PROPOSED MITIGATED NEGATIVE DECLARATION
and
INITIAL STUDY

City of Shasta Lake
Force Main Replacement Project

Prepared for:

City of Shasta Lake

July 2019
32-49

ENPLAN
3179 Bechelli Lane Suite 100
Redding, CA 96002

PROPOSED MITIGATED NEGATIVE DECLARATION

LEAD AGENCY:	City of Shasta Lake
PROJECT PROPONENT:	City of Shasta Lake
PROJECT NAME:	**Force Main Replacement Project**
PROJECT SUMMARY:	The proposed Project includes improvements to the City's wastewater collection system. Sewer force mains from Lift Station (LS) 3 and LS5 to the Wastewater Treatment Plant (WWTP) would be replaced/upsized and realigned to provide easier access for on-going maintenance and repairs. The LS5 diversion manhole would be internally modified to better regulate flows to LS3; a ±20-foot segment of existing sewer line would be replaced in conjunction with this work. Additionally, a ±5- to 10-foot segment of a sewer line west of the LS5 overflow manhole would be replaced.
LOCATION:	The Project is located within the City of Shasta Lake in Shasta County. The Project study area is generally south of Pine Grove Avenue, north of Autumn Harvest Drive, west of Cascade Boulevard, and east of the City's Wastewater Treatment Plant (WWTP). *See **Figure 1** of the Initial Study.*

Findings / Determination

As documented in the Initial Study, project implementation could result in possible effects to special-status wildlife species, disturbance of nesting migratory birds (if present), impacts to cultural resources and tribal cultural resources (if present), the introduction and spread of noxious weeds during construction, temporarily increased risk of wildfires, 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 1.9 of the Initial Study. Because the City of Shasta Lake 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.

Final Mitigated Negative Declaration approved by the City Council of the City of Shasta Lake on _____, 2019 by Resolution _____.

INITIAL STUDY

FORCE MAIN REPLACEMENT PROJECT

CITY OF SHASTA LAKE

SHASTA COUNTY, CALIFORNIA

LEAD AGENCY:

City of Shasta Lake
P.O. Box 777
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PREPARED BY:

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July 2019

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SECTION 1.0 INTRODUCTION

1.1 PURPOSE OF STUDY

The City of Shasta Lake (City), 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 Shasta Lake Force Main Replacement Project (proposed 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 City may apply for funding through the State Water Resources Control Board (SWRCB) Clean Water State Revolving Fund (CWSRF) 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.

1.2 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.

1.3 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.

1.4 PROJECT SUMMARY

Project Title:	**Shasta Lake Force Main Replacement Project**
Lead Agency Name and Address:	**City of Shasta Lake** P.O. Box 777 Shasta Lake, CA 96019
Contact Person and Phone Number:	**Jeff Tedder, City Engineer** 530.275.7423
City's Environmental Consultant:	**ENPLAN** 3179 Bechelli Lane Redding, CA 96002

1.5 PROJECT LOCATION

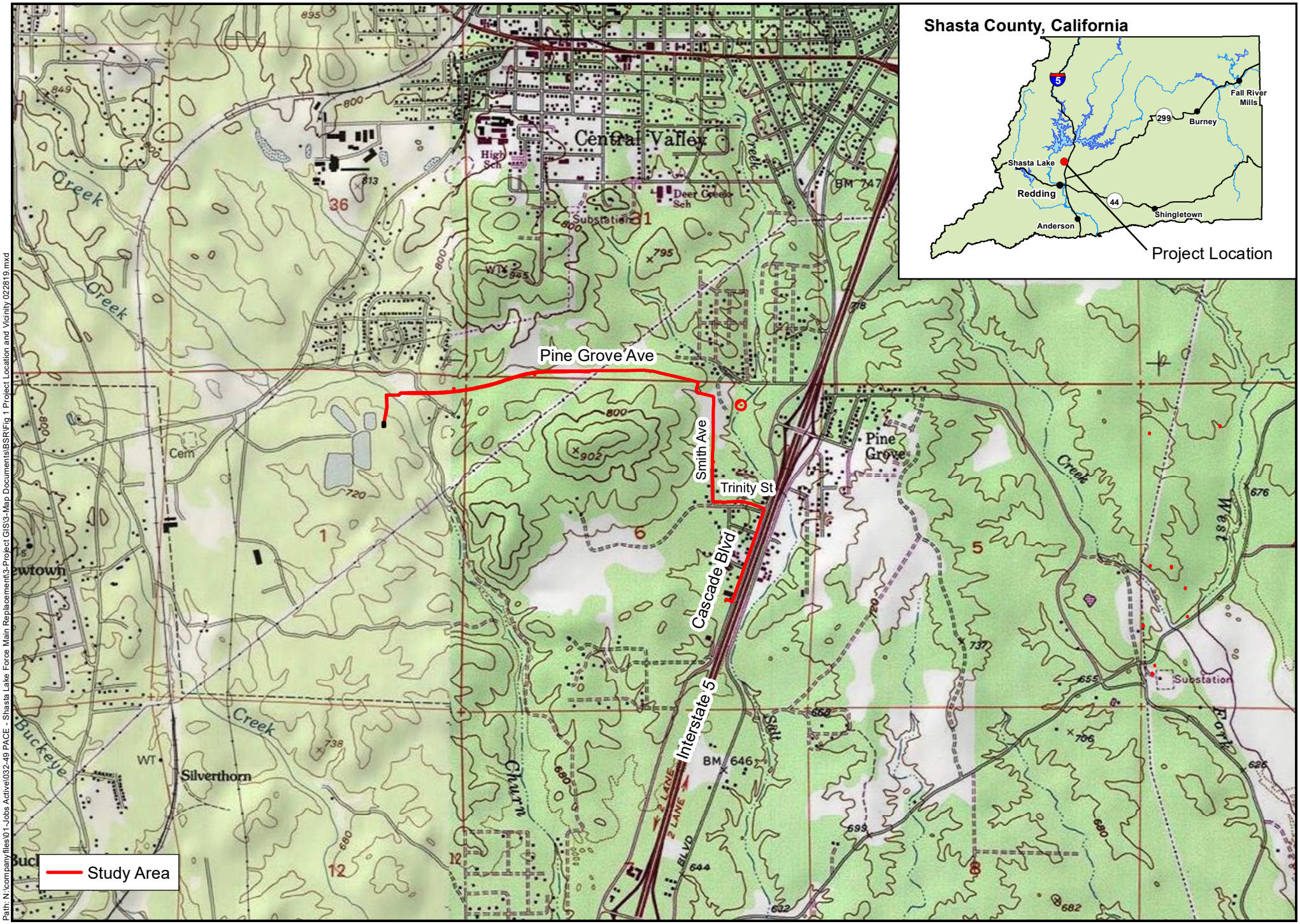
As shown in **Figure 1**, the City of Shasta Lake is located both east and west of Interstate 5 (I-5), generally south of Lake Shasta and north of the City of Redding. Proposed improvements would occur in the public road rights-of-way (ROWs) of Cascade Boulevard, Trinity Street, Smith Avenue, and Pine Grove Avenue. Between Pine Grove Avenue and the WWTP headworks, the force main would be routed through City-owned undeveloped land that is currently used as a spray field for the WWTP (see **Figures 2 and 3**). The LS5 diversion manhole and overflow manhole improvements would occur on property owned by the City, generally south of the Pine Grove Avenue bridge over Salt Creek (see **Figure 3**).

Temporary staging of construction materials and equipment would occur within the boundaries of the WWTP site in paved and graveled areas. Project staging would also occur in the affected street ROW throughout the project area. No physical improvements are needed to establish the staging areas.

The proposed Project is located in Section 1, Township 32N, Range 5W, of the U.S. Geological Survey (USGS) Shasta Dam 7.5-minute quadrangle; and Section 31, Township 33N, Range 4W, and Section 6, Township 32N, Range 4W, of the USGS Project City 7.5-minute quadrangle. Latitude 40° 39' 55"; Longitude -122° 22' 26" (Centroid).

Assessor's Parcel Numbers:

Lift Station 3: 075-110-037; **Lift Station 5:** 075-150-046; **Lift Station 5 Diversion Manhole and Overflow Manhole:** 075-570-047; **WWTP:** 064-160-005; **Pipeline Improvements:** 007-140-079 (PG&E fee title parcel across Pine Grove Avenue), public road ROWs and public utility easements.



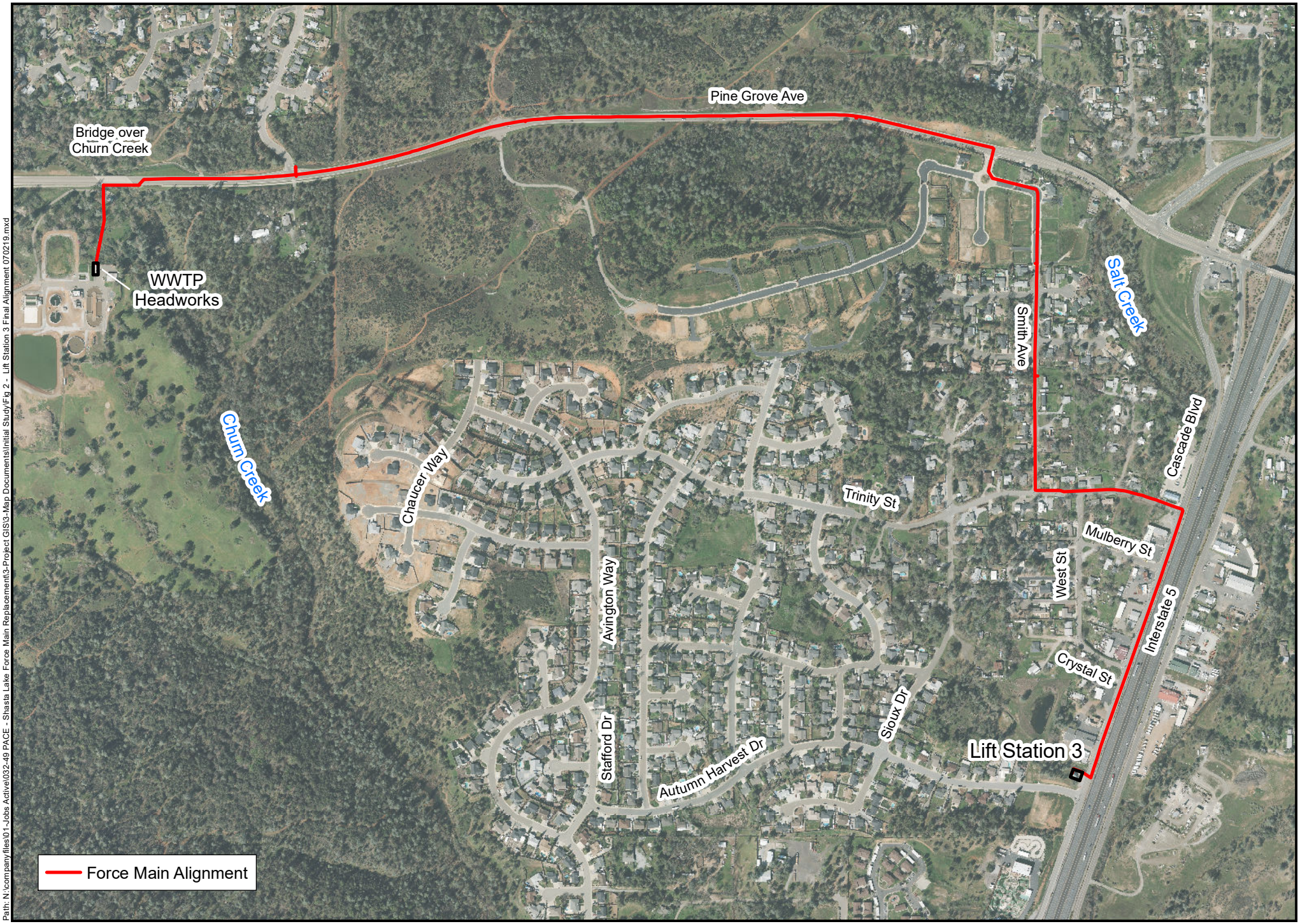
All depictions are approximate. Not a survey product. 07.02.19

0 2,000 Feet

Figure 1

Project Location and Vicinity

ENPLAN



Path: N:\company files\01-Jobs Active\032-49 PACE - Shasta Lake Force Main Replacement\3-Project GIS\3-Map Documents\Initial Study\Fig. 2 - Lift Station 3 Final Alignment 070219.mxd

All depictions are approximate. Not a survey product. 07.02.19

0 700 Feet

Figure 2

Lift Station 3 Force Main Alignment

ENPLAN

Path: N:\company files\01-Jobs Active\032-49 PACE - Shasta Lake Force Main Replacement\3-Project GIS\3-Map Documents\Initial Study\Fig. 3 - Lift Station 5 Final Alignment 070219.mxd

All depictions are approximate. Not a survey product. 07.02.19

Figure 3

0 700 Feet

Lift Station 5 Force Main Alignment and Manhole Improvements

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1.6 ENVIRONMENTAL SETTING

General Plan Designations:	Suburban Residential (SR) and Urban Residential (UR) along Trinity Street and Smith Avenue. SR and Light Industrial (IL) along Pine Grove Avenue; Commercial (C) along Cascade Boulevard; Public Facilities (PF) on the WWTP property.
Zoning:	Single-family residential (R-1) along Trinity Street and Smith Avenue; R-1 and Unclassified along Pine Grove Avenue; Community Commercial (C-2) along Cascade Boulevard; Public Facilities (PF) on the WWTP property.
Surrounding Land Uses:	Properties on Cascade Boulevard north of LS3 include antique stores, restaurants, and general commercial uses. Interstate 5 (I-5) parallels Cascade Boulevard to the east. Properties along Trinity Street and Smith Avenue are developed with single-family residences. Single-family homes in the Deer Creek Manor Subdivision back up to Pine Grove Avenue west of LS5. A sound wall is located between the homes and Pine Grove Avenue. The majority of properties along Pine Grove Avenue in the study area are undeveloped. There are two developed residential properties at the western end of the study area, south of Pine Grove Avenue at its intersection with Coeur D'Alene Avenue; the closest home is approximately 200 feet south of Pine Grove Avenue and approximately 675 feet northeast of the WWTP headworks.
Topography:	Elevations in the study area range between ±670 feet and ±725 feet above mean sea level. The study area is characterized by gently rolling terrain, and the overall topographical gradient slopes gradually downward toward the south and southeast.
Soils:	According to the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS, 2019), the following soil units have been mapped in the Project site: Auburn loam, 0-8 percent slopes; Auburn loam, 8-30 percent slopes; Boomer gravelly loam, 0-15 percent slopes; Boomer gravelly loam, 15-30 percent slopes; and Churn gravelly loam, deep, 0-3 percent slopes.
Plant Communities/Wildlife Habitats:	As discussed in Section 4.4, natural communities in the study area include stream/riverine, oak woodland, and urban. Salt Creek, Churn Creek, and several small drainages pass through the study area. Riparian habitat occurs along Salt Creek and Churn Creek. The oak woodland community occurs in the westernmost study area between Pine Grove Avenue and the WWTP headworks and is comprised of blue oak, California black oak, and interior live oak. Understory vegetation includes California coffeeberry, buckbrush, and western poison oak. The urban community includes road ROW and developed residential and commercial properties in the study area. Roadside vegetation includes English plantain, dandelion, puncture vine, yellow star-thistle, and pokeweed. The residential parcels support a wide variety of plants, including native species, introduced weeds, and horticultural species.
Climate:	Climatic conditions in the study area are characterized by a Mediterranean climate with cool, wet winters and hot, dry summers. The average annual temperature is about 75 degrees Fahrenheit (°F). Monthly mean maximum temperatures range from a high of 95° F in July to a low of 31° F in January. Daily high temperatures commonly exceed 100° F during the summer. Precipitation is about 63 inches per year.

1.7 TRIBAL CULTURAL RESOURCES CONSULTATION

Public Resources Code §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:

1. The California Native American 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.

According to the City, as of March 20, 2019, only one tribe, the Wintu Tribe of Northern California & Toyon-Wintu Center, has requested formal notification of proposed projects in the geographical area. On August 8, 2018, the City sent a letter to the Tribe providing detailed information on the proposed Project and describing the AB 52 consultation process. The letter stated that if the Tribe would like to engage in formal consultation with the City regarding possible significant effects that the Project may have on tribal cultural resources, the Tribe must respond to the City in writing within 30 days of the Tribe's receipt of the letter.

The City did not receive a response from the Wintu Tribe of Northern California & Toyon-Wintu Center. No other California Native American tribes have requested that the City provide formal notification of proposed projects in the geographical area. Therefore, the requirements of PRC §21080.3.1 have been satisfied. *See discussion in Section 4.5 regarding outreach to Native American Tribes identified by the Native American Heritage Commission.*

1.8 REGULATORY REQUIREMENTS

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

City of Shasta Lake:

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

U.S. Army Corps of Engineers:

- Section 404 Permit under the Federal Clean Water Act if work occurs within the drainage ditch on Cascade Boulevard (see discussion in Section 3.3).

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

- Coverage under the NPDES permit for *Discharges of Storm Water Runoff associated with Construction Activity* (currently Order No. 2009-009-DWQ, amended by 2010-0014-DWQ & 2012-0006-DWQ). Permit coverage may be obtained by submitting a Notice of Intent to the SWRCB. The permitting process requires the development and implementation of an effective Storm Water Pollution Prevention Plan (SWPPP) that includes Best Management Practices (BMPs) to reduce pollutants and any additional controls necessary to meet water quality standards.

- Section 401 Water Quality Certification (or waiver) and Report of Waste Discharge if work occurs within the drainage ditch on Cascade Boulevard (see discussion in Section 3.3).

California Department Fish and Wildlife:

- Issuance of a Section 1600 Lake or Streambed Alteration Agreement if work occurs within the drainage ditch on Cascade Boulevard (see discussion in Section 3.3).

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

- Due to federal funding and federal permits 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 City shall ensure through contractual obligations that the following measures are implemented:

a. All material excavated, stockpiled, or graded shall be sufficiently watered to prevent fugitive dust from leaving property boundaries and causing a public nuisance or a violation of ambient air quality standards. The timing and frequency of watering shall be determined by the City Engineer.

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

c. All on-site vehicles shall be limited to a speed of 15 miles per hour on unpaved roads and work areas.

d. All land clearing, grading, earth moving or excavation activities on the project site shall be suspended if/when the City Engineer determines that winds are causing excessive dust generation.

e. Paved streets adjacent to construction areas 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 work site.

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

g. All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications.

h. Off-road construction equipment and other diesel-fueled construction vehicles (e.g., dump trucks) shall not be left idling for periods longer than five minutes when not in use.

BIOLOGICAL

MM 4.4.1 In the event western pond turtles enter a 100-foot buffer of on-going construction activities, a qualified biologist must be contacted and construction activities within 50 feet of the turtle must be halted until the turtle has left the area or is relocated by the qualified biologist.

MM 4.4.2 Prior to commencement of any earth disturbance (e.g., clearing, grading, trenching, etc.), all construction personnel shall receive training from a qualified biologist regarding protective measures for special-status animal species and their habitats that could exist in the study area (western pond turtle, foothill yellow-legged frog, Central Valley steelhead and Chinook salmon). If new personnel are added to the project, the City shall ensure that they receive the mandatory training before starting work. At a minimum, the training shall include the following:

a. A review of the special-status species that could occur in the project study area, the locations where the species could occur, the laws and regulations that protect these species, and the consequences of noncompliance with those laws and regulations.

b. Procedures to be implemented in the event that these species are encountered during construction.

c. A review of sensitive habitats that occur in the study area and the location of the sensitive habitats.

d. A review of applicable mitigation measures, standard construction measures, best management practices, and regulatory agency permit conditions that apply to the protection of special-status species and sensitive habitats.

MM 4.4.3 In order to avoid/minimize effects to protected trees, temporary construction fencing shall be installed and maintained at least 6 feet outside of the dripline of all trees to be preserved. The fencing around this "root protection zone" shall be maintained throughout construction.

a. No vehicle parking or materials stockpiling shall occur within the root protection zone.

b. To the extent feasible, no construction activities (including grading, cutting, and trenching), shall occur within the root protection zone. If the force main must be installed using open-cut trenching within the root protection zone, the work shall be completed under the supervision of a certified arborist.

MM 4.4.4 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., and

b. Limiting any import or export of fill material to material that is known to be weed free.

MM 4.4.5 In order 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:

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 in the work area for the LS5 manholes and associated sewer line improvements, and/or the force main corridor from the east side of Churn Creek to the WWTP headworks, a pre-construction nesting survey shall be conducted by a qualified biologist to identify active nests in and adjacent to the work area.

   Surveys shall begin prior to sunrise and continue until vegetation and nests have been sufficiently observed. The survey shall take into account 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 to the California Department of Fish and Wildlife 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

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, the City 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 City prior to resuming construction.

MM 4.5.2 In the event that human remains are encountered during construction activities, the City shall comply with §15064.5 (e) (1) of the CEQA Guidelines and PRC §7050.5. All project-related ground disturbance within 100 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.

HAZARDS/HAZARDOUS MATERIALS

MM 4.9.1 During construction, all areas in which work will be completed using spark-producing equipment shall be cleared of dried vegetation or other materials that could serve as fire fuel. To the extent feasible, the contractor shall keep these areas clear of combustible materials in order to maintain a fire break.

NOISE

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

MM 4.13.1 During construction the contractor shall comply with the following time periods established for construction activities: Monday through Friday, 7:00 A.M. – 7:00 P.M., and Saturday, 8:00 A.M. – 5:00 P.M. Exceptions to these limitations may be approved by the City Engineer or his/her designee 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 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.**

WILDFIRE

Implementation of **Mitigation Measure MM 4.9.1.**

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.

Jeff Tedder, P.E.
City Engineer

7-5-19
Date

SECTION 3.0 PROJECT DESCRIPTION

3.1 INTRODUCTION

The City of Shasta Lake (City) provides wastewater collection and treatment services within the City's sewer service area. According to the City's 2016-2026 Wastewater Master Plan (WWMP), prepared by Akel Engineering Group, Inc., in December 2016, the service area encompasses approximately 2,026 net acres. The western area of the City, known as Summit City, is not included in the City's sewer service area. Sewer collection services are provided to approximately 3,800 residential, commercial, industrial, and institutional accounts. The City's collection system consists of approximately 4.1 miles of sewer force mains and 54 miles of gravity sewer pipes that convey raw sewage to the Wastewater Treatment Plant (WWTP). Six lift stations serve localized low areas that cannot gravity flow into the collection sewers.

The proposed Project entails improvements to the City's wastewater collection system, including replacing/upsizing sewer force mains from Lift Station (LS) 3 and LS5 to the Wastewater Treatment Plant (WWTP), and realigning the mains to provide easier access for ongoing maintenance and repairs. In addition, modifications to the LS5 diversion manhole would be completed to allow use of the surplus pumping capacity at LS5 and to reduce maintenance requirements. A ±20-foot segment of an existing sewer pipe immediately south of LS5 would be replaced. A ±5- to 10-foot segment of an existing sewer pipe immediately west of the existing LS5 overflow manhole (±10 feet north of the LS5 diversion manhole) would also be replaced. A detailed description of the improvements is provided in Section 3.3 (Project Components/ Physical Improvements).

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,

Work is anticipated to commence in the summer of 2021 and would be completed in approximately 10 to 12 months.

3.2 PROJECT BACKGROUND, NEED AND OBJECTIVES

The WWMP incorporates the results of a 2015 system-wide closed-circuit television (CCTV) inspection of the City's sewer mains. The purpose of the CCTV inspection was to identify cracks and breaks in the pipes, collapsed pipes, and foreign objects protruding into the pipes (e.g., roots) that could create capacity and/or safety concerns.

The WWMP identifies deficiencies in the collection system and presents a Capital Improvement Program (CIP) for recommended improvements. The CIP improvements are prioritized based on the severity of existing deficiencies and capacity restrictions. The CIP phasing plan identifies immediate, near-term (2016-2025), and long-term (2026-2035) improvements. The proposed improvements are identified in the WWMP as improvements that are required to resolve existing deficiencies and near-term capacity restrictions.

Lift Station 3 Force Main

The proposed LS3 force main improvements are identified in the WWMP as immediate improvements that are required to resolve existing deficiencies.

LS3, constructed in late 1977, serves the southern portion of the City, plus diverted high flows that LS5 cannot accommodate. LS3 is equipped with two duty pumps and one standby pump. The pumps discharge into a 10-inch force main that traverses west in a public utility easement on private property to Impression Way. The main continues west in Impression Way to Wandsworth Drive, where it enters private property and runs along the rear property lines of five parcels between Wandsworth Drive and Avington Way. The force main enters Avington Way near its intersection with Pembroke Lane, transitions to a 14-inch main, and proceeds to the northwest

end of Avington Way where it crosses City-owned property. At that point, the force main transitions to parallel 8-inch and 10-inch pipelines that continue in off-road areas to the WWTP headworks.

According to the WWMP, most sections of the LS3 force main are undersized. Also, during heavy flow periods when the backup pump is required and all three pumps are running, very little additional flow is added to the force main, and the backup pump has almost no effect on the rising wet-well levels. In addition, large segments of the LS3 force main are located in overland areas with limited access.

The objective is to upsize the pipeline and relocate it to paved streets to the extent feasible. These improvements will allow LS3 to reduce the use of three pumps, handle heavy flows, eliminate nearly all of the overland alignment sections, and provide easier access for on-going maintenance and repairs.

Lift Station 5 Force Main

The LS5 force main improvements are identified in the WWMP as near-term improvements that are required to resolve existing deficiencies as well as to serve future growth. LS5 serves the middle and eastern area of the City that is north of Pine Grove Avenue. LS5 is equipped with one duty pump and one standby pump. The pumps discharge into an 18-inch main that proceeds north to Pine Grove Avenue and continues west in Pine Grove Avenue to the PG&E powerline easement, approximately 2,400 feet west of LS5. From this point, the force main transitions to a 14-inch main, continues in Pine Grove Avenue a distance of approximately 1,800 feet, then continues in off-road areas to the WWTP headworks.

The objective is to upsize the LS5 14-inch force main and relocate it to public streets to the extent feasible. These improvements will allow LS5 to serve future development, eliminate nearly all of the overland alignment sections, and provide easier access for on-going maintenance and repairs.

Lift Station 5 Diversion Manhole

The LS5 diversion manhole, constructed in the early 1990s, currently has two aluminum stop gates that allow flow to be diverted to either LS3 or LS5. Under normal operations, only the southern stop gate is installed, which directs flow to LS5. As flows increase during rain events, the water level builds up in the manhole and occasionally overflows the stop gate, sending excess flows south to LS3. The second stop gate is installed only when flows to LS5 must be blocked entirely to allow for maintenance. The City must periodically lift the existing stop gate to flush accumulated solids to LS3. Because the aluminum gate tends to seize inside the aluminum guides, heavy equipment must be used to lift the gate.

The City is proposing internal modifications to the manhole that would replace the manually operated gates with a passive flow regulator and increase use of the existing surplus pumping capacity at LS5. These improvements require that a ±20-foot segment of the sewer line exiting the diversion manhole be replaced at a higher elevation.

Lift Station 5 Overflow Manhole

The LS5 overflow manhole, located ±10 feet northeast of the LS5 diversion manhole, has an existing 15-inch sanitary sewer line that connects to a manhole ±105 feet northwest of the overflow manhole. The original invert elevation set for the 15-inch line within the overflow manhole is not sufficient for its purpose and needs to be lowered within the manhole.

3.3 PROJECT COMPONENTS / PHYSICAL IMPROVEMENTS

This section describes the proposed improvements that are the subject of this Initial Study.

Lift Station 3 Force Main

As shown in **Figure 2**, a 12-inch diameter force main would be installed between LS3 and the WWTP headworks. With the exception of the Churn Creek crossing, all pipeline improvements would be installed using open-cut trenching. The pipe would be installed primarily in the paved sections of Cascade Boulevard, Trinity Street, Smith Avenue, and Pine Grove Avenue. In areas with no sidewalks on Trinity Street and Smith Avenue, a portion of the pipe would be installed in the graveled shoulders within the road ROW. Areas of paved roads that are disturbed during construction would be re-paved following installation of the improvements.

Immediately north of LS3, the force main would be installed in the fill overlying a box culvert that runs under Cascade Boulevard (see **Photo 3.3-1**). If it is determined that the depth of fill is not sufficient to install the force main over the culvert, the pipe would be installed by open-cut trenching through a drainage ditch adjacent to Cascade Boulevard (see **Photo 3.3-2**). In accordance with regulatory agency permits, if the pipe is installed in the drainage ditch, the area would be restored to pre-construction contours, and no permanent impacts would occur.

Photo 3.3-1. *Box culvert under Cascade Boulevard.*

Photo 3.3-2. *Cascade Boulevard Drainage Ditch, North of LS3.*

The pipeline would proceed in Smith Avenue through an older residential neighborhood (**Photo 3.3-3**) and through the Deer Creek Manor Subdivision. Due to the poor condition of Smith Avenue between Trinity Street and the southern boundary of the Deer Creek Manor Subdivision (±1,250 linear feet), the existing pavement on Smith Avenue, which ranges in width from 25 feet to 35 feet, would receive a 2-inch asphalt concrete overlay following completion of the improvements.

Photo 3.3-3. *Smith Avenue, facing north.*

Decorative pavement within the Deer Creek Manor Subdivision (see **Photo 3.3-4**) that is damaged during construction would be replaced with like materials or with asphalt. Improvements in Pine Grove Avenue would occur entirely within the paved road ROW (see **Photo 3.3-5**).

Photo 3.3-4. *Decorative pavement in Deer Creek Manor Subdivision, facing southeast from Pine Grove Avenue.*

Photo 3.3-5. *Pine Grove Avenue, facing west.*

At the Pine Grove Avenue bridge over Churn Creek (see **Photo 3.3-6)**, both the LS3 and LS5 force mains would be mounted on the south side of the bridge using brackets. All work would be conducted from the bridge deck using "over-the-rail" man and equipment lifts. Although a few low-hanging limbs immediately south of the bridge may be pruned, no woody riparian vegetation would be removed. No in-water work would occur.

Photo 3.3-6. *Pine Grove Bridge over Churn Creek, facing northeast.*

Between Pine Grove Avenue and the WWTP headworks, the LS3 and LS5 force mains would be installed in an undeveloped area that is currently used as a spray field for the WWTP (see **Photo 3.3-7**). The Project has been designed to avoid the removal of trees. Further, the area would be restored to pre-construction conditions, and no permanent impacts would occur.

Photo 3.3-7. *WWTP Spray Field, facing northeast.*

Lift Station 5 Force Main

As shown in **Figure 3**, an 18-inch diameter force main would be installed in a ±3,400-foot segment of Pine Grove Avenue between the PG&E powerline easement and the west side of the Churn Creek bridge, and would then extend south to the WWTP. The pipe would be mounted on the south side of the Churn Creek bridge in the same manner as the LS3 force main. The remainder of the pipe would be installed using open-cut trenching and would parallel the LS3 force main between Pine Grove Avenue and the WWTP headworks. Areas of Pine Grove Avenue that are damaged during construction would be re-paved.

Currently, the force main from LS5 is reduced to 10 inches before entering the WWTP headworks. It will be necessary to retrofit the existing headworks to allow for an 18-inch discharge. The new 18-inch discharge would traverse up and over the headworks wall; alternatively, the LS3 and LS5 force mains would be manifolded together and enter the headworks through one 18-inch pipe.

Lift Station 5 Diversion Manhole

Improvements to the LS5 diversion manhole (see **Photo 3.3-8**) include installing a ±3-foot-tall concrete weir within the manhole and increasing the slope of the 12-inch diversion main that exits the manhole. The latter would be accomplished by replacing a ±20-foot segment of the 12-inch diversion main at a ±3-foot higher elevation. Depending on final design of the project, the existing diversion main would either be removed or abandoned in place.

Photo 3.3-8. *LS5 Diversion and Overflow Manholes, facing southwest toward Salt Creek.*

The diversion main would be installed using open-cut trenching. In order to connect the new pipe to the existing pipe, the length of the trench would need to be extended to no more than 25 feet. If the existing diversion main is abandoned in place, the maximum depth of excavation, associated with installation of the new pipe, would be six feet. If the existing diversion main is removed and replaced, the maximum depth of excavation would be ten feet. No work within the ordinary high water mark (OHWM) of Salt Creek would occur.

Lift Station 5 Overflow Manhole

The LS5 overflow manhole (see **Photo 3.3-8**), located ±10 feet northeast of the LS5 diversion manhole, has an existing 15-inch sanitary sewer line that connects to a manhole ±105 feet northwest of the overflow manhole. The original invert elevation set for the 15-inch line within the overflow manhole is not sufficient for its purpose and needs to be lowered within the manhole. A small segment of the existing 15-inch sewer line would be replaced in place at a slightly lower elevation (±0.4 feet). Trenching associated with the pipe replacement would be limited to no more than 10 feet in length. The pipe would be installed using open-cut trenching; the maximum depth of excavation would be six feet. No work within the OHWM of Salt Creek would occur.

3.4 CUMULATIVE IMPACTS ANALYSIS

As defined in §15355 of the CEQA Guidelines, a cumulative impact consists of an impact that is created as a result of the combination of a proposed project together with other closely related past, present, and reasonably foreseeable future projects that cause related impacts. As noted in §15064(h)(4) of the CEQA Guidelines, the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable. Further, §15130(b) of the CEQA Guidelines states, *"The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact."*

As documented in Section 4.0, the proposed Project does not include any components that would result in long-term operational impacts; therefore, only construction-related impacts are considered in the cumulative impacts analysis. In addition to growth associated with the build-out projections in the City's General Plan, the projects described below were considered in determining whether the proposed Project's impacts would be cumulatively considerable in accordance with §15064(h) of the CEQA Guidelines. No other related projects were identified as being reasonably foreseeable in accordance with §15144 of the CEQA Guidelines.

City of Shasta Lake Wastewater Treatment Plant Upgrades

On March 23, 2015, the City of Shasta Lake adopted a Mitigated Negative Declaration for the Wastewater Treatment Facility Upgrade Project. The project includes installation of a new effluent discharge line, cascade re-aeration structure, and replacement of the primary outfall to Churn Creek; the secondary outfall into Churn Creek would be abandoned. The spray fields and the 400-acre-foot reclaimed water reservoir would be taken off-line and abandoned in place.

The effluent pipeline and outfall improvements for the WWTP upgrade project would occur in the area south of the Pine Grove Avenue bridge, west of Churn Creek, and northeast of the WWTP headworks, in the same vicinity as the proposed force main improvements. In order to accommodate the WWTP effluent pipeline, vegetation would need to be cleared; however, no trees would be removed to accommodate the WWTP effluent pipeline to the outfall.

The WWTP upgrade project would contribute toward cumulative impacts associated with the force main improvements if both projects were constructed simultaneously. However, the WWTP project is scheduled to be completed in 2019. Since the force main improvements would not be constructed until 2021 or later, no construction-related cumulative impacts would occur.

City of Shasta Lake HSIP Safety Guardrail Upgrade Project

The City of Shasta Lake has obtained funding through the Caltrans Highway Safety Improvement Program (HSIP) to upgrade guardrail transitions to correct existing deficiencies.

Improvements would occur at 11 locations, including two areas within the proposed Project's work area: the Pine Grove Avenue bridge over Salt Creek, immediately north of the LS5 diversion and overflow manholes, and the Pine Grove Avenue bridge over Churn Creek, north of the WWTP headworks. The Guardrail Upgrade Project would contribute toward cumulative impacts associated with the force main improvements if both projects were constructed simultaneously. However, according to the City Engineer, the Guardrail Upgrade Project is scheduled to be completed in 2019-2020. Since the force main improvements would not be constructed until 2021 or later, no construction-related cumulative impacts would occur.

Potential cumulative impacts are further discussed in the applicable resource sections in Section 4.0 below.

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

FEDERAL

There are no federal regulations pertaining to aesthetics 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.

LOCAL

City of Shasta Lake

The Shasta Lake General Plan includes the following policy and implementation measure that apply to the proposed project:

Circulation and Safety Elements		
Policy:	FL-b	City of Shasta Lake flood control measures should advance, in so far as possible, the goals of providing for domestic and industrial water uses, recreation, resource conservation (including streamside vegetation and habitat) and the preservation of the scenic values of water resources.
Implementation Measure:	C-(17)	As part of the development review process, include consideration of the visual aspects of a development from roadways. Aesthetic consideration shall include architectural compatibility and landscaping. Development review will include visibility requirements at intersections.

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 Salt Creek, Churn Creek, trees and other vegetation, and open space. The Project area is visible to individuals living and working in the area and to travelers on adjacent roadways, including Cascade Boulevard, Trinity Street, Smith Avenue, Jorzack Way (within the Deer Creek Manor Subdivision) and Pine Grove Avenue.

The proposed Project does not include any above-ground structures that would permanently obstruct the view of any scenic resource. The proposed Project would have short-term visual impacts during construction due to clearing, trenching, and staging of construction equipment and materials. Staging would occur on the WWTP property and in the affected street ROW throughout the Project area; however, no clearing or earth disturbance would be required to establish the staging areas.

The majority of the force main would be installed in paved or graveled areas within the road ROW using open-cut trenching, and no vegetation would be removed in these areas. As stated in Section 3.3 (Project Components/Physical Improvements), paved areas that are disturbed during installation of the force mains would be re-paved following construction. Decorative pavement within the Deer Creek Manor Subdivision that is damaged during construction would be replaced with like materials or with asphalt.

Installation of the pipeline between Pine Grove Avenue and the WWTP headworks would require trenching through an undeveloped area, which would require the removal of vegetation (see **Photo 3.3-7**); however, no trees would be removed. In addition, in accordance with regulatory agency requirements, the area that is cleared during construction would be restored to pre-construction conditions.

Therefore, impacts would be less than significant because the Project does not include any components that could impede the view of a scenic vista; natural areas disturbed during construction would be restored to pre-construction conditions; impacted roads would be repaved; and impacts during construction would be temporary and cease at completion of the Project.

Question B

The nearest officially designated State Scenic Highway is Route 151 (Shasta Dam Boulevard), located approximately 1.2 miles northwest of the Project area. The scenic route commences at the intersection of SR 151 and Lake Boulevard and continues to Shasta Dam. The proposed Project would not be visible from the scenic route. Therefore, 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 or aboveground structures that may cause glare. Temporary lighting needed during construction activities would be required to comply with Shasta Lake Municipal Code (SLMC) §17.84.050, that states all lighting 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 constitutes a hazard to vehicular traffic, either on private property or on abutting streets.

Compliance with existing City regulations regarding lighting will ensure that the proposed Project does not adversely affect day or nighttime views in the area; therefore, impacts would be less than significant.

CUMULATIVE IMPACTS

Potential cumulative projects in the area include growth according to the build-out projections in the City's General Plan. In addition, as noted in Section 3.4 above, construction of the WWTP upgrades also would require clearing and trenching in the area between Pine Grove Avenue and the WWTP headworks. Pursuant to existing regulatory agency requirements, both the WWTP upgrade project and the proposed Project are required to restore disturbed areas to pre-construction conditions following construction.

The proposed Project does not include any features that would result in a significant permanent change to the visual character of the community. In addition, the proposed Project would include only temporary construction lighting that would cease at the completion of construction. Therefore, the proposed Project's aesthetic impacts would not be cumulatively considerable.

MITIGATION

None necessary.

DOCUMENTATION

City of Shasta Lake. 1999. City of Shasta Lake General Plan. http://www.cityofshastalake.org/documentcenter/view/115. Accessed February 2019.

_____. 2017. City of Shasta Lake Municipal Code, Chapter 17.84 (General Development Standards). https://library.municode.com/ca/shasta_lake/codes/code_of_ordinances?nodeId=TIT17ZO_CH17.84GEDEST. Accessed February 2019.

Caltrans. 2015. California State Scenic Highway Mapping System. Shasta County. http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm. Accessed February 2019.

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 or local 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)."*

DISCUSSION OF IMPACTS

Questions A, B, and D

According to the *Important Farmland in California* map published by the FMMP, areas in which improvements would occur are not designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance and are not subject to a Williamson Act contract. According to the City's Zoning Code, the properties are not zoned for agricultural use. Approximately 8 acres of land designated Farmland of Statewide Importance is located immediately south and east of the WWTP. In addition, approximately 34 acres southeast of the WWTP, west of Churn Creek, is designated Farmland of Local Importance. However, no work is proposed adjacent to these areas, and no indirect impacts would occur.

Because 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, there would be no impact.

Question C

According to the City's Zoning Code, the Project site and surrounding area are not designated as timberland or forest land and are not zoned for timberland production. Therefore, the proposed Project would have no impact on forest land or timberland zoning.

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.

As described in Section 3.0 (Project Description), the LS3 and LS5 force mains would be installed in an undeveloped area that is currently used as a spray field for the WWTP. Although this area meets the definition of forest land under the PRC in that it can support 10 percent native tree cover under natural conditions and provides habitat for wildlife resources, no trees would be removed to accommodate the proposed improvements. Further, in accordance with regulatory agency requirements, this area would be restored to pre-construction conditions following construction. Therefore, the Project would have no impact on forest land, as defined by PRC §12220(g).

CUMULATIVE IMPACTS

As documented above, the proposed Project would not result in impacts to agriculture and forest resources; therefore, the proposed Project would not contribute to adverse cumulative impacts to agriculture and forest resources.

MITIGATION

None necessary.

DOCUMENTATION

City of Shasta Lake. 1999. Shasta Lake General Plan. http://www.cityofshastalake.org/documentcenter/view/115. Accessed February 2019.

State of California, Department of Conservation, Farmland Mapping and Monitoring Program. Shasta County Important Farmland 2016. ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2012/sha12.pdf. Accessed February 2019.

_____. 2013. Shasta County Williamson Act FY 2006/2007. ftp://ftp.consrv.ca.gov/pub/dlrp/wa/shasta_w_06_07_WA.pdf. Accessed February 2019.

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 (CAP), known as the National Ambient Air Quality Standards (NAAQSs). The NAAQSs are designed to protect the health and welfare of the populace with a reasonable margin of safety. **Table 4.3-1** identifies the seven 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 vehicles operating at slow speeds are the primary source of carbon monoxide.	• 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.
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})	Particulate matter is a major air pollutant consisting of	• Premature death.	Dust- and fume-producing construction activities, power

	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}.	• Hospitalization for worsening of cardiovascular disease. • Hospitalization for respiratory disease • Asthma-related emergency room visits. • Increased symptoms, increased inhaler usage	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.

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 (CAAQSs). The California Air Resources Board (CARB) has jurisdiction over local air districts and has established its own standards and violation criteria 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 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. There are presently over 200 chemicals listed by the State as TACs with varying degrees of toxicity. 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. TACs are less pervasive in the urban atmosphere than the CAPs, but are linked to short-term (acute) and long-term (chronic or carcinogenic) adverse human health effects. Health effects of TACs include cancer, birth defects, neurological damage, and death. Ambient air quality standards have not been set for TACs. Instead, these pollutants are typically regulated through a technology-based approach for reducing TACs. This approach requires facilities to install Maximum Achievable Control Technology on emission sources. Assembly Bill 2588, the Air Toxics "Hot Spots" Information and Assessment Act of 1987, was adopted in response to public concern regarding potential adverse health effects associated with emissions of TACs. 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.

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 a non-attainment 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. In the past, Shasta County has been designated non-attainment for State PM_{10} standards; however, as of September 24, 2018, the County is in attainment for State PM_{10} standards.

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) 2018 Triennial AQAP constitutes the region's State Implementation Plan (SIP). The NSVPA 2018 AQAP, adopted by the SCAQMD Board on May 7, 2019, includes updated control measures for the three-year period of 2019 through 2021. Shasta County has determined that the County's primary emphasis in implementing the 2018 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 (NOx) 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.

City of Shasta Lake

The Shasta Lake General Plan includes the following objective and policy that apply to the proposed project:

Air Quality Element		
Objectives:	AQ-1	Improve and maintain air quality to protect human health and preclude damage to plants and property.
	AQ-2	Meet applicable California air quality standards and avoid violating Federal air quality standards.
Policy:	AQ-b	Land use decisions shall be made with consideration given to the improvement of air quality. New development projects shall be conditioned to reduce air quality impacts. *Standard Mitigation Measures and Best Available Mitigation Measures* shall be incorporated into new projects when thresholds are exceeded. The City should consult with the Air Quality Management District regarding mitigation of air quality impacts.

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 2018 AQAP serves as the air quality plan for the region.

The Project would result in the temporary generation of ROG, NOx, PM_{10}, and other regulated pollutants during construction. ROG and NOx 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 2016.3.1 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. Output files, including 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 2021 and occur over a period of approximately 10-12 months.
- Total land disturbance would be approximately five acres; 4,800 cubic yards (CY) of dirt would be imported; 5,525 CY would be exported.
- The total area to be re-paved following pipeline installation would be 4.4 acres.
- The total weight of demolition debris (pavement) to be removed from the project site would be approximately 2,270 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 as of January 1, 2014
- Requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (i.e., exhaust retrofits)

Table 4.3-4 shows the highest daily levels of project construction emissions regardless of construction phase. Because the City may apply for funding for the proposed Project through the CWSRF Program, which is partially funded by the USEPA, **Table 4.3-4** also shows estimated emissions in tons per year in accordance with CWSRF 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
2021	2.41	0.14	24.38	1.37	5.32	0.19	3.31	0.13	15.35	0.99	0.03	Trace
2022	1.41	0.10	12.56	0.86	0.78	0.05	0.65	0.04	14.4	1.0	0.02	Trace

As shown in **Table 4.3-4,** construction of the proposed Project would not exceed the SCAQMD 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 areas for all federal ambient air quality standards.

In addition, 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 the amount of wastewater treated at the WWTP or a change in the treatment process; therefore, there is no potential for an increase in hydrogen sulfide emissions.
Vinyl Chloride. Vinyl chloride is used to manufacture polyvinyl chloride (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, 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.

Because the proposed Project would not exceed the SCAQMD Level A or Level B 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, impacts would be less than significant, and the proposed Project would be in conformance with the NSVPA 2018 Triennial AQAP.

Question C

See discussion under Questions A and B. 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. As stated above, the proposed Project does not have any components that would result in long-term operational emissions.

The proposed Project includes construction activities adjacent to single-family residences on Trinity Street, Smith Avenue, and Pine Grove Avenue. As discussed above, the proposed Project would generate PM_{10} and other pollutants during construction. Although these emissions would cease with completion of construction work, sensitive uses adjacent to the construction area could be exposed to elevated dust levels and other pollutants. Compliance with federal, state, and local regulations, and implementation of **Mitigation Measure 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, generation of fugitive dust, and paving (asphalt). 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. In developing attainment designations for criteria pollutants, the USEPA considers the region's past, present, and future emission levels. In addition, local air districts determine suitable significance thresholds based on an area's designated nonattainment status, which also considers the region's past, present, and future emissions levels.

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 City shall ensure through contractual obligations that the following measures are implemented:

a. All material excavated, stockpiled, or graded shall be sufficiently watered to prevent fugitive dust from leaving property boundaries and causing a public nuisance or a violation of ambient air quality standards. The timing and frequency of watering shall be determined by the City Engineer.

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

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

d. All land clearing, grading, earth moving or excavation activities on the project site shall be suspended if/when the City's designated project engineer determines that winds are causing excessive dust generation.

e. Paved streets adjacent to construction areas 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 work site.

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

g. All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications.

h. Off-road construction equipment and other diesel-fueled construction vehicles (e.g., dump trucks) shall not be left idling for periods longer than five minutes when not in use.

DOCUMENTATION

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Shasta County Air Quality Management District. Rule 2:1 new Source Review https://www.arb.ca.gov/nsr/sb288/rules/scaqmd2_1.pdf. Accessed June 2019.

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 or 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 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 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

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. 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. The SAA will 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 Act

The State of California provides for oak protection through the Oak Woodlands Conservation Act (Act), last amended in 2005. The Act applies only when the lead agency is a county and the project is located in an unincorporated county area. The Act requires a determination of whether the project may result in the conversion of oak woodlands that will have a significant effect on the environment as well as implementation of oak woodland mitigation measures, if necessary.

LOCAL

City of Shasta Lake

The Shasta Lake General Plan includes the following objectives, policies, and implementation measures that apply to the proposed project:

Open Space, Conservation, and Land Use Elements		
Objectives:	FW-1	Conserve and manage significant fish, wildlife, and vegetation resources.
	FW-2	Recognize that wildlife habitat and development practices may on occasion conflict and shall need to be resolved according to policies specified in the General Plan.

Policies:	FW-b	Projects that may impact rare, threatened, or endangered plant or animal species, as officially designated by federal and state resource agencies, shall be designed or conditioned to avoid significant adverse impacts on those species.
	W-a	The City shall maintain standards for erosion and sediment control plans for development.
	W-b	Septic systems, waste disposal sites, and other sources of hazardous or polluting materials shall be designed to prevent contamination to rivers, creeks, streams, reservoirs, or the groundwater basin in accordance with standards accepted by or imposed by the City, Shasta County Environmental Health Division and the State Regional Water Quality Control Board.
Implementation Measures:	FW-(2)	Ensure that open space corridors along creeks include protective buffers (non-development setbacks), preserve existing riparian vegetation through the environmental review process and require minimum setbacks from the top-of-bank along creeks. Specific setbacks and widths will be determined on a case by case basis. Input from resource agencies, including the Department of Fish and Game will be considered in determining the setback distance.
	FW-(4)	Ensure that all new developments restrict the use of fencing in locations essential for wildlife movement and place structures so as to minimize interference with wildlife movement.
	FW-(11)	Coordinate with the Department of Fish and Game to ensure the preservation and enhancement of resident and anadromous fish in creeks within the City.
	PF-(5)	Require the use of Best Management Practices to control runoff from all new development, including the issuance of building permits.
	PF-(6)	Continue requiring project proponents to provide plans for erosion and sedimentation control from their sites during construction.

DISCUSSION OF IMPACTS

Question A

Included as **Appendix B** is a Biological Study Report (BSR) for the proposed Project that was prepared by ENPLAN in July 2019. The BSR includes the following:

- *Potential for Special-Status Species to Occur on the Project Site.*
- *Potential for Birds of Conservation Concern to Occur on the Project Site.*
- California Natural Diversity Database (CNDDB) RareFind Report Summary.
- U.S. Fish and Wildlife Service (USFWS) List of Threatened and Endangered Species.
- National Marine Fisheries Service (NMFS) List of Threatened and Endangered Fish Species, Critical Habitat for Fish Species, and Essential Fish Habitat.
- List of Vascular Plant Species Observed: May 16 and July 6, 2018.

To determine the presence/absence of special-status plant and animal species, an ENPLAN biologist conducted botanical and wildlife surveys on May 16 and July 6, 2018. Additional wildlife surveys near the Pine Grove Avenue bridge over Churn Creek were conducted on June 3, 5, and 10, 2019.

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 would not have been evident at the time the fieldwork was conducted; however, determination of their potential presence could readily be made based on observed habitat characteristics.

The records searches included a review of CNDDB records for special-status plants and animals; California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants; USFWS records for federally listed, proposed, and candidate plant and animal species under jurisdiction of the USFWS; USFWS records for migratory birds of conservation concern; and NMFS records for special-status fish species, critical habitat for fish species, and essential fish habitat (EFH).

Special-Status Plant Species

Review of the USFWS species lists for the project area did not identify any federally listed plant species as potentially being affected by the proposed project. Review of CNDDB records showed that no special-status plants have been reported in the study area. Six special-status plants have been reported within a five-mile radius of the study area: maverick clover, Red Bluff dwarf rush, Sanford's arrowhead, Shasta huckleberry, silky cryptantha, and Sulphur Creek brodiaea. Two non-status plants, dubious pea and Henderson's bent grass, have also been reported in the five-mile search radius. The CNPS Inventory identifies two additional special-status plants within the Project City and Shasta Dam quadrangles: northern clarkia and Shasta snow-wreath.

As documented in the BSR, no special-status plant species were observed in the study area or are expected to occur. Therefore, the proposed Project would have no impact on special-status plant species.

Special-Status Wildlife Species

Review of the USFWS species list for the project area identified the following federally listed animal species as potentially being present in the study area: northern spotted owl, California red-legged frog, Delta smelt, Shasta crayfish, and vernal pool fairy shrimp. The USFWS does not identify any designated critical habitat in the study area for any federally listed animal species.

Review of the NMFS species list found that Central Valley spring-run Chinook salmon, evolutionary significant unit (ESU); Sacramento River winter-run (SRWR) Chinook salmon ESU; and California Central Valley (CCV) steelhead, distinct population segment (DPS) occur in the Shasta Dam and Project City quadrangles. Essential Fish Habitat (EFH) is identified in the Project City and Shasta Dam quadrangles for Chinook salmon, and critical habitat is identified in the Project City quadrangle for CCV steelhead. Additionally, fall-run Chinook salmon ESU and late fall-run Chinook salmon ESU are known to occur in Churn Creek.

CNDDB records showed that no special-status wildlife species have been previously reported in the project site. Nine special-status animal species have been reported within a five-mile radius of the project site: bald eagle, Chinook salmon-Central Valley spring-run ESU, Chinook salmon-Sacramento River winter-run ESU, CCV steelhead, fisher (west coast DPS), foothill yellow-legged frog, Shasta salamander, valley elderberry longhorn beetle, and western pond turtle. Additionally, seven non-status animals have been reported within the five-mile search radius: Antioch Dunes anthicid beetle, Oregon shoulderband, Sacramento anthicid beetle, Shasta chaparral, silver-haired bat, western pearlshell, and Wintu sideband. Wildlife species observed during the field surveys include squirrels, crows, warblers, and lizards.

As documented in the BSR and discussed below, the study area has the potential to support western pond turtle, foothill yellow-legged frog, CCV steelhead, and Chinook salmon (fall-, late fall-, and spring-run).

Western Pond Turtle (*Emys marmorata*)

The western pond turtle, a State Species of Special Concern and federal candidate species, is found in a variety of habitats (e.g., ponds, reservoirs, streams, rivers, ditches, sloughs) from sea level to approximately 6,000 feet in elevation. Pond turtles prefer ponds or slow-flowing streams with deep pools. Such habitats often have muddy bottoms. The presence of suitable basking sites is an important habitat component for western pond turtles. Basking sites may include partially submerged logs, rocks, mats of floating vegetation, or open mud banks. Suitable upland habitat (sandy banks or grassy open fields) for egg-laying is required.

CNDDB records show that western pond turtles have been previously reported in Churn Creek and Salt Creek, and suitable habitat for the species is present in the project area.

As documented in the BSR, the potential for direct effects is extremely low because no in-water work is proposed. However, because work will occur during the turtle nesting season (April-August), there is some potential for turtles and/or their nests to be present in upland work areas near Churn Creek and Salt Creek.

Potential direct impacts can be minimized/avoided through implementation of **Mitigation Measure MM 4.4.1**, which requires that if western pond turtles enter a 100-foot buffer of on-going construction activities, a qualified biologist must be contacted and construction activities within 50 feet of the turtle must be halted until the turtle has left the area or is relocated by the qualified biologist.

Mitigation Measure MM 4.4.2 requires that all construction personnel receive training from a qualified biologist regarding special-status species that could occur in the project study area, the locations where the species could occur, the laws and regulations that protect these species, the consequences of noncompliance with those laws and regulations, and procedures to be implemented in the event that these species are encountered during construction.

Potential indirect effects on western pond turtles could occur if sediments or other pollutants enter Churn Creek, Salt Creek, or other surface waters and degrade habitat near the Project site and downstream. However, as discussed in Section 1.8 (Regulatory Requirements), the City is required to develop a SWPPP that includes BMPs to control erosion and sedimentation and prevent damage to streams, watercourses, and aquatic habitat.

Foothill Yellow-Legged Frog (*Rana boylii*)

The foothill yellow-legged frog, a state Species of Special Concern, inhabits rocky, perennial streams and rivers. During the summer and fall, adult frogs prefer stream channels that provide exposed basking sites and cool shady areas. Adults often bask on exposed bedrock, boulders, or gravel bars near riffles. When disturbed, frogs jump into the stream and take refuge beneath submerged rocks or in soft sediment. Breeding and egg laying occur from April through June. Egg masses are generally attached to the downstream side of cobble or pebble substrates in shallow (e.g., less than two feet deep), slow-moving water at the stream or river margin. Tadpoles generally emerge from egg masses in two to four weeks, and transform into juvenile frogs in three to four months. Juvenile and adult frogs generally remain in the vicinity of breeding sites during summer and early fall. By late fall, frogs move into smaller streams to escape scouring winter flows or seek refuge in nearby riparian vegetation.

As documented in the BSR, in the spring, Churn Creek in the study area has a low potential to provide breeding, foraging, and dispersal habitat for foothill yellow-legged frogs. In summer, the stream reach has a low potential to provide foraging and dispersal habitat for tadpoles, juveniles, and adults.

Because no work will occur within Churn Creek or Salt Creek, the project has a negligible potential to directly affect foothill yellow-legged frogs. Nonetheless, the construction personnel training required by **Mitigation Measure 4.4.2** will address the potential presence of foothill yellow-legged frog, the locations where the species could occur, the laws and regulations that

protect these species, the consequences of noncompliance with those laws and regulations, and procedures to be implemented in the event that these species are encountered during construction.

Potential indirect effects on foothill yellow-legged frogs could occur if sediments or other pollutants enter Churn Creek, Salt Creek, and/or downstream waters. As discussed in Section 1.8 (Regulatory Requirements), the City is required to develop a SWPPP that includes BMPs to control erosion and sedimentation and prevent damage to streams, watercourses, and aquatic habitat.

California Central Valley (CCV) Steelhead (*Oncorhynchus mykiss*)

As documented in the BSR, it is possible that CCV steelhead may be present in the on-site reaches of Churn Creek and Salt Creek in the study area during construction. Although no in-water work would occur, potential indirect effects on steelhead include habitat degradation if sediment-laden water enters Churn Creek, Salt Creek, and/or downstream waters. As discussed above, BMPs for sediment control and spill prevention would be implemented in accordance with SWRCB requirements to minimize/avoid the potential for indirect impacts on steelhead.

Chinook Salmon (*Oncorhynchus tshawytscha)*

As documented in the BSR, it is possible that fall-, late fall-, and spring-run Chinook salmon may be present in the on-site reaches of Churn Creek and Salt Creek in the study area during construction. As stated above, no in-water work would occur, and implementation of BMPs in accordance with SWRCB requirements would minimize/avoid the potential for indirect impacts on Chinook salmon.

Implementation of **Mitigation Measures 4.4.1** and **4.4.2**, combined with BMPs for sediment control and spill prevention, will ensure that direct and indirect impacts to special-status species and their habitats are less than significant.

Question B

As documented in the BSR (Appendix B), neither USFWS nor CNDDB records identify any critical habitats in the study area. NMFS identifies critical habitat for CCV steelhead in the Project City quadrangle; however, the critical habitat does not extend to the study area.

NMFS identifies essential fish habitat (EFH) for Chinook salmon in the reaches of Churn Creek and Salt Creek in the study area. The Sustainable Fisheries Act of 1996, defines EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” A project could potentially affect EFH if it resulted in changes in water quality, modifications to the stream channel, and/or degradation of stream vegetation. Although no in-water work would occur, potential indirect effects on Chinook salmon include habitat degradation if sediment-laden water enters Churn Creek, Salt Creek, and/or downstream waters.

As stated in Question A, no in-water work would occur, and BMPs would be implemented in accordance with SWRCB requirements to control erosion and sedimentation and prevent damage to streams, watercourses, and aquatic habitat. In addition, although a few low-hanging limbs may be pruned to accommodate the proposed improvements on the Pine Grove Avenue bridge over Churn Creek, no woody riparian vegetation would be removed. Given the existing requirement for erosion control BMPs during project construction, no further mitigation is needed to protect aquatic habitats, including EFH, in the study area and downstream.

As stated in Section 1.6, an oak woodland community occurs in the westernmost study area between Pine Grove Avenue and the WWTP headworks and is comprised of blue oak, California black oak, and interior live oak. Although the Project has been designed to avoid tree removal, trenching has the potential to damage roots of trees adjoining the pipeline corridor, which could lead to eventual loss of those trees.

Potential indirect impacts can be minimized/avoided through implementation of **Mitigation Measure 4.4.3,** which requires the placement of exclusionary fencing around trees planned for retention; the fencing would be placed six feet outside the driplines of the trees to create a "root protection zone;" to the extent feasible, no construction activities or storage of materials would occur within this zone. If the force main must be installed using open-cut trenching within the root protection zone, the work shall be completed under the direction of a certified arborist to ensure that the trees are not substantially damaged. With implementation of this measure, the potential direct and indirect loss of oak trees is less than significant.

The introduction and spread of noxious weeds during construction activities has the potential to impact sensitive habitats. Each noxious weed identified by the California Department of Agriculture 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. Noxious weeds observed in the Project area are of widespread distribution in the County, and further spread of these weeds is not anticipated. **Mitigation Measure MM 4.4.4** reduces potential impacts related to the introduction and spread of noxious weeds to a less than significant level.

Compliance with the conditions of regulatory agency permits, use of BMPs for spill prevention and erosion control, and implementation of **Mitigation Measures MM 4.4.3 and MM 4.4.4** would reduce the proposed project's potential impacts on riverine/riparian habitat, oak woodland, and other sensitive natural communities to a less-than-significant level.

Question C

ENPLAN conducted field investigations on September 19, 2018, and June 27, 2019, to identify potential U.S. Army Corps of Engineers (USACE) jurisdictional 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, 2008), and the *Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States*.

As stated in the BSR, the Project has been designed to avoid wetlands and other waters of the U.S. and State; however, as discussed in Section 3.0 above, if it is not possible to install the force main on top of a box culvert in Cascade Boulevard, this segment of the force main would be installed using open-cut trenching through one jurisdictional water adjacent to Cascade Boulevard. This feature is a stream/drainage channel that conveys drainage to Salt Creek on the east side of I-5. This work would be subject to conditions of a CWA Section 404 permit as required by the USACE. If work in the drainage ditch is required, it is anticipated that the proposed project would qualify for a USACE Nationwide Permit (NWP) 12. NWP 12 applies to activities required for the construction, maintenance, repair, and removal of utility lines and associated facilities, provided the activity does not result in the loss of greater than ½-acre of waters of the U.S. 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. In addition, a Streambed Alteration Agreement from CDFW may be required.

Among other conditions, the regulatory agency permits require that temporary fills be removed in their entirety and the affected areas be returned to pre-construction contours to maintain the original hydrology of the site. In addition, temporarily disturbed areas must be revegetated, as appropriate. Because the City would comply with conditions of regulatory agency permits, impacts would be less that significant.

Question D

As stated above, the majority of the force main would be installed in paved or graveled areas within road ROWs that have minimal potential to serve as wildlife corridors. Further, the proposed Project

does not include installation of fencing or other permanent structures that could impede the movement of terrestrial wildlife. Although Churn Creek and Salt Creek in the study area may serve as wildlife corridors for various animal species, as discussed above, no in-water work in Churn Creek or Salt Creek would occur. Nonetheless, the Project could result in temporary impacts to wildlife throughout the construction period due to increased human activity, increased noise levels, and temporary loss of vegetation that may provide food and shelter for wildlife.

Daytime wildlife movement in the Churn Creek and Salt Creek corridors may be temporarily affected during the construction period. This impact is not significant because it would be of limited duration and wildlife species would likely use the stream corridors during non-working hours or alter their routes to move around the construction areas.

The Project area is located within the Pacific Flyway, and it is possible that resident and migratory 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 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 that occur in surfaced roadways and graveled road shoulders are not expected to directly affect nesting birds because no trees or other vegetation would be removed; indirect effects in these areas, such as nest abandonment by adults in response to loud noise levels, are likewise not expected given the urban character of the work area. Any birds that may nest adjacent to roadways would be accustomed to periodic loud noises and other human-induced disturbances.

Construction activities in proximity to the LS5 manholes and associated sewer line improvements, and the force main corridor between Pine Grove Avenue and the WWTP headworks, 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 **Mitigation Measure MM 4.4.5**, 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 City 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.

Therefore, because no in-water work in Churn Creek or Salt Creek would occur, activities that may impede the movement of wildlife would be temporary and would cease at completion of the Project, and **Mitigation Measure MM 4.4.5** would reduce the potential for adversely affecting nesting birds, the proposed Project would have a less than significant impact on the movement of migratory fish and wildlife species, would not significantly impact migratory wildlife corridors, and would not impede the use of native wildlife nursery sites.

Question E

As noted under Regulatory Context above, the City's General Plan addresses the need to avoid impacts to special-status fish, wildlife, and plant species and their habitats. In addition, Shasta Lake Municipal Code Chapter 12.36 (Tree Conservation) promotes the preservation of trees.

As documented in the BSR and herein, impacts to special-status species and their habitats would be less than significant with implementation of BMPs for sediment and erosion control and **Mitigation**

Measures MM 4.4.1 through **MM 4.4.5.** Implementation of these measures ensures that the Project does not conflict with local policies or ordinances adopted for the protection of biological resources.

Question F

A Habitat Conservation Plan (HCP) is a federal planning document that is prepared pursuant to Section 10 of the Federal Endangered Species Act (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 vicinity of the Project area, including growth resulting from build-out of the City of Shasta Lake, City of Redding, and Shasta County General Plans, are anticipated to permanently remove plant and wildlife resources.

As development in the area continues, sensitive plant and wildlife species native to the region and their habitat, including those species listed under CESA and FESA and those identified by state and federal resources agencies as threatened, endangered, fully protected, sensitive, species of concern, or candidate species, will be lost through conversion of existing open space to urban development. With continued conversion of natural habitat to human use, the availability and accessibility of remaining foraging and natural habitats in this ecosystem would dwindle and those remaining natural areas may not be able to support additional plant or animal populations. Cumulative development would potentially result in a regionally significant cumulative impact on special-status species and their habitats.

Implementation of BMPs for erosion and sediment control, and implementation of **Mitigation Measures MM 4.4.1** through **4.4.5** avoid, reduce, or mitigate potential impacts to special-status species and their habitat, and sensitive natural communities. With these measures, the proposed Project's contribution to cumulative regional impacts to biological resources would be less than significant.

MITIGATION

MM 4.4.1 In the event western pond turtles enter a 100-foot buffer of on-going construction activities, a qualified biologist must be contacted and construction activities within 50 feet of the turtle must be halted until the turtle has left the area or is relocated by the qualified biologist.

MM 4.4.2 Prior to commencement of any earth disturbance (e.g., clearing, grading, trenching, etc.), all construction personnel shall receive training from a qualified biologist regarding protective measures for special-status animal species and sensitive habitats that could exist in the study area (western pond turtle, foothill yellow-legged frog, Central Valley steelhead and Chinook salmon). If new personnel are added to the project, the City shall ensure that they receive the mandatory training before starting work. At a minimum, the training shall include the following:

a. A review of the special-status species that could occur in the project study area, the locations where the species could occur, the laws and regulations that protect these species, and the consequences of noncompliance with those laws and regulations.

b. Procedures to be implemented in the event that these species are encountered during construction.

c. A review of sensitive habitats that occur in the study area and the location of the sensitive habitats.

d. A review of applicable mitigation measures, standard construction measures, best management practices, and regulatory agency permit conditions that apply to the protection of special-status species and sensitive habitats.

MM 4.4.3 In order to avoid/minimize effects to protected trees, temporary construction fencing shall be installed and maintained at least 6 feet outside of the dripline of all trees to be preserved. The fencing around this "root protection zone" shall be maintained throughout construction.

a. No vehicle parking or materials stockpiling shall occur within the root protection zone.

b. To the extent feasible, no construction activities (including grading, cutting, and trenching), shall occur within the root protection zone. If the force main must be installed using open-cut trenching within the root protection zone, the work shall be completed under the supervision of a certified arborist.

MM 4.4.4 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, and

b. Limiting any import or export of fill material to material that is known to be weed free.

MM 4.4.5 In order 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:

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 in the work area for the LS5 manholes and associated sewer line improvements, and/or the force main corridor from the east side of Churn Creek to the WWTP headworks, a pre-construction nesting survey shall be conducted by a qualified biologist to identify active nests in and adjacent to the work area.

Surveys shall begin prior to sunrise and continue until vegetation and nests have been sufficiently observed. The survey shall take into account 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 to the California Department of Fish and Wildlife 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

City of Shasta Lake. 1999. City of Shasta Lake General Plan. http://www.cityofshastalake.org/documentcenter/view/115. Accessed June 2019.

California Department of Fish and Wildlife. 2019. California Regional Conservation Plans. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=68626&inline. Accessed June 2019.

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ENPLAN. Field surveys. May 16, July 6, September 19, and November 5, 2018; June 3, 5, 10, and 27, 2019.

_____. 2019. Biological Study Report for the Shasta Lake Force Main Replacement Project.

_____. 2017. Environmental Conservation Online System. Habitat Conservation Plans. https://ecos.fws.gov/ecp0/conservationPlan/region/summary?region=8&type=HCP. Accessed August 2018.

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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, 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

City of Shasta Lake

The Shasta Lake General Plan includes the following objective, policy, and implementation measures that apply to the proposed project:

Open Space Element		
Objective:	HER-1	Conserve and manage significant prehistoric and historic cultural resources.
Policy:	HER-a	Development projects in areas containing known significant cultural resources 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 zones, and building siting requirements.
Implementation Measures:	HER-(a)	Require a records search for any development project proposed in areas of high archaeology sensitivity to determine whether the site contains known prehistoric or historic cultural resources and/or to determine the potential for discovery of additional cultural resources.
	HER-(b)	Require that sponsors of projects on sites where probable cause for discovery of archaeological resources exists (as indicated by records search and where resources have been discovered in the vicinity of the project) retain a consulting archaeologist to survey the project site. If unique resources, as defined by state law, are found, require preparation of an archaeological resource mitigation plan; monitor the project to ensure that mitigation measures are implemented.

DISCUSSION OF IMPACTS

Questions A and B

A Cultural Resources Inventory (CRI) was completed for the proposed Project by ENPLAN in June 2019. 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); 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); Shasta Historical Society; Shasta Lake Heritage and Historical Society; and historical maps and aerial photographs.

Archaeological fieldwork took place on July 20, 2018. 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 vertical APE (i.e., associated with the potential for buried cultural resources) is based upon the existing topography, geological history, site development history, and the engineering design of the Project. The vertical APE for the proposed Project is a maximum depth of 7 feet related to pipeline trenching. The vertical APE for the manhole improvements is anticipated to be a maximum of six feet; however, if the existing overflow manhole sewer line is removed and replaced in place, the maximum depth of excavation could be up to ten feet.

Records Search

Research at the NEIC was conducted on July 9, 2018, and covered an approximate half-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 that the project area has been extensively surveyed in the past in conjunction with previous development projects (i.e. Windsor Estates Subdivision, Deer Creek Manor Subdivision, Cascade Boulevard realignment, Pine Grove Avenue Extension, WWTP Direct Discharge project, proposed Churn Creek Trail, Heritage Grove Subdivision, and others).

The records search indicated that 35 cultural resource surveys have been conducted within a half-mile radius of the project APE, nine of which encompassed portions of the APE.

There are 13 previously recorded sites in the search radius; however, none of the sites is 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. Consultation with the Shasta Historical Society and Shasta Lake Heritage and Historical Society did not identify any resources in the Project area.

Native American Consultation

In response to ENPLAN's request for information, on July 9, 2018, the NAHC conducted a search of the Sacred Lands File; the search did not reveal any known Native American sacred sites or cultural resources in the Project area. The NAHC also provided contact information for several Native American representatives and organizations, who were contacted with a request to provide comments on the proposed Project. Follow-up e-mails and telephone calls were placed to the tribal members that were previously identified by the NAHC.

A response was received from Kelli Hayward with the Wintu Tribe of Northern California. Ms. Hayward indicated that there are known sites in the Pine Grove Avenue area, but she is not aware of any within the APE. Lacie Mills, Cultural Resources Representative with the Greenville Rancheria, responded and said she has no comment on the Project. No other comments or concerns were reported by any Native American representative or organization.

Conclusions

No cultural resources were identified in the APE as a result of the cultural resources inventory survey. However, based on the geomorphological and topographic characteristics of the project site, the results of the records and literature search, and the age of soils mapped in the area, improvements in

previously undisturbed areas have a moderate to high potential to encounter buried historic and prehistoric resources. **Mitigation Measure MM 4.5.1** addresses the inadvertent discovery of archaeological 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 4.5.2** ensures 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, the City 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 City prior to resuming construction.

MM 4.5.2 In the event that human remains are encountered during construction activities, the City shall comply with §15064.5 (e) (1) of the CEQA Guidelines and PRC §7050.5. All project-related ground disturbance within 100 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

City of Shasta Lake. 1999. City of Shasta Lake General Plan. http://www.cityofshastalake.org/documentcenter/view/115. Accessed June 2019.

ENPLAN. 2019. Cultural Resources Inventory Report for the City of Shasta Lake Force Main 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, GHG emissions, transportation, or utilities at the discretion of the lead agency.

DISCUSSION OF IMPACTS

Questions A and B

The Project does not include any components that would result in a permanent increase in energy use. Energy consumption during construction would occur from diesel and gasoline used for construction equipment, haul trucks, and construction workers travelling 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. With implementation of **MM 4.3.1(h),** and compliance with existing State regulations that require the use of fuel-efficient equipment, 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 City'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. With implementation of **Mitigation Measure MM 4.3.1(h)** and compliance with State regulations, the proposed Project's cumulative impacts on energy resources would be less than significant.

MITIGATION

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

DOCUMENTATION

California Air Resources Board. 2016. Mobile Source Strategy. https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf. Accessed April 2019.

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

The National Earthquake Hazards Reduction (NEHR) Act 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 NEHR Act 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

City of Shasta Lake

The Shasta Lake General Plan includes the following objective and policy that apply to the proposed project:

Safety Element		
Objective:	SG-2	Avoid development on unstable slopes by developing standards for the location of development relative to these hazards.
	SG-3	Protect development from other geologic hazards, such as landslides, erosion, and expansive soils.
Policy:	SG-c	Sedimentation and erosion from development shall be minimized through ordinances and implementation mechanisms as adopted by the City.

DISCUSSION OF IMPACTS

Question A

i and ii)

According to the Alquist-Priolo Earthquake Fault Zoning Maps, the closest Special Study Zone is the Rocky Ledge Fault Zone, approximately 42 miles northeast of the Project area. Review of the USGS earthquake fault map shows that the potentially active Battle Creek fault zone that consists of closely parallel faults that parallel Cottonwood Creek is approximately 20 miles south of the Project site. Although these fault lines could produce low to moderate ground shaking, earthquake activity has not been a serious hazard in the City's history, 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, there would be no impact.

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**, it is possible that liquefaction could occur in some areas due to soil type; 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	Landform and Parent Material	Erosion Potential	Drainage	Runoff Class	Permeability	Shrink-Swell Potential
Auburn loam, 0 to 8 percent slopes (AnB)	Mountains; residuum weathered from metavolcanics	Slight to Moderate	Well-Drained	Slow to Medium	Moderate	Low
Auburn loam, 8 to 30 percent slopes (AnD)	Mountains; residuum weathered from metavolcanics	Moderate to High	Well-Drained	Medium	Moderate	Low
Boomer gravelly loam, 0 to 15 percent slopes (BkC)	Mountains; residuum weathered from metavolcanics	Slight to Moderate	Well-Drained	High	Moderately slow	Moderate
Boomer gravelly loam, 15 to 30 percent slopes (BkD)	Mountains; residuum weathered from metavolcanics	Moderate to High	Well-Drained	Medium to Rapid	Moderately slow	Moderate
Churn gravelly loam, deep, 0 to 3 percent slopes (CfA)	Terraces; alluvium	None to Slight	Moderately Well-Drained	Slow	Slow	Low to Moderate

Sources: U.S. Department of Agriculture, Natural Resources Conservation Service, 2019; USDA, Soil Conservation Service and Forest Service, Soil Survey of Shasta County Area, California, 1974.

iv)

Landslides are more likely to occur in steep areas with weak rocks where the soil is saturated from heavy rains or snowmelt. The Landslide Susceptibility Map included in the City's 2014 *Shasta Lake Local Hazard Mitigation Plan* indicates that areas in which improvements are proposed have a low susceptibility for landslide hazards. In addition, the proposed Project does not include extensive grading on steep slopes; therefore, potential impacts associated with landslides are less than significant.

Question B

Construction of the proposed Project would involve excavation, grading activities, 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 re-vegetation potential of the area. As shown in **Table 4.7-1**, some of the soils on the Project site are shown to have a moderate to high potential for erosion.

As noted in Section 1.8 (Regulatory Requirements), the City is required to obtain coverage under the NPDES permit for *Discharges of Storm Water Runoff Associated with Construction Activity* by submitting a Notice of Intent to the SWRCB. The permitting process requires the development and implementation of an effective SWPPP that includes BMPs to reduce pollutants and any additional controls necessary to meet water quality standards. 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 in accordance with existing requirements, the potential for soil erosion and loss of top soil 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 sands, silts, and clays. 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**, none of the soils in the Project area has a high shrink-swell potential. In addition, improvement plans for the proposed Project would be prepared by a registered professional engineer to ensure any 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

According to the California Geological Survey, there are formations in the study area that are old enough to contain paleontological resources; however, there is no record of paleontological resources in the Project area, and the Project area has no unique geological features. Although no unique geologic features or paleontological sites are known to exist in the study area, **Mitigation Measure MM 4.5.1** addresses the inadvertent discovery of paleontological resources and ensures that impacts are 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, all development projects in the County that result in earth disturbance over one acre are required to obtain coverage under the NPDES permit for *Discharges of Storm Water Runoff Associated with Construction Activity* by submitting a Notice of Intent to the SWRCB along with an effective SWPPP that includes BMPs to minimize erosion. In addition, pursuant to existing State regulations, incorporation of standard seismic safety and engineering design measures are required for all public utility projects. Therefore, the proposed Project's cumulative impacts are less than significant.

MITIGATION

None necessary.

DOCUMENTATION

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U.S. Department of Agriculture, Natural Resource Conservation Service. 2015. Web Soil Survey. http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed August 2018.

_____. 1974. Soil Survey of Shasta County 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 (GHGs) 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 USEPA 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)

The California Global Warming Solutions Act of 2006 (AB 32) established a statewide GHG emissions cap for 2020 based on 1990 emissions levels as set forth in EO S-3-05. As required by AB 32, 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, rather than only focusing on targets for 2020 or 2050. In December 2017, CARB adopted the second update to the Scoping Plan that includes strategies to achieve the 2030 mid-term target established by EO B-30-15 (discussed below).

California Executive Order B-30-15

EO B-30-15 was signed by the Governor on April 29, 2015. It sets interim GHG targets of 40 percent below 1990 levels by 2030, to ensure California will meet its 2050 target set by EO S-3-05. It also calls for state agencies to continue to develop and implement GHG emission reduction programs in support of the reduction targets.

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, 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. The Renewables Portfolio Standard has been subsequently amended by the following actions:

Date	Legislation/Plan	Action
May 3, 2003	Energy Action Plan I	Accelerated the 20 percent renewable energy target to 2010.
September 21, 2005	Energy Action Plan II	Recommended a goal of 33 percent renewable energy by 2020.
September 26, 2006	SB 107	Codified the 20 percent renewable energy by 2010 target set forth in the Energy Action Plan I.
November 17, 2008	EO S-14-08 (Schwarzenegger)	Required 33 percent renewable energy by 2020 as recommended in the Energy Action Plan II.
September 15, 2009	EO S-21-09 (Schwarzenegger)	Directed the CARB to adopt regulations by July 31, 2010, consistent with the 33 percent renewable energy by 2020 target set forth in EO S-14-08.
April 12, 2011	Senate Bill X1-2	Codified the 33 percent renewable energy by 2020 target set forth in EO S-14-08; this new target applied to all electricity retailers in the state, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators.
October 7, 2015	SB 350	Codified a target of 50 percent renewable energy by 2030. Also requires California utilities to develop integrated resource plans that incorporate a GHG emission reduction planning component beginning January 1, 2019.
September 10, 2018	SB 100	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)

The Sustainable Communities and Climate Protection Act aims to reduce GHG emissions from passenger vehicles and light duty trucks through the coordination of land use, housing, and transportation strategies. 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 in the applicable Regional Transportation Plan that demonstrates how the region will meet the GHG emissions reduction targets.

CEQA Guidelines

§15064.4 of the CEQA Guidelines states 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 EIR must be prepared for the project.

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.

City of Shasta Lake

Chapter 4 of the RCAP is specific to the City of Shasta Lake. Although the City has not adopted the RCAP, the RCAP provides background information regarding GHG emissions in the City, as well as recommended GHG reduction measures that can be considered in developing mitigation measures for projects within the City.

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, 2018.*

As stated under Regulatory Context, neither Shasta County nor the City have adopted thresholds of significance for GHG emissions. Because there are no local quantitative GHG thresholds, predicted Project-related GHG emissions were compared to thresholds established by the Bay Area Air Quality Management District and Sacramento Metropolitan Air Quality Management District, which are widely adopted GHG emissions thresholds, as shown in **Table 4.8-3.** These thresholds are tied directly to state-wide emissions reduction goals.

TABLE 4.8-3
Greenhouse Gas Emissions Thresholds

Category	Bay Area AQMD	Sacramento Metropolitan AQMD
Construction	None Recommended	1,100 metric tons/year CO_2e
Stationary Sources [1]	10,000 metric tons/year CO_2e	10,000 metric tons/year CO_2e
Land Development Projects (Operational)	1,100 metric tons/year CO_2e or 4.6 metric tons CO_2e/service population/year	1,100 metric tons/year CO_2e

The City has determined the commonly adopted numeric threshold for construction projects of 1,100 metric tons of CO_2e per year is appropriate for the proposed Project. If construction emissions exceed 1,100 metric tons of CO_2e, then the impact is considered significant.

Project GHG Emissions

GHG emissions for the proposed Project were estimated using the CalEEMod.2016.3.1 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.

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. The proposed Project does not include any components that

[1] *Stationary sources are typically associated with industrial processes (e.g., boilers, heaters, flares, cement plants, and other types of combustion equipment.*

would result in a permanent increase in GHG emissions above existing levels. Therefore, there would be no operational impacts.

Construction of the proposed Project would emit GHG emissions as shown in **Table 4.8-4**, primarily from the combustion of diesel fuel in heavy equipment. Because CO_2e associated with construction of the proposed Project would not exceed the numerical threshold of 1,100 metric tons/year of CO_2e, impacts during construction would be less than significant.

TABLE 4.8-4
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)**
2021	160.88	0.04	0	161.96
2022	141.97	0.03	0	142.80

Question B

See discussion under Regulatory Context and Question A above. The proposed Project would generate minimal GHG emissions on a temporary basis during construction activities, with no increase in operational emissions. Construction emissions would be well below the referenced threshold of 1,100 metric tons/year of CO_2e. This threshold is tied directly to state-wide emissions reduction goals. There are no adopted local plans associated with GHG emissions; 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 numerical threshold of 1,100 metric tons/year CO_2e, and there would be no increased energy use or GHG emissions as a result of Project operation; therefore, the proposed Project would not significantly contribute to adverse impacts associated with cumulative GHG emissions; cumulative impacts would be less than significant.

MITIGATION

None necessary.

DOCUMENTATION

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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 of hazardous wastes, including generation, transportation, treatment, storage, and disposal. The USEPA has primary responsibility for implementing the RCRA. The RCRA 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.

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. OSHA regulates workplace exposure to hazardous chemicals and activities through regulations governing workplace procedures and equipment.

U.S. Department of Transportation

The United States Department of Transportation 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.

Cal/OSHA enforces hazard communication program regulations, which include identifying and labeling hazardous substances, communicating information related to hazardous substances and their handling, and preparing health and safety plans to protect workers and employees at hazardous waste sites.

Regional Water Quality Control Board

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 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.

LOCAL

City of Shasta Lake

The Shasta Lake General Plan includes the following objectives and policies that apply to the proposed project:

Safety Element		
Objectives:	FS-1	Protect development from wildland and non-wildland fires by requiring development to incorporate design measures responsive to the risk from this hazard.
	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.
Policies:	FS-b	All land divisions and development shall be required to conform to Shasta Lake Fire Protection District Fire Safety Standards.

	FS-c	Known fire hazard information should be reported as part of every general plan amendment, zone change, use permit, variance, building site approval, and all other land development applications subject to environmental assessment.

City of Shasta Lake Local Hazard Mitigation Plan (LHMP)

The City's LHMP includes a fire fuel rank map based on CAL FIRE's fuel model for the City. The map identifies moderate, high, and very-high fuel ranks based on inputs such as fuel, slope, brush density, and tree density. Fuel rankings are used in conjunction with three additional factors (weather, assets at risk, and level of service) to assign a final risk ranking. The areas with the highest risk of wildfire are spread throughout the City and are generally located in areas with greater fuel loads.

Shasta County Hazardous Materials Area Plan, 2018

The Shasta County Hazardous Materials Area Plan 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 Area Plan 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 (SCHMRT), which is the primary hazardous materials response group for Shasta County.

DISCUSSION OF IMPACTS

Questions A and B

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

The schools closest to the Project site are Shasta Lake School (K-8) on Vallecito Street, approximately 0.6 miles north of the Project site, and Central Valley High School on La Mesa Avenue, approximately 0.9 miles north of the Project site. There are no schools proposed in the Project area; therefore, the Project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school; there would be no impact.

Question D

The Cortese list is prepared in accordance with California Government Code §65962.5. The following databases were reviewed to locate "Cortese List" sites:

- List of Hazardous Waste and Substances sites from the Department of Toxic Substances Control (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 these records identified one active clean-up site within a one-mile radius of the Project area: Valley Plating Company on El Cajon Avenue is approximately 0.8 miles north of the Project study area. Due to the distance between the Project site and the Valley Plating Company site, there would be no impact.

Question E

According to the Shasta Lake 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 Benton Airpark, approximately 5.5 miles southwest of the Project site. The closest private airstrip is Tews Field on Moody Creek Drive, approximately 2.5 miles northeast of the Project site. Due to the distance between the airports and the Project site, 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.

In addition, the City's standard construction measures require temporary traffic control to be implemented during completion of activities that require work in the public road right-of-way. Traffic control must adhere to the procedures, methods, and guidance given in the current edition of the California Manual on Uniform Traffic Control Devices (MUTCD). Controlled one- or two-way traffic must be able to pass at all times, unless an exception is granted by the City Engineer. Unimpeded two-way traffic shall be maintained during hours of darkness, and where practicable during daylight hours. Driveway access to private property must be maintained at all times.

At the discretion of the City Engineer, the contractor may be required to submit a temporary traffic control plan for review and approval. The plan must illustrate the location of the work, affected roads and types and locations of temporary traffic control measures (i.e., signs, cones, flaggers, etc.) that would be implemented during the work. These requirements ensure that the proposed Project would not interfere with emergency response vehicles or an emergency evacuation plan; 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. **Mitigation Measure MM 4.9.1** ensures that impacts during construction are 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. These regulations, combined with **Mitigation Measure MM 4.9.1**, ensure that impacts are less than significant and that activities do not result in impacts that would be cumulatively considerable.

MITIGATION

MM 4.9.1 During construction, all areas in which work will be completed using spark-producing equipment shall be cleared of dried vegetation or other materials that could serve as fire fuel. To the extent feasible, the contractor shall keep these areas clear of combustible materials in order to maintain a fire break.

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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

Under the 1974 Safe Drinking Water Act, 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

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 State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCB). NPDES permits are also referred to as waste discharge requirements (WDRs) that 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. 2009-009-DWQ, amended by 2010-0014-DWQ & 2012-0006-DWQ), 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 as defined in the applicable Basin Plan. If Basin Plan objectives are exceeded, corrective measures are required.

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 R5-2016-0076-01 (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 enter waters of the U.S. are authorized under SWRCB Water Quality Order No. 2003-003-DWQ, provided that the dewatering

discharge is of a quality as good as or better than the underlying groundwater, and there is a low risk of nuisance.

Sanitary Sewer Systems

On May 2, 2006, the SWRCB adopted statewide *General Waste Discharge Requirements for Sanitary Sewer Systems* (General Order 2006-0003DWQ [the General Order]). The General Order requires all public agencies that own or operate sanitary sewer systems greater than one mile in length to comply with the Order. Because the City's collection system exceeds one mile in length, the City is enrolled under the General Order for operation of its wastewater collection system.

Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (Phase II MS4)

On April 30, 2003, the SWRCB adopted *Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s)* (currently Water Quality Order No. 2013-0001-DWQ). The City of Shasta Lake is a Regulated Small MS4 and must comply with provisions of the Phase II MS4 General Order. This General Order requires entities covered under the permit to implement measures intended to reduce storm water runoff from construction sites, including post-construction storm water management programs. Linear underground/overhead projects (LUPs) are exempt from the construction site design measures unless the LUP has a discrete location that has 5,000 square feet or more of newly constructed contiguous impervious surface.

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. Water quality objectives for all waters addressed through the plans are included, along with implementation programs and policies to achieve those objectives. Waste discharge requirements (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. Of the 517 groundwater basins in the State, 109 are identified as medium- and high-priority basins. Critical conditions of overdraft have been identified in 21 groundwater basins (Department of Water Resources, 2019).
The SGMA requires local agencies in medium- and high-priority basins to form Groundwater Sustainability Agencies by July 1, 2017, and be managed in accordance with locally-developed Groundwater Sustainability Plans (GSPs). Basins identified as critically overdrafted are required to be managed under a GSP by January 31, 2020. All other 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

City of Shasta Lake

The Shasta Lake General Plan includes the following objective, policies, and implementation measures that apply to the proposed project:

Conservation Element		
Objective:	W-1	Conserve and manage all surface and groundwater resources so that all City residents, both now and in the future, have reasonable assurances that an adequate quantity and quality of water exists.

Policies:	W-a	The City shall maintain standards for erosion and sediment control plans for development.
	W-b	Septic systems, waste disposal sites, and other sources of hazardous or polluting materials shall be designed to prevent contamination to rivers, creeks, streams, reservoirs, or the groundwater basin in accordance with standards accepted by or imposed by the City, Shasta County Environmental Health Division and the State Regional Water Quality Control Board.
Implementation Measures:	PF-(5)	Require the use of Best Management Practices to control runoff from all new development, including the issuance of building permits.
	PF-(6)	Continue requiring project proponents to provide plans for erosion and sedimentation control from their sites during construction.

In addition, SLMC Chapter 13.36 (Storm Water Quality Management) was enacted to assist in the protection of watercourses and to provide the City with the legal authority to fully implement and enforce provisions of the Phase II MS4 permit. SLMC Chapter 13.36 includes general discharge and waste disposal prohibitions, and requirements for implementation of BMPs to minimize erosion and runoff at construction sites. SLMC Chapter 15.08 (Grading, Erosion Control, and Hillside Development) also includes standards and design criteria that implement stormwater BMPs to control water pollution and erosion during construction activities for all development.

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, the City is required to implement an effective SWPPP that includes BMPs to control erosion and sedimentation and prevent damage to streams, watercourses, and aquatic habitat.

The City is also required to obtain a State Water Quality Certification (or waiver) from the CVRWQCB to ensure that the project will not violate established State water quality standards. The City also must file a Report of Waste Discharge for any discharge of waste to land or surface waters that may impair a beneficial use of surface or groundwater of the State. The City's Public Works Director or his/her designee is responsible for ensuring compliance with the City's Storm Water Quality Management program for public improvements, including installation of public utilities.

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 and 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 Project area.

Because BMPs would be implemented to control erosion and sedimentation and prevent damage to streams and watercourses in accordance with existing State and City requirements, and the City will ensure compliance with the Phase II MS4 permit and City's Storm Water Quality Management regulations during improvement plan review and construction site monitoring, 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 installation of subsurface pipelines, and the ground would be restored to pre-construction conditions following installation of the pipe. The Project does not include the addition of impervious surfacing, and does not include any new above-ground structures that would impede or redirect flood flows or otherwise affect drainage patterns. In addition, as discussed under Question A, BMPs would be implemented throughout construction to minimize erosion and runoff in accordance with existing State and City regulations; therefore, impacts would be less than significant.

Question D

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 Shasta due to very strong ground-shaking. However, as discussed in Section 4.7 under Question A, the closest potentially active faults are in the Battle Creek fault zone, approximately 20 miles south of the 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 overtop Shasta Dam. 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.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (Panels 06089C1236G, 06089C1238G, and 06089C1217G, effective March 17, 2011), the Project includes work within the 100-year flood hazard zones of Churn Creek and Salt Creek. Work within flood hazard areas includes pipeline improvements on Cascade Boulevard, immediately north of LS3 (see **Figure 4.10-1**), and pipeline improvements immediately west of the bridge over Churn Creek between Pine Grove Avenue and the WWTP headworks (see **Figure 4.10-2**). In addition, the LS5 diversion manhole and associated sewer line replacement, and the sewer line replacement for the overflow manhole, would occur within a 100-year flood hazard zone (**see Figure 4.10-3**).

Construction of the proposed project is subject to SLMC Chapter 15.04 (Floodplain Management). SLMC Section 15.04.170 (Standards for Utilities) requires that all new and replacement sanitary sewage systems be designed to minimize or eliminate infiltration of flood waters into the systems, and discharge from the systems into flood waters. Improvement plans would be prepared by a registered professional engineer to ensure compliance with the City's Floodplain Management ordinance; therefore, the potential for release of pollutants due to a flood is less than significant.

CUMULATIVE IMPACTS

The proposed Project and other potential cumulative projects in the region, including growth resulting from build-out of the City'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.

All projects in the State that result in land disturbance of one acre or more are required to comply with the State Water Board General Construction NPDES permit which requires implementation of post-construction measures to ensure that new development does not cause or contribute to impacts from stormwater runoff upstream or downstream. Projects in the City must also comply with provisions of the Phase II MS4 permit, the City's Storm Water Quality Management program, and the City's Floodplain Management Ordinance. These regulations are intended to reduce the potential for cumulative impacts, both during and post-construction. Compliance with State and City regulations ensures that the Project's cumulative contribution to hydrology and water quality impacts is less than significant.

MITIGATION

None necessary.

DOCUMENTATION

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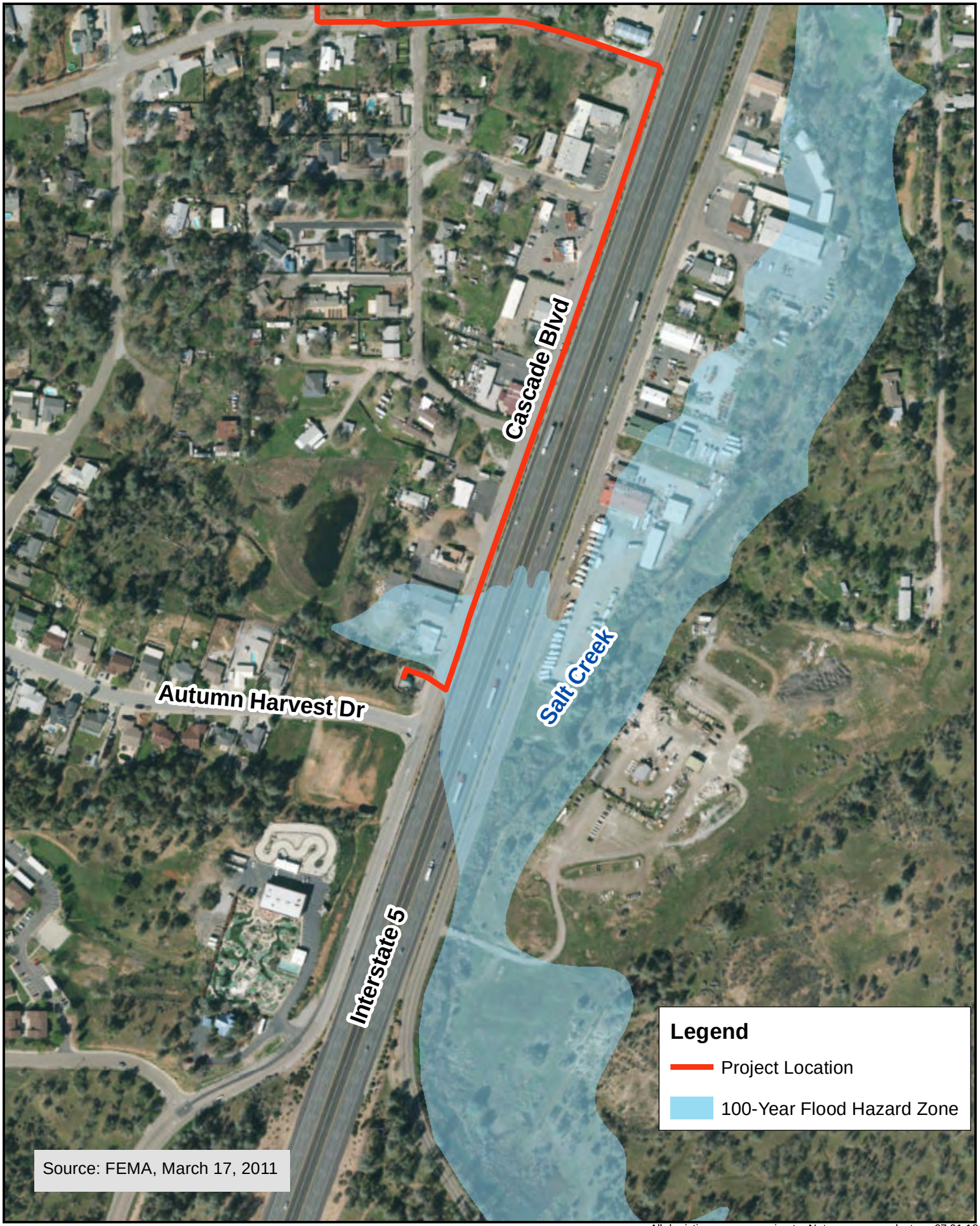
State of California, Department of Water Resources. 2019. Sustainable Groundwater Management Act, 2018 Basin Prioritization. https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Basin-Prioritization/Files/2018-Sustainable-Groundwater-Management-Act-Basin-Prioritization.pdf?la=en&hash=B9F946563AA3E6B338674951A7FFB0D80B037530. Accessed June 2019.



All depictions are approximate. Not a survey product. 07.01.19

Figure 4.10-1

0 300 Feet

100-Year Flood Hazard Zone - Cascade Boulevard

ENPLAN

Path: N:\companyfiles\01-Jobs Active\032-49 PACE - Shasta Lake Force Main Replacement\3-Project GIS\3-Map Documents\Initial Study\FEMA Floodplain Pine Grove Ave 070119.mxd

All depictions are approximate. Not a survey product. 07.01.19

Figure 4.10-2

0 300 Feet

100-Year Flood Hazard Zone - Pine Grove Avenue

ENPLAN

Path: N:\companyfiles\01-Jobs Active\032-49 PACE - Shasta Lake Force Main Replacement\3-Project GIS\3-Map Documents\Initial Study\FEMA Floodplain Smith Ave 070119.mxd

All depictions are approximate. Not a survey product. 07.01.19

Figure 4.10-3

0 50 Feet

100-Year Flood Hazard Zone - Lift Station 5 Manholes

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

City of Shasta Lake

The Shasta Lake General Plan includes objectives and policies designed for the purpose of avoiding or minimizing environmental impacts to the natural environment. The General Plan recognizes major components of the natural environment are landforms, water, climate, minerals, soils, vegetation, and wildlife. The SLMC implements the City'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 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 City's General Plan and regulations of the regulatory agencies identified in Section 1.8 of this Initial Study. With implementation of the mitigation measures identified in Section 1.10, the proposed Project would not conflict with any plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect.

CUMULATIVE IMPACTS

Cumulative projects in the vicinity of the Project area, including population growth resulting from build-out of the City's General Plan, would be developed in accordance with local and regional planning documents. Thus, cumulative impacts associated with land use compatibility are expected to be less than significant.

MITIGATION

No additional mitigation necessary.

DOCUMENTATION

City of Shasta Lake. 1999. City of Shasta Lake General Plan. http://www.cityofshastalake.org/documentcenter/view/115. Accessed April 2018.

_____. 2019. Shasta Lake Municipal Code. https://library.municode.com/ca/shasta_lake/codes/code_of_ordinances. Accessed April 2019.

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 proposed Project.

STATE

Surface Mining and Reclamation Act of 1975

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

MRZ-1: Areas with little or no likelihood for presence of significant mineral resources.

MRZ-2a: Lands that contain discovered mineral deposits and are of prime importance due to known economic mineral deposits.

MRZ-2b: Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present.

MRZ-3a: Areas containing known mineral occurrences of undetermined significance.

MRZ-3b: Areas containing inferred mineral occurrences of undetermined significance.

MRZ-4: Areas of no known mineral occurrences where geologic information does not rule out the presence or absence of significant mineral resources.

DISCUSSION OF IMPACTS

Questions A and B

According to the CGS, the closest Mineral Resource Zones and mining operations are approximately 4.5 miles northeast of the Project area. Due to the distance from the Project area, the Project would not interfere with existing mining operations. 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

City of Shasta Lake. 1999. City of Shasta Lake General Plan. http://www.cityofshastalake.org/documentcenter/view/115. Accessed June 2019.

California Department of Conservation, Division of Mines and Geology. 1997. Mineral Land Classification of Alluvial Sand and Gravel, Crushed Stone, Volcanic Cinders, Limestone, and Diatomite within Shasta County, California. ftp://ftp.consrv.ca.gov/pub/dmg/pubs/ofr/OFR_97-03/OFR_97-03_Text.pdf. Accessed June 2019.

State of California, Department of Conservation, California Geological Survey. SMARA Mineral Lands Classification Data Portal. http://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=mlc. Accessed June 2019.

_____. 2019. SMARA Mines Interactive Map. http://maps.conservation.ca.gov/mol/index.html. Accessed June 2019.

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:

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

Attenuation The reduction of noise.

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.

CNEL Community Noise Equivalent Level. The average sound level over a 24-hour period, with a penalty of 5 dB added during evening hours (between 7:00 PM and 10:00 PM) and a penalty of 10 dB added during nighttime hours (between 10:00 PM and 7:00 AM).

A change of 1 dBA generally cannot be perceived by humans; a 3 dBA change is considered to be a barely noticeable difference; a 5 dBA change is typically noticeable; and a 10 dBA increase is considered to be a doubling in loudness.

Depending on the type of construction, interior noise levels are about 10-15 dBA lower than exterior levels with the windows partially open, and approximately 20-25 dBA lower than exterior noise levels with the windows closed.

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

City of Shasta Lake

The Shasta Lake General Plan includes the following objective and policy that apply to the proposed project. The General Plan does not include specific standards or thresholds for temporary construction noise.

Noise Element		
Objective:	N-1	Protect noise sensitive areas of the City by regulation of new noise-generating development.
Policy:	N-b	The planning and design of improvements in the circulation system shall consider their noise impacts on adjacent land uses and shall include measures to mitigate significant noise impacts.

DISCUSSION OF IMPACTS

Question A

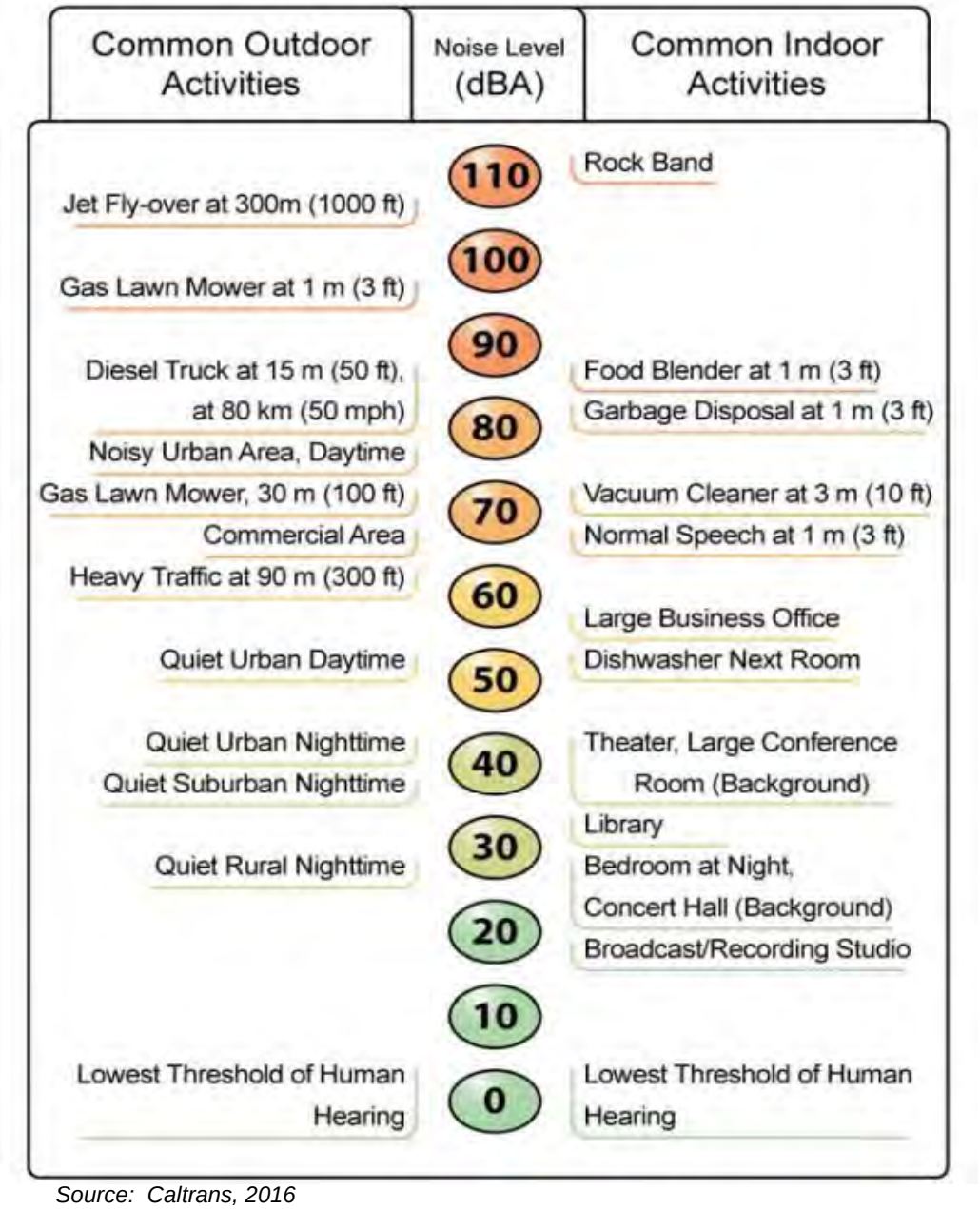
Some individuals and groups of people are considered more sensitive to noise than others and are more likely to be affected by the existence of noise. A sensitive receptor is defined as any living entity or aggregate of entities whose comfort, health, or well-being could be impaired or endangered by 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.

The proposed Project does not include any components that would result in a permanent increase in noise levels in the area. Construction activities associated with the proposed Project would temporarily increase noise levels at nearby sensitive land uses. Construction would occur adjacent to single-family residences on Trinity Street, Smith Avenue, and Pine Grove Avenue. Construction activities would occur as close as 40 feet from some of the dwelling units on Trinity Street and Smith Avenue. The closest sensitive receptors to the LS5 manhole improvements include single-family residences approximately 200 feet to the north on Ostling Place and approximately 325 feet to the west on Smith Avenue.

Temporary traffic noise impacts along local streets would occur due to an increase in traffic from construction workers commuting to the site; however, it is not anticipated that worker commutes would significantly increase daily traffic volumes. Noise also would be generated during delivery of construction equipment and materials to the Project site.

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.

Figure 4.13-1
Noise Levels of Common Activities



Source: Caltrans, 2016

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.

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, 2017.

Noise from construction activities generally attenuates at a rate of 6 dBA per doubling of distance, assuming the intervening ground is a smooth surface without much vegetation. At an attenuation rate of 6 dBA, 74 to 89 dBA noise levels would drop to 68 to 83 dBA at a distance of 100 feet, 62 to 77 dBA at a distance of 200 feet, and 58 to 73 dBA at a distance of 300 feet. At a distance of 40 feet, 74 to 89 dBA noise levels would increase to 76 to 91 dBA.

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 within 40 feet of a sensitive receptor, noise levels could reach approximately 92 dBA at the exterior of single-family residences on Trinity Street and Smith Avenue.

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 67 to 72 dBA when equipment operates within 40 feet of a residence, 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 a distance of 40 feet, 97 to 112 dBA noise levels would increase to 99 to 114 dBA; such noise levels could temporarily be experienced at the exteriors of single-family residences on Trinity Street and Smith Avenue. Depending on the decibel level of the alarm, interior noise levels could reach 74 to 94 dBA, provided that the windows were closed.

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.

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 92 dBA at the exterior of single-family residences on Trinity Street and Smith Avenue, and could reach approximately 114 dBA if reverse signal alarms are used. Interior noise levels due to construction equipment operation could reach approximately 72 dBA, and could reach approximately 94 dBA if reverse signal alarms are used.

Construction equipment does not operate continuously throughout the entire work day. In addition, given the linear nature of the Project, construction equipment would be operating within 40 to 50 feet of a particular residence for a relatively short duration and would then proceed to the next work area. 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, noise levels at the nearby residences would be moderate much of the time and would not exceed OSHA noise exposure thresholds for hearing damage.

In order to minimize impacts from construction noise, **Mitigation Measure MM 4.13.1** limits construction activities to between the hours of 7:00 AM and 7:00 PM, Monday through Friday, and from 8:00 AM to 5:00 PM on Saturdays, with no construction allowed on Sundays.

Construction outside of this timeframe may occur only if the City Engineer issues an exemption for activities that require interruption of utility services to allow work during low demand periods, or to alleviate traffic congestion and safety hazards.

Mitigation Measure MM 4.13.2 requires that construction equipment be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds; and **MM 4.13.3** requires that stationary equipment (generators, compressors, etc.) be located at the furthest practical distance from nearby noise-sensitive land uses. In addition, **Mitigation Measure MM 4.3.1(h)** requires that off-road construction equipment and other diesel-fueled construction vehicles (e.g., dump trucks) shall not be left idling for periods longer than five minutes when not in use, which would also minimize noise levels during construction.

Noise 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; noise levels during construction would not be at a duration and intensity that would cause hearing loss; and **Mitigation Measures MM 4.13.1** through **MM 4.13.3,** and **MM 4.3.1(h)** 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 (2013), 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, 2013

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, 2013

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, 2013.

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

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

Based on this equation, a vibratory roller at a distance of 40 feet would generate a PPV of 0.13 inches per second, while a large bulldozer would generate a PPV of up to 0.06 inches per second. As shown in **Table 4.13-5**, these vibration levels would be distinctly perceptible to strongly perceptible but would not rise to a level that would be considered disturbing.

In addition, as shown in **Table 4.13-4**, vibration levels would not be at a level that would cause structural damage. Because increased ground-borne vibration is temporary and would cease at completion of the Project, and **Mitigation Measure MM 4.13.1** would reduce the potential for human annoyance by limiting construction hours, impacts would be less than significant.

Question C

See discussion under Section 4.9 under Question E. The project is not located in an airport land use plan area. The closest private airstrip is approximately 1.2 miles northeast of the Project site. Due to the distance between the airports and the Project site, there would be no impact.

CUMULATIVE IMPACTS

The proposed Project would result in a temporary increase in daytime noise and vibration levels during construction activities. Other projects within the study area would also contribute to increases in noise and vibration levels during construction, and in some cases construction periods may overlap. However, all construction would take place in compliance with standard mitigation measures governing noise levels.

With implementation of **Mitigation Measures MM 4.13.1 through MM 4.13.3** and **MM 4.3.1(h),** the proposed Project's contribution to cumulative noise and vibration impacts during construction would be less than significant.

MITIGATION

Implementation of Mitigation Measure MM 4.3.1(h).

MM 4.13.1 During construction the contractor shall comply with the following time periods established for construction activities: Monday through Friday, 7:00 A.M. – 7:00 P.M., and Saturday, 8:00 A.M. – 5:00 P.M. Exceptions to these limitations may be approved by the City Engineer or his/her designee 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 equipment (generators, compressors, etc.) shall be located at the furthest practical distance from nearby noise-sensitive land uses.

DOCUMENTATION

California Department of Transportation. 2013. Transportation and Construction Vibration Guidance Manual. http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf. Accessed May 2019.

City of Shasta Lake. 1999. City of Shasta Lake General Plan. http://www.cityofshastalake.org/documentcenter/view/115. Accessed May 2019.

Federal Aviation Administration. 2019. Airport Facilities Data. https://www.faa.gov/airports/. Accessed May 2019.

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

FEDERAL

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

STATE

California Government Code §65581

California Government Code §65581 *et seq.* requires a Housing Element to be included in all city and county General Plans. State Housing Element law mandates that jurisdictions accommodate a variety of housing opportunities for all economic segments of the community. Compliance with this requirement is measured by the jurisdiction's ability to provide adequate land to accommodate a share of the region's projected housing needs for the applicable planning period. This share is known as the Regional Housing Needs Allocation (RHNA).

LOCAL

City of Shasta Lake

The Shasta Lake General Plan includes the following objective and policy that apply to the proposed project:

Land Use Element		
Objective:	LU-1	Promote a development pattern which will accommodate, consistent with the other objectives of the Plan, the growth which will be experienced by City of Shasta Lake during the planning period (1999-2020), and as such period is extended by future revisions of the Plan.
Policy:	LU-a	The City shall ensure the availability of an inventory of developable lands sufficient to accommodate growth projected for the planning period.

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. The City's 2016-2026 Wastewater Master Plan (WWMP) includes an evaluation of the City's sewer system and identifies improvements necessary to meet the needs of existing customers, as well as improvements required to accommodate future growth based on land use designations included in the City's General Plan.

As stated in the WWMP, buildout of the General Plan is not anticipated within the planning horizon of the WWMP (2016-2026) based on historical growth rates. As such, recommended improvements are based on City staff knowledge of development anticipated to occur during the WWMP horizon. The LS3 and LS5 improvements are identified as improvements needed to accommodate anticipated growth in the 10-year planning horizon.

Although the proposed Project would increase capacity in the City's sewer system, future development would be subject to density limitations established by the City's General Plan; thus, the Project would not induce unplanned population growth that hasn't already been contemplated by the City. There would be no impact.

Questions B and C

No structures 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. Therefore, the proposed Project would not contribute to cumulative impacts associated with population and housing.

MITIGATION

None necessary

DOCUMENTATION

City of Shasta Lake. 1999. City of Shasta Lake General Plan. http://www.cityofshastalake.org/documentcenter/view/115. Accessed June 2019.

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

City of Shasta Lake. 1999. City of Shasta Lake General Plan. http://www.cityofshastalake.org/documentcenter/view/115. Accessed June 2019.

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

City of Shasta Lake. 1999. City of Shasta Lake General Plan. http://www.cityofshastalake.org/documentcenter/view/115. Accessed June 2019.

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

FEDERAL

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

STATE

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 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 travelled (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. The requirement to use the VMT metric becomes effective statewide on July 1, 2020, although lead agencies have the option to commence using a VMT analysis immediately.

LOCAL

City of Shasta Lake

The City's Circulation Element of the General Plan includes Goals, Policies, and Implementation Measures regarding the design and use of roadways within the City limits. The City's Bicycle, Pedestrian, and Trails Master Plan addresses a city-wide network of bike lanes and routes, and pedestrian facilities.

DISCUSSION OF IMPACTS

Questions A through D

The proposed Project does not include the construction of housing or commercial/industrial development that would cause a permanent increase in traffic in the area. 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. The proposed Project would temporarily disrupt use of the

bicycle lane on Pine Grove Avenue; however, upon completion of construction activities, the bicycle lane would be repaved and restriped.

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. In addition, the City's standard construction measures require temporary traffic control to be implemented during completion of activities that require work in the public road ROW. Driveway access to private property must be maintained at all times. The proposed Project does not include any components that would permanently increase the potential for hazards due to a design feature or incompatible uses.

Because no permanent impacts to the circulation system would occur, and safety measures would be employed to safeguard travel by the general public and emergency response vehicles during construction, 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, all projects in the City that include work in the road ROW are required to implement safety measures to protect the traveling public and maintain access for emergency response vehicles during construction. 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

City of Shasta Lake. 1999. City of Shasta Lake General Plan. http://www.cityofshastalake.org/documentcenter/view/115. Accessed June 2019.

4.18 TRIBAL CULTURAL RESOURCES

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code (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

FEDERAL

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

STATE

California Environmental Quality Act

Assembly Bill 52 of 2014 (Public Resources Code [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 criteria.

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).

LOCAL

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

DISCUSSION OF IMPACTS

Questions A and B

As stated in Section 1.7, according to the City, as of July 1, 2019, only one tribe, the Wintu Tribe of Northern California & Toyon-Wintu Center, has requested formal notification of proposed projects in the geographical area. On August 8, 2018, the City sent a letter to the Tribe providing detailed information on the proposed Project and describing the AB 52 consultation process. The letter stated that if the Tribe would like to engage in formal consultation with the City regarding possible significant effects that the Project may have on tribal cultural resources, the Tribe must respond to the City in writing within 30 days of the Tribe's receipt of the letter.

The City did not receive a response from the Wintu Tribe of Northern California & Toyon-Wintu Center. No other California Native American tribes have requested that the City provide formal notification of proposed projects in the geographical area. Therefore, the requirements of PRC §21080.3.1 have been satisfied.

Mitigation Measures MM 4.5.1 and 4.5.2 address the inadvertent discovery of cultural resources and human remains. 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. 2019. Cultural Resources Inventory for the City of Shasta Lake Force Main Replacement Project. 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

FEDERAL

There are no federal 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

LOCAL

City of Shasta Lake

The Shasta Lake General Plan includes the following objective and implementation measure that apply to the proposed project:

Land Use Element		
Objective:	PF-4	Improve and maintain the Citywide wastewater system facilities.
Implementation Measure:	PF-(3)	As part of the project review and building permit process, ensure that all new development has a minimal impact on natural drainage channels and flow capacity.

DISCUSSION OF IMPACTS

Question A

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 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 pavement in public road ROWs to accommodate the pipeline improvements. Construction debris would be disposed of at the Anderson Landfill in Anderson, California. According to CalRecycle, the design capacity of the Anderson landfill is 16,840,000 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.

The construction contractor would be responsible for disposing of all construction waste. The City 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

City of Shasta Lake. 1999. City of Shasta Lake General Plan. http://www.cityofshastalake.org/documentcenter/view/115. Accessed June 2019.

CalRecycle. n.d. Facility Details: Anderson Landfill, Inc. (45-AA-0020). https://www2.calrecycle.ca.gov/swfacilities/Directory/45-AA-0020. Accessed June 2019.

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 (SRA) in November 2007. Pursuant to California Government Code §51175-51189, CAL FIRE also recommended FHSZs for Local Responsibility Areas (LRA). 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 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

City of Shasta Lake

The City's General Plan includes the following Objective that applies to the proposed Project:

Safety Element		
Objective	FS-1	Protect development from wildland and non-wildland fires by requiring development to incorporate design measures responsive to the risk from this hazard.

In the study area, properties north and south of Pine Grove Avenue west of Smith Avenue, and areas surrounding the WWTP headworks, are located in a LRA Very High Fire Hazard Severity Zone (VHFHSZ).

DISCUSSION OF IMPACTS

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. Temporary traffic control during completion of activities that require work in the public right-of-way is required and must adhere to the procedures, methods and guidance given in the current edition of the MUTCD. Implementation of traffic control measures during construction ensures impacts are less than significant.

Questions B and C

As discussed under Regulatory Context above, properties north and south of Pine Grove Avenue west of Smith Avenue, and areas surrounding the WWTP headworks, are located in a VHFHSZ.

The proposed Project would not require installation of infrastructure that could exacerbate fire hazards (e.g., power lines in vegetated areas); would not construct 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.

Implementation of **Mitigation Measure MM 4.9.1** 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

The proposed Project would not expose people or structures to significant post-fire risks. The Project site consists primarily of paved road ROW. The undeveloped area between Pine Grove Avenue and the WWTP headworks consists of gently sloping lands with little potential for post-fire erosion, landslides or other slope instability, or drainage changes or flooding. All project improvements would be underground and are not at risk due to fire or post-fire effects; therefore, the potential for post-fire impacts would be less than significant.

CUMULATIVE IMPACTS

The proposed Project and 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. Because all projects must provide adequate access during construction, there would be no cumulative impact even if more than one project were under construction at the same time.

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. Although cumulative wildfire risks could occur during construction, implementation of **Mitigation Measure MM 4.9.1** adequately minimizes such risks.

MITIGATION

Implementation of **Mitigation Measure MM 4.9.1.**

DOCUMENTATION

California Board of Forestry and Fire Protection. 2018. Strategic Fire Plan for California. http://cdfdata.fire.ca.gov/pub/fireplan/fpupload/fpppdf1614.pdf. Accessed April 2019.

City of Shasta Lake. 1999. City of Shasta Lake General Plan. http://www.cityofshastalake.org/documentcenter/view/115. Accessed April 2019.

CAL FIRE. 2008. Shasta County, Very High Fire Hazard Severity Zones in LRA. http://frap.fire.ca.gov/webdata/maps/shasta/fhszl_map.45.pdf. Accessed April 2019.

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 the applicable environmental resource sections above, the proposed Project could result in possible effects to special-status wildlife species, disturbance of nesting migratory birds (if

present), impacts to cultural resources and tribal cultural resources (if present), the introduction and spread of noxious weeds during construction, temporarily increased risk of wildfires, temporarily increased air emissions, and temporarily increased noise and vibration levels. However, as identified in Section 1.10, 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 and vibration levels. However, mitigation measures are included to reduce all potential impacts to a less than significant level.

SECTION 5.0 LIST OF PREPARERS

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City of Shasta Lake

Jeff Tedder, P.E. ..... City Engineer

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Paul Reuter, P.E. ..... Managing Engineer/President
Keith Krantz, P.E. ..... Civil Engineer
Paige Cibart, P.E. ..... Civil Engineer

SECTION 6.0 ABBREVIATIONS AND ACRONYMNS

AB	Assembly Bill
AQAP	Air Quality Attainment Plan
AQMD	Air Quality Management District
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
CalEPA	California Environmental Protection Agency
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
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
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act

CWSRF	Clean Water State Revolving Fund
CY	Cubic Yards
dBA	Decibels
DOC	Department of Conservation
DPS	Distinct Population Segment
DTSC	California Department of Toxic Substances Control
EHS	Extremely Hazardous Substance
EO	Executive Order
ESU	Evolutionary Significant Unit
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Act
FESA	Federal Endangered Species Act
FHSZ	Fire Hazard Severity Zone
GHG	Greenhouse Gas Emissions
GSPs	Groundwater Sustainability Plans
GWP	Global Warming Potential
H_2S	Hydrogen Sulfide
HCP	Habitat Conservation Plan
HFC	Hydrofluorocarbons
HSIP	Highway Safety Improvement Program
I-5	Interstate 5
IBC	International Building Code
IS	Initial Study
LHMP	Local Hazard Mitigation Plan
LRA	Local Responsibility Area
LUP	Linear Underground/Overhead Projects
MACT	Maximum Achievable Control Technology
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	Northeast Information Center of the California Historical Resources Information System
NEHRA	National Earthquake Hazards Reduction Act
NEPA	National Environmental Policy 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	California 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	Perfluorocarbons
$PM_{2.5}$	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	Shasta Lake Force Main Replacement
PVC	Polyvinyl Chloride
RCAP	Regional Climate Action Plan
RCRA	Resource Conservation and Recovery Act
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
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
SLMC	Shasta Lake Municipal Code
SMM	Standard Mitigation Measures
SIP	State Implementation Plan
SMARA	Surface Mining and Reclamation Act
SO_2	Sulfur Dioxide
SO_4	Sulfates
SO_X	Sulfur Oxides
SRA	State Responsibility Area
SRWR	Sacramento River Winter-Run
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 Contaminants
TPZ	Timberland Production Zone
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 Travelled
WDRs	Waste Discharge Requirements
WQO	Water Quality Objectives
WWTP	Wastewater Treatment Plant
$\mu g/m^3$	Micrograms per Cubic Meter

Appendix A

CalEEMod.2016.3.1 Emissions Reports

Shasta Lake Force Main Project

Shasta County AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	0.00		0.70	0.00	0
Other Asphalt Surfaces	0.00		3.70	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	82
Climate Zone	3			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Shasta Lake Force Main Project - Shasta County AQMD Air District, Summer

Project Characteristics -

Land Use -

Construction Phase - Construction schedule estimated based on project characteristics.

Grading - Imported/exported material - information provided by PACE.

Demolition -

Trips and VMT - Hauling trips for pavement removal and imported/exported dirt.

Construction Off-road Equipment Mitigation - Implementation of Standard Mitigation Measures.

Off-road Equipment - Pavement Removal

Off-road Equipment - Clearing undisturbed areas

Off-road Equipment - Trenching for pipeline.

Off-road Equipment - Force main installation.

Off-road Equipment - Re-paving streets damaged during construction.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

Shasta Lake Force Main Project - Shasta County AQMD Air District, Summer

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstructionPhase	NumDays	230.00	170.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	8.00	70.00
tblConstructionPhase	NumDays	18.00	30.00
tblConstructionPhase	NumDays	5.00	20.00
tblConstructionPhase	PhaseEndDate	6/1/2022	6/10/2022
tblConstructionPhase	PhaseEndDate	6/25/2021	6/11/2021
tblConstructionPhase	PhaseEndDate	7/14/2021	10/15/2021
tblConstructionPhase	PhaseEndDate	6/27/2022	7/22/2022
tblConstructionPhase	PhaseEndDate	7/2/2021	7/9/2021
tblConstructionPhase	PhaseStartDate	7/15/2021	10/18/2021
tblConstructionPhase	PhaseStartDate	7/3/2021	7/12/2021
tblConstructionPhase	PhaseStartDate	6/2/2022	6/13/2022
tblConstructionPhase	PhaseStartDate	6/26/2021	6/14/2021
tblGrading	AcresOfGrading	30.63	0.70
tblGrading	MaterialExported	0.00	5,525.00
tblGrading	MaterialImported	0.00	4,800.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	3.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00

tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	HaulingTripLength	20.00	10.80
tblTripsAndVMT	HaulingTripLength	20.00	10.80
tblTripsAndVMT	HaulingTripLength	20.00	10.80
tblTripsAndVMT	HaulingTripLength	20.00	10.80
tblTripsAndVMT	HaulingTripLength	20.00	10.80
tblTripsAndVMT	HaulingTripNumber	126.00	88.00
tblTripsAndVMT	HaulingTripNumber	691.00	112.00
tblTripsAndVMT	WorkerTripNumber	13.00	15.00
tblTripsAndVMT	WorkerTripNumber	13.00	15.00
tblTripsAndVMT	WorkerTripNumber	0.00	15.00
tblTripsAndVMT	WorkerTripNumber	20.00	15.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	2.4107	24.3851	15.3546	0.0325	9.1564	1.1349	10.2912	4.9980	1.0573	6.0421	0.0000	3,176.3884	3,176.3884	0.7197	0.0000	3,194.3801
2022	1.4071	12.5608	14.4083	0.0236	0.1232	0.6603	0.7836	0.0327	0.6218	0.6545	0.0000	2,254.2571	2,254.2571	0.5465	0.0000	2,266.7456
Maximum	**2.4107**	**24.3851**	**15.3546**	**0.0325**	**9.1564**	**1.1349**	**10.2912**	**4.9980**	**1.0573**	**6.0421**	**0.0000**	**3,176.3884**	**3,176.3884**	**0.7197**	**0.0000**	**3,194.3801**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	2.4107	24.3851	15.3546	0.0325	4.1828	1.1349	5.3176	2.2658	1.0573	3.3098	0.0000	3,176.3884	3,176.3884	0.7197	0.0000	3,194.3801
2022	1.4071	12.5608	14.4083	0.0236	0.1179	0.6603	0.7782	0.0314	0.6218	0.6532	0.0000	2,254.2571	2,254.2571	0.5465	0.0000	2,266.7456
Maximum	**2.4107**	**24.3851**	**15.3546**	**0.0325**	**4.1828**	**1.1349**	**5.3176**	**2.2658**	**1.0573**	**3.3098**	**0.0000**	**3,176.3884**	**3,176.3884**	**0.7197**	**0.0000**	**3,194.3801**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**53.65**	**0.00**	**44.96**	**54.34**	**0.00**	**40.82**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**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**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/31/2021	6/11/2021	5	10	
2	Site Preparation	Site Preparation	6/14/2021	7/9/2021	5	20	
3	Grading	Grading	7/12/2021	10/15/2021	5	70	
4	Building Construction	Building Construction	10/18/2021	6/10/2022	5	170	
5	Paving	Paving	6/13/2022	7/22/2022	5	30	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0.7

Acres of Paving: 4.4

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Shasta Lake Force Main Project - Shasta County AQMD Air District, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	2	6.00	158	0.38
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	3	6.00	89	0.20
Grading	Excavators	1	6.00	158	0.38
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	6.00	80	0.38
Demolition	Rubber Tired Dozers	2	6.00	247	0.40
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Graders	1	7.00	187	0.41
Paving	Paving Equipment	2	6.00	132	0.36
Site Preparation	Rubber Tired Dozers	3	4.00	247	0.40
Building Construction	Welders	1	4.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	15.00	0.00	88.00	10.80	7.30	10.80	LD_Mix	HDT_Mix	HHDT
Site Preparation	6	15.00	0.00	0.00	10.80	7.30	10.80	LD_Mix	HDT_Mix	HHDT
Grading	5	15.00	0.00	112.00	10.80	7.30	10.80	LD_Mix	HDT_Mix	HHDT
Building Construction	9	15.00	0.00	0.00	10.80	7.30	10.80	LD_Mix	HDT_Mix	HHDT
Paving	8	15.00	0.00	0.00	10.80	7.30	10.80	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7602	0.0000	2.7602	0.4180	0.0000	0.4180			0.0000			0.0000
Off-Road	2.2981	22.7249	14.6384	0.0268		1.1285	1.1285		1.0520	1.0520		2,583.9809	2,583.9809	0.6785		2,600.9421
Total	**2.2981**	**22.7249**	**14.6384**	**0.0268**	**2.7602**	**1.1285**	**3.8887**	**0.4180**	**1.0520**	**1.4700**		**2,583.9809**	**2,583.9809**	**0.6785**		**2,600.9421**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0431	1.6188	0.2020	4.4200e-003	0.0833	4.7300e-003	0.0881	0.0229	4.5300e-003	0.0274		463.4897	463.4897	0.0371		464.4160
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0695	0.0414	0.5142	1.3000e-003	0.1232	8.5000e-004	0.1241	0.0327	7.8000e-004	0.0335		128.9178	128.9178	4.1700e-003		129.0221
Total	**0.1126**	**1.6602**	**0.7162**	**5.7200e-003**	**0.2065**	**5.5800e-003**	**0.2121**	**0.0555**	**5.3100e-003**	**0.0609**		**592.4075**	**592.4075**	**0.0412**		**593.4381**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.2421	0.0000	1.2421	0.1881	0.0000	0.1881			0.0000			0.0000
Off-Road	2.2981	22.7249	14.6384	0.0268		1.1285	1.1285		1.0520	1.0520	0.0000	2,583.9809	2,583.9809	0.6785		2,600.9421
Total	**2.2981**	**22.7249**	**14.6384**	**0.0268**	**1.2421**	**1.1285**	**2.3706**	**0.1881**	**1.0520**	**1.2401**	**0.0000**	**2,583.9809**	**2,583.9809**	**0.6785**		**2,600.9421**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0431	1.6188	0.2020	4.4200e-003	0.0802	4.7300e-003	0.0849	0.0221	4.5300e-003	0.0266		463.4897	463.4897	0.0371		464.4160
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0695	0.0414	0.5142	1.3000e-003	0.1179	8.5000e-004	0.1187	0.0314	7.8000e-004	0.0322		128.9178	128.9178	4.1700e-003		129.0221
Total	**0.1126**	**1.6602**	**0.7162**	**5.7200e-003**	**0.1981**	**5.5800e-003**	**0.2036**	**0.0535**	**5.3100e-003**	**0.0588**		**592.4075**	**592.4075**	**0.0412**		**593.4381**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.0331	0.0000	9.0331	4.9653	0.0000	4.9653			0.0000			0.0000
Off-Road	2.1314	22.1444	12.8374	0.0221		1.1340	1.1340		1.0433	1.0433		2,143.7285	2,143.7285	0.6933		2,161.0617
Total	**2.1314**	**22.1444**	**12.8374**	**0.0221**	**9.0331**	**1.1340**	**10.1671**	**4.9653**	**1.0433**	**6.0086**		**2,143.7285**	**2,143.7285**	**0.6933**		**2,161.0617**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0695	0.0414	0.5142	1.3000e-003	0.1232	8.5000e-004	0.1241	0.0327	7.8000e-004	0.0335		128.9178	128.9178	4.1700e-003		129.0221
Total	**0.0695**	**0.0414**	**0.5142**	**1.3000e-003**	**0.1232**	**8.5000e-004**	**0.1241**	**0.0327**	**7.8000e-004**	**0.0335**		**128.9178**	**128.9178**	**4.1700e-003**		**129.0221**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.0649	0.0000	4.0649	2.2344	0.0000	2.2344			0.0000			0.0000
Off-Road	2.1314	22.1444	12.8374	0.0221		1.1340	1.1340		1.0433	1.0433	0.0000	2,143.7285	2,143.7285	0.6933		2,161.0616
Total	**2.1314**	**22.1444**	**12.8374**	**0.0221**	**4.0649**	**1.1340**	**5.1989**	**2.2344**	**1.0433**	**3.2777**	**0.0000**	**2,143.7285**	**2,143.7285**	**0.6933**		**2,161.0616**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0695	0.0414	0.5142	1.3000e-003	0.1179	8.5000e-004	0.1187	0.0314	7.8000e-004	0.0322		128.9178	128.9178	4.1700e-003		129.0221
Total	**0.0695**	**0.0414**	**0.5142**	**1.3000e-003**	**0.1179**	**8.5000e-004**	**0.1187**	**0.0314**	**7.8000e-004**	**0.0322**		**128.9178**	**128.9178**	**4.1700e-003**		**129.0221**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5489	0.0000	4.5489	2.4871	0.0000	2.4871			0.0000			0.0000
Off-Road	1.6339	17.8712	10.4188	0.0207		0.8096	0.8096		0.7448	0.7448		2,008.4818	2,008.4818	0.6496		2,024.7214
Total	**1.6339**	**17.8712**	**10.4188**	**0.0207**	**4.5489**	**0.8096**	**5.3585**	**2.4871**	**0.7448**	**3.2319**		**2,008.4818**	**2,008.4818**	**0.6496**		**2,024.7214**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.8300e-003	0.2943	0.0367	8.0000e-004	0.0152	8.6000e-004	0.0160	4.1600e-003	8.2000e-004	4.9800e-003		84.2709	84.2709	6.7400e-003		84.4393
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0695	0.0414	0.5142	1.3000e-003	0.1232	8.5000e-004	0.1241	0.0327	7.8000e-004	0.0335		128.9178	128.9178	4.1700e-003		129.0221
Total	**0.0773**	**0.3357**	**0.5509**	**2.1000e-003**	**0.1384**	**1.7100e-003**	**0.1401**	**0.0368**	**1.6000e-003**	**0.0385**		**213.1886**	**213.1886**	**0.0109**		**213.4614**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.0470	0.0000	2.0470	1.1192	0.0000	1.1192			0.0000			0.0000
Off-Road	1.6339	17.8712	10.4188	0.0207		0.8096	0.8096		0.7448	0.7448	0.0000	2,008.4818	2,008.4818	0.6496		2,024.7214
Total	**1.6339**	**17.8712**	**10.4188**	**0.0207**	**2.0470**	**0.8096**	**2.8566**	**1.1192**	**0.7448**	**1.8640**	**0.0000**	**2,008.4818**	**2,008.4818**	**0.6496**		**2,024.7214**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.8300e-003	0.2943	0.0367	8.0000e-004	0.0146	8.6000e-004	0.0154	4.0200e-003	8.2000e-004	4.8400e-003		84.2709	84.2709	6.7400e-003		84.4393
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0695	0.0414	0.5142	1.3000e-003	0.1179	8.5000e-004	0.1187	0.0314	7.8000e-004	0.0322		128.9178	128.9178	4.1700e-003		129.0221
Total	**0.0773**	**0.3357**	**0.5509**	**2.1000e-003**	**0.1325**	**1.7100e-003**	**0.1342**	**0.0354**	**1.6000e-003**	**0.0370**		**213.1886**	**213.1886**	**0.0109**		**213.4614**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4978	13.9748	14.0963	0.0223		0.7850	0.7850		0.7386	0.7386		2,129.0749	2,129.0749	0.4988		2,141.5457
Total	**1.4978**	**13.9748**	**14.0963**	**0.0223**		**0.7850**	**0.7850**		**0.7386**	**0.7386**		**2,129.0749**	**2,129.0749**	**0.4988**		**2,141.5457**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0695	0.0414	0.5142	1.3000e-003	0.1232	8.5000e-004	0.1241	0.0327	7.8000e-004	0.0335		128.9178	128.9178	4.1700e-003		129.0221
Total	**0.0695**	**0.0414**	**0.5142**	**1.3000e-003**	**0.1232**	**8.5000e-004**	**0.1241**	**0.0327**	**7.8000e-004**	**0.0335**		**128.9178**	**128.9178**	**4.1700e-003**		**129.0221**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4978	13.9748	14.0963	0.0223		0.7850	0.7850		0.7386	0.7386	0.0000	2,129.0749	2,129.0749	0.4988		2,141.5457
Total	**1.4978**	**13.9748**	**14.0963**	**0.0223**		**0.7850**	**0.7850**		**0.7386**	**0.7386**	**0.0000**	**2,129.0749**	**2,129.0749**	**0.4988**		**2,141.5457**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0695	0.0414	0.5142	1.3000e-003	0.1179	8.5000e-004	0.1187	0.0314	7.8000e-004	0.0322		128.9178	128.9178	4.1700e-003		129.0221
Total	**0.0695**	**0.0414**	**0.5142**	**1.3000e-003**	**0.1179**	**8.5000e-004**	**0.1187**	**0.0314**	**7.8000e-004**	**0.0322**		**128.9178**	**128.9178**	**4.1700e-003**		**129.0221**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3428	12.5239	13.9406	0.0224		0.6595	0.6595		0.6211	0.6211		2,130.0102	2,130.0102	0.4959		2,142.4064
Total	**1.3428**	**12.5239**	**13.9406**	**0.0224**		**0.6595**	**0.6595**		**0.6211**	**0.6211**		**2,130.0102**	**2,130.0102**	**0.4959**		**2,142.4064**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0643	0.0368	0.4678	1.2500e-003	0.1232	8.2000e-004	0.1241	0.0327	7.6000e-004	0.0334		124.2469	124.2469	3.6900e-003		124.3392
Total	**0.0643**	**0.0368**	**0.4678**	**1.2500e-003**	**0.1232**	**8.2000e-004**	**0.1241**	**0.0327**	**7.6000e-004**	**0.0334**		**124.2469**	**124.2469**	**3.6900e-003**		**124.3392**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3428	12.5239	13.9406	0.0224		0.6595	0.6595		0.6211	0.6211	0.0000	2,130.0102	2,130.0102	0.4959		2,142.4064
Total	**1.3428**	**12.5239**	**13.9406**	**0.0224**		**0.6595**	**0.6595**		**0.6211**	**0.6211**	**0.0000**	**2,130.0102**	**2,130.0102**	**0.4959**		**2,142.4064**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0643	0.0368	0.4678	1.2500e-003	0.1179	8.2000e-004	0.1187	0.0314	7.6000e-004	0.0321		124.2469	124.2469	3.6900e-003		124.3392
Total	**0.0643**	**0.0368**	**0.4678**	**1.2500e-003**	**0.1179**	**8.2000e-004**	**0.1187**	**0.0314**	**7.6000e-004**	**0.0321**		**124.2469**	**124.2469**	**3.6900e-003**		**124.3392**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9353	9.1032	11.6345	0.0182		0.4651	0.4651		0.4296	0.4296		1,729.8199	1,729.8199	0.5428		1,743.3904
Paving	0.3231					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2585**	**9.1032**	**11.6345**	**0.0182**		**0.4651**	**0.4651**		**0.4296**	**0.4296**		**1,729.8199**	**1,729.8199**	**0.5428**		**1,743.3904**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0643	0.0368	0.4678	1.2500e-003	0.1232	8.2000e-004	0.1241	0.0327	7.6000e-004	0.0334		124.2469	124.2469	3.6900e-003		124.3392
Total	**0.0643**	**0.0368**	**0.4678**	**1.2500e-003**	**0.1232**	**8.2000e-004**	**0.1241**	**0.0327**	**7.6000e-004**	**0.0334**		**124.2469**	**124.2469**	**3.6900e-003**		**124.3392**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9353	9.1032	11.6345	0.0182		0.4651	0.4651		0.4296	0.4296	0.0000	1,729.8199	1,729.8199	0.5428		1,743.3904
Paving	0.3231					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2585**	**9.1032**	**11.6345**	**0.0182**		**0.4651**	**0.4651**		**0.4296**	**0.4296**	**0.0000**	**1,729.8199**	**1,729.8199**	**0.5428**		**1,743.3904**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0643	0.0368	0.4678	1.2500e-003	0.1179	8.2000e-004	0.1187	0.0314	7.6000e-004	0.0321		124.2469	124.2469	3.6900e-003		124.3392
Total	**0.0643**	**0.0368**	**0.4678**	**1.2500e-003**	**0.1179**	**8.2000e-004**	**0.1187**	**0.0314**	**7.6000e-004**	**0.0321**		**124.2469**	**124.2469**	**3.6900e-003**		**124.3392**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.523272	0.032530	0.181768	0.106196	0.031705	0.006508	0.012974	0.094129	0.001340	0.001253	0.005657	0.001294	0.001375
Other Non-Asphalt Surfaces	0.523272	0.032530	0.181768	0.106196	0.031705	0.006508	0.012974	0.094129	0.001340	0.001253	0.005657	0.001294	0.001375

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Shasta Lake Force Main Project

Shasta County AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	0.00		0.70	0.00	0
Other Asphalt Surfaces	0.00		3.70	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	82
Climate Zone	3			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Shasta Lake Force Main Project - Shasta County AQMD Air District, Annual

Project Characteristics -

Land Use -

Construction Phase - Construction schedule estimated based on project characteristics.

Grading - Imported/exported material - information provided by PACE.

Demolition -

Trips and VMT - Hauling trips for pavement removal and imported/exported dirt.

Construction Off-road Equipment Mitigation - Implementation of Standard Mitigation Measures.

Off-road Equipment - Pavement Removal

Off-road Equipment - Clearing undisturbed areas

Off-road Equipment - Trenching for pipeline.

Off-road Equipment - Force main installation.

Off-road Equipment - Re-paving streets damaged during construction.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

Shasta Lake Force Main Project - Shasta County AQMD Air District, Annual

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstructionPhase	NumDays	230.00	170.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	8.00	70.00
tblConstructionPhase	NumDays	18.00	30.00
tblConstructionPhase	NumDays	5.00	20.00
tblConstructionPhase	PhaseEndDate	6/1/2022	6/10/2022
tblConstructionPhase	PhaseEndDate	6/25/2021	6/11/2021
tblConstructionPhase	PhaseEndDate	7/14/2021	10/15/2021
tblConstructionPhase	PhaseEndDate	6/27/2022	7/22/2022
tblConstructionPhase	PhaseEndDate	7/2/2021	7/9/2021
tblConstructionPhase	PhaseStartDate	7/15/2021	10/18/2021
tblConstructionPhase	PhaseStartDate	7/3/2021	7/12/2021
tblConstructionPhase	PhaseStartDate	6/2/2022	6/13/2022
tblConstructionPhase	PhaseStartDate	6/26/2021	6/14/2021
tblGrading	AcresOfGrading	30.63	0.70
tblGrading	MaterialExported	0.00	5,525.00
tblGrading	MaterialImported	0.00	4,800.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	3.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00

tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblTripsAndVMT	HaulingTripLength	20.00	10.80
tblTripsAndVMT	HaulingTripLength	20.00	10.80
tblTripsAndVMT	HaulingTripLength	20.00	10.80
tblTripsAndVMT	HaulingTripLength	20.00	10.80
tblTripsAndVMT	HaulingTripLength	20.00	10.80
tblTripsAndVMT	HaulingTripNumber	126.00	88.00
tblTripsAndVMT	HaulingTripNumber	691.00	112.00
tblTripsAndVMT	WorkerTripNumber	13.00	15.00
tblTripsAndVMT	WorkerTripNumber	13.00	15.00
tblTripsAndVMT	WorkerTripNumber	0.00	15.00
tblTripsAndVMT	WorkerTripNumber	20.00	15.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1361	1.3670	0.9897	1.8300e-003	0.2733	0.0670	0.3404	0.1415	0.0622	0.2036	0.0000	160.8795	160.8795	0.0431	0.0000	161.9570
2022	0.1000	0.8595	1.0043	1.6400e-003	8.5000e-003	0.0450	0.0535	2.2600e-003	0.0422	0.0445	0.0000	141.9690	141.9690	0.0335	0.0000	142.8056
Maximum	**0.1361**	**1.3670**	**1.0043**	**1.8300e-003**	**0.2733**	**0.0670**	**0.3404**	**0.1415**	**0.0622**	**0.2036**	**0.0000**	**160.8795**	**160.8795**	**0.0431**	**0.0000**	**161.9570**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1361	1.3670	0.9897	1.8300e-003	0.1281	0.0670	0.1951	0.0650	0.0622	0.1272	0.0000	160.8793	160.8793	0.0431	0.0000	161.9568
2022	0.1000	0.8595	1.0043	1.6400e-003	8.1300e-003	0.0450	0.0531	2.1700e-003	0.0422	0.0444	0.0000	141.9689	141.9689	0.0335	0.0000	142.8055
Maximum	**0.1361**	**1.3670**	**1.0043**	**1.8300e-003**	**0.1281**	**0.0670**	**0.1951**	**0.0650**	**0.0622**	**0.1272**	**0.0000**	**160.8793**	**160.8793**	**0.0431**	**0.0000**	**161.9568**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**51.67**	**0.00**	**36.98**	**53.25**	**0.00**	**30.85**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Shasta Lake Force Main Project - Shasta County AQMD Air District, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	5-31-2021	8-30-2021	0.6970	0.6970
2	8-31-2021	11-29-2021	0.5666	0.5666
3	11-30-2021	2-27-2022	0.4674	0.4674
4	2-28-2022	5-30-2022	0.4589	0.4589
5	5-31-2022	8-30-2022	0.2043	0.2043
		Highest	0.6970	0.6970

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**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**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/31/2021	6/11/2021	5	10	
2	Site Preparation	Site Preparation	6/14/2021	7/9/2021	5	20	
3	Grading	Grading	7/12/2021	10/15/2021	5	70	
4	Building Construction	Building Construction	10/18/2021	6/10/2022	5	170	
5	Paving	Paving	6/13/2022	7/22/2022	5	30	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0.7

Acres of Paving: 4.4

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Shasta Lake Force Main Project - Shasta County AQMD Air District, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	2	6.00	158	0.38
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	3	6.00	89	0.20
Grading	Excavators	1	6.00	158	0.38
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	6.00	80	0.38
Demolition	Rubber Tired Dozers	2	6.00	247	0.40
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Graders	1	7.00	187	0.41
Paving	Paving Equipment	2	6.00	132	0.36
Site Preparation	Rubber Tired Dozers	3	4.00	247	0.40
Building Construction	Welders	1	4.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	15.00	0.00	88.00	10.80	7.30	10.80	LD_Mix	HDT_Mix	HHDT
Site Preparation	6	15.00	0.00	0.00	10.80	7.30	10.80	LD_Mix	HDT_Mix	HHDT
Grading	5	15.00	0.00	112.00	10.80	7.30	10.80	LD_Mix	HDT_Mix	HHDT
Building Construction	9	15.00	0.00	0.00	10.80	7.30	10.80	LD_Mix	HDT_Mix	HHDT
Paving	8	15.00	0.00	0.00	10.80	7.30	10.80	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0138	0.0000	0.0138	2.0900e-003	0.0000	2.0900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0115	0.1136	0.0732	1.3000e-004		5.6400e-003	5.6400e-003		5.2600e-003	5.2600e-003	0.0000	11.7207	11.7207	3.0800e-003	0.0000	11.7977
Total	**0.0115**	**0.1136**	**0.0732**	**1.3000e-004**	**0.0138**	**5.6400e-003**	**0.0194**	**2.0900e-003**	**5.2600e-003**	**7.3500e-003**	**0.0000**	**11.7207**	**11.7207**	**3.0800e-003**	**0.0000**	**11.7977**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.2000e-004	8.2100e-003	1.1100e-003	2.0000e-005	4.0000e-004	2.0000e-005	4.2000e-004	1.1000e-004	2.0000e-005	1.3000e-004	0.0000	2.0692	2.0692	1.8000e-004	0.0000	2.0737
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	2.2000e-004	2.1500e-003	1.0000e-005	5.9000e-004	0.0000	5.9000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5239	0.5239	2.0000e-005	0.0000	0.5243
Total	**5.1000e-004**	**8.4300e-003**	**3.2600e-003**	**3.0000e-005**	**9.9000e-004**	**2.0000e-005**	**1.0100e-003**	**2.7000e-004**	**2.0000e-005**	**2.9000e-004**	**0.0000**	**2.5932**	**2.5932**	**2.0000e-004**	**0.0000**	**2.5980**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.2100e-003	0.0000	6.2100e-003	9.4000e-004	0.0000	9.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0115	0.1136	0.0732	1.3000e-004		5.6400e-003	5.6400e-003		5.2600e-003	5.2600e-003	0.0000	11.7207	11.7207	3.0800e-003	0.0000	11.7977
Total	**0.0115**	**0.1136**	**0.0732**	**1.3000e-004**	**6.2100e-003**	**5.6400e-003**	**0.0119**	**9.4000e-004**	**5.2600e-003**	**6.2000e-003**	**0.0000**	**11.7207**	**11.7207**	**3.0800e-003**	**0.0000**	**11.7977**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.2000e-004	8.2100e-003	1.1100e-003	2.0000e-005	3.8000e-004	2.0000e-005	4.1000e-004	1.1000e-004	2.0000e-005	1.3000e-004	0.0000	2.0692	2.0692	1.8000e-004	0.0000	2.0737
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	2.2000e-004	2.1500e-003	1.0000e-005	5.6000e-004	0.0000	5.7000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.5239	0.5239	2.0000e-005	0.0000	0.5243
Total	**5.1000e-004**	**8.4300e-003**	**3.2600e-003**	**3.0000e-005**	**9.4000e-004**	**2.0000e-005**	**9.8000e-004**	**2.6000e-004**	**2.0000e-005**	**2.8000e-004**	**0.0000**	**2.5932**	**2.5932**	**2.0000e-004**	**0.0000**	**2.5980**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0213	0.2214	0.1284	2.2000e-004		0.0113	0.0113		0.0104	0.0104	0.0000	19.4476	19.4476	6.2900e-003	0.0000	19.6048
Total	**0.0213**	**0.2214**	**0.1284**	**2.2000e-004**	**0.0903**	**0.0113**	**0.1017**	**0.0497**	**0.0104**	**0.0601**	**0.0000**	**19.4476**	**19.4476**	**6.2900e-003**	**0.0000**	**19.6048**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	4.4000e-004	4.2900e-003	1.0000e-005	1.1700e-003	1.0000e-005	1.1800e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	1.0479	1.0479	3.0000e-005	0.0000	1.0487
Total	**5.8000e-004**	**4.4000e-004**	**4.2900e-003**	**1.0000e-005**	**1.1700e-003**	**1.0000e-005**	**1.1800e-003**	**3.1000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**1.0479**	**1.0479**	**3.0000e-005**	**0.0000**	**1.0487**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0213	0.2214	0.1284	2.2000e-004		0.0113	0.0113		0.0104	0.0104	0.0000	19.4476	19.4476	6.2900e-003	0.0000	19.6048
Total	**0.0213**	**0.2214**	**0.1284**	**2.2000e-004**	**0.0407**	**0.0113**	**0.0520**	**0.0223**	**0.0104**	**0.0328**	**0.0000**	**19.4476**	**19.4476**	**6.2900e-003**	**0.0000**	**19.6048**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	4.4000e-004	4.2900e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.1000e-004	0.0000	1.0479	1.0479	3.0000e-005	0.0000	1.0487
Total	**5.8000e-004**	**4.4000e-004**	**4.2900e-003**	**1.0000e-005**	**1.1200e-003**	**1.0000e-005**	**1.1300e-003**	**3.0000e-004**	**1.0000e-005**	**3.1000e-004**	**0.0000**	**1.0479**	**1.0479**	**3.0000e-005**	**0.0000**	**1.0487**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1592	0.0000	0.1592	0.0871	0.0000	0.0871	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0572	0.6255	0.3647	7.3000e-004		0.0283	0.0283		0.0261	0.0261	0.0000	63.7722	63.7722	0.0206	0.0000	64.2879
Total	**0.0572**	**0.6255**	**0.3647**	**7.3000e-004**	**0.1592**	**0.0283**	**0.1875**	**0.0871**	**0.0261**	**0.1131**	**0.0000**	**63.7722**	**63.7722**	**0.0206**	**0.0000**	**64.2879**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.8000e-004	0.0105	1.4100e-003	3.0000e-005	5.1000e-004	3.0000e-005	5.4000e-004	1.4000e-004	3.0000e-005	1.7000e-004	0.0000	2.6336	2.6336	2.3000e-004	0.0000	2.6392
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0200e-003	1.5500e-003	0.0150	4.0000e-005	4.1000e-003	3.0000e-005	4.1300e-003	1.0900e-003	3.0000e-005	1.1200e-003	0.0000	3.6675	3.6675	1.2000e-004	0.0000	3.6704
Total	**2.3000e-003**	**0.0120**	**0.0164**	**7.0000e-005**	**4.6100e-003**	**6.0000e-005**	**4.6700e-003**	**1.2300e-003**	**6.0000e-005**	**1.2900e-003**	**0.0000**	**6.3011**	**6.3011**	**3.5000e-004**	**0.0000**	**6.3096**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0717	0.0000	0.0717	0.0392	0.0000	0.0392	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0572	0.6255	0.3647	7.3000e-004		0.0283	0.0283		0.0261	0.0261	0.0000	63.7722	63.7722	0.0206	0.0000	64.2878
Total	**0.0572**	**0.6255**	**0.3647**	**7.3000e-004**	**0.0717**	**0.0283**	**0.1000**	**0.0392**	**0.0261**	**0.0652**	**0.0000**	**63.7722**	**63.7722**	**0.0206**	**0.0000**	**64.2878**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.8000e-004	0.0105	1.4100e-003	3.0000e-005	4.9000e-004	3.0000e-005	5.2000e-004	1.4000e-004	3.0000e-005	1.6000e-004	0.0000	2.6336	2.6336	2.3000e-004	0.0000	2.6392
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0200e-003	1.5500e-003	0.0150	4.0000e-005	3.9300e-003	3.0000e-005	3.9600e-003	1.0500e-003	3.0000e-005	1.0800e-003	0.0000	3.6675	3.6675	1.2000e-004	0.0000	3.6704
Total	**2.3000e-003**	**0.0120**	**0.0164**	**7.0000e-005**	**4.4200e-003**	**6.0000e-005**	**4.4800e-003**	**1.1900e-003**	**6.0000e-005**	**1.2400e-003**	**0.0000**	**6.3011**	**6.3011**	**3.5000e-004**	**0.0000**	**6.3096**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0412	0.3843	0.3877	6.1000e-004		0.0216	0.0216		0.0203	0.0203	0.0000	53.1153	53.1153	0.0124	0.0000	53.4264
Total	**0.0412**	**0.3843**	**0.3877**	**6.1000e-004**		**0.0216**	**0.0216**		**0.0203**	**0.0203**	**0.0000**	**53.1153**	**53.1153**	**0.0124**	**0.0000**	**53.4264**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5800e-003	1.2200e-003	0.0118	3.0000e-005	3.2200e-003	2.0000e-005	3.2500e-003	8.6000e-004	2.0000e-005	8.8000e-004	0.0000	2.8816	2.8816	9.0000e-005	0.0000	2.8839
Total	**1.5800e-003**	**1.2200e-003**	**0.0118**	**3.0000e-005**	**3.2200e-003**	**2.0000e-005**	**3.2500e-003**	**8.6000e-004**	**2.0000e-005**	**8.8000e-004**	**0.0000**	**2.8816**	**2.8816**	**9.0000e-005**	**0.0000**	**2.8839**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0412	0.3843	0.3877	6.1000e-004		0.0216	0.0216		0.0203	0.0203	0.0000	53.1152	53.1152	0.0124	0.0000	53.4263
Total	**0.0412**	**0.3843**	**0.3877**	**6.1000e-004**		**0.0216**	**0.0216**		**0.0203**	**0.0203**	**0.0000**	**53.1152**	**53.1152**	**0.0124**	**0.0000**	**53.4263**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5800e-003	1.2200e-003	0.0118	3.0000e-005	3.0800e-003	2.0000e-005	3.1100e-003	8.2000e-004	2.0000e-005	8.5000e-004	0.0000	2.8816	2.8816	9.0000e-005	0.0000	2.8839
Total	**1.5800e-003**	**1.2200e-003**	**0.0118**	**3.0000e-005**	**3.0800e-003**	**2.0000e-005**	**3.1100e-003**	**8.2000e-004**	**2.0000e-005**	**8.5000e-004**	**0.0000**	**2.8816**	**2.8816**	**9.0000e-005**	**0.0000**	**2.8839**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0772	0.7201	0.8016	1.2800e-003		0.0379	0.0379		0.0357	0.0357	0.0000	111.1080	111.1080	0.0259	0.0000	111.7546
Total	**0.0772**	**0.7201**	**0.8016**	**1.2800e-003**		**0.0379**	**0.0379**		**0.0357**	**0.0357**	**0.0000**	**111.1080**	**111.1080**	**0.0259**	**0.0000**	**111.7546**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0700e-003	2.2700e-003	0.0224	6.0000e-005	6.7400e-003	5.0000e-005	6.7900e-003	1.7900e-003	4.0000e-005	1.8400e-003	0.0000	5.8072	5.8072	1.7000e-004	0.0000	5.8114
Total	**3.0700e-003**	**2.2700e-003**	**0.0224**	**6.0000e-005**	**6.7400e-003**	**5.0000e-005**	**6.7900e-003**	**1.7900e-003**	**4.0000e-005**	**1.8400e-003**	**0.0000**	**5.8072**	**5.8072**	**1.7000e-004**	**0.0000**	**5.8114**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0772	0.7201	0.8016	1.2800e-003		0.0379	0.0379		0.0357	0.0357	0.0000	111.1079	111.1079	0.0259	0.0000	111.7545
Total	**0.0772**	**0.7201**	**0.8016**	**1.2800e-003**		**0.0379**	**0.0379**		**0.0357**	**0.0357**	**0.0000**	**111.1079**	**111.1079**	**0.0259**	**0.0000**	**111.7545**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0700e-003	2.2700e-003	0.0224	6.0000e-005	6.4500e-003	5.0000e-005	6.5000e-003	1.7200e-003	4.0000e-005	1.7700e-003	0.0000	5.8072	5.8072	1.7000e-004	0.0000	5.8114
Total	**3.0700e-003**	**2.2700e-003**	**0.0224**	**6.0000e-005**	**6.4500e-003**	**5.0000e-005**	**6.5000e-003**	**1.7200e-003**	**4.0000e-005**	**1.7700e-003**	**0.0000**	**5.8072**	**5.8072**	**1.7000e-004**	**0.0000**	**5.8114**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0140	0.1366	0.1745	2.7000e-004		6.9800e-003	6.9800e-003		6.4400e-003	6.4400e-003	0.0000	23.5390	23.5390	7.3900e-003	0.0000	23.7237
Paving	4.8500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0189**	**0.1366**	**0.1745**	**2.7000e-004**		**6.9800e-003**	**6.9800e-003**		**6.4400e-003**	**6.4400e-003**	**0.0000**	**23.5390**	**23.5390**	**7.3900e-003**	**0.0000**	**23.7237**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-004	5.9000e-004	5.8400e-003	2.0000e-005	1.7600e-003	1.0000e-005	1.7700e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.5149	1.5149	4.0000e-005	0.0000	1.5160
Total	**8.0000e-004**	**5.9000e-004**	**5.8400e-003**	**2.0000e-005**	**1.7600e-003**	**1.0000e-005**	**1.7700e-003**	**4.7000e-004**	**1.0000e-005**	**4.8000e-004**	**0.0000**	**1.5149**	**1.5149**	**4.0000e-005**	**0.0000**	**1.5160**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0140	0.1366	0.1745	2.7000e-004		6.9800e-003	6.9800e-003		6.4400e-003	6.4400e-003	0.0000	23.5390	23.5390	7.3900e-003	0.0000	23.7236
Paving	4.8500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0189**	**0.1366**	**0.1745**	**2.7000e-004**		**6.9800e-003**	**6.9800e-003**		**6.4400e-003**	**6.4400e-003**	**0.0000**	**23.5390**	**23.5390**	**7.3900e-003**	**0.0000**	**23.7236**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-004	5.9000e-004	5.8400e-003	2.0000e-005	1.6800e-003	1.0000e-005	1.6900e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.5149	1.5149	4.0000e-005	0.0000	1.5160
Total	**8.0000e-004**	**5.9000e-004**	**5.8400e-003**	**2.0000e-005**	**1.6800e-003**	**1.0000e-005**	**1.6900e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**1.5149**	**1.5149**	**4.0000e-005**	**0.0000**	**1.5160**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.523272	0.032530	0.181768	0.106196	0.031705	0.006508	0.012974	0.094129	0.001340	0.001253	0.005657	0.001294	0.001375
Other Non-Asphalt Surfaces	0.523272	0.032530	0.181768	0.106196	0.031705	0.006508	0.012974	0.094129	0.001340	0.001253	0.005657	0.001294	0.001375

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix B

Biological Study Report

BIOLOGICAL STUDY REPORT

Shasta Lake Force Main Replacement Project

City of Shasta Lake, Shasta County, California

Prepared for:

PACE ENGINEERING

Prepared by:

John Luper, Qualified Biologist

July 2019

032-49

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TABLE OF CONTENTS

1. INTRODUCTION

The proposed project includes improvements to the City's wastewater collection system that are required to resolve existing deficiencies and capacity restrictions, and improve access for ongoing maintenance.

The purpose of this biological study report (BSR) is to identify and characterize sensitive biological resources that could 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. For purposes of this BSR, "study area" and "project site" shall mean the project footprint, which includes areas for staging and construction access, and areas in which improvements would occur.

ENPLAN is an environmental consulting firm with over 35 years of experience with projects throughout northern California. All work associated with this project was performed by Donald Burk, Environmental Services Manager, John Luper, Environmental Scientist, and Jacob Ewald, Wildlife Biologist. Resumes for the biologists are provided in **Appendix A**.

Mr. Burk received his Master of Science degree in Botany, and Bachelor of Arts degrees 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. Mr. Burk was responsible for the botanical survey and final report review.

Mr. Luper received his Bachelor of Science degree in Botany and Biology (Environmental) from California State University, Humboldt. He has over thirteen years of experience working as a biologist and regulatory specialist throughout northern California. His experience includes preparation of CEQA/NEPA environmental compliance documents, wetland delineations, biological studies, open space preserve development, environmental monitoring for construction activities, and preparation/ implementation of storm water management plans. Mr. Luper was responsible for the

delineation of waters subject to federal and State jurisdiction, project mapping, and drafting the report.

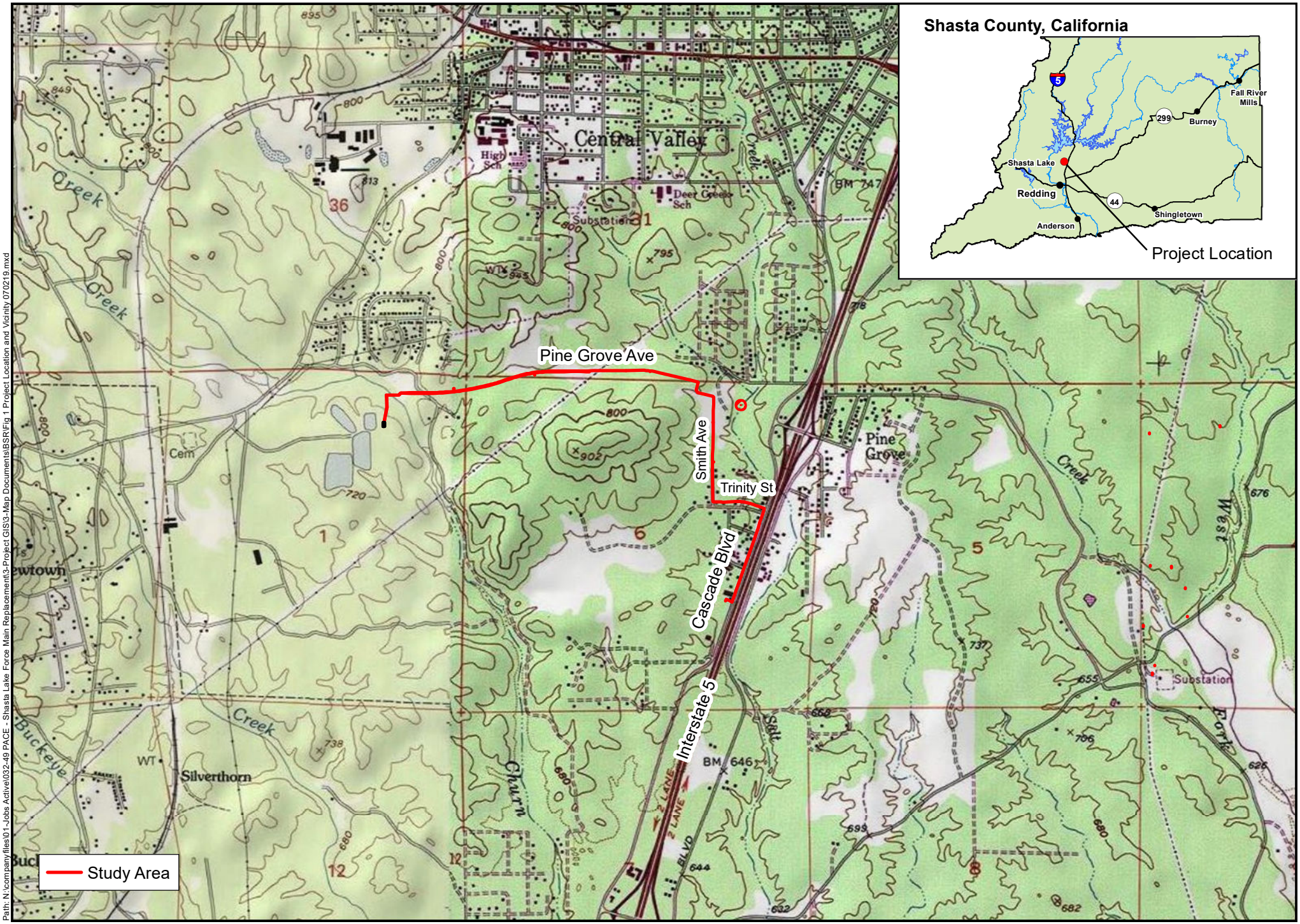
Mr. Ewald received his Bachelor of Science degree in Biology from the University of California, Davis. He has over four years of experience in California, where he has conducted stream surveys, endangered species surveys, nesting bird surveys, and construction monitoring. Mr. Ewald conducted the wildlife survey for the project.

2. PROJECT LOCATION

The project site is situated in the City of Shasta Lake, Shasta County, in Section 1, Township 32N, Range 5W, of the U.S. Geological Survey's (USGS) Shasta Dam quadrangle; Section 6, Township 32N, Range 4W, of the USGS Project City quadrangle; and Section 31, Township 33N, Range 4W, of the USGS Project City quadrangle (see **Figure 1**).

Proposed improvements would occur in the public road rights-of-way (ROWs) of Cascade Boulevard, Trinity Street, Smith Avenue, and Pine Grove Avenue. Between Pine Grove Avenue and the Wastewater Treatment Plant (WWTP) headworks, the force main would be routed through City-owned undeveloped land that is currently used as a spray field for the WWTP (see **Figures 2 and 3**). The LS5 diversion manhole and overflow manhole improvements would occur on property owned by the City (see **Figure 3**).

Temporary staging of construction materials and equipment would occur within the boundaries of the WWTP site in paved and graveled areas. Project staging would also occur in the affected street ROW throughout the project area. Representative photos of the project area are included in **Appendix B**.



Path: N:\company files\01-Jobs Active\032-49 PACE - Shasta Lake Force Main Replacement\3-Project GIS\3-Map Documents\BSR\Fig 1 Project Location and Vicinity 070219.mxd

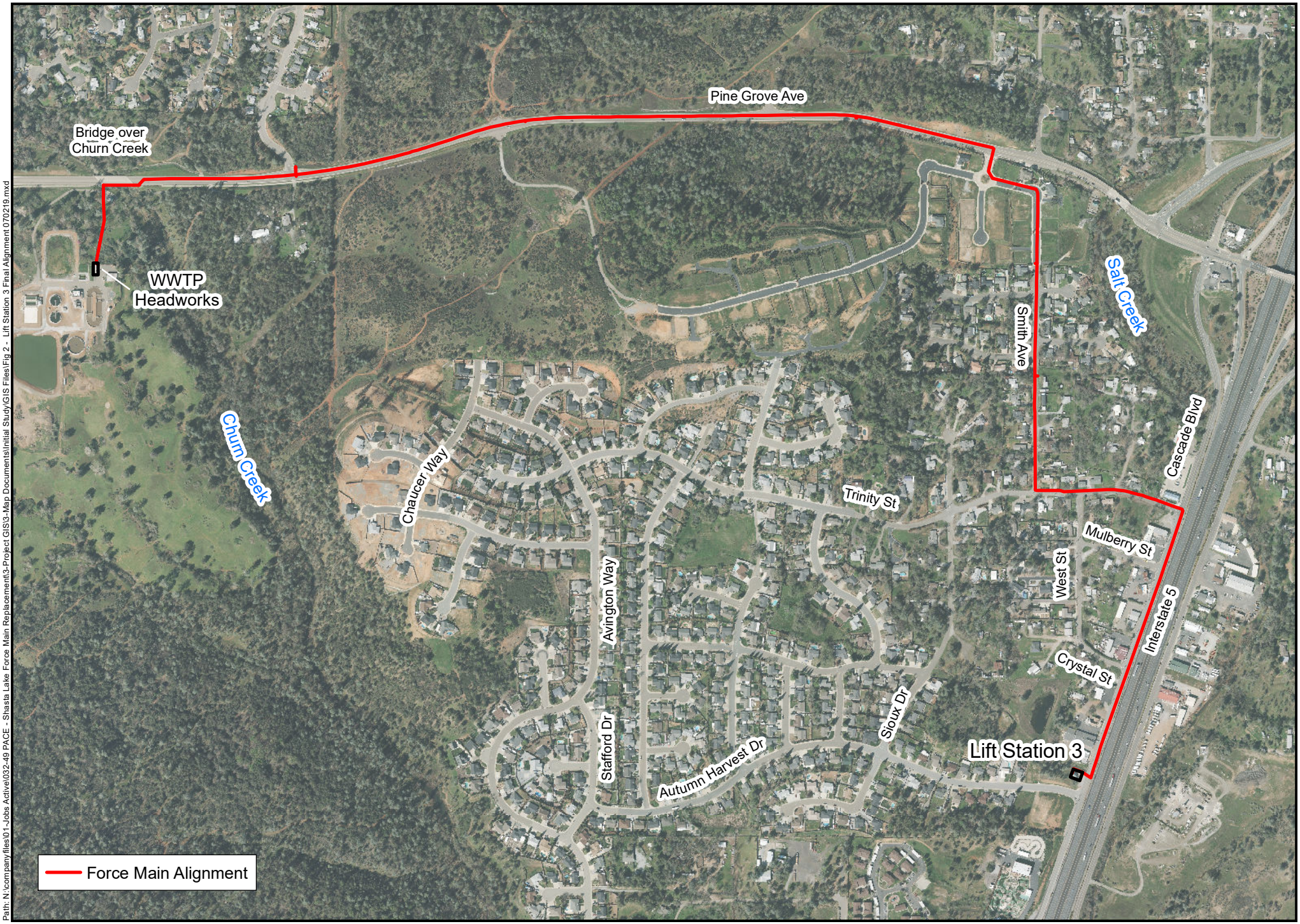
All depictions are approximate. Not a survey product. 07.02.19

0 2,000 Feet

Figure 1

Project Location and Vicinity

ENPLAN



All depictions are approximate. Not a survey product. 07.02.19

Feet
0 700

Figure 2

Lift Station 3 Force Main Alignment

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Path: N:\company files\01-Jobs Active\032-49 PACE - Shasta Lake Force Main Replacement\3-Project GIS\3-Map Documents\Initial Study\GIS Files\Fig 3 - Lift Station 5 Final Alignment 070219.mxd

All depictions are approximate. Not a survey product. 07.02.19

0 700 Feet

Figure 3

Lift Station 5 Force Main Alignment

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3. PROJECT DESCRIPTION

This section provides an overview of proposed improvements that are the subject of this BSR.

Lift Station 3 Force Main Improvements

As shown in **Figure 2**, a 12-inch diameter force main would be installed between LS3 and the WWTP headworks. All pipeline improvements would be installed using open-cut trenching. The pipe would be installed primarily in the paved sections of Cascade Boulevard, Trinity Street, Smith Avenue, and Pine Grove Avenue. In areas with no sidewalks on Trinity Street and Smith Avenue, a portion of the pipe may be installed in the graveled shoulders within the road ROW. Paved roads that are disturbed during construction would be re-paved following installation of the improvements.

Immediately north of LS3, the force main would be installed in the fill overlying a boxed culvert that runs under Cascade Boulevard. If it is determined that the depth of fill is not sufficient to install the force main over the culvert, the pipe would be installed by open-cut trenching through a drainage ditch adjacent to Cascade Boulevard. This ditch conveys drainage to Salt Creek on the east side of I-5. In accordance with resource agency permit requirements, the area would be restored to pre-construction contours, and no permanent impacts would occur. The pipeline would proceed in Smith Avenue through an older residential neighborhood and through the Deer Creek Manor Subdivision. Improvements in Pine Grove Avenue would occur entirely within the paved road ROW.

Lift Station 5 Force Main Improvements

As shown in **Figure 3**, an 18-inch diameter force main would be installed in a ±3,400-foot segment of Pine Grove Avenue between the PG&E powerline easement and the west side of the Churn Creek Bridge, where the pipe would turn south to the WWTP. The pipe would be installed using open-cut trenching and would parallel the LS3 force main. Pine Grove Avenue would be re-paved

following installation of the improvements. Currently, the force main from LS5 is reduced to 10 inches before entering the WWTP headworks. It will be necessary to retrofit the existing headworks to allow for an 18-inch discharge. The new 18-inch discharge would traverse up and over the headworks wall; alternatively, the LS3 and LS5 force mains would be manifolded together and enter the headworks through one 18-inch pipe.

Both the LS3 and LS5 force mains would extend across Churn Creek on the existing Pine Grove Avenue bridge. The new force mains would be mounted via brackets on the south side of the bridge. All work would be conducted from the bridge deck using "over-the-rail" man and equipment lifts. Although a few low-hanging limbs immediately south of the bridge may be pruned, no woody riparian vegetation would be removed. No in-water work would occur. Between Pine Grove Avenue and the WWTP headworks, the force mains would be installed using open-cut trenching. In accordance with resource agency permits, the area would be restored to pre-construction contours, and no permanent impacts would occur.

Lift Station 5 Diversion Manhole

Improvements to the LS5 diversion manhole include installing a ±3-foot-tall concrete weir within the manhole and increasing the slope of the 12-inch diversion main that exits the manhole. The latter would be accomplished by replacing a ±20-foot segment of the 12-inch diversion main at a ±3-foot higher elevation. Depending on final design of the project, the existing diversion main would either be removed or abandoned in place.

The diversion main would be installed using open-cut trenching. In order to connect the new pipe to the existing pipe, the length of the trench would need to be extended to no more than 25 feet. If the existing diversion main is abandoned in place, the maximum depth of excavation, associated with installation of the new pipe, would be six feet. If the existing diversion main is removed and replaced, the maximum depth of excavation would be ten feet. No work within the ordinary high water mark (OHWM) of Salt Creek would occur.

Lift Station 5 Overflow Manhole

The LS5 overflow manhole, located ±10 feet northeast of the LS5 diversion manhole, has an existing 15-inch sanitary sewer line that connects to a manhole ±105 feet northwest of the overflow manhole. The original invert elevation set for the 15-inch line within the overflow manhole is not sufficient for its purpose and needs to be lowered within the manhole. A small segment of the existing 15-inch sewer line would be replaced in place at a slightly lower elevation (±0.4 feet). Trenching associated with the pipe replacement would be limited to no more than 10 feet in length to avoid work within the ordinary high-water mark (OHWM) of Salt Creek. The pipe would be installed using open-cut trenching; the maximum depth of excavation would be six feet.

4. AREA CHARACTERISTICS

The study area ranges in elevation between 670 and 725 feet above mean sea level, and is characterized by gently rolling terrain. The overall topographical gradient slopes gradually downward toward the south and southeast. Salt Creek, Churn Creek, and several unnamed tributaries pass through the study area.

Salt Creek is an intermittent stream that is directly tributary to Churn Creek. In the study area, Salt Creek has a confined channel. The substrate is mostly pebble and gravel, and its banks are populated with cottonwoods, willows, and Himalayan blackberry. Salt Creek is mostly dry by late summer.

Churn Creek is a perennial stream that is a direct tributary to the Sacramento River. In the study area, Churn Creek has a confined channel that is wide and shallow. The substrate is mostly embedded gravel and cobble. The streambanks are populated with an overstory of valley oaks and an understory of willows and Himalayan blackberry.

Properties on Cascade Boulevard north of LS3 include antique stores, restaurants, and general commercial uses. A gasoline station/mini market is located on the east side of Cascade Boulevard at the Pine Grove Avenue interchange. Interstate 5 (I-5) parallels Cascade Boulevard to the east. Properties along Trinity Street and Smith Avenue are developed with single-family residences. Single-family homes in the Deer

Creek Manor Subdivision back up to Pine Grove Avenue west of LS5. A sound wall is located between the homes and Pine Grove Avenue. The majority of properties along Pine Grove Avenue in the study area are undeveloped. There are two developed residential properties at the western end of the study area, south of Pine Grove Avenue at its intersection with Coeur D'Alene Avenue; the closest home is approximately 200 feet south of Pine Grove Avenue and approximately 675 feet northeast of the WWTP headworks.

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 California Natural Diversity Data Base (CNDDB) records for special-status plants, animals, and natural communities (**Table 1**); the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (**Table 2**); U.S. Fish and Wildlife Service (USFWS) records for federally listed, proposed, and Candidate plant and animal species under jurisdiction of the USFWS (**Appendix C**); National Marine Fisheries Service (NMFS) records for anadromous fish species under the jurisdiction of the NMFS (**Appendix C**); soils records maintained by the U.S. Department of Agriculture's Natural Resources Conservation Service (2019), and National Wetlands Inventory (NWI) maps (USFWS, 2019). The CNDDB records search covered a five-mile radius around the study area. The records review addressed portions of the USGS Project City, Shasta Dam, Balls Ferry, Bend, Enterprise, and Redding quadrangles.

5.2. Field Reconnaissance

To determine the presence/absence of special-status plant and animal species and sensitive natural communities in the study area, biological screening evaluations were completed by an ENPLAN biologist on May 16, July 6, and November 5, 2018. Most of the special-status species potentially occurring in the study area would have been evident at the time the fieldwork was conducted. In addition, determination of the

potential presence of such species could readily be made based on observed habitat characteristics.

To determine the presence of wetlands and other waters of the U.S./State, field investigations were conducted on September 19, 2018, and June 27, 2019.

6. NATURAL COMMUNITIES

According to the California Department of Fish and Wildlife (CDFW), since the inception of the Natural Heritage Program in 1979, natural communities have been considered for their conservation significance (CDFW, 2019). Unique natural communities were recorded in the CNDDB until the mid-1990s; at that time, funding for the natural community portion of the program was eliminated. Although natural communities are no longer being added to the CNDDB, many of the natural community occurrences maintained in the CNDDB still have significance for conservation, and their existence should be considered in the environmental review process. Review of CNDDB natural community records shows that one natural community, Great Valley Cottonwood Riparian Forest, is identified about 4.75 miles south of the WWTP. CNDDB records do not identify any other sensitive natural communities within a five-mile radius of the project site. Other records reviewed for sensitive natural communities included those maintained by the USFWS and NMFS. Neither the USFWS nor NMFS identify any designated critical habitats for federally listed species within the study area.

As a result of the field evaluation, the following communities were identified in the study area: stream/riverine, oak woodland, and urban. Stream/riverine and oak woodland habitats are considered sensitive communities.

Stream/Riverine Communities. The stream/riverine habitats consist of Salt Creek, Churn Creek, and one drainage ditch; all three features are considered Waters of the U.S./State. Other small drainages are present adjacent to the study area, including some that pass under streets in culverts, but none of these features will be affected by project implementation. As stated in Section 3, manhole improvements adjacent to Salt Creek have been designed to ensure that work does not encroach into the OHWM of Salt Creek; therefore, no resource agency permits are required for the

manhole improvements. In addition, no woody riparian vegetation adjacent to Salt Creek would be removed. Likewise, although a few low-hanging limbs immediately south of the Churn Creek bridge may be pruned to accommodate the bridge-mounted pipes, no woody riparian vegetation would be removed, and no construction-related activities would occur in Churn Creek.

The drainage ditch conveys stormwater and urban runoff to Salt Creek on the east side of I-5, and is channeled under Cascade Boulevard in a box culvert. Given its urban character and small drainage area, the ditch provides minimal biological values. Project plans call for the force main to be installed in fill soil on top of the box culvert. However, if this is not possible, this segment of the force main would be installed through the drainage ditch adjacent to Cascade Boulevard using open-cut trenching.

If the force main must be installed through the ditch, work would be subject to conditions of a Clean Water Act (CWA) Section 404 permit as required by the U.S. Army Corps of Engineers (USACE). It is anticipated that the work would qualify for a USACE Nationwide Permit (NWP) 12, which authorizes activities required for the construction, maintenance, repair, and removal of utility lines and associated facilities, provided the activity does not result in the loss of greater than ½-acre of waters of the U.S. 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. In addition, a Streambed Alteration Agreement from CDFW may be required.

Among other conditions, the resource agency permits require that temporary fills be removed in their entirety and the affected areas be returned to pre-construction contours to maintain the original hydrology of the site. In addition, temporarily disturbed areas must be revegetated, as appropriate. With implementation of the standard conditions of these permits, no adverse effects on the drainage or downstream waters are expected.

In addition to potential direct impacts, construction activities throughout the study area would result in the exposure of on-site soils to erosive actions. If the eroded soils are washed into downstream waters, they could directly and indirectly affect aquatic species and habitats. The City is required to obtain coverage under the State Water

Resources Control Board's (SWRCB) National Pollutant Discharge Elimination System (NPDES) permit for Discharges of Storm Water Runoff Associated with Construction Activity (currently Order No. 2009-009-DWQ) by submitting a Notice of Intent to the SWRCB. The permitting process requires the development and implementation of an effective Storm Water Pollution Prevention Plan (SWPPP) that includes Best Management Practices (BMPs) to control erosion and sedimentation and prevent damage to streams, watercourses, and sensitive habitats.

BMPs may 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 to surface waters and sensitive habitats; and revegetating temporarily disturbed sites upon completion of construction. Given the existing requirement for erosion control BMPs during project construction, no further mitigation is needed to protect aquatic habitats in the study area and downstream.

Oak Woodlands. The oak woodland community occurs in the westernmost study area between Pine Grove Avenue and the WWTP headworks and is comprised of blue oak, California black oak, and interior live oak. Understory vegetation includes California coffeeberry, buckbrush, and western poison oak. The oak woodland is open, consisting of scattered individual trees. The project has been designed to avoid direct impacts to oak trees. However, trenching has the potential to damage roots of trees adjoining the pipeline corridor, which could lead to eventual loss of those trees.

Potential indirect impacts can be minimized/avoided through implementation of **Mitigation Measure 1,** which requires the placement of exclusionary fencing around trees planned for retention; the fencing would be placed six feet outside the driplines of the trees to create a "root protection zone;" to the extent feasible, no construction activities or storage of materials would occur within this zone. If the force main must be installed using open-cut trenching within the root protection zone, the work shall be completed under the direction of a certified arborist to ensure that the trees are not substantially damaged. With implementation of this measure, the potential direct and indirect loss of oak trees is less than significant.

7. SPECIAL-STATUS SPECIES

7.1. Special-Status Plant Species

Review of the USFWS species lists for the project area did not identify any federally listed plant species as potentially being affected by the proposed project.

Review of CNDDB records did not identify any reported occurrences of special-status plants in the study area. Six special-status plants have been reported within a five-mile radius of the study area: maverick clover, Red Bluff dwarf rush, Sanford's arrowhead, Shasta huckleberry, silky cryptantha, and Sulphur Creek brodiaea. Two non-status plants, dubious pea and Henderson's bent grass, have also been reported in the five-mile search radius.

The CNPS Inventory identifies two additional special-status plants within the Project City and Shasta Dam quadrangles: northern clarkia and Shasta snow-wreath; and seven additional non-status plants within these quadrangles: depauperate milk-vetch, Redding checkerbloom, Sanborn's onion, Shasta County arnica, Shasta maidenhair fern, slender false lupine, and thread-leaved beakseed.

The potential for each 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 D** 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 identified the following federally listed animal species as potentially being affected by the proposed project: northern spotted owl, California red-legged frog, Delta smelt, Shasta crayfish, and vernal pool fairy shrimp. The USFWS does not identify any designated critical habitat in the study area for any federally listed animal species.

Review of the NMFS species list found that Central Valley spring-run Chinook salmon, evolutionary significant unit (ESU) (federally threatened); Sacramento River winter-run (SRWR) Chinook salmon ESU (federally endangered); and California Central Valley (CCV) steelhead, distinct population segment (DPS) (federally threatened) occur in the Shasta Dam and Project City quadrangles. Essential Fish Habitat (EFH) is

identified in the Project City and Shasta Dam quadrangles for Chinook salmon. Additionally, fall run Chinook salmon ESU and late fall-run Chinook salmon ESU (state Species of Special Concern) are known to occur in Churn Creek (Graham Matthews & Associates, 2008). Although critical habitat for CCV steelhead is identified Churn Creek, the critical habitat designation does not extend upstream to the project site (NMFS, 2014).

CNDDB records showed that no special-status wildlife species have been previously reported in the project site. Nine special-status animal species have been reported within a five-mile radius of the project site: bald eagle, Chinook salmon-Central Valley spring-run ESU, Chinook salmon-Sacramento River winter-run ESU, California Central Valley (CCV) steelhead, fisher (west coast DPS), foothill yellow-legged frog, Shasta salamander, valley elderberry longhorn beetle, and western pond turtle. Additionally, seven non-status animals have been reported within the five-mile search radius: Antioch Dunes anthicid beetle, Oregon shoulderband, Sacramento anthicid beetle, Shasta chaparral, silver-haired bat, western pearlshell, and Wintu sideband.

The potential for each of the above special-status animal species to occur on the project site is evaluated in **Table 3**. As documented in Table 3, the project site has the potential to support western pond turtle, foothill yellow-legged frog, Central Valley steelhead, and Central Valley Chinook salmon (fall, late-fall and spring runs). Each of these species is discussed in further detail below.

Western Pond Turtle

The western pond turtle, a state Species of Special Concern and candidate for listing as a federally endangered species, is found in a variety of habitats (e.g., ponds, reservoirs, streams, rivers, ditches, sloughs) from sea level to approximately 6,000 feet in elevation. Pond turtles prefer ponds or slow-flowing streams with deep pools. Such habitats often have muddy bottoms. The presence of suitable basking sites is an important habitat component for western pond turtles. Basking sites may include partially submerged logs, rocks, mats of floating vegetation, or open mud banks. Suitable upland habitat (sandy banks or grassy open fields) for egg-laying is required.

Courtship and mating occur primarily in late April or early May. Most egg-laying occurs in May and June, although some females may deposit a second clutch of eggs later in summer. Nests are usually within 500 feet of water. Nests are generally found in substrates that have a high sand, clay, or silt component, and are generally located on unshaded, south-facing slopes. Using their hind feet, female turtles excavate a shallow, two- to three-inch-deep, flask-shaped nest with an opening approximately 1.5 inches in diameter. From 1 to 13 eggs are deposited in the nest. Females often cover the nest site with soil and leaf litter to conceal the nest. Eggs hatch approximately 80 to 130 days later. Hatchlings generally emerge from the nest in August and move to aquatic sites, although in some populations in the northern part of the species' range, hatchlings may overwinter and emerge from the nest the following spring. Adult and juvenile western pond turtles generally leave aquatic sites in the fall to overwinter in nearby uplands and return to aquatic sites in the spring.

CNDDB records show that western pond turtles have been previously reported in the Churn Creek watershed; one occurrence was reported from Churn Creek approximately 0.8 miles south of Pine Grove Avenue, and two occurrences were reported in a 0.75-mile reach of Salt Creek extending from Pine Grove Avenue north to Vallecito Street. ENPLAN staff have also observed western pond turtles in Churn Creek about two miles downstream of Pine Grove Avenue. Adult and juvenile turtles likely utilize Churn Creek and Salt Creek in the study area for foraging and/or dispersal.

Because work will occur during the turtle nesting season (April-August), there is some potential for turtles and/or their nests to be present in the upland work areas near Churn Creek and Salt Creek. Potential direct impacts can be minimized/avoided through implementation of **Mitigation Measure 2**, which requires that if western pond turtles enter a 100-foot buffer of on-going construction activities, a qualified biologist must be contacted and construction activities within 50 feet of the turtle must be halted until the turtle has left the area or is relocated by the qualified biologist. **Mitigation Measure 3** requires that all construction personnel receive training from a qualified biologist regarding special-status species that could occur in the project study area, the locations where the species could occur, the laws and regulations that protect these species, the consequences of noncompliance with those laws and regulations, and

procedures to be implemented in the event that these species are encountered during construction.

Potential indirect effects on western pond turtles include habitat degradation if sediment-laden water enters Churn Creek, Salt Creek, and/or downstream waters. As discussed in Section 6, BMPs for sediment control and spill prevention would be implemented in accordance with SWRCB requirements to minimize/avoid the potential for indirect impacts on pond turtles.

Foothill Yellow-Legged Frog (*Rana boylii*)

The foothill yellow-legged frog, a state Species of Special Concern, inhabits rocky, perennial streams and rivers. During the summer and fall, adult frogs prefer stream channels that provide exposed basking sites and cool shady areas. Adults often bask on exposed bedrock, boulders, or gravel bars near riffles. When disturbed, frogs jump into the stream and take refuge beneath submerged rocks or in soft sediment. Breeding and egg laying occur from April through June. Egg masses are generally attached to the downstream side of cobble or pebble substrates in shallow (e.g., less than two feet deep), slow-moving water at the stream or river margin. Tadpoles generally emerge from egg masses in two to four weeks, and transform into juvenile frogs in three to four months. Juvenile and adult frogs generally remain in the vicinity of breeding sites during summer and early fall. By late fall, frogs move into smaller streams to escape scouring winter flows or seek refuge in nearby riparian vegetation.

Although the foothill yellow-legged frog has not been reported in Churn Creek or its tributaries, the frog has been reported just outside the watershed in Cornish Creek (Cornish Creek drains to the Sacramento River approximately 2.5 miles below Shasta Dam). The headwaters and middle reach of Churn Creek hold water year-round and may provide potentially suitable habitat for the foothill yellow-legged frog. No foothill yellow-legged frogs were observed during the field inspections. However, in spring, Churn Creek in the study area has a low potential to provide breeding, foraging, and dispersal habitat for foothill yellow-legged frogs. In summer, the stream reach has a low potential to provide foraging and dispersal habitat for tadpoles, juveniles, and adults.

Because no work will occur within Churn Creek or Salt Creek, the project has a negligible potential to directly affect foothill yellow-legged frogs. Nonetheless, **Mitigation Measure 3** requires that all construction personnel receive training from a qualified biologist regarding special-status species that could occur in the project study area, the locations where the species could occur, the laws and regulations that protect these species, the consequences of noncompliance with those laws and regulations, and procedures to be implemented in the event that these species are encountered during construction.

Potential indirect effects on foothill yellow-legged frogs include habitat degradation if sediment-laden water enters Churn Creek, Salt Creek, and/or downstream waters. As discussed in Section 6, BMPs for sediment control and spill prevention would be implemented in accordance with SWRCB requirements to minimize/avoid the potential for indirect impacts on foothill yellow-legged frogs.

California Central Valley Steelhead (*Oncorhynchus mykiss*)

CCV steelhead, a federally threatened species, typically migrate to marine waters after spending two years in fresh water. For the first year or two of life, steelhead are found in cool, clear, fast-flowing permanent streams and rivers where riffles predominate over pools, there is ample cover from riparian vegetation or undercut banks, and invertebrate life is diverse and abundant (Moyle 2002). The smallest fish are most often found in riffles, intermediate-sized fish in runs, and larger fish in pools. Steelhead can be found where daytime water temperatures range from nearly 32°F to 81°F in the summer (Moyle 2002). Juvenile steelhead in northern California rivers reportedly exhibit increased physiological stress, increased agonistic activity, and a decrease in forage activity when ambient stream temperatures exceed 71.6°F (Nielsen et al. 1994).

According to the Stillwater-Churn Creek Watershed Assessment completed by North State Resources (NSR) in 2007, some steelhead are known to spawn and rear in Churn Creek, and this species is regularly observed in Churn Creek. In addition, Salt Creek in the study area has potentially suitable habitat for CV steelhead, and steelhead have been observed in Salt Creek approximately two miles south of the Pine Grove

Avenue bridge over Salt Creek. Therefore, it is possible that CCV steelhead may be present in the study area during construction.

Although no in-water work would occur, potential indirect effects on CCV steelhead include habitat degradation if sediment-laden water enters Churn Creek, Salt Creek, and/or downstream waters. As discussed in Section 6, BMPs for sediment control and spill prevention would be implemented in accordance with SWRCB requirements to minimize/avoid the potential for indirect impacts on CCV steelhead.

Chinook Salmon (*Oncorhynchus tshawytscha)*

Four distinct runs of Chinook salmon spawn in the Sacramento-San Joaquin River system, named for the season when the majority of the run enters freshwater as adults (winter-, spring-, fall- and late fall-run).

All salmon species are adapted to cold, clean, fresh water habitats but spend the majority of their lives at sea. They seek out natal streams using an acute sense of smell to spawn and complete their life cycles. Female salmon select a site to dig a redd in loose gravel and cobbles, with appropriate streamflow, depth, and temperature, and then deposit up to several thousand pea-sized pink to orange eggs. Males defend females and fertilize the eggs. Once in fresh water, adult salmon do not eat, and die shortly after spawning. Alevins emerge after several weeks to months in gravel, and as they absorb their yolk sacs they become known as fry. These young salmon slowly gain strength until they are able to seek out prey in faster waters. As they grow, the young salmon feed aggressively in a variety of freshwater habitats, increasing their size before migrating to the Pacific Ocean. (California Trout, 2019).

Spring-run Chinook salmon enter the Sacramento River from late March through September. Adults hold in cool water habitats through the summer, then spawn in the fall from mid-August through early October. Spring-run juveniles migrate soon after emergence, or remain in freshwater and migrate as yearlings. Winter-run Chinook salmon spawn in the upper mainstem Sacramento River from mid-April through August. Fry and smolts emigrate downstream from July through March through the Sacramento River, reaching the Delta from September through June. Spring- and winter-run

Chinook salmon exhibit a strong “stream-type” life history, which is dependent upon cold freshwater habitat year-round (CalTrout, 2019).

Fall-run Chinook salmon return to fresh water in later summer and early fall, and spawn relatively quickly after reaching spawning grounds in mainstem rivers. Spawning peaks from October-November, but can continue through December and into January if stream conditions allow. Juveniles emerge from December through March, and spend up to seven months feeding before migrating downstream in spring (CalTrout, 2019).

Late fall-run Chinook adults begin their spawning migrations in mid-October to November, and spawn quickly after reaching spawning grounds in December to January. Most late fall-run Chinook are four years old when they return to spawn. Fry emerge from the spawning gravel from April to June, and over-summer in the Sacramento River for 7 to 13 months before migrating out to sea (CalTrout, 2019).

According to the Stillwater-Churn Creek Watershed Assessment (NSR, 2007), the lack of holding and staging habitat (i.e., year-round cold freshwater habitat) excludes winter- and spring-run salmon spawning in Churn Creek. Water temperatures also rise in Salt Creek by early summer, and the creek is dry or nearly dry by late summer. Maslin et al. (1997-1999) observed rearing spring-run in Churn Creek near the project site, but did not observed rearing winter-run except near the mouth of Churn Creek.

Some fall- and late fall-run Chinook salmon are known to spawn and rear in Churn Creek, although most of the spawning salmon are thought to be “strays” originating from other nearby established spawning populations. Peak flows that occur during heavy fall and winter storms likely attract salmon from the Sacramento River.

Small numbers of fall- and late fall-run Chinook salmon have been observed and photographed in Churn Creek in the vicinity of Gold Hills Golf Course during 2004 and below a box culvert on Hill Boulevard in the City of Shasta Lake during 2001. During years with ample flow, Salt Creek may provide suitable spawning and rearing habitat for fall- and late fall-run Chinook salmon. Therefore, it is possible that fall- and late fall-run Chinook salmon may be present in the study area during construction.

In addition, EFH for Chinook salmon is mapped in the reaches of Churn Creek and Salt Creek in the study area. The Sustainable Fisheries Act of 1996, defines EFH

as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” A project could potentially affect EFH if it resulted in changes in water quality, modifications to the stream channel, and/or degradation of stream vegetation.

Although no in-water work would occur, potential indirect effects on Chinook salmon include habitat degradation if sediment-laden water enters Churn Creek, Salt Creek, and/or downstream waters. As discussed in Section 6, BMPs for sediment control and spill prevention would be implemented in accordance with SWRCB requirements to minimize/avoid the potential for indirect impacts on Chinook salmon. In addition, although a few low-hanging limbs may be pruned to accommodate the proposed improvements on the Pine Grove Avenue bridge over Churn Creek, no woody riparian vegetation would be removed. Given the existing requirement for erosion control BMPs during project construction, no further mitigation is needed to protect aquatic habitats, including EFH, in the study area and downstream.

8. NESTING MIGRATORY BIRDS

Under the Migratory Bird Treaty Act (MBTA) of 1918, migratory bird species, 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 and §3503.5 provide regulatory protection to resident and migratory birds and all birds of prey within the State.

The USFWS identified the following *Birds of Conservation Concern* as potentially affected by the proposed Project: bald eagle, California thrasher, common yellowthroat, Costa’s hummingbird, golden eagle, Lewis’s woodpecker, Nuttall’s woodpecker, oak titmouse, rufous hummingbird, song sparrow, spotted towhee, and yellow-billed magpie. The potential for each of these species to utilize the project site is evaluated in Table 4.

During construction, nesting migratory birds, if present, could be directly or indirectly affected by construction activities. Direct effects could include mortality resulting from construction equipment operating in an area 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.

Construction activities that occur in surfaced roadways and graveled road shoulders are not expected to directly affect nesting migratory birds because no trees or other vegetation would be removed; indirect effects in these areas, such as nest abandonment by adults in response to loud noise levels, are likewise not expected given the urban character of the work area. Any birds that may nest adjacent to roadways would be accustomed to periodic loud noises and other human-induced disturbances.

Construction activities in proximity to the LS5 manholes and associated sewer line improvements, and the force main corridor between Pine Grove Avenue and the WWTP headworks, have a somewhat higher potential to directly or indirectly impact nesting birds, if present. In the local area, most birds nest between February 1 and August 31, and the potential for adversely affecting nesting birds can be greatly minimized by conducting demolition and construction activities either before February 1 or after August 31. If this is not possible, a nesting survey should be conducted prior to commencement of construction. If active nests are found, construction activities would need to be postponed until after the young birds have fledged. **Mitigation Measure 4** will minimize/avoid potential direct and indirect effects to nesting birds.

9. NOXIOUS WEEDS

The introduction and spread of noxious weeds during construction activities has the potential to impact 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) 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 that apply to the study area:

> **Category A.** A pest of known economic or environmental detriment and 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, it 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.

Five Category C noxious weeds were observed in the study area during the botanical survey: bull thistle, Italian thistle, Klamath weed, puncture vine, and yellow star-thistle. These weeds are of widespread distribution in the County, and further spread of these weeds is not anticipated. As required by **Mitigation Measure 5**, 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, and by limiting any import or export of fill material to material that is known to be weed free.

10. CONCLUSIONS AND RECOMMENDATIONS

Based on the records search results, field observations, and the above analyses, we find that the proposed project could damage oak trees adjacent to the force main corridor; may require open-cut trenching through a drainage ditch that provides low-value habitat for wildlife; has the potential to directly or indirectly affect special-status wildlife species (western pond turtle, foothill yellow-legged frog, CCV steelhead, and Chinook salmon), if present; has the potential to adversely affect nesting birds in the area of the LS5 manhole improvements and between Pine Grove Avenue and the WWTP headworks; and could result in the introduction and spread of noxious weeds. However, use of BMPs for spill prevention and erosion control, and implementation of the following mitigation measures would reduce the proposed project's potential impacts on biological resources to a less-than-significant level.

Mitigation Measure 1: Construction Measures to Promote Retention of Oak Trees

Temporary construction fencing shall be installed and maintained at least six feet outside of the dripline of all oak trees to be preserved. The fencing around this "root protection zone" shall be maintained throughout construction.

a. No vehicle parking or materials stockpiling shall occur within the root protection zone.

b. To the extent feasible, no construction activities (including grading, cutting, and trenching), shall occur within the root protection zone. If the force main must be installed using open-cut trenching within the root protection zone, the work shall be completed under the supervision of a certified arborist.

Mitigation Measure 2: Avoid/Minimize Effects to Western Pond Turtles

In the event that western pond turtles enter a 100-foot buffer of on-going construction activities, a qualified biologist shall be contacted and construction activities shall be halted within 50 feet of the turtle until the turtle is confirmed to have left the project area or is relocated by the qualified biologist.

Mitigation Measure 3: Conduct Worker Environmental Awareness Program

Prior to commencement of any earth disturbance (e.g., clearing, grading, trenching, etc.), all construction personnel shall receive training from a qualified biologist regarding protective measures for special-status animal species and their habitats that could exist in the study area (western pond turtle, foothill yellow-legged frog, Central Valley steelhead and Chinook salmon). If new personnel are added to the project, the City shall ensure that they receive the mandatory training before starting work. At a minimum, the training shall include the following:

a. A review of the special-status species that could occur in the project study area, the locations where the species could occur, the laws and regulations that protect these species, and the consequences of noncompliance with those laws and regulations.

b. Procedures to be implemented in the event that these species are encountered during construction.

c. A review of sensitive habitats that occur in the study area and the location of the sensitive habitats.

d. A review of applicable mitigation measures, standard construction measures, best management practices, and regulatory agency permit conditions that apply to the protection of special-status species and sensitive habitats.

Mitigation Measure 4: Avoid Effects to Nesting Birds and Raptors.

In order 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:

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 in the work area for the LS5 manholes and associated sewer line improvements, and/or the force main corridor from the east side of Churn Creek to the WWTP headworks, a pre-construction nesting survey shall be conducted by a qualified biologist to identify active nests in and adjacent to the work area.

   Surveys shall begin prior to sunrise and continue until vegetation and nests have been sufficiently observed. The survey shall take into account 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 to the California Department of Fish and Wildlife 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 5: 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, and

b. Limiting any import or export of fill material to material that is known to be weed free.

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TABLES

TABLE 1
CNDDB Report Summary

Five-Mile Radius of Project Area
July 2019

Listed Element	Quadrangle [1]						Status [2]
	SD	BF	BD	EP	PJ	RD	
ANIMALS							
Antioch Dunes anthicid beetle	•						None
Bald eagle	•			•	•		FD, SE, SFP
Chinook salmon – Central Valley spring-run ESU						•	FT, ST
Chinook salmon – Sacramento River winter-run ESU			•				FE, SE
Fisher – West Coast DPS	•						ST, SSSC
Foothill yellow-legged frog	•			•	•	•	SCT, SSSC
Oregon shoulderband					•		None
Sacramento anthicid beetle	•						None
Shasta chaparral	•					•	None
Shasta salamander	•				•		ST
Silver-haired bat				•			None
Steelhead – Central Valley DPS		•					FT
Valley elderberry longhorn beetle	•				•		FT
Western pearlshell				•			None
Western pond turtle	•			•	•		SSSC
Wintu sideband					•		None
PLANTS							
Dubious pea						•	3
Henderson's bent grass					•		3.2
Maverick clover						•	1B.2
Red Bluff dwarf rush					•		1B.1
Sanford's arrowhead					•		1B.2
Shasta huckleberry	•						1B.3
Silky cryptantha					•		1B.2
Sulphur Creek brodiaea						•	1B.1
NATURAL COMMUNITES							
Great Valley Cottonwood Riparian Forest				•			None

Highlighting denotes the quadrangle in which the project site is located

[1]QUADRANGLE CODE

SD	Shasta Dam	EP	Enterprise
BF	Balls Ferry	PJ	Project City
BD	Bend	RD	Redding

[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
SD	State Delisted
SSSC	State Species of Special Concern

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

TABLE 2
California Native Plant Society
Inventory of Rare and Endangered Plants

U.S. Geological Survey's Project City and Shasta Dam 7.5-minute Quadrangles

July 2019

Common Name	Scientific Name	CA Rare Plant Rank	Blooming Period	State Listing Status	Federal Listing Status	Quad
Depauperate milk-vetch	*Astragalus pauperculus*	4.3	Mar-Jun	None	None	Project City
Henderson's bentgrass	*Agrostis hendersonii*	3.2	Apr-Jun	None	None	Project City
Northern clarkia	*Clarkia borealis* ssp. *borealis*	1B.3	Jun-Sep	None	None	Project City & Shasta Dam
Red Bluff dwarf rush	*Juncus leiospermus* var. *leiospermus*	1B.2	Mar-Jun	None	None	Project City
Redding checkerbloom	*Sidalcea celata*	3	Apr-Aug	None	None	Project City & Shasta Dam
Sanborn's onion	*Allium sanbornii* var. *sanbornii*	4.2	May-Sep	None	None	Project City & Shasta Dam
Sanford's arrowhead	*Sagittaria sanfordii*	1B.2	May-Oct	None	None	Project City
Shasta County arnica	*Arnica venosa*	4.2	May-Jul (Sep)	None	None	Project City & Shasta Dam
Shasta huckleberry	*Vaccinium shastense* ssp. *shastense*	1B.3	Dec-May (Jun-Sep)	None	None	Shasta Dam
Shasta maidenhair fern	*Adiantum shastense*	4.3	Apr-Aug	None	None	Project City & Shasta Dam
Shasta snow-wreath	*Neviusia cliftonii*	1B.2	Apr-Jun	None	None	Project City
Silky cryptantha	*Cryptantha crinita*	1B.2	Apr-May	None	None	Project City
Slender false lupine	*Thermopsis gracilis*	4.3	Mar-Jul	None	None	Shasta Dam
Thread-leaved beakseed	*Bulbostylis capillaris*	4.2	Jun-Aug	None	None	Project City

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. 2019. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). http://www.rareplants.cnps.org. Accessed June 25,2019.*

TABLE 3
Potential for Special-Status Species to Occur on the Project Site
July 2019

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							
Maverick clover	*Trifolium piorkowskii*	1B.2	Maverick clover is an annual herb that occurs in chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland, and vernal pools, typically on volcanic clay, and often in opening and along streambanks. The species is reported between 525 and 2,230 feet in elevation. The flowering period is April to May.	No	No	No	According to CNDDB records, the closest reported occurrence of maverick clover was in 1911, approximately 4.7 miles southwest of the project site. The species was not observed during the botanical survey and is not expected to be present.
Northern clarkia	*Clarkia borealis* ssp. *borealis*	1B.3	Northern clarkia is an annual herb that occurs in chaparral, cismontane woodland, and lower montane coniferous forest, and is often seen in roadcuts. The species is found between about 1,100 and 5,000 feet in elevation. The flowering period is June through August.	No	No	No	According to CNDDB records, the closest reported occurrence of northern clarkia is approximately 5.5 miles northeast of the project site. The species was not observed during the botanical survey and is not expected to be present.
Red Bluff dwarf rush	*Juncus leiospermus* var. *leiospermus*	1B.1	Red Bluff dwarf rush is an annual herb that typically occurs along the edges of vernal pools and vernal drainages, or on clay-rich terrace soils. The species is found between 100 and 3,400 feet in elevation. The flowering period is March through May.	No	No	No	No vernal pools or other potentially suitable habitat for Red Bluff dwarf rush are present in the project site. Red Bluff dwarf rush was not observed during the botanical survey and is not expected to be present.
Sanford's arrowhead	*Sagittaria sanfordii*	1B.2	Sanford's arrowhead occurs in freshwater ponds, marshes, and ditches with perennial water. The species is reported from sea level to 2,200 feet in elevation. The flowering period is May through October.	No	No	No	No suitable habitat for Sanford's arrowhead is present in the project site. Sanford's arrowhead 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
July 2019

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
Shasta huckleberry	*Vaccinium shastense* ssp. *shastense*	1B.3	Shasta huckleberry, a perennial deciduous shrub, occurs in a variety of acidic habitats and is often associated with acid mine drainage. Shasta huckleberry may be found along streambanks, around seeps, rocky outcrops, roadsides, and in disturbed areas within chaparral, cismontane woodland, coniferous forest, and riparian communities. The species is reported between 1,000 and 4,000 feet in elevation. The flowering period is December through September.	No	No	No	According to CNDDB records, the closest reported occurrences of Shasta huckleberry are near Lake Shasta, approximately 4.5 miles north of the project site. No potentially suitable habitat for Shasta huckleberry is present in the study area; thus, the species would not be present.
Shasta snow-wreath	*Neviusia cliftonii*	1B.2	Shasta snow-wreath is a shrub that occurs in cismontane woodland, lower montane coniferous forest, and riparian woodland, often on shaded, north-facing, or sheltered canyons, and occasionally on limestone and in mesic areas. The species is known from fewer than 20 occurrences in the mountains around Lake Shasta. The flowering period is April through June.	No	No	No	According to CNDDB records, the closest reported occurrence of Shasta snow-wreath is approximately 5 miles northeast of the project site at the Fawndale Quarry. No potentially suitable habitat for Shasta snow-wreath is present in the study area; thus, the species would not be present.
Silky cryptantha	*Cryptantha crinita*	1B.2	Silky cryptantha is an annual herb that occurs along low-gradient seasonal streams with broad floodplains, usually on the valley floor, where it is found on gravelly or cobbly substrates. The species also occurs in vernally moist uplands. Less frequently, it occurs along perennial streams, including the Sacramento River. The species is found between 200 and 4,000 feet in elevation. The flowering period is April and May.	Yes	No	No	According to CNDDB records, the closest reported occurrence of silky cryptantha is approximately 2.7 miles northeast of the project site. Silky cryptantha has not been reported along Churn Creek or Salt Creek in Shasta County. 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
July 2019

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
Sulphur Creek brodiaea	*Brodiaea matsonii*	1B.1	Sulphur Creek brodiaea, a perennial bulbiferous herb, occurs only along Sulphur Creek near Redding. The species is reported between 600 and 700 feet in elevation. The flowering period is May and June.	No	No	No	No potentially suitable habitat for Sulphur Creek brodiaea is present in the project site. Sulphur Creek brodiaea was not observed during the botanical survey and is not expected to be present.
INVERTEBRATES							
Shasta crayfish	*Pacifastacus fortis*	FE	Shasta crayfish inhabit sections of the Pit River, Fall River, Hat Creek, and tributary streams and springs characterized by cool, clear water, low gradient, and substrate consisting of volcanic rubble on sand and/or gravel.	No	No	No	No suitable habitat occurs in the project site for Shasta crayfish. The Shasta crayfish would thus not be present.
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT	The valley elderberry longhorn beetle (VELB) is found only in association with elderberry shrubs (*Sambucus* spp.). The species' elevational range extends from sea level to 3,000 feet. The species is known to occur in the Central Valley and foothills.	No	No	No	Elderberry shrubs are known to occur in the general project area near Salt Creek and Churn Creek. The closest known elderberry shrub is located ±200 feet northwest of the LS5 manhole and associated sewer line improvements. No elderberry shrubs were identified in the study area during the field surveys; thus, the VELB would 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
July 2019

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
BIRDS							
Bald eagle	*Haliaeetus leucocephalus*	FD, SE, SFP	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 do not usually begin nesting if human disturbance is evident. In California, the bald eagle nesting season is from February through July.	No	No	No	No old-growth forest or potentially suitable nesting trees/snags near open bodies of water are present in the project site. Thus, bald eagles are not expected to 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. Thus, the spotted owl is not expected to nest in the project site.
AMPHIBIANS							
California red-legged frog	*Rana draytonii*	FT	Suitable aquatic habitat for the California red-legged frog (CRLF) consists of permanent water bodies of virtually still or slow-moving fresh water, including natural and man-made ponds, backwaters within streams and creeks, marshes, lagoons, and dune ponds. Dense, shrubby riparian vegetation, e.g., willow (*Salix*) and bulrush (*Scirpus*) species, and bank overhangs are important features of CRLF breeding habitat. The CRLF tends to occur in greater numbers in deeper, cooler pools with dense emergent and shoreline vegetation.	No	No	No	CRLF is considered to be extirpated in Shasta County. The nearest confirmed, extant population is in Butte County, ±80 miles from the project site. The species is not present in the project area.

TABLE 3
Potential for Special-Status Species to Occur on the Project Site
July 2019

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
Foothill yellow-legged frog	*Rana boylii*	SCT, 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, foothill yellow-legged frog has not been reported in Churn Creek. The closest reported occurrence is ±4 miles northwest of the Pine Grove Avenue/Churn Creek Bridge near the Sacramento River. The species was not observed during the wildlife survey, but has a low potential to be present.
Shasta salamander	*Hydromantes shastae*	ST	The Shasta salamander is primarily restricted to limestone outcrops near Lake Shasta. Habitat consists of moist limestone fissures and caves, limestone talus, and under woody debris on the surface near limestone outcrops. Shasta salamanders may be found in all successional stages of valley foothill hardwood-conifer, ponderosa pine, and mixed conifer habitats.	No	No	No	According to CNDDB records, the closest reported occurrence of Shasta salamander is at the Mountain Gate Limestone Quarry, ±3 miles north of the project site. There are no limestone outcrops or other suitable habitats for the Shasta salamander in the project area. Thus, the Shasta salamander would not be present.
REPTILES							
Western pond turtle	*Emys marmorata*	SSSC, FC	The western pond turtle associates with permanent or nearly permanent quiet-water environments. Pond turtles require basking sites such as partially submerged logs, rocks, or open mud banks, and suitable upland habitat (sandy banks or grassy open fields) for egg-laying. Nesting and courtship occur during spring. Nests are generally constructed within 500 feet of a waterbody. Pond turtles may leave aquatic sites in the fall and overwinter in nearby uplands, returning to the aquatic sites in spring.	Yes	No	Pot.	Suitable habitat for western pond turtle is present in the project area, and the species is known to occur in Churn Creek and Salt Creek. Therefore, there is a potential for western pond turtle to be present.

TABLE 3
Potential for Special-Status Species to Occur on the Project Site
July 2019

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
FISH							
Chinook salmon – Central Valley fall-run ESU	*Oncorhynchus tshawytscha*	SSSC	The Central Valley fall-run Chinook salmon spawn in the lower reaches of most rivers and streams in the Central Valley. Adults begin their spawning migration between July and December. Spawning occurs between October and December. Spawning habitat is characterized by loose, clean gravel in cold, swiftly flowing water.	Yes	No	Pot.	Fall-run Chinook salmon are known to use Churn Creek for spawning and rearing. Salt Creek also has suitable spawning habitat for fall-run Chinook salmon. In years with sufficient stream flow, spawning and rearing may occur in the on-site reaches of Churn Creek and Salt Creek.
Chinook salmon – Central Valley late-fall-run ESU	*Oncorhynchus tshawytscha*	SSSC	The Central Valley late-fall-run spawn in the lower reaches of most rivers and streams in the Central Valley. Adults begin their upstream spawning migration between mid-October and mid-April. Spawning occurs between January and April. Spawning habitat is characterized by loose, clean gravel in cold, swiftly flowing water.	Yes	No	Pot.	Late-fall-run Chinook salmon are known to use Churn Creek for spawning and rearing. Salt Creek also has suitable spawning habitat for late-fall-run Chinook salmon. In years with sufficient stream flow, spawning and rearing may occur in the on-site reaches of Churn Creek and Salt Creek.
Chinook salmon – Central Valley spring-run ESU	*Oncorhynchus tshawytscha*	FT, ST	Central Valley spring-run Chinook salmon enter the Sacramento-San Joaquin Delta in early January, and enter natal streams between mid-March and mid-October. Upon entering fresh water, spring-run are sexually immature and must hold in cold water habitats through summer to mature. Typically, spring-run utilize mid- to high-elevation streams that provide sufficient flow, water temperature, cover, and pool depth to allow over-summering. Spawning occurs between August and mid-October.	Yes	No	Pot.	Spring-run Chinook salmon are known to use Churn Creek for rearing. Salt Creek also has potentially suitable rearing habitat for spring-run Chinook salmon. In years with sufficient stream flow, rearing may occur in the on-site reaches of Churn Creek and Salt Creek.

TABLE 3
Potential for Special-Status Species to Occur on the Project Site
July 2019

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
Chinook salmon – Sacramento River winter-run ESU	*Oncorhynchus tshawytscha*	FE, SE	Sacramento River winter-run Chinook salmon spawn almost exclusively in the Sacramento River from mid-April through August. Spawning generally occurs in swift, relatively shallow riffles or along the edges of fast runs where there is an abundance of loose gravel. The species is dependent on cold freshwater habitat year-round.	No	No	No	Prior surveys have shown that Churn Creek in the project area does not support rearing winter-run Chinook salmon. Habitat in Salt Creek is less conducive for winter-run rearing. Therefore, winter-run Chinook salmon would not be present in the project area.
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 Delta smelt. The Delta smelt would thus not be present.
Steelhead-Central Valley DPS	*Oncorhynchus mykiss*	FT	Central Valley steelhead inhabit cold-water tributaries of the Sacramento and San Joaquin rivers. Adults begin their upstream spawning migration between August and March. Spawning occurs between December and April. Spawning habitat is characterized by loose, clean gravel in cold, swiftly flowing, shallow water.	Yes	No	Pot.	Low numbers of steelhead are known to spawn and rear in Churn Creek. Steelhead have also been observed in Salt Creek, ±2 miles south of the Pine Grove Avenue bridge over Salt Creek; thus, there is a potential for the species to be present in the on-site reaches of Churn Creek and Salt Creek.
MAMMALS							
Fisher – West Coast DPS	*Pekania pennanti*	ST, SSSC	Fishers inhabit mixed conifer forests dominated by Douglas-fir, 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	No	No suitable habitat occurs in the project site for fisher-west coast DPS. The fisher-west coast DPS would thus not be present.

[1] Status Codes

Federal:		**State**:	
FE	Federally Listed – Endangered	SFP	State Fully Protected
FT	Federally Listed – Threatened	SR	State Rare
FC	Federal Candidate Species	SE	State Listed - Endangered
FP	Federal Proposed Species	ST	State Listed - Threatened
FD	Federal Delisted	SC	State Candidate Species
		SSSC	State Species of Special Concern

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 for Birds of Conservation Concern to Occur on the Project Site

July 2019

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 do not usually begin nesting if human disturbance is evident. In California, the bald eagle nesting season is from February through July.	No	No	No suitable nesting habitat for the bald eagle is present in the project site. No bald eagles or eagle nests were observed during the biological surveys. Thus, the bald eagle is not expected to nest in or adjacent to the project site.
California thrasher	*Toxostoma redivivum*	Habitats for the California thrasher include chaparral, foothills, valley thickets, parks, and gardens. Within their range, they may be found in practically any lowland habitat with dense low brush. Most common in chaparral, California thrashers also occur in streamside thickets and in suburban neighborhoods that have sufficient vegetation. The species habitat extends into edges of desert regions and in chaparral in mountains up to about 6,000 feet. The breeding season is January through July.	Yes	Pot.	Potentially suitable habitat for California thrasher is present in and adjacent to the study corridor. To ensure California thrasher will not be adversely affected by the proposed project, the City shall comply with the nesting bird survey requirement described in the Biological Study Report.
Common yellowthroat	*Geothlypis trichas sinuosa*	Habitats for the common yellowthroat include swamps, marshes, and wet thickets. The species breeds most commonly in marshes and other wet habitat with dense low growth. Nesting habitats consist of briars, moist brushy places, tangles of rank weeds and shrubs near streams, and overgrown fields. The breeding season is May through July.	Yes	Pot.	The spray field located south of Pine Grove Avenue provides potentially suitable habitat for common yellowthroat. To ensure common yellowthroat will not be adversely affected by the proposed project, the City shall comply with the nesting bird survey requirement described in the Biological Study Report.

TABLE 4
Potential for Birds of Conservation Concern to Occur on the Project Site

July 2019

Common Name	Scientific Name	General Habitat Description	Habitat Present (Y/N)	Species Present (Y/N/POT.)	Rationale/Comments
Costa's hummingbird	*Calypte costae*	Costa's hummingbird is found most commonly in dry and open habitats that have a variety of plant life, such as washes and streamsides in the Sonoran Desert, lower parts of dry canyons, and coastal sage scrub. The breeding season is January through June.	Yes	Pot.	Costa's hummingbird is primarily a desert species and is rarely found in Shasta County. Local habitats may include riparian zones, shrublands, and oak woodlands. Compliance with the nesting bird survey requirement will ensure that Costa's hummingbirds are not adversely affected by project implementation.
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 breeding season is January through August.	No	No	No suitable nesting habitat for golden eagles is present in the project site. Thus, the golden eagle is not expected to nest in the project site.
Lewis's woodpecker	*Melanerpes lewis*	Lewis's woodpecker generally breeds in open ponderosa pine forests and logged or burned pine forests, but may also breed in open riparian woodlands, oak woodlands, and other habitats. The breeding season is April through September.	Yes	Pot.	Potentially suitable woodland habitat for Lewis's woodpecker is present in or adjacent the project site. Thus, the woodpecker could be present. Compliance with the nesting bird survey requirement will ensure that Lewis's woodpecker is not adversely affected by project implementation.
Nuttall's woodpecker	*Picoides nuttallii*	Nuttall's woodpeckers are found primarily in oak woodlands, but are also found in riparian woodlands. The breeding season is April through July.	Yes	Pot.	Suitable woodland habitat for Nuttall's woodpecker is present in or adjacent the project site. Thus, the woodpecker could be present. Compliance with the nesting bird survey requirement will ensure that Nuttall's woodpecker is not adversely affected by project implementation.

TABLE 4
Potential for Birds of Conservation Concern to Occur on the Project Site

July 2019

Common Name	Scientific Name	General Habitat Description	Habitat Present (Y/N)	Species Present (Y/N/POT.)	Rationale/Comments
Oak titmouse	*Baeolophus inornatus*	The oak titmouse mostly live in warm, open, dry oak or oak-pine woodlands. Many will use scrub oaks or other brush as long as woodlands are nearby. Nests are built in tree cavities and are made of grass, moss, hair, and feathers. Occasionally, oak titmice nest in stumps, fenceposts, pipes, eaves, or holes in riverbanks. They will also use nest boxes. The breeding season is March through July.	Yes	Pot.	Suitable woodland habitat for oak titmouse is present in or adjacent the project site. Thus, the titmouse could be present. Compliance with the nesting bird survey requirement will ensure that oak titmouse is not adversely affected by project implementation.
Rufous hummingbird	*Selasphorus rufus*	Rufous hummingbirds typically breed in open or shrubby areas in mountain meadows up to 12,600 feet in elevation. They put their nests up to 30 feet high in coniferous or deciduous trees, hidden in drooping branches.	No	No	No suitable nesting habitat for the rufous hummingbird is present in the project sites. Although the species may migrate through the project area, rufous hummingbirds would not nest in the project area.
Song sparrow	*Melospiza melodia*	Habitats for the song sparrow include thickets, brush, marshes, roadsides, and gardens. In its wide habitat range, the species is most commonly found in brushy fields, streamsides, shrubby marsh edges, woodland edges, hedgerows, and well-vegetated gardens. The breeding season is February through August.	Yes	Pot.	Potentially suitable habitat for the song sparrow is present in and adjacent to the project site. To ensure that nesting song sparrow are not adversely affected by the proposed project, the City shall comply with the nesting bird survey requirement described in the Biological Study Report.
Spotted towhee	*Pipilo maculatus*	Habitats for the spotted towhee include dry thickets, chaparral, forest edges, and other areas with dense shrub cover. The breeding season is April through July.	Yes	Pot.	Potentially suitable habitat for the spotted towhee is present in or adjacent to the project site. To ensure that spotted towhees will not be adversely affected by the proposed project, the City shall comply with the nesting bird survey requirement described in the Biological Study Report.
Yellow-billed magpie	*Pica nuttalli*	Habitats for the yellow-billed magpie include oak savannahs and other open areas with large trees, such as ranches and farms. The species nests in small colonies, with the nests placed high in large trees. The breeding season is April through July.	Yes	Pot.	Potentially suitable habitat for yellow-billed magpie is present in and adjacent to the project area. To ensure that yellow-billed magpies will not be adversely affected by the proposed project, the City shall comply with the nesting bird survey requirement described in the Biological Study Report.

APPENDIX A

RESUMES

Donald Burk, Environmental Services Manager

John Luper, Qualified Biologist

Jacob Ewald, Wildlife Biologist

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

Society of Wetland Scientists
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.

While attending CSU, Chico, Mr. Burk was recognized as “Outstanding Organic Chemist of the Year,” received an award of merit from the American Botanical Society, and delivered the valedictory address for the School of Natural Sciences. His Master’s thesis was granted the first annual “Outstanding Thesis Award” by CSU, Chico.

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, II and III site investigations for a number of commercial and industrial facilities. Investigations have addressed wood-products manufacturing facilities, a major clothing manufacturing operation, dry cleaners, a medical clinic, ranches, a regional transmission transformer site, automotive shops and service stations, abandoned sewage treatment ponds, 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.

JOHN LUPER

Environmental Scientist

Education

B.S. Botany and Biology (Environmental)
California State University, Humboldt

Professional Affiliations and Certifications

GIS Certificate, Shasta College, Redding, CA
Qualified SWPPP Developer (QSD) #22990
Certified Professional in Erosion and Sediment Control (CPESC) #6936

John Luper has over thirteen years of experience working as a biologist and regulatory specialist throughout northern California. His experience includes preparation of CEQA/ NEPA environmental compliance documents, open space preserve development, wetland delineations, biological studies, environmental monitoring for construction activities, and preparation/implementation of storm water management plans.

Representative Experience

- *Regulatory Permitting*. Worked closely with developers, engineers, and resource agencies to manage the permitting process for a wide variety of projects. Prepared application packages for federal and state resource agency permits including: Individual Permits, Letters of Permission, and Nationwide Permits for the U.S. Army Corps of Engineers; Streambed Alteration Agreements for the California Department of Fish and Wildlife; and Water Quality Certifications and Waste Discharge Requirements for the Regional Water Quality Control Board.
- *CEQA/NEPA Compliance.* Prepared environmental compliance documentation for diverse projects, including public facility projects, residential development projects, vegetation management plans, and stream/wetland restoration projects.
- *Preserve Establishment/Management*. Prepared Operations and Management Plans, Conservation Easements, and Declarations of Restrictions allowing for establishment of open space preserves to ensure long-term protection of biological and wetland resources. Conducted field monitoring and prepared preserve monitoring reports for established preserves to evaluate long-term success.
- *Wetland Delineation*. Conducted wetland field delineations, wrote technical reports, prepared maps of jurisdictional waters, and verified boundaries with Corps staff.
- *Biological Studies*. Conducted botanical surveys and tree surveys, prepared habitat creation, restoration, and enhancement plans, wrote technical reports, and prepared biological resource maps.
- *Environmental Monitoring*. Conducted environmental monitoring on construction sites to ensure avoidance/protection of biological and wetland resources as well as long-term monitoring of mitigation and restoration areas.
- *Stormwater Management*. Prepared and supervised implementation of storm water plans, conducted site inspections, performed required sampling and water quality analysis, and prepared final documentation.

Jacob Ewald

Environmental Scientist/Wildlife Biologist

Education

B.S. Biology (Wildlife, Fish & Conservation Biology)
University of California, Davis

Professional Affiliations and Certifications

GIS Certificate—University of California, San Diego
The Wildlife Society

Jacob Ewald has over four years of experience working as an environmental scientist throughout California. His experience includes endangered species surveys, nesting bird surveys, and stream surveys. In addition to working in the private sector, he has extensive experience conducting research and handling wildlife working as a field biologist for federal and state agencies in California.

Representative Experience

- *Endangered Species Surveys*. Expertise in conducting focused surveys for various threatened and endangered species, including spotted owls, northern goshawks, and giant garter snakes.
- *Nesting Bird Surveys.* Performed pre-construction nesting bird surveys to determine the presence or absence of nesting migratory birds on project sites.
- *General 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, National Marine Fisheries Service records, the U.S. Fish and Wildlife Service IPAC reports, and other available data.
- *Stream Surveys*. Performed surveys of streams and rivers throughout Northern California to assess presence of and habitat suitability for the Sierra Nevada yellow-legged frog. Knowledgeable in the identification of aquatic vertebrates, including threatened and endangered species.
- *GIS Mapping and Data Collection*. Skilled in creating maps as well as importing, georeferencing, managing, and analyzing data within ArcGIS.
- *CEQA/NEPA Documentation*. Responsible for drafting environmental compliance documentation including biological study reports, Natural Environment Studies, and biological evaluations for CEQA Initial Studies.
- *Wood Duck Research*: Participated in a long-term research study analyzing nest box utilization by California wood ducks. Duties included monitoring nest boxes, weighing/marking eggs, and weighing/tagging hatchlings.
- *Thermal Niche Partitioning Analysis*: Analyzed the temperature-related activity levels of multiple Mojave Desert lizard species. Walked transects at multiple sites and times of day, capturing and identifying active lizards as they were found.

APPENDIX B

Representative Photographs

Box culvert under Cascade Boulevard

Drainage ditch west of the Cascade Boulevard box culvert

LS 5 diversion and overflow manholes above the Salt Creek riparian zone

South side of Pine Grove Avenue, view to west

South side of Pine Grove Avenue bridge over Churn Creek

Force main corridor between Pine Grove Avenue and WWTP

APPENDIX C

SPECIES LISTS

U.S. Fish and Wildlife Service List of Threatened and Endangered Species

National Marine Fisheries Service Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: June 25, 2019
Consultation Code: 08ESMF00-2018-SLI-2430
Event Code: 08ESMF00-2019-E-07287
Project Name: Shasta Lake Main Force Replacement Project 032-49

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/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, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) 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 Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

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

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

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 Tracking Number 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:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2018-SLI-2430

Event Code: 08ESMF00-2019-E-07287

Project Name: Shasta Lake Main Force Replacement Project 032-49

Project Type: WASTEWATER PIPELINE

Project Description: The City of Shasta Lake (City) is proposing improvements to its wastewater collection system, including alternatives for replacing and realigning the force mains from Lift Station 3 (LS3) and Lift Station 5 (LS5). The project also includes evaluation of the diversion manhole for LS5.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/40.66050688563502N122.35881133280395W

Counties: Shasta, CA

Endangered Species Act Species

There is a total of 5 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.

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Crustaceans

NAME	STATUS
Shasta Crayfish *Pacifastacus fortis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8284	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

National Marine Fisheries Service

Species List, Fish Critical Habitat, Essential Fish Habitat

U.S. Geological Survey Quadrangle: **Project City (40122-F3)**

ESA Anadromous Fish

CVSR Chinook Salmon ESU (T)
SRWR Chinook Salmon ESU (E)
CCV Steelhead DPS (T)

ESA Anadromous Fish Critical Habitat

CCV Steelhead

Essential Fish Habitat

Chinook Salmon

U.S. Geological Survey Quadrangle: **Shasta Dam (40122-F4)**

ESA Anadromous Fish

CVSR Chinook Salmon ESU (T)
SRWR Chinook Salmon ESU (E)
CCV Steelhead DPS (T)

ESA Anadromous Fish Critical Habitat

None

Essential Fish Habitat

Chinook Salmon

APPENDIX D

List of Vascular Plants Observed during the Botanical Surveys

CHECKLIST OF VASCULAR PLANT SPECIES OBSERVED

(Includes Alternative Routes that were Considered)
May 16 and July 6, 2018

Apiaceae	**Carrot Family**
Perideridia sp.	Yampah
Asteraceae	**Sunflower Family**
Anthemis cotula	Mayweed
Carduus pycnocephalus	Italian thistle
Centaurea solstitialis	Yellow star thistle
Cirsium vulgare	Bull thistle
Lactuca serriola	Prickly lettuce
Boraginaceae	**Borage Family**
Heliotropium europaeum	European pulsey
Brassicaceae	**Mustard Family**
Hirschfeldia incana	Shortpod mustard
Caryophyllaceae	**Pink Family**
Herniaria hirsuta var. *hirsuta*	Gray herniaria
Cyperaceae	**Sedge Family**
Cyperus eragrostis	Nutsedge
Dipsacaceae	**Teasel Family**
Dipsacus fullonum	Wild teasel
Fabaceae	**Legume Family**
Lotus corniculatus	Birdsfoot trefoil
Trifolium sp.	Clover
Trifolium glomeratum	Sessile-headed clover
Trifolium hirtum	Rose clover
Fagaceae	**Oak Family**
Quercus douglasii	Blue oak
Quercus kelloggii	California black oak
Quercus wislizeni	Interior live oak
Gentianaceae	**Gentian Family**
Centaurium tenuiflorum	June centaury
Hypericaceae	**St. John's-wort Family**
Hypericum perforatum	Klamath weed
Juncaceae	**Rush Family**
Juncus occidentalis	Western rush
Lamiaceae	**Mint Family**
Melissa officinalis	Bee-balm
Mentha pulegium	Pennyroyal
Moraceae	**Mulberry Family**
Ficus carica	Common fig

CHECKLIST OF VASCULAR PLANT SPECIES OBSERVED

(Includes Alternative Routes that were Considered)

Myrsinaceae	**Myrsine Family**
Anagallis arvensis	Scarlet pimpernel
Orobanchaceae	**Broom-rape Family**
Parentucellia viscosa	Yellow parentucellia
Phytolaccaceae	**Pokeweed Family**
Phytolacca americana	Pokeweed
Pinaceae	**Pine Family**
Pinus sabiniana	Grey pine
Plantaginaceae	**Plantain Family**
Kickxia elatine	Sharp-leaved fluellin
Plantago lanceolata	English plantain
Poaceae	**Grass Family**
Agrostis sp.	Bentgrass
Bromus diandrus	Ripgut grass
Bromus hordeaceus	Soft chess
Cynodon dactylon	Bermuda grass
Cynosurus echinatus	Hedgehog dogtail
Festuca arundinacea	Tall fescue
Festuca myuros	Foxtail fescue
Festuca perennis	Annual ryegrass
Holcus lanatus	Common velvet grass
Paspalum dilatatum	Dallis grass
Poa compressa	Canadian bluegrass
Polypogon monspeliensis	Annual beardgrass
Polygonaceae	**Buckwheat Family**
Persicaria hydropiper	Water-pepper
Polygonum aviculare subsp. *depressum*	Common knotweed
Rumex pulcher	Fiddle dock
Rosaceae	**Rose Family**
Pyracantha sp.	Pyracantha
Rosa canina	Dog rose
Rosa multiflora	Multiflora rose
Rubus armeniacus	Himalayan blackberry
Rubiaceae	**Madder Family**
Galium parisiense	Wall bedstraw
Scrophulariaceae	**Snapdragon Family**
Verbascum blattaria	Moth mullein
Zygophyllaceae	**Caltrop Family**
Tribulus terrestris	Puncture vine