service (USFWS). 2022. Official Species List. Accessed October 2022.

United States Geological Survey. 1985. Dunsmuir, California, 7.5-minute topographic map.

Vaughan, T. A. 1959. Functional morphology of three bats: Eumops, Myotis, Macrotus. Univ. Kans., Mus. Nat. Hist. Publ. 12:1-153.

Western Regional Climate Center. 2022. Dunsmuir, California (042572). <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca2572>.

TABLES

TABLE 1
Rarefind (CNDDB) Report Summary
Castella Intake Replacement Project; Five-Mile Radius of Project Area
October 2022

Listed Element	Status [2]				
	DU	CHH	SLB	TM	
ANIMALS					
American peregrine falcon*	●				FD, SD, SFP
Bilobed rhyacophilan caddisfly*	●				None
California wolverine	●				ST, SFP
Cascades frog	●				SCE, SSSC
Castle Crags rhyacophilan caddisfly*	●				None
Confusion caddisfly*	●				None
Fisher	●		●	●	SSSC
Foothill yellow-legged frog - north coast DPS	●		●	●	SSSC
Leaden slug			●		None
Long-eared myotis*	●			●	None
Northern goshawk	●				SSSC
Obscure bumble bee	●				None
Osprey	●				WL
Pacific tailed frog	●		●	●	SSSC
Shasta hesperian				●	None
Spotted bat			●		SSSC
Western mastiff bat	●				SSSC
Western pearlshell				●	None
Western pond turtle				●	SSSC
Western ridged mussel				●	None
PLANTS					
Baker's globe mallow				●	4.2
Cascade grass-of-Parnassus	●	●	●		2B.2
Castle Crags harebell	●				1B.3
Castle Crags ivesia	●				1B.3
Oregon fireweed	●				1B.2
Rattlesnake fern	●			●	2B.2
Shasta limestone monkeyflower				●	1B.1

Highlighting denotes the quadrangle in which the project site is located
*Denotes species on the project site

[1]QUADRANGLE CODE

DU	Dunsmuir	SLB	Seven Lakes Basin
CHH	Chicken Hawk Hill	TM	Tombstone Mtn.

[2]STATUS CODES

Federal

FE	Federally Listed – Endangered
FT	Federally Listed – Threatened
FC	Federal Candidate Species
FP	Federal Proposed Species
FD	Federally Delisted
FSC	Federal Species of Concern

State

SFP	State Fully Protected
SR	State Rare
SE	State Listed – Endangered
ST	State Listed – Threatened
SC	State Candidate Species
SCE	State Candidate Endangered
SD	State Delisted
SSSC	State Species of Special Concern
WL	Watch List

Rare Plant Rank

1A	Plants Presumed Extinct in California
1B	Plants Rare, Threatened or Endangered in California and Elsewhere
2	Plants Rare, Threatened, or Endangered in California, but More Common Elsewhere
3	Plants About Which We Need More Information *(A Review List)* (generally not considered special-status, unless unusual circumstances warrant)
4	Plants of Limited Distribution *(A Watch List)* (generally not considered special-status, unless unusual circumstances warrant)

Rare Plant Threat Ranks

0.1 Seriously Threatened in California

0.2 Fairly Threatened in California

0.3 Not Very Threatened in California

Natural Community Rank

Global Ranking

G1 Critically Imperiled	Critically imperiled in the state because of extreme rarity (often five or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation.
G2 Imperiled	Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation.
G3 Vulnerable	Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
G4 Apparently Secure	Uncommon but not rare; some cause for long-term concern due to declines or other factors.
G5 Secure	Common, widespread, and abundant in the state.

State Ranking

S1 Critically Imperiled	Critically imperiled in the state because of extreme rarity (often 5 or fewer populations) or because of factor(s) such as very steep declines making it especially vulnerable to extirpation from the state.
S2 Imperiled	Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.
S3 Vulnerable	Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state.
S4 Apparently Secure	Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors.
S5 Secure	Common, widespread, and abundant in the state.

TABLE 2
California Native Plant Society
Inventory of Rare and Endangered Plants
U.S. Geological Survey's Dunsmuir 7.5-minute Quadrangle

Common Name	Scientific Name	CA Rare Plant Rank	Blooming Period	State Listing Status	Federal Listing Status
California lady's-slipper	*Cypripedium californicum*	4.2	Apr-Aug (Sep)	None	None
California pitcherplant	*Darlingtonia californica*	4.2	Apr-Aug	None	None
Cascade grass-of-Parnassus	*Parnassia cirrata* var. *intermedia*	2B.2	(Jul) Aug-Sep	None	None
Castle Crags harebell	*Campanula shetleri*	1B.3	Jun-Sep	None	None
Castle Crags ivesia	*Ivesia longibracteata*	1B.3	Jun	None	None
Howell's draba	*Draba howellii*	4.3	Jun-Jul	None	None
Klamath fawn lily	*Erythronium klamathense*	2B.2	Apr-Jul	None	None
Klamath rock daisy	*Eigeron petrophilus var. viscidulus*	4.3	Jul-Sep	None	None
Marsh claytonia	*Claytonia palustris*	4.3	May-Oct	None	None
Mountain lady's-slipper	*Cypripedium montanum*	4.2	Mar-Aug	None	None
Oregon fireweed	*Epilobium oreganum*	1B.2	Jun-Sep	None	None
Pacific fuzzwort	*Ptilidium californicum*	4.3	May-Aug	None	None
Rattlesnake fern	*Botrypus virginianus*	2B.2	Jun-Sep	None	None
Redding checkerbloom	*Sidalcea celata*	3	Apr-Aug	None	None
Redwood lily	*Lilium rubescens*	4.2	Apr-Aug (Sep)	None	None
Shasta County arnica	*Arnica venosa*	4.2	May-Jul (Sep)	None	None
Siskiyou aster	*Eucephalus glabratus*	4.3	Jun-Sep	None	None
Thread-leaved beardtongue	*Penstemon filiformis*	4.2	May-Aug (Sep)	None	None

Rare Plant Rank	
1A	Plants Presumed Extinct in California
1B	Plants Rare, Threatened or Endangered in California and Elsewhere
2	Plants Rare, Threatened, or Endangered in California, but More Common Elsewhere
3	Plants About Which We Need More Information – A Review List (generally not considered special-status, unless unusual circumstances warrant)
4	Plants of Limited Distribution – A Watch List (generally not considered special-status, unless unusual circumstances warrant)
Rare Plant Threat Rank	
0.1	Seriously Threatened in California
0.2	Fairly Threatened in California
0.3	Not Very Threatened in California

Source: *California Native Plant Society, Rare Plant Program. 2022. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). http://www.rareplants.cnps.org. Accessed October 4, 2022.*

TABLE 3
Potential for Special-Status Species to Occur on the Project Site
Castella Intake Replacement Project
October 2022

COMMON NAME	SCIENTIFIC NAME	STATUS [1]	GENERAL HABITAT DESCRIPTION	HABITAT PRESENT (Y/N)	CRITICAL HABITAT PRESENT (Y/N)	SPECIES PRESENT (Y/N/POT.)	RATIONALE/COMMENTS
PLANTS							
Cascade grass-of-Parnassus	*Parnassa cirrata* var. *intermedia*	2B.2	Cascade grass-of-Parnassus occurs on rocky serpentine soils in lower and upper montane coniferous forests, meadows, seeps, bogs, or fens. The species is reported between 2,500 and 6,500 feet in elevation. The flowering period is August through September.	No	No	No	No potentially suitable habitat for Cascade grass-of-Parnassus is present in the project site. Cascade grass-of-Parnassus was not observed during the botanical survey and is not expected to be present.
Castle Crags harebell	*Campanula shetleri*	1B.3	Castle Crags harebell is a perennial rhizomatous herb that occurs on granite and diorite cliffs near Castle Crags. The species is reported between 4,000 and 6,000 feet in elevation. The flowering period is June through September.	No	No	No	No potentially suitable habitat for Castle Crags harebell is present in the project site. Castle Crags harebell was not observed during the botanical survey and is not expected to be present.
Castle Crags ivesia	*Ivesia longibracteata*	1B.3	Castle Crags ivesia is a perennial herb that occurs on granite and diorite outcrops near and above the timberline in the vicinity of Castle Crags. The species is reported between 3,900 and 4,600 feet in elevation. The flowering period is June.	No	No	No	No potentially suitable habitat for Castle Crags ivesia is present in the project site. Castle Crags ivesia was not observed during the botanical survey and is not expected to be present.
Klamath fawn lily	*Erythronium klamathense*	2B.2	Klamath fawn lily is a perennial bulbiferous herb that occurs in meadows and seeps in upper montane coniferous forests. The species is reported between 3,900 and 6,100 feet in elevation. The flowering period is April through July.	No	No	No	No potentially suitable habitat for Klamath fawn lily is present in the project site. The species was not observed during the botanical survey and is not expected to be present.
Oregon fireweed	*Epilobium oreganum*	1B.2	Oregon fireweed is associated with springs, bogs, fens, and meadows in montane coniferous forest. The species is reported between 1,600 and 7,400 feet in elevation. The flowering period is June through September.	No	No	No	No potentially suitable habitat for Oregon fireweed is present in the project site. The species was not observed during the botanical survey and is not expected to be present.

TABLE 3
Potential for Special-Status Species to Occur on the Project Site
Castella Intake Replacement Project
October 2022

COMMON NAME	SCIENTIFIC NAME	STATUS [1]	GENERAL HABITAT DESCRIPTION	HABITAT PRESENT (Y/N)	CRITICAL HABITAT PRESENT (Y/N)	SPECIES PRESENT (Y/N/POT.)	RATIONALE/COMMENTS
Rattlesnake fern	*Botrypus virginianus*	2B.2	Rattlesnake fern is a perennial herb that occurs in bogs, ferns, lower montane coniferous forests, meadows, seeps, and riparian forests. The species is reported between 2,300 and 4,500 feet in elevation. The flowering period is June through September.	No	No	No	According to CNDDB records, the rattlesnake fern has been observed approximately 0.5 miles southwest of the project site in 2006. No potentially suitable habitat for rattlesnake fern is present in the project site. Rattlesnake fern was not observed during the botanical survey and is not expected to be present.
Shasta limestone monkeyflower	*Erythranthe taylorii*	1B.1	Shasta limestone monkeyflower is an annual herb that occurs on limestone rocks in the vicinity of Shasta Lake. The species is reported between 1,100 and 3,300 feet in elevation. The flowering period is April through May.	No	No	No	No potentially suitable habitat for Shasta limestone monkeyflower is present in the project site. The species was not observed during the botanical survey and is not expected to be present.
INVERTEBRATES							
Conservancy fairy shrimp	*Branchinecta conservatio*	FE	Conservancy fairy shrimp inhabit large, cool-water vernal pools with moderately turbid water.	No	No	No	No vernal pools or other potentially suitable habitats for Conservancy fairy shrimp are present in the project site. Conservancy fairy shrimp would thus not be present.
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT	Vernal pool fairy shrimp inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump or basalt-flow depression pools.	No	No	No	No vernal pools or other potentially suitable habitats for vernal pool fairy shrimp are present in the project site. Vernal pool fairy shrimp would thus not be present.

TABLE 3
Potential for Special-Status Species to Occur on the Project Site
Castella Intake Replacement Project
October 2022

COMMON NAME	SCIENTIFIC NAME	STATUS [1]	GENERAL HABITAT DESCRIPTION	HABITAT PRESENT (Y/N)	CRITICAL HABITAT PRESENT (Y/N)	SPECIES PRESENT (Y/N/POT.)	RATIONALE/COMMENTS
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE	Vernal pool tadpole shrimp occur in vernal pools in California's Central Valley and in the surrounding foothills.	No	No	No	No vernal pools or other potentially suitable habitats for vernal pool tadpole shrimp are present in the project site. Vernal pool tadpole shrimp would thus not be present.
BIRDS							
American peregrine falcon	*Falco peregrinus anatum*	FD, SD, SFP	American peregrine falcons frequent water bodies in open areas with cliffs and canyons nearby for nesting. This falcon feeds and breeds near water.	No	No	No	No suitable nesting habitat for the American peregrine falcon is present in the project site or vicinity. Thus, the American peregrine falcon would not nest in the project site.
Northern goshawk	*Accipiter gentilis*	SSSC	Northern goshawks generally nest on north-facing slopes near water in old-growth coniferous and deciduous forests. Goshawks re-use old nests and maintain alternate nest sites.	No	No	No	No suitable nesting habitat for the northern goshawk is present in the project site or vicinity. Thus, the northern goshawk would not nest in the project site.
Northern spotted owl	*Strix occidentalis caurina*	FT, SC, SSSC	Northern spotted owls inhabit dense, old-growth, multi-layered mixed conifer, redwood, and Douglas-fir forests from sea level to approximately 7,600 feet in elevation. Northern spotted owls typically nest in tree cavities, the broken tops of trees, or in snags.	No	No	No	No old-growth forest or potentially suitable nesting trees/snags are present in the project site or vicinity. Thus, the spotted owl is not expected to nest in the project site.
Yellow-billed cuckoo	*Coccyzus americanus*	FT, SE	Western yellow-billed cuckoos inhabit and nest in extensive deciduous riparian thickets or forests with dense, low-level or understory foliage, and which abut slow-moving watercourses, backwaters, or seeps. Willows are almost always a dominant component of the vegetation.	No	No	No	No suitable nesting habitat for the yellow-billed cuckoo is present in the project site or vicinity. Thus, the species is not expected to nest in the project site.
AMPHIBIANS							

TABLE 3
Potential for Special-Status Species to Occur on the Project Site
Castella Intake Replacement Project
October 2022

COMMON NAME	SCIENTIFIC NAME	STATUS [1]	GENERAL HABITAT DESCRIPTION	HABITAT PRESENT (Y/N)	CRITICAL HABITAT PRESENT (Y/N)	SPECIES PRESENT (Y/N/POT.)	RATIONALE/COMMENTS
Cascades frog	*Rana cascadae*	SCE, SSSC	In the Klamath Mountains and southern Cascades of Northern California, the Cascades frog is typically found above 5,000 feet in elevation. Cascades frogs inhabit alpine lakes, inlet and outlet streams to mountain lakes, ponds, and meadows.	No	No	No	No suitable habitat for the Cascades frog is present in the project site or vicinity. Thus, the Cascades frog would not be present.
Foothill yellow-legged frog, north coast DPS	*Rana boylii*	SSSC	Foothill yellow-legged frogs are typically found in shallow, partly-shaded, perennial streams in areas with riffles and rocky substrates. This frog needs at least some cobble-sized substrate for egg-laying. Foothill yellow-legged frogs generally prefer low- to moderate-gradient streams, especially for breeding and egg-laying, although juvenile and adult frogs may utilize moderate- to steep-gradient streams during summer and early fall.	Yes	No	Pot.	According to CNDDB records, the foothill yellow-legged frog has been reported approximately 0.3 miles to the west of the project site in Castle Creek in 1995. Therefore, the foothill yellow-legged frog has the potential to be present in the project site.
Pacific tailed frog	*Ascaphus truei*	SSSC	In California, the Pacific tailed frog occurs in permanent streams of low temperatures in conifer-dominated habitats, including coast redwood, Douglas-fir, Klamath mixed-conifer, and ponderosa pine habitats. This frog also occurs in montane hardwood-conifer habitats. Pacific tailed frogs occur more often in mature or late-successional stands than in younger stands. During the day, adults seek cover under submerged rocks and logs in the stream or occasionally under similar surface objects close to the stream.	Yes	No	Pot.	Suitable habitat for the Pacific tailed frog is present in the project site and vicinity. Since Castle Creek is a tributary to the Sacramento River, the Pacific tailed frog has the potential to be present in the project site.

TABLE 3
Potential for Special-Status Species to Occur on the Project Site
Castella Intake Replacement Project
October 2022

COMMON NAME	SCIENTIFIC NAME	STATUS [1]	GENERAL HABITAT DESCRIPTION	HABITAT PRESENT (Y/N)	CRITICAL HABITAT PRESENT (Y/N)	SPECIES PRESENT (Y/N/POT.)	RATIONALE/COMMENTS
REPTILES							
Western pond turtle	*Emys marmorata*	SSSC	The western pond turtle associates with permanent or nearly permanent water in a variety of habitats. This turtle is typically found in quiet water environments. Pond turtles require basking sites such as partially submerged logs, rocks, or open mud banks, and suitable (sandy banks or grassy open fields) upland habitat for egg-laying. Nesting and courtship occur during spring. Nests are generally constructed within 500 feet of a waterbody, but some nests have been found up to 1,200 feet away. Pond turtles leave aquatic sites in the fall and overwinter in uplands nearby. Pond turtles return to aquatic sites in spring.	No	No	No	No suitable habitat occurs in the project site for the western pond turtle. The western pond turtle would thus not be present.
INSECTS							
Franklin's bumble bee	*Bombus franklini*	FE	Franklin's bumble bee has a very limited geographic distribution. The species may be found in Douglas, Josephine, and Jackson counties in Oregon, and in Siskiyou and Trinity counties in California. This species inhabits open grassy coastal prairies and Coast Range meadows from 540 feet to above 7800 feet in elevation. Important food plants include *Lupinus, Agastache, Monardella*, and *Vicia*. The flight season is from mid-May to the end of September. The nesting biology of this species is unknown, but it probably nests in abandoned rodent burrows. Very little is known about overwintering sites utilized by the species. Generally, bumble bees overwinter in soft, disturbed soil, or under leaf litter or other debris.	No	No	No	Franklin's bumble bee is not known to occur in Shasta County. Further, the study area is disturbed by ongoing activities and does not support an abundance of floral resources that would provide food for the bumble bee. Although the Franklin's bumble bees could potentially pass through the project area, they would not be affected by project implementation.

TABLE 3
Potential for Special-Status Species to Occur on the Project Site
Castella Intake Replacement Project
October 2022

COMMON NAME	SCIENTIFIC NAME	STATUS [1]	GENERAL HABITAT DESCRIPTION	HABITAT PRESENT (Y/N)	CRITICAL HABITAT PRESENT (Y/N)	SPECIES PRESENT (Y/N/POT.)	RATIONALE/COMMENTS
Monarch butterfly	*Danaus plexippus*	FC	Monarch butterflies are reliant on milkweed species for development and survival. Adults migrate from their overwintering sites on the California Coast, Baja California, and to some extent the central Mexico mountains in February and March and reach the northern limit of their North America range in California, Oregon, Washington, Idaho, and Nevada, in early to mid-June. Eggs are laid singly on milkweed plants within their breeding range. Once hatched, larva reach the adult stage in 20 to 35 days; adults live 2 to 5 weeks. Several generations can be produced within one season, with the last generation beginning migration to their overwintering range in August and September where they live between 6 and 9 months before migrating north.	No	No	Pot.	No milkweeds were observed in the project are during the field evaluation; therefore, there would be no direct impacts on pre-adult monarchs. Indirect impacts could occur if important nectar sources for the butterfly were removed. However, the study area is disturbed by ongoing activities and does not support an abundance of floral resources. Although the monarch butterfly could pass through the project area, the butterfly would not be affected by project implementation.
FISH							
Delta smelt	*Hypomesus transpacificus*	FT	Delta smelt primarily inhabit the brackish waters of Sacramento-San Joaquin River Delta. Most spawning occurs in backwater sloughs and channel edgewaters.	No	No	No	No suitable habitat occurs in the project site for the Delta smelt. The Delta smelt would thus not be present.
Longfin smelt	*Spirinchus thaleichthys*	FC	The longfin smelt is a pelagic fish that ranges from Alaska southward to the San Francisco Bay-Delta in California. The range includes at least 20 scattered populations found in estuaries, rivers, and lakes stretching from California to Alaska. The USFWS found that listing of the longfin smelt is warranted only for the Bay-Delta population, not range-wide.	No	No	No	No suitable habitat occurs in the project site for the longfin smelt. The longfin smelt would thus not be present.

TABLE 3
Potential for Special-Status Species to Occur on the Project Site
Castella Intake Replacement Project
October 2022

COMMON NAME	SCIENTIFIC NAME	STATUS [1]	GENERAL HABITAT DESCRIPTION	HABITAT PRESENT (Y/N)	CRITICAL HABITAT PRESENT (Y/N)	SPECIES PRESENT (Y/N/POT.)	RATIONALE/COMMENTS
MAMMALS							
California wolverine / North American Wolverine	*Gulo gulo* / *Gulo gulo luscus*	ST, SFP / FPT	Wolverines are dependent on areas in high mountains, near the tree-line, where conditions are cold year-round and snow cover persists well into the month of May. Female wolverines use birthing dens that are excavated in snow. Persistent, stable snow greater than 1.5 meters deep appears to be a requirement for birthing dens. Birthing dens consist of tunnels that contain well-used runways and bed sites and may naturally incorporate shrubs, rocks, and downed logs as part of their structure. Birthing dens may occur on rocky sites, such as north-facing boulder talus or subalpine cirques. Wolverines are very sensitive to human activities and often abandon den sites in response to human disturbance.	No	No	No	No suitable habitat occurs in the project site for the California wolverine / North American wolverine. The California wolverine / North American wolverine would thus not be present.
Fisher	*Pekania pennant*	SSSC	Fishers inhabit mixed conifer forests dominated by Douglas-fir, although they also are encountered frequently in higher elevation fir and pine forests, and mixed evergreen/broadleaf forests. Suitable habitat for fishers consists of large areas of mature, dense forest stands with snags and greater than 50 percent canopy closure. Fishers den in cavities in large trees, snags, logs, rocky areas, or shelters provided by slash or brush piles. Fishers are very sensitive to human activities. Den sites are most often found in areas with no human disturbance.	No	No	Yes	According to CNDDB records, a fisher was reported in the project vicinity in March 1984. Although fishers could potentially forage or stray in the project site, the species is not expected to den on the site due to the level of human activity nearby. Project implementation would have no adverse effect on fishers.

TABLE 3
Potential for Special-Status Species to Occur on the Project Site
Castella Intake Replacement Project
October 2022

COMMON NAME	SCIENTIFIC NAME	STATUS [1]	GENERAL HABITAT DESCRIPTION	HABITAT PRESENT (Y/N)	CRITICAL HABITAT PRESENT (Y/N)	SPECIES PRESENT (Y/N/POT.)	RATIONALE/COMMENTS
Gray wolf	*Canis lupus*	FE, SE	Gray wolves are habitat generalists and populations can be found in any type of habitat in the Northern Hemisphere from about 20° latitude to the polar ice pack. Key components of preferred wolf habitat include a year-round abundance of natural prey, secluded denning and rendezvous sites, and sufficient space with minimal human disturbance. Dens may be a hollow log or a tunnel excavated in loose soil. A den may have two or more entrances, which are usually indicated by a large pile of dirt. Den sites are often near water, and are usually elevated to detect approaching enemies. Wolf packs establish and defend territories that may range from 20 to 400 square miles. Wolves travel over large areas to hunt, and may cover as much as 30 miles in a day. Young wolves may disperse several hundred miles to seek out a mate or to establish their own pack.	No	No	No	A gray wolf pack, known as the "Shasta Pack" became established in southeastern Siskiyou County in the spring of 2015. Continued dispersal of wolves into California is expected. Although gray wolves can travel approximately 30 miles each day, and could potentially stray near the project sites, gray wolves would not be expected to stray onto or den in the project sites given the extent of human activity and urbanization in and adjacent to the project sites.
Spotted bat	*Euderma maculatum*	SSSC	Spotted bats inhabit grasslands, mixed coniferous forests, and deserts. Spotted bats typically roost in cliff crevices, but may also roost in caves, and manmade structures. Roosts usually occur near suitable foraging areas (i.e., open water, meadows, riparian habitat, and forest openings).	Yes	No	Pot.	Suitable foraging habitat for the spotted bat is present in the project site and vicinity; however, this species generally roosts in cliffs which are not present in the study area or vicinity. Therefore, although this species may occur in the project area it would not be adversely affected by project implementation.

TABLE 3
Potential for Special-Status Species to Occur on the Project Site
Castella Intake Replacement Project
October 2022

COMMON NAME	SCIENTIFIC NAME	STATUS [1]	GENERAL HABITAT DESCRIPTION	HABITAT PRESENT (Y/N)	CRITICAL HABITAT PRESENT (Y/N)	SPECIES PRESENT (Y/N/POT.)	RATIONALE/COMMENTS
Western mastiff bat	*Eumops perotis californicus*	SSSC	The western mastiff bat is the largest native bat in the continental United States. This bat occurs in a variety of open, semi-arid to arid habitats, including coniferous forests, deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban areas. The western mastiff bat typically roosts in crevices in rocky canyons and cliffs where the canyon or cliff face is vertical or nearly vertical. The species may also roost in trees, tunnels, buildings, or other manmade structures. Suitable roost sites feature an unobstructed drop-off of at least 6.5 feet to provide takeoff or launching area for flight, with no obstructions.	Yes	No	Pot.	Suitable habitat for the western mastiff bat is present in the project site and vicinity. Although the western mastiff bat could potentially forage in the study area, no roosting habitat would be affected; project implementation would thus not adversely affect the bat.

[1] Status Codes

Federal:

FE	Federally Listed – Endangered
FT	Federally Listed – Threatened
FC	Federal Candidate Species
FP	Federal Proposed Species
FPT	Federal Proposed – Threatened
FD	Federal Delisted

State:

SFP	State Fully Protected
SR	State Rare
SE	State Listed - Endangered
ST	State Listed - Threatened
SC	State Candidate Species
SCE	State Candidate Endangered
SSSC	State Species of Special Concern
WL	Watch List

Rare Plant Rank

1A	Plants Presumed Extinct in California
1B	Plants Rare, Threatened or Endangered in California and Elsewhere
2A	Presumed Extirpated in California, but More Common Elsewhere
2B	Rare or Endangered in California, but More Common Elsewhere

Rare Plant Threat Rank

0.1	Seriously Threatened in California
0.2	Fairly Threatened in California
0.3	Not Very Threatened in California

TABLE 4

Potential to Occur: Migratory Birds of Conservation Concern Identified by the U.S. Fish and Wildlife Service

Castella Intake Replacement Project October 2022

Common Name	Scientific Name	General Habitat Description	Habitat Present (Y/N)	Species Present (Y/N/POT.)	Rationale/Comments
Bald eagle	*Haliaeetus leucocephalus*	Bald eagles nest in large, old-growth trees or snags in mixed stands near open bodies of water. Adults tend to use the same breeding areas year after year and often use the same nest, though a breeding area may include one or more alternate nests. Bald eagles usually do not begin nesting if human disturbance is evident. In California, the bald eagle nesting season is from January through September.	No	No	A narrow band of riparian vegetation borders both sides of Castle Creek, but is too small to provide suitable nesting habitat for the bald eagle. Additionally, the site is located adjacent to Interstate 5 and receives much noise disturbance. Therefore, bald eagles may migrate through the area, however the species is not expected to nest on the project site.
Evening grosbeak	*Coccothraustes vepertinus*	Evening grosbeaks winter in forests and feed in both deciduous and coniferous trees, typically at higher elevations. Nesting occurs in spruce-fir, pine-oak, pinyon-juniper, and aspen forests. The species breeds between May and August.	No	No	According to the *Birds of Shasta County* checklist, evening grosbeaks are rarely encountered in Shasta County. Although evening grosbeaks may migrate through the area, the species is not expected to nest on the project site.
Golden eagle	*Aquila chrysaetos*	Golden eagles inhabit oak woodlands, coniferous forests, and deserts. Nesting habitat consists of large trees in open areas or cliff-walled canyons. The species breeds between January and August.	No	No	According to the *Birds of Shasta County* checklist, golden eagles are rarely encountered in Shasta County. No suitable nesting habitat for golden eagles is present on the project sites or vicinity. Thus, the golden eagle is not expected to nest in the project area.
Olive-sided flycatcher	*Contopus cooperi*	Olive-sided flycatchers breed in montane and northern coniferous forests, at forest edges and openings, such as meadows and ponds. The nest is an open cup of twigs, rootlets, and lichens, placed out near the tip of a horizontal branch of a tree. The breeding season extends from May 20 to August 31.	Yes	Pot.	According to the *Birds of Shasta County* checklist, olive-sided flycatchers are common in Shasta County. The project area provides suitable nesting trees and is adjacent to an opening that may be used for foraging. Therefore, the olive-sided flycatcher has the potential to nest in and adjacent to the project site.

TABLE 4

Potential to Occur: Migratory Birds of Conservation Concern Identified by the U.S. Fish and Wildlife Service

Castella Intake Replacement Project October 2022

Common Name	Scientific Name	General Habitat Description	Habitat Present (Y/N)	Species Present (Y/N/POT.)	Rationale/Comments
Rufous hummingbird	*Selasphorus rufus*	Rufous hummingbirds nest in coniferous or deciduous trees, and occasionally ferns or vines. Throughout migration, they pass through mountain meadows where nectar-rich, tubular flowers are blooming. The breeding season for this species is between April to July	Yes	Pot.	According to the *Birds of Shasta County* checklist, rufous hummingbirds are common in Shasta County. The project site provides suitable nesting habitat for this species along the banks of Castle Creek.
Wrentit	*Chamaea fasciata*	Wrentit nesting habitat consists of dense low growth. Most commonly chaparral, poison oak thickets, and coastal sage scrub, the species may also inhabit streamside thickets and shrubby areas in suburbs and city parks. The species breeds between March to August.	Yes	Pot.	According to the *Birds of Shasta County* checklist, wrentits are common in Shasta County. The species has the potential to nest in the vegetation along the banks of Castle Creek and in the vicinity of the project area.

Sources:

The Cornell Lab of Ornithology, *All About Birds*. 2022. https://www.allaboutbirds.org/guide/search/

California Natural Diversity Database (CNDDB), RareFind 5 and BIOS Viewer

Wintu Audubon Society, *Birds of Shasta County*. 2005. https://www.wintuaudubon.org/Bird_Lists/pdf_2005%20Shasta%20Co%20Bird%20List.pdf

TABLE 5
Tree Survey Results
Castella Water Intake Replacement Project
July 2022

ID Number	Common Name	Scientific Name	Diameter at Breast Height (inches)
1	Black Cottonwood	*Populus balsamifera* ssp. *trichocarpa*	5
8	Black Cottonwood	*Populus balsamifera* ssp. *trichocarpa*	6
9	Black Cottonwood	*Populus balsamifera* ssp. *trichocarpa*	9
10	Black Cottonwood	*Populus balsamifera* ssp. *trichocarpa*	9
11	Black Cottonwood	*Populus balsamifera* ssp. *trichocarpa*	6
12	Incense-Cedar	*Calocedrus decurrens*	5
13	Incense-Cedar	*Calocedrus decurrens*	6
15	Ponderosa Pine	*Pinus ponderosa*	9
16	Ponderosa Pine	*Pinus ponderosa*	6
17	Black Cottonwood	*Populus balsamifera* ssp. *trichocarpa*	5
18	Black Cottonwood	*Populus balsamifera* ssp. *trichocarpa*	10
19	Black Cottonwood	*Populus balsamifera* ssp. *trichocarpa*	6
20	Black Cottonwood	*Populus balsamifera* ssp. *trichocarpa*	9
21	Black Cottonwood	*Populus balsamifera* ssp. *trichocarpa*	9
22	Ponderosa Pine	*Pinus ponderosa*	6
23	Black Cottonwood	*Populus balsamifera* ssp. *trichocarpa*	6
24	California Black Oak	*Quercus kelloggii*	8
25	Ponderosa Pine	*Pinus ponderosa*	9
26	Ponderosa Pine	*Pinus ponderosa*	5
27	Ponderosa Pine	*Pinus ponderosa*	24
28	Ponderosa Pine	*Pinus ponderosa*	14
29	Ponderosa Pine	*Pinus ponderosa*	17
30	Ponderosa Pine	*Pinus ponderosa*	14
31	Ponderosa Pine	*Pinus ponderosa*	8
32	Ponderosa Pine	*Pinus ponderosa*	9
33	Ponderosa Pine	*Pinus ponderosa*	15
34	Ponderosa Pine	*Pinus ponderosa*	15
35	Ponderosa Pine	*Pinus ponderosa*	20
36	Ponderosa Pine	*Pinus ponderosa*	9
37	Pacific Madrone	*Arbutus menziesii*	5
38	Ponderosa Pine	*Pinus ponderosa*	21
39	Ponderosa Pine	*Pinus ponderosa*	11
40	Incense-Cedar	*Calocedrus decurrens*	8

41 (north)	Ponderosa Pine	*Pinus ponderosa*	11
41 (south)	Ponderosa Pine	*Pinus ponderosa*	13
42	Black Cottonwood	*Populus balsamifera* ssp. *trichocarpa*	11
43	White Alder	*Alnus rhombifolia*	8
44	White Alder	*Alnus rhombifolia*	9
45	White Alder	*Alnus rhombifolia*	9
46	Black Cottonwood	*Populus balsamifera* ssp. *trichocarpa*	13
48	White Alder	*Alnus rhombifolia*	12
49	White Alder	*Alnus rhombifolia*	7
50	Black Cottonwood	*Populus balsamifera* ssp. *trichocarpa*	6
51	Ponderosa Pine	*Pinus ponderosa*	13
52 (north)	White Alder	*Alnus rhombifolia*	7
52 (south)	White Alder	*Alnus rhombifolia*	7
53	White Alder	*Alnus rhombifolia*	7
54	White Alder	*Alnus rhombifolia*	5
55	White Alder	*Alnus rhombifolia*	7
56	White Alder	*Alnus rhombifolia*	10
57	White Alder	*Alnus rhombifolia*	5
58	White Alder	*Alnus rhombifolia*	5
59	Incense-Cedar	*Calocedrus decurrens*	5
60	White Alder	*Alnus rhombifolia*	7
61	Pacific Willow	*Salix lucida* var. *lasiandra*	9
62	White Alder	*Alnus rhombifolia*	9
63	White Alder	*Alnus rhombifolia*	13
64	Black Cottonwood	*Populus balsamifera* ssp. *trichocarpa*	13
65	Black Cottonwood	*Populus balsamifera* ssp. *trichocarpa*	14
66	White Alder	*Alnus rhombifolia*	15

APPENDIX A

RESUMES

Donald Burk, Environmental Services Manager

Allison Loveless, Environmental Scientist

Sabrina Rouse, Environmental Planner

Hannah Raab, Environmental Planner

DONALD M. BURK

Environmental Services Manager

Education

M.S. Botany
California State University, Chico

B.A. Chemistry and Biological Sciences
California State University, Chico

Professional Affiliations and Certifications

California Botanical Society
California Native Plant Society
Association of Environmental Professionals

Donald Burk has an in-depth background in a broad spectrum of environmental studies. His academic background includes graduate studies in environmental analysis methodology, biological sciences, and community planning. He has continued his professional development through completion of specialized courses in wetland delineation; wetland impacts and mitigations; vernal pool restoration and creation; noise assessments; Surface Mining and Reclamation Act regulations; erosion control practices; and hazardous materials evaluation and remediation.

As environmental services manager with ENPLAN, Mr. Burk is instrumental in the preparation of environmental documents such as site assessment reports, environmental impact reports, biological studies, and noise evaluations. His responsibilities include project team management, key decision-making, coordination with applicable agencies, and final review of environmental documents. Having worked in the environmental consulting field since 1981, Mr. Burk has the skills and experience to manage studies to achieve reliable data and concise, effective documentation in a timely and cost-efficient manner.

Representative Experience

- *CEQA/NEPA Compliance.* Prepared environmental impact reports, environmental impact statements, and other environmental compliance documentation for a multitude of projects, including 516- and 1,244-acre industrial parks; public facilities projects including several sewage treatment plants, a 90-foot-high earthen dam and 15-acre reservoir, a 6-mile-long, 8-lane roadway, other new road corridors, and water supply projects; shopping centers and highway commercial developments; a 10,000-seat church; a 475-acre recreation ranch; ski areas; a softball park; four new schools; a 1-million cubic yard reservoir dredging project; numerous residential developments and many other projects.
- *Environmental Site Assessments.* Managed preparation of Phase I site investigations for a number of commercial and industrial facilities, including about 150 such studies in Shasta County. Investigations have addressed wood-products manufacturing facilities, dry cleaners, medical facilities, ranches, a regional transmission transformer site, automotive shops and service stations, abandoned sewage treatment ponds, a shooting range, office buildings, shopping centers, and other uses.
- *Biological Studies.* Managed preparation of technical field studies, including wildlife and botanical studies for a 1,016-acre site in Sacramento County; fisheries, aquatic macroinvertebrate, and riparian vegetation studies for a 38-mile reach of the North Fork

Feather River; botanical surveys for 175-mile and 265-mile underground telephone cable corridors; botanical surveys for over 2,400 acres on Mount Shasta proposed for ski area development; biological surveys for a 200-acre park site; spotted owl surveys; vernal pool fairy/tadpole shrimp and valley elderberry longhorn beetle assessments; and numerous other projects.

- *Wetland Delineations.* Managed preparation of wetland delineations and/or U.S. Army Corps of Engineers permit applications for a 1,016-acre site east of Sacramento, a 200-acre site in north Redding, a 580-acre site in the City of Weed, a 100-acre site near the Redding Municipal Airport, a transmission corridor project in east Redding, a 78-acre industrial parcel in the City of Benicia, and many other parcels throughout northern California.
- *Noise Studies.* Prepared noise studies for a variety of projects, including numerous traffic corridors; large industrial facilities such as a co-generation plant, food processing plant, and a regional scrap metal recycling facility; recreation facilities such as a new ski area and a community sports complex; many new residential developments; schools; and other facilities. Testified as an expert witness in a court case involving noise generated by electric- and diesel-powered water well pumps.
- *Reclamation Plans/Stream Restoration Projects.* Prepared mine reclamation plans and/or technical studies for projects including an aggregate pit adjacent to Cow Creek in Shasta County, a pumice quarry in Napa County, and underground gold mines in Shasta and Trinity Counties. Managed preparation of a stream restoration project for a reach of the Susan River, which involved hydraulic analysis, preparation of an earth-work plan, supervision of all on-site construction activities, preparation of a revegetation/erosion control plan and supervision of its implementation, and preparation of a monitoring program. Developed a plan, and obtained all agency approvals, for creation of 10 acres of riparian forest habitat along the Sacramento River to mitigate losses on a nearby parcel.

Publications

Burk, Donald et al. (29 contributing authors). Technical Editors Gary Nakamura, UC Cooperative Extension Service and Julie Kierstead Nelson, USDA Forest Service, Shasta-Trinity National Forest. 2001. *Illustrated Field Guide to Selected Rare Plants of Northern California.* University of California, Agriculture and Natural Resources. Publication 3395.

Luper, J. and D. Burk. 2014. Noteworthy collections: *Froelichia gracilis* (Amaranthaceae). Madrono 61(4):413-413.

ALLISON LOVELESS

Environmental Scientist/Wildlife Biologist

Education

M.S. Zoology
Oklahoma State University, Stillwater

B.S. Geography (Environmental Studies)
University of California, Los Angeles

Prior to her career in the environmental services sector, Allison Loveless conducted field surveys for listed plants species with Sierra Pacific Industries, conducted morphological and geospatial research on mammals while at Oklahoma State University, and participated in genetic research on gray wolves during an internship with the Wyoming Fish and Game Wildlife Forensic Laboratory. Additionally, Allison has experience conducting genetic and morphological based research on isolated reptile and amphibian species, and in developing range predictions and assessments using both field and environmental modeling techniques.

Allison now has over five years of experience working in environmental services throughout northern California. Her projects have included biological studies such as endangered species surveys and nesting bird surveys, delivering on-site environmental trainings and monitoring, as well as delivering products by preparation of technical environmental documents including environmental impact reports, biological study reports, wetland delineations, biological assessments, and figure and map creation.

Representative Experience

- *Biological Studies*. Experience conducting habitat assessments, general wildlife surveys with an emphasis on species of concern, and pre-construction nesting bird surveys.
- *Wildlife Surveys.* Performed habitat assessments and general wildlife surveys, with an emphasis on species of concern. Such work has typically included pre-field review of available records including the California Natural Diversity Data Base (CNDDB), the U.S. Fish and Wildlife Service IPAC reports, and other available data sources.
- *Wetland Studies*. Performed wetland delineations and report preparation in compliance with the standards as defined by the U.S. Army Corps of Engineers.
- *GIS Mapping and Data Collection*. Skilled field data collection using GPS and Trimble units, map construction, managing, querying, and analyzing data within ArcGIS.
- *CEQA/NEPA Documentation*. Responsible for drafting environmental compliance documentation including biological study reports, natural environment studies, and biological sections of environmental impact reports and environmental impact statements.

Publications

Loveless, A.M. and K. McBee. 2017. *Nyctimene robinsoni* (Chiroptera: Pteropodidae). Mammalian Species 49 (949): 68-75.

Loveless, A.M., M. Papeş, D.M. Reding, and P.M. Kapfer. 2016. *Combining ecological niche modeling and morphology to assess the range-wide population genetic structure of bobcats (Lynx rufus).* The Biological Journal of the Linnean Society 117: 842-857.

SABRINA ROUSE

Environmental Planner

Education

B.S. Animal Sciences
Washington State University, Pullman, WA

Certificate of Study, Environmental and Natural Resources Planning
Cal Poly Humboldt, Arcata, CA

Sabrina Rouse is an environmental planner with experience in Geographic Information Systems (GIS) and CEQA and NEPA compliance. Project experience with ENPLAN includes water system infrastructure, wells, wastewater treatment plants, and water treatment plants. As an environmental planner with ENPLAN, her responsibilities include preparation and evaluation of environmental compliance documentation, technical research, data analysis, and GIS-based mapping.

Representative Experience

- *GIS Mapping, Database Management, and Data Collection*. Skilled in creating GIS-based maps for a variety of resource agencies using QGIS and ArcGIS Pro.
- *CEQA/NEPA Compliance.* Prepared and evaluated environmental compliance documentation, such as Initial Studies (IS), Mitigated Negative Declarations (MND), Notices of Exemption (NOE), and State Revolving Fund (SRF) Environmental Packages for public infrastructure projects. Project experience includes:
    - *City of Etna Water System Improvement Project* – Drinking Water SRF Environmental Package
    - *Burney Water System Improvement Project* – CEQA NOE
    - *Castella Water Intake Replacement Project* – CEQA IS/MND
    - *Fall River Valley Community Services District – Groundwater Test Well Project* – CEQA NOE
    - *Fall River Valley Community Services District – McArthur Wastewater System Expansion Project* – Clean Water SRF Environmental Package
    - *City of Weed Stormdrain Improvement Project* – CEQA IS/MND
    - *City of Yreka Wastewater Treatment Plant Improvements* – CEQA IS/MND
- *Technical Studies.* Prepared technical reports, conducted biological records searches, and prepared biological and wetland resource maps.
- *Biological Surveys.* Assisted with tree surveys, conducted construction monitoring to ensure compliance with mitigation measures and permit conditions.

HANNAH RAAB

Environmental Planner

Education

B.S. Environmental Science and Management (Natural Resource Management)
University of California, Davis, CA

Hannah Raab is an environmental planner with experience in CEQA and NEPA compliance, and Geographic Information Systems (GIS). Project experience with ENPLAN includes water system infrastructure, wells, wastewater treatment plants, and water treatment plants. As an environmental planner with ENPLAN, Ms. Raab's responsibilities include technical research, impact evaluation, preparation and evaluation of environmental compliance documentation, technical editing, and GIS-based mapping.

Representative Experience

- *GIS Mapping, Database Management, and Data Collection*. Skilled in creating GIS-based maps for a variety of resource agencies using QGIS and ArcGIS Pro.
- *CEQA/NEPA Compliance.* Prepared and evaluated environmental compliance documentation, such as Mitigated Negative Declarations (MND), Notices of Exemption (NOE), Mitigation Monitoring and Reporting Programs (MMRP), and associated components of State Revolving Fund (SRF) Environmental Packages for public infrastructure projects. Project experience includes:
    - *City of Etna Water System Improvement Project* – CEQA NOE
    - *City of Portola Water and Wastewater Improvements Project* – CEQA NOE
    - *City of Williams Well 11 Improvement Project* – MMRP
    - *Fall River Valley Community Services District – McArthur Wastewater System Expansion Project* – CEQA IS/MND
    - *Castella Water Intake Replacement Project* – CEQA IS/MND and Drinking Water State Revolving Fund (SRF) Environmental Package
    - *City of Weed Stormdrain Improvement Project* – CEQA IS/MND
    - *City of Yreka Wastewater Treatment Plant Improvements* – CEQA IS/MND
- *Technical Studies.* Prepared technical reports, conducted biological records searches, and prepared biological, wetland, and cultural resource maps.

APPENDIX B

REPRESENTATIVE PHOTOGRAPHS

Access route to Castella Intake structure, view to the west.

Castle Creek (1:PS), view to the east toward Interstate 5 overpass.

Seasonal Wetland (3:SW), view to the west.

View to the north, toward riparian habitat along Castle Creek.

APPENDIX C

U.S. FISH AND WILDLIFE SPECIES

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
Phone: (530) 842-5763 Fax: (530) 842-4517

In Reply Refer To: October 21, 2022
Project Code: 2023-0007541
Project Name: Shasta County CSA No. 3 Castella Water Intake Replacement Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
(530) 842-5763

Project Summary

Project Code: 2023-0007541

Project Name: Shasta County CSA No. 3 Castella Water Intake Replacement Project

Project Type: Water Supply Facility - Maintenance / Modification

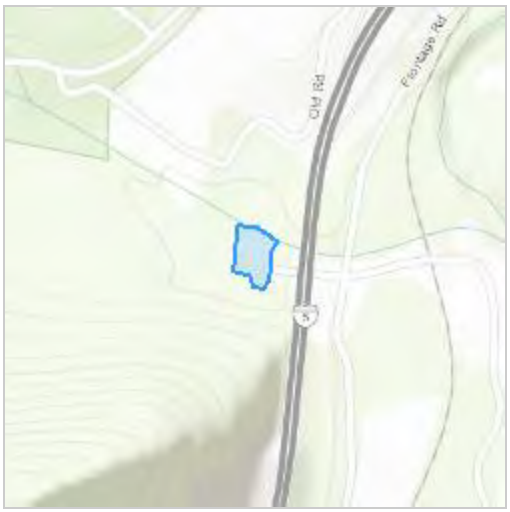
Project Description: The proposed project includes improvements to the Shasta County Community Services Area No. 3 Water Treatment Plant (WTP). Improvements include replacing an existing water intake structure within Castle Creek with an instream infiltration gallery, rehabilitation of an existing wet wellclearwell, installation of a new chemical injection vault, and replacing the existing electrical control system equipment with new efficient models. A new post-filter chlorination metering pump and day tank would be installed inside the WTP building, in addition to a new air compressor, new grating, and new filter and backwash control valves; a new post-filter chlorination vault and appurtenances would be installed to the north of the WTP building; a new surge tank would be installed on the east side of the building; and a new emergency generator, and automatic transfer switch, and propane tank would be installed to the south of the WTP building. The purpose of the proposed project is to replace aging infrastructure, and ensure a safe and reliable potable water supply for residents within Shasta County Community Services Area No. 3.

The proposed project is located within the unincorporated community of Castella in northern Shasta County; approximately 50 miles north of Redding and 5 miles south of Dunsmuir in Section 22, Township 38 North, Range 4 West of the U.S. Geological Survey (USGS) Dunsmuir 7.5-minute quadrangle. Latitude 41°08' 41 "N; Longitude 122°19' 07 "W (centroid).

Improvements would occur on the west side of Interstate 5 (I-5) at the Shasta County Community Services Area (CSA) No. 3 Water Treatment Plant (WTP) and within the streambed of Castle Creek. The WTP is located on two discontiguous County-owned lots and an intervening access corridor. The two County-owned lots are identified as a single parcel: Shasta County Assessor’s Parcel Number (APN) 014-600-016, which totals approximately 1.2 acres. The 80-foot wide access corridor is a portion of APN 014-600-015, a ±40.7-acre parcel owned by Eugene Ammirati. Temporary staging of construction materials and equipment would occur at the WTP; no physical improvements are needed to establish the staging area.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.144949499999996,-122.31864368013376,14z



Counties: Shasta County, California

Endangered Species Act Species

There is a total of 11 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Gray Wolf *Canis lupus* Population: U.S.A.: All of AL, AR, CA, CO, CT, DE, FL, GA, IA, IN, IL, KS, KY, LA, MA, MD, ME, MI, MO, MS, NC, ND, NE, NH, NJ, NV, NY, OH, OK, PA, RI, SC, SD, TN, TX, VA, VT, WI, and WV; and portions of AZ, NM, OR, UT, and WA. Mexico. There is **final** critical habitat for this species. Species profile: https://ecos.fws.gov/ecp/species/4488	Endangered
North American Wolverine *Gulo gulo luscus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Threatened
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.	
Species profile: https://ecos.fws.gov/ecp/species/321	
Longfin Smelt *Spirinchus thaleichthys*	Candidate
Population: San Francisco Bay-Delta DPS	
No critical habitat has been designated for this species.	
Species profile: https://ecos.fws.gov/ecp/species/9011	

Insects

NAME	STATUS
Franklin's Bumble Bee *Bombus franklini*	Endangered
No critical habitat has been designated for this species.	
Species profile: https://ecos.fws.gov/ecp/species/7022	
Monarch Butterfly *Danaus plexippus*	Candidate
No critical habitat has been designated for this species.	
Species profile: https://ecos.fws.gov/ecp/species/9743	

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio*	Endangered
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.	
Species profile: https://ecos.fws.gov/ecp/species/8246	
Vernal Pool Fairy Shrimp *Branchinecta lynchi*	Threatened
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.	
Species profile: https://ecos.fws.gov/ecp/species/498	
Vernal Pool Tadpole Shrimp *Lepidurus packardi*	Endangered
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.	
Species profile: https://ecos.fws.gov/ecp/species/2246	

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPaC User Contact Information

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APPENDIX D

REVEGETATION PLAN

REVEGETATION PLAN

CASTELLA WATER INTAKE REPLACEMENT PROJECT

SHASTA COUNTY SERVICE AREA NO. 3

SHASTA COUNTY, CALIFORNIA

November 2022

LEAD AGENCY:

Shasta County
1855 Placer St.
Redding, CA 96001-1759
530.225.5661

PREPARED BY:

ENPLAN
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Table of Contents

Castella Water Intake Replacement Project

Revegetation Plan

1.0 PROJECT LOCATION AND DESCRIPTION

Shasta County is proposing to improve the County Service Area No. 3 (CSA No. 3) water intake and water treatment plant (WTP). Proposed improvments include replacing the existing water intake structure within Castle Creek with a new in-stream infilitration gallery; rehabilitating an existing wet well; replacing the electrical controls with new, efficient models; and installing a new chemical injection vault, new post-filter chlorination vault and metering pump, a day tank, air compressor, grating, control valves, surge tank, emergency generator, and automatic transfer switch.

The proposed project is located within the unicorporated community of Castella in northern Shasta County, (see **Figure 1**). The Shasta County CSA No. 3 WTP is located west of Interstate 5 (I-5) and south of Castle Creek. The WTP is located on two discontiguous County-owned lots identified as one Assessor's Parcel Number (APN 014-600-016), which totals ±1.2 acres. The two lots are separated by an 80-foot-wide access corridor, which is a portion of APN 014-600-015 owned by Eugene Ammirati.

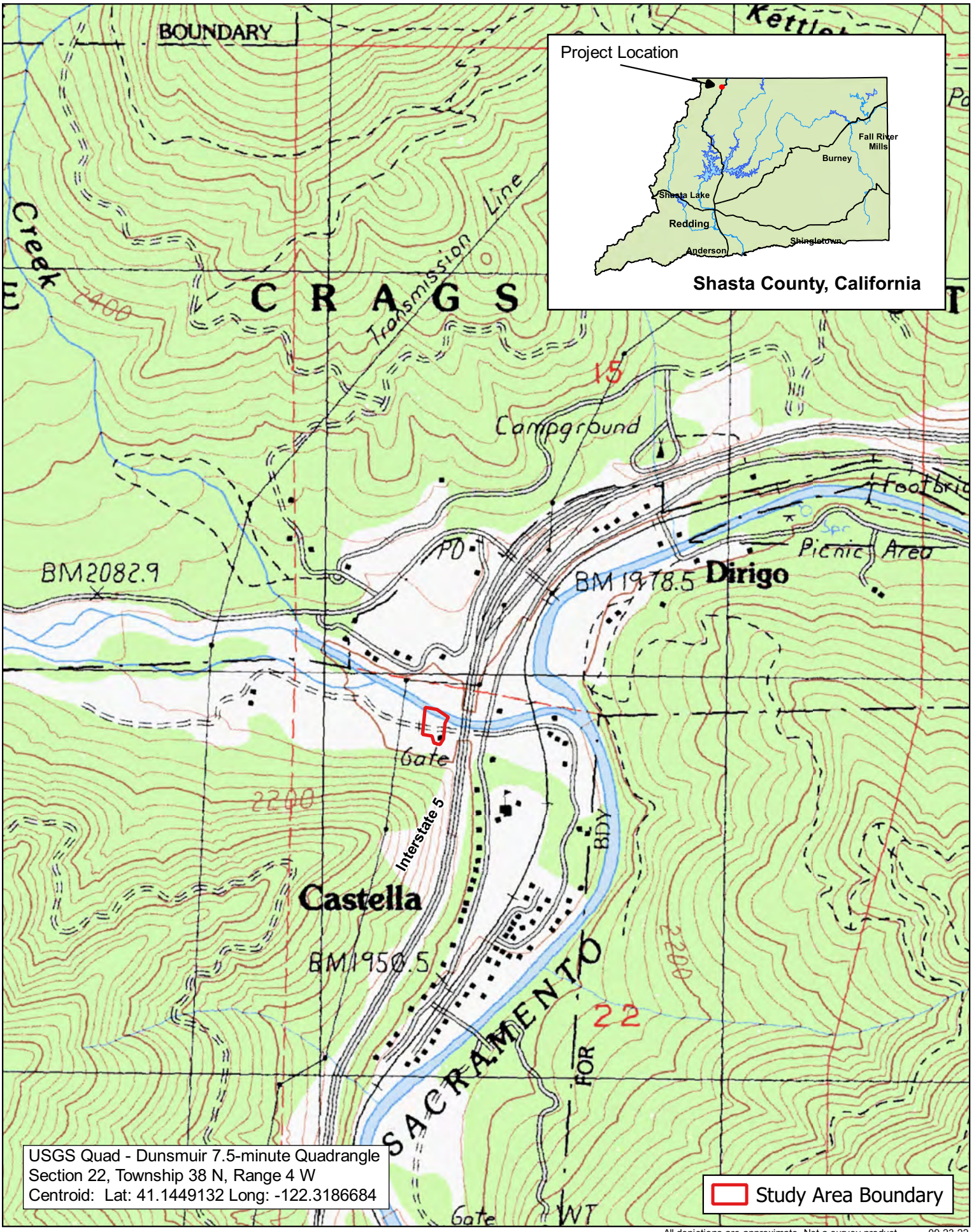

Figure 1

Project Vicinity and Location

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2.0 SENSITIVE NATURAL COMMUNITIES

The principal natural communities in the study area are stream/riverine, montane hardwood – conifer, annual grassland, barren, and montane riparian. Riverine habitat and montane riparian habitat are considered sensitive natural communities by the California Department of Fish and Wildlife (CDFW). In addition, the project area contains inclusions of seasonal wetlands that are also considered sensitive natural communities. **Figure 2** shows the on-site sensitive natural communities as well as the locations of on-site trees with a diameter at breast height (DBH) that is 5 inches or greater. The on-site sensitive communities are further described below.

Stream/Riverine

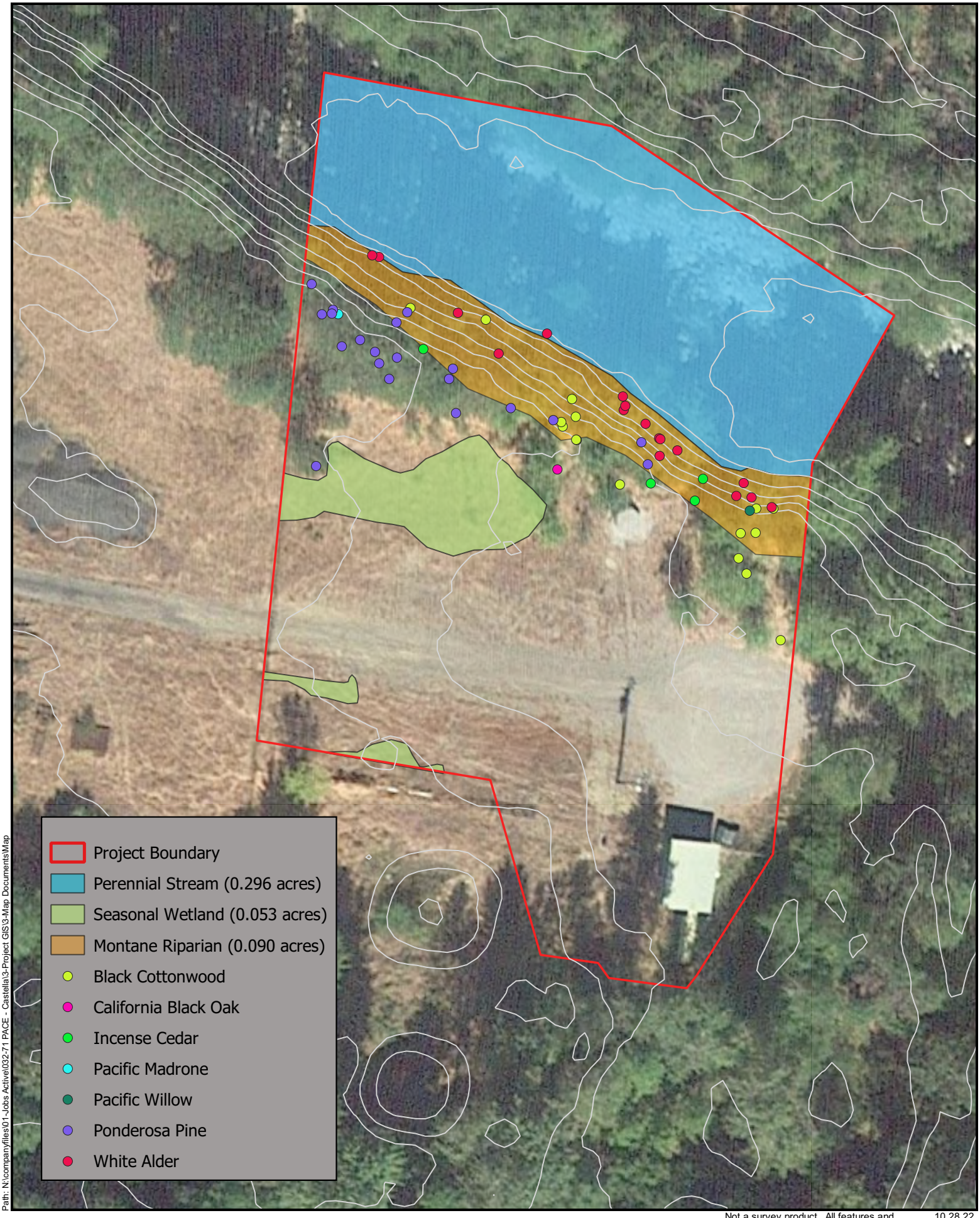
The stream/riverine habitat occurs in the project area as Castle Creek, an upper perennial stream tributary to the Sacramento River. Castle Creek flows for approximately 178 feet through the northern portion of the study area and is an average of 39 feet wide along that distance. The dominant in-stream substrate is cobbles and boulders.

The reach of Castle Creek within the project area may be utilized by a variety of fish and wildlife species. Pools and backwater areas provide breeding habitat for amphibians, while waterfowl forage for aquatic plants and invertebrates in slow moving sections of the stream. Small mammals such as beaver, river otter, and muskrat may use the stream as a location for nesting. Habitat complexity is provided by overhanging trees and shrubs, which provide shade, as well as by roots from trees and fallen vegetation that provide shelter for rearing fish and amphibians.

Montane Riparian

A narrow zone of montane riparian habitat borders the south side of Castle Creek in the project area. Montane riparian habitat is generally considered a sensitive community due to its high value for wildlife species. Riparian habitat provides cover, migration corridors, and nesting and foraging opportunities to a variety of wildlife.

Riparian species present in the project area include white alder (*Alnus rhombifolia*), American dogwood (*Cornus sericea* subsp. *sericea*), common horsetail (*Equisetum arvense*), big-leaf maple (*Acer macrophyllum*), black cottonwood (*Populus balsamifera* subsp. *trichocarpa*), Himalayan blackberry (*Rubus armeniacus*), and several species of willow (*Salix* spp.).



Path: N:\companyfiles\01-Jobs Active\032-71 PACE - Castella\3-Project GIS\3-Map Documents\Map

1" = 40'

0 20 40 Feet

Figure 2
Sensitive Habitat Types and Tree Survey Results

Not a survey product. All features and boundaries are preliminary until verified by the Army Corps of Engineers.

10.28.22

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Seasonal Wetlands

Three seasonal wetlands are present as inclusions within the annual grassland habitat. These features are generally considered to be sensitive communities due to the uniquely adapted flora and fauna species that may be present in them. Wetlands within the study area are represented by the following species: tall fescue (*Festuca arundinacea*), annual hairgrass (*Deschampsia danthonioides*), Mediterranean barley (*Hordeum marinum*), chicory (*Cichorium intybus*), and Spanish lotus (*Acmispon americanus*).

3.0 IMPACTS ON SENSITIVE NATURAL COMMUNITIES

Stream/Riverine

An estimated 0.30 acres of Castle Creek will be directly impacted due to the proposed project. Work within the ordinary high-water mark of Castle Creek will be temporary and will include the implementation of a water diversion and dewatering system during the installation of the new water intake gallery. A diversion/dewatering plan has been prepared and includes the use of a cofferdam and bypass pipes, water intake and discharge locations, and the potential use of settling tanks if needed to control turbidity. Additionally, the potential for indirect impacts downstream from the project site could result from increased turbidity and a temporary decrease in water quality. Because vegetation is not present within the riverine habitat, no revegetation will be necessary following project completion; therefore, no further discussion of Castle Creek is warranted in this revegetation plan.

Seasonal Wetlands

Approximately 0.053 acres of seasonal wetlands are present in the study area. Due to the limited space available at the project site, full avoidance of the wetlands is unlikely to occur. Instead, it is expected that the wetlands may be used for staging of equipment and materials or as part of an access route to Castle Creek. If this is the case, the wetlands would be protected through the use of wetland mats or similar materials that would protect wetland soils and plant roots, and allow speedy recovery of the wetland habitats upon completion of the project, with no human intervention.

Alternatively, it is possible that the contractor may need to excavate portions of the wetlands for equipment access or installation of subsurface facilities. If this were to

occur, then, in accordance with standard Corps of Engineers permit conditions (e.g., NWP 58: Utility Line Activities for Waters and Other Substances), the upper 6-12 inches of topsoil would be separately removed and stockpiled. Upon completion of construction, the wetland topography would be restored and the reserved topsoil would be applied as the uppermost soil layer. Because the restored wetlands would have their pre-construction topography, hydrology, surface soils, and seed bank, no further restoration work would be necessary following project completion. No further discussion of seasonal wetland restoration is needed in this revegetation plan.

Montane Riparian

Approximately 0.09 acres of montane riparian habitat is present in the study area. The riparian habitat includes 36 trees with a diameter at breast height (DBH) of greater than five inches. These trees include 17 white alders, 10 black cottonwoods, 6 ponderosa pines, 2 incense-cedars, and 1 Pacific willow. The extent of montane riparian habitat that will be impacted by project implementation is not known at this time and is dependent on the contractor's construction plans. However, tree removal will undoubtedly be necessary to provide equipment access to Castle Creek and for installation of subsurface water lines and other facilities. Section 4.0 of this report presents the actions to be taken to restore the on-site montane riparian habitat following completion of project construction.

4.0 REVEGETATION PLAN

4.1 Responsible Party

Shasta County is responsible for implementation of this Revegetation Plan. At the County's discretion, some or all activities may be delegated to contractors.

4.2 Contractor Qualifications

Implementation of this Revegetation Plan shall be overseen by a qualified biologist or landscape professional with documented habitat restoration experience. The installation contractor must have documented native habitat restoration experience.

4.3 Revegetation/Restoration Methods and Materials

Upon completion of construction activities, the project site shall be evaluated by a qualified biologist to determine the extent of impact sustained by the montane riparian habitat. The qualified biologist shall identify disturbed areas that need to be recontoured, re-seeded with herbaceous species, and/or replanted with woody species. The ground surface will then be restored to its pre-existing grade and the soil will be track-walked to achieve a density suitable for planting. Although the sloped southern bank of Castle Creek will be treated with rip rap to provide slope stability, woody riparian vegetation will be planted within the rip rap.

The objective of reseeding with herbaceous species is to provide cover for immediate erosion control and soil stabilization. All hydroseeding shall use a California native seed mix. An appropriate seed mix is provided in Table 1, and would be applied at a rate of 40 pounds per acre. Because seed availability may vary from year to year, the species composition and application rate may necessarily differ from that suggested in the table.

Table 1
Sample Herbaceous Seed Mix

Scientific Name	Common Name	Quantity
Nasella pulchra	Purple needlegrass	30%
Elymus glaucus	Blue wildrye	25%
Bromus sitchensis var. *carinatus*	California brome	20%
Festuca idahoensis	Idaho fescue	18%
Vulpia microstachys	Six-weeks fescue	5%
Achillea millefolium	Common yarrow	2%

The herbaceous cover will be achieved by hydroseeding with the selected seed mix, or planting with the selected seed mix and covering the seed with a weed-free mulch at a rate of one ton per acre. The hydroseeding slurry (including seed mix, fiber, fertilizer, binder, etc.) shall be per the revegetation/restoration contractor's specifications. Should planting rather than hydroseeding be selected, seeding will be conducted by hand-broadcasting or by using a whirlybird-type speader. After seeding, the site will be dragged, harrowed, or raked to cover the seed with soil. Seeding and mulching will be conducted between October 15 and December 31; seeding may be conducted earlier if regular watering is provided.

Trees and other woody vegetation to be removed will be pruned at ground-level or crushed with equipment where feasible at the start of construction, leaving the root systems in place to encourage regrowth. Following construction, replanting would occur

using cuttings or seedlings of native riparian trees and shrubs. The planting should be stocked at a rate of 450 stems per acre. Recommended riparian species are white alder, American dogwood, Oregon ash, locally native willows (e.g., Pacific willow, arroyo willow, dusky willow, Scouler's willow), and black cottonwood. Cuttings may be collected from vigorously growing plants in the vicinity of the project site (use of cuttings is not recommended for white alder or Oregon ash). The cuttings will be approximately two feet in length although longer cuttings may be needed for planting within the rip rap. The base cut will be made at an approximately 45-degree angle to the stem. The terminal end cut will be horizontal to the stem to aid in correct orientation and to facilitate planting. Cuttings and seedlings will be planted between October 15 and December 31, after fall rains have thoroughly moistened the soil. If cuttings are used, they will be planted on the same day they are collected.

Prior to planting, each cutting may be treated with a rooting hormone and fungicide, such as hormodin powder, by dipping the basal portion of the cutting. The plant should then dry to minimize the loss of rooting hormone through handling and planting. Cuttings will be pushed into moist soil, with 6 to 8 inches of the cutting remaining above the ground surface. Plantings will be placed in staggered rows, or as recommended by a qualified biologist.

To minimize weed problems and competition for water, weed mats or bark mulch shall be placed around the plants, extending to 18 inches from the stem where feasible. If bark is used, it shall be spread to a depth of three inches.

4.4 Monitoring and Remedial Measures

No long-term monitoring of the site is proposed because riparian habitat credits will be purchased at a 1:1 ratio from an approved mitigation bank. Purchase of the riparian habitat credits will ensure that direct impacts to riparian habitat is mitigated even if restoration effort is not immediately successful.

APPENDIX E

CHECKLIST OF VASCULAR PLANT SPECIES OBSERVED

CHECKLIST OF VASCULAR PLANT SPECIES OBSERVED

Castella Water Intake Replacement Project

October 5, 2022, November 12, 2021, and May 30, 2022

Apiaceae	**Carrot Family**
Torilis arvensis	Field hedge-parsley
Asteraceae	**Sunflower Family**
Ambrosia artemisiifolia	Annual ragweed
Centaurea solstitialis	Yellow star thistle
Cichorium intybus	Chicory
Cirsium vulgare	Bull thistle
Madia elegans	Madia
Madia exigua	Thread-stemmed madia
Matricaria discoidea	Pineapple weed
Solidago velutina subsp. *californica*	California goldenrod
Taraxacum officinale	Dandelion
Tragopogon dubius	Goat's beard
Betulaceae	**Birch Family**
Alnus rhombifolia	White alder
Blechnaceae	**Deer Fern Family**
Woodwardia fimbriata	Giant chain fern
Boraginaceae	**Borage Family**
Myosotis discolor	Yellow scorpion-grass
Brassicaceae	**Mustard Family**
Arabidopsis thaliana	Thalecress
Barbarea sp.	Wintercress
Draba verna	Whitlow grass
Isatis tinctoria	Dyer's-woad
Lepidium campestre	English peppergrass
Caryophyllaceae	**Pink Family**
Cerastium glomeratum	Mouse-eared chickweed
Scleranthus annuus subsp. *annuus*	German knotgrass
Cornaceae	**Dogwood Family**
Cornus nuttallii	Mountain dogwood
Cornus sericea subsp. *sericea*	American dogwood
Cupressaceae	**Cypress Family**
Calocedrus decurrens	Incense-cedar
Equisetaceae	**Horsetail Family**
Equisetum arvense	Common horsetail

CHECKLIST OF VASCULAR PLANT SPECIES OBSERVED

Castella Water Intake Replacement Project

Fabaceae	**Legume Family**
Acmispon americanus	Spanish lotus
Lathyrus latifolius	Perennial sweet pea
Lotus corniculatus	Birdsfoot trefoil
Lupinus bicolor	Bicolored lupine
Medicago lupulina	Black medick
Trifolium sp.	Clover
Trifolium dubium	Little hop clover
Trifolium pratense	Red clover
Vicia sativa	Garden vetch
Fagaceae	**Oak Family**
Notholithocarpus densiflorus var. *echinoides*	Tanoak shrub
Quercus chrysolepis	Canyon live oak
Quercus kelloggii	California black oak
Onagraceae	**Evening-Primrose Family**
Epilobium brachycarpum	Tall annual willowherb
Pinaceae	**Pine Family**
Pseudotsuga menziesii var. *menziesii*	Douglas-fir
Plantaginaceae	**Plantain Family**
Plantago lanceolata	English plantain
Veronica arvensis	Field speedwell
Poaceae	**Grass Family**
Aegilops cylindrica	Jointed goatgrass
Aegilops triuncialis	Barbed goatgrass
Aira caryophyllea	Silver hairgrass
Bromus commutatus	Meadow brome
Bromus diandrus	Ripgut grass
Bromus hordeaceus	Soft chess
Bromus tectorum	Downy brome
Deschampsia danthonioides	Annual hairgrass
Elymus caput-medusae	Medusahead
Elymus glaucus subsp. *glaucus*	Blue wild rye
Festuca arundinacea	Tall fescue
Festuca myuros	Foxtail fescue
Hordeum marinum subsp. *gussoneanum*	Mediterranean barley
Hordeum murinum	Foxtail barley
Poa annua	Annual bluegrass
Poa bulbosa	Bulbous bluegrass
Poa pratensis subsp. *pratensis*	Kentucky bluegrass
Ventenata dubia	North Africa grass
Polemoniaceae	**Phlox Family**
Navarretia intertexta	Needle-leaf navarretia
Polygonaceae	**Buckwheat Family**
Polygonum aviculare	Common knotweed
Rumex crispus	Curly dock

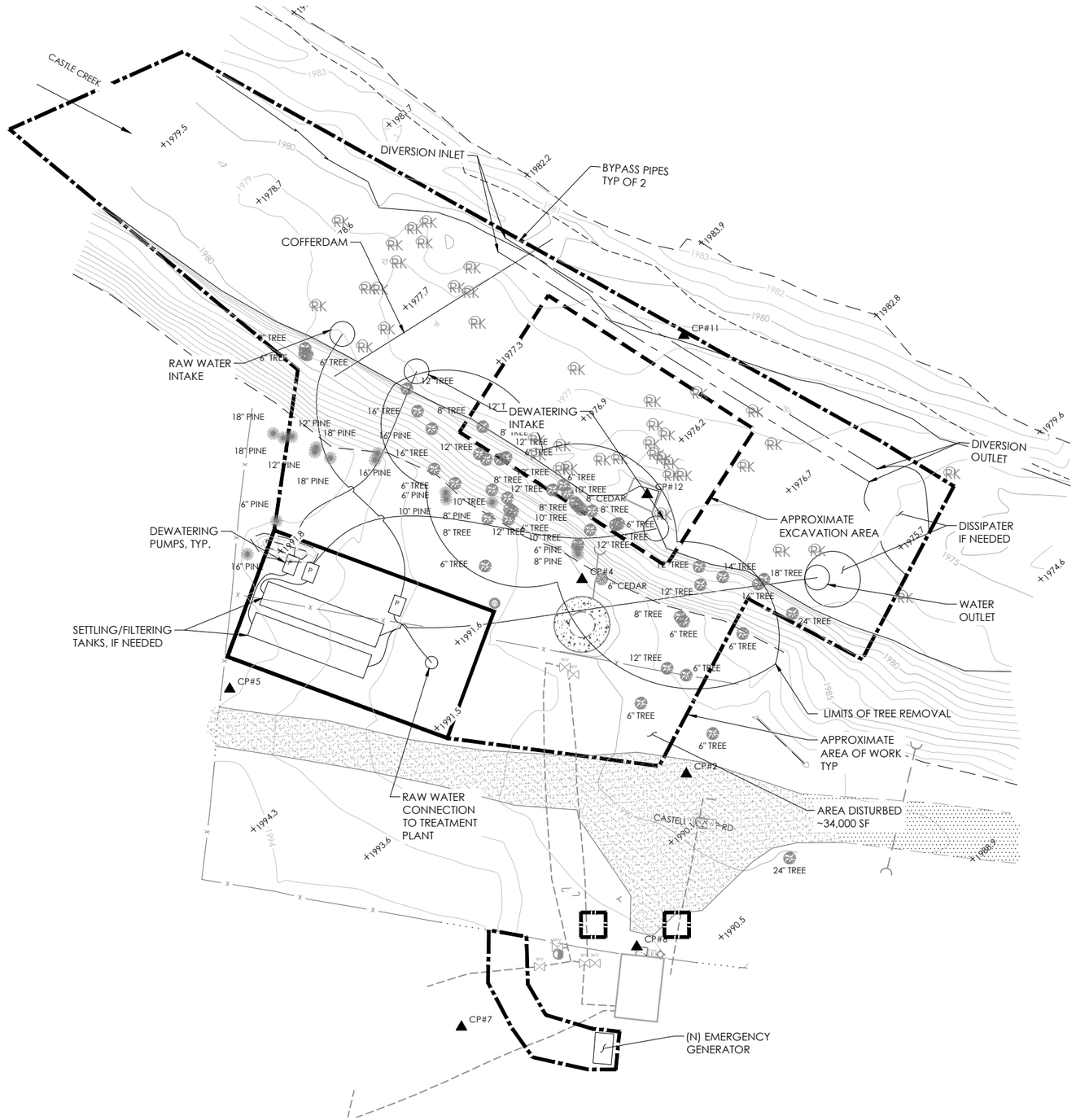
CHECKLIST OF VASCULAR PLANT SPECIES OBSERVED

Castella Water Intake Replacement Project

Rhamnaceae	**Buckthorn Family**
Ceanothus integerrimus	Deer brush
Rosaceae	**Rose Family**
Arbutus menziesii	Pacific madrone
Poteridium annuum	Western burnet
Rosa rubiginosa (canina?)	Sweetbriar
Rubus armeniacus	Himalayan blackberry
Rubiaceae	**Madder Family**
Galium aparine	Cleavers
Salicaceae	**Willow Family**
Populus balsamifera subsp. *trichocarpa*	Black cottonwood
Salix exigua	Sandbar willow
Salix lasiandra var. *lasiandra*	Pacific willow
Salix lasiolepis	Arroyo willow
Sapindaceae	**Soapberry Family**
Acer macrophyllum	Big-leaved maple
Saxifragaceae	**Saxifrage Family**
Darmera peltata	Indian rhubarb

APPENDIX F

DIVERSION/DEWATERING PLAN



GRAPHIC SCALE
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1 IN = 20 FT

DRAFT

BAR IS ONE INCH ON ORIGINAL DRAWING
0" 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REVISIONS

NO	DATE	DESCRIPTION

PACE ENGINEERING

DES ??	CKD ??	JOB NO. 199.106
DRN DD	DATE 07/25/22	

SIGNED

SHASTA COUNTY CSA 3 CASTELLA
INTAKE REPLACEMENT PROJECT

PLAN

SHEET
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PG X OF XX

Plot Date: July 25, 2022 - 3:32 pm Login Name: ddelson
File Name: M:\Land Projects\199.106 CSA 3 Castella Intake Replacement Project\Dewatering Plan\General Notes Sheets.dwg Layout: PACE 22x34

Appendix C

Wetlands and Other Waters of the U.S. and/or State (Map Exhibits)

Waters of the U.S. and/or State	
Project:	Castella Water Intake Replacement Project
Delineator:	Don Burk, Allison Loveless
Delineation Date:	November 12, 2021
Map Updated:	August 25, 2022
Map Preparer:	Allison Loveless

Potential Waters by Map ID

Map ID	Type	Average Width (feet)	Length (feet)	Area	
				sq. ft.	acres
1:PS	Perennial Stream	39	178	12,903	0.296
2:SW	Seasonal Wetland	—	—	149	0.003
3:SW	Seasonal Wetland	—	—	147	0.003
4:SW	Seasonal Wetland	—	—	2,038	0.047
			Total Waters	**15,237**	**0.349**

Data/Sampling Point	Depth to Water (inches)	Wetland Hydrology Indicators Met
DP1	8	Yes
DP2	>18	No
DP3	0	Yes
DP4	>14	No
SP1	>15	No
SP2	>15	No
SP3	4	Yes
SP4	11	Yes
SP5	7	Yes
SP6	5	Yes
SP7	14	No
SP8	>14	No
SP9	12	No

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1" = 50'

0 25 50 Feet

Figure 1
Aquatic Resources Delineation Results

Not a survey product. All features and boundaries are preliminary until verified by the Army Corps of Engineers.

08.25.22

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