INITIAL STUDY & MITIGATED NEGATIVE DECLARATION

Calistoga Riverside Ponds Relocation Project

1100 Dunaweal Lane
Calistoga, California

Draft August 2019

Lead Agency:

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ACRONYMS AND ABBREVIATIONS

2017 CAP	2017 Clean Air Plan
AB	Assembly Bill
Alquist-Priolo Act	Alquist-Priolo Earthquake Fault Zoning Act
APN	Assessor's parcel number
CARB	California Air Resources Board
BAAQMD	Bay Area Air Quality Management District
Basin Plan	San Francisco Bay Water Quality Control Plan
bgs	below ground surface
BMP	Best Management Practice
BP	before present
C-APE	CEQA Area of Potential Effects
California Register	California Register of Historical Resources
Cal EPA	California Environmental Protection Agency
CalEEMod	California Emissions Estimator Model
CAL FIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CalOSHA	California Occupational Safety and Health Administration.
CBC	California Building Code
CDFW	California Department of Fish and Wildlife
CDO	Cease and Desist Order
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CGS	California Geologic Survey
CHRIS	California Historical Resources Information System
City	City of Calistoga
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO_2e	carbon dioxide-equivalent
CRPR	California Rare Plant Rank
CTMP	Construction Traffic Management Plan
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
CY	cubic yards
dBA	A-weighted decibels
DDT	Dichlorodiphenyltrichloroethane
DTSC	Department of Toxic Substances Control
DOC	Department of Conservation
DOGGR	Department of Oil, Gas, and Geothermal Resources

DWR	Department of Water Resources
EIR	Environmental Impact Report
EFZ	Earthquake Fault Zone
ESA	Environmental Science Associates
ESCP	Erosion and Sedimentation Control Plan
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIGR	Federal Indians of Graton Rancheria
FM	Force Main
FMMP	Farmland Mapping and Monitoring Program
FTA	Federal Transportation Administration
FWARG	Far Western Anthropological Research Group
GHG	greenhouse gas
GSA	groundwater sustainability agency
GP	General Plan
HMBP	Hazardous Materials Business Plan
HDPE	High Density Polyethylene
hrs	hours
HSC	Health and Safety Code
HUC	hydrologic unit code
IS	Initial Study
L_{eq}	steady-state acoustical energy level
LED	light-emitting diode
LF	linear feet
M_W	moment magnitude
MG	million gallon
Mishewal-Wappo	Mishewal-Wappo Tribe of the Alexander Valley
MMI	Modified Mercalli Intensity
MND	Mitigated Negative Declaration
mpg	miles per gallon
msl	mean sea level
NAHC	Native American Heritage Commission
National Register	National Register of Historic Places
NAVD	North American Vertical Datum
NHTSA	National Highway Traffic Safety Administration
NFIP	National Flood Insurance Program
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resources Conservation Service

NWIC	Northwest Information Center
NVRR	Napa Valley Railroad
OPR	Governor's Office of Planning and Research
oz	ounce
PCB	Polychlorinated biphenyl
PRC	Public Resources Code
RSP	rock slope protection
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCADA	Supervisory Control and Data Acquisition
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SFHA	Special Flood Hazard Area
SGMA	Sustainable Groundwater Management Act
SLF	Sacred Lands File
SVP	Society of Vertebrate Paleontology
SWPPP	Stormwater Pollution Protection Plan
SWRCB	State Water Resources Control Board
TMDL	total maximum daily load
UCERF3	Third Uniform California Earthquake Rupture Forecast
USA	Underground Services Alert
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geologic Survey
Vine Trail	Napa Valley Vine Trail
WDR	Waste Discharge Requirement
WWTP	Wastewater Treatment Plant
WUI	Wildland Urban Interface
YDWN	Yocha Dehe Wintun Nation

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INITIAL STUDY & MITIGATED NEGATIVE DECLARATION

Calistoga Riverside Ponds Relocation Project

The proposed *Calistoga Riverside Ponds Relocation Project* (Project) is subject to the requirements of the California Environmental Quality Act (CEQA). The purpose of this Initial Study (IS) is to provide a basis for deciding whether to prepare an Environmental Impact Report (EIR) or a Mitigated Negative Declaration (MND). This Initial Study is intended to satisfy the requirements of CEQA, the State CEQA Guidelines, and the City of Calistoga's Environmental Review and Compliance Procedures.

Project Title	Calistoga Riverside Ponds Relocation Project
Lead agency name and address	City of Calistoga Public Works Department 414 Washington Street Calistoga, CA 94515
Contact and Phone Number	Derek Rayner, Deputy Director of Public Works (707)942-2789
Project Location	Assessor's parcel numbers (APNs) 020-150-010 and 020-180-035
Project Sponsor and Address	City of Calistoga Public Works Department c/o Derek Rayner, Deputy Director of Public Works 414 Washington Street Calistoga, CA 94515
General Plan (GP) Designations	Public/Quasi Public (P)
Zoning Districts	Public/Quasi Public (P)

Project Setting

The City of Calistoga (City) Riverside Ponds Relocation Project (Project) site is located within the Dunaweal Wastewater Treatment Plant (WWTP) and Sewer Treatment Ponds site, which extends from the WWTP entrance on Dunaweal Lane 0.6 miles westward between the Napa Valley Vine Trail (Vine Trail) berm to the north, and the Oat Hill Mine Ditch[1] and Napa River to the south. The WWTP facility is located between Dunaweal Lane and Simmons Creek, a tributary to the Napa River. The four existing riverside ponds are located west across the narrow (8 feet wide) bridge, between Simmons Creek and the Oat Hill Mine Ditch. Topography throughout the study area is relatively flat except where the slopes descend southward to the Napa River. The immediately surrounding environs consist of riparian and perennial stream habitats, which are

[1] The Oat Hill Mine Ditch is a channelized waterway that joins the Napa River from the north. The name "Ditch" does not mean that it is a water diversion canal.

surrounded by agricultural and urban land use areas. The areas adjacent to the Napa River are dominated by large over-hanging trees and riparian forest species. The project region is shown in **Figure 1**, and the project vicinity is shown in **Figures 2** and **3**. The Project site corresponds to the Calistoga, CA U.S. Geological Survey (USGS) 7.5 Minute topographic quadrangle map and is in a portion of Township 9 North, Range 6 West. Elevation at the study area ranges from 360 to 310 feet (North American Vertical Datum of 1988; NAVD 88) above mean sea level (msl). The approximate centroid of the study area is 38º 34′ 18.47″ North, 122º 33′ 34.14″ West.

The Project area is zoned Public/Quasi Public. The WWTP sprayfields, located to the west of the riverside ponds across the Oat Hill Mine Ditch, are not within the Project area and are zoned Public/Quasi Public. The City of Calistoga General Plan designates the land north of the Project site on the other side of the Napa Valley Vine Trail as Commercial Airport. South of the property in the Project vicinity is zoned as High and Medium Density Residential and Public/Quasi-Public (City of Calistoga, 2015). Agriculture associated with vineyards and row crops surrounds the Project site outside the City limits in Napa County.

The paved Vine Trail bike path owned by the City of Calistoga runs between the WWTP to the east and Washington Street to the west along a berm that separates the riverside ponds and the floodplain to the north. A fenced-in site owned by the City known as the “Bone Yard,” which is located 0.4 miles west of the Project on the east side of the baseball diamond at the end of Washington Street where the Vine Trail begins, is available for off-site construction staging. A construction water source for dust control is available 0.1 miles east of the Bone Yard, 0.3 miles west along the Vine Trail from the Project. There are two recycled water holding ponds northwest of the Project across the Vine Trail and the parallel channelized Oat Hill Mine Ditch: a 16 MG (million gallon) pond to the west, and a 10 MG pond to the east. The off-site stockpile area is located on City property adjacent to the northwest corner of the 16 MG wastewater pond, 0.3 miles northwest (0.6 miles driving distance) from the Project site (**Figure 4**). Access to the stockpile and upper ponds is via the paved Vine Trail and Washington Street from the south, two narrow (10 feet wide) concrete bridges that cross the Oat Mine Hill Ditch and a drainage ditch, and via a dirt road easement north of the berm that exits along a mobile home park and vineyards to the paved arterial Silverado Trail. The Silverado Trail links to Washington Street via Lincoln Avenue through Calistoga (Highway 29) to create an alternate access loop from the stockpile to the Project site.

Agency Approvals

Federal

- United States Army Corps of Engineers (USACE) – Clean Water Act Section 404 Nationwide Permit for construction activities in the vicinity of drainage and that could affect jurisdictional waters
- United States Fish and Wildlife Service (USFWS)/National Marine Fisheries Service (NMFS) – federal Endangered Species Act Section 7 consultation for construction activities affecting federal-listed species or habitat

State

- California Department of Fish and Wildlife, Bay Delta Region (CDFW) – Fish and Game Code 1600 Lake and Streambed Alteration Agreement for activities affecting riparian habitat or nesting birds, state Endangered Species Act Section 2080 and California Code of Regulations, Section 783.2 Incidental Take Permit for construction activities affecting state-listed species or habitat, including California freshwater shrimp, a State and Federally listed species

- Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) – Clean Water Act Section 401 Water Quality Certification; Porter-Cologne Act for construction activity that could affect water quality
- State Historic Preservation Office – National Historic Preservation Act, Section 106 compliance for construction activities affecting historic and archaeological resources

Local

- City of Calistoga – tree removal permit
- City of Calistoga – encroachment permit for construction along the Vine Trail

Project Purpose and Need

The engineering analysis of the City of Calistoga Dunaweal WWTP (Kennedy/Jenks, 2016), establishes that portions of the WWTP facilities are at risk of flooding, and catastrophic failure due to bank erosion caused by channel incision and lateral migration of the Napa River, Oat Hill Mine Ditch, and Simmons Creek, which has occurred since construction of the Plant. The four riverside ponds situated on the northeast bank of the Napa River, which provide some additional oxidation of effluent, redundancy of treatment process checks, and more control of discharge prior to discharging to the Napa River, are threatened by bank erosion along the Oat Hill Mine Ditch and the Napa River. These ponds were originally designed as percolation ponds in the 1970's and now the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) is requiring the City to line or abandon these ponds. The headworks structure, where raw, untreated sewer influent enters the WWTP for processing, is located 155 feet downstream of the riverside ponds, across the tributary, on the east bank of Simmons Creek. Between 2002 and 2016, erosion of the Simmons Creek channel bank reduced the distance between the headworks structure and the active channel from 12 feet to 3 feet. In 2016, Kennedy/Jenks engineers projected that at "the observed erosion rates of approximately 8-inches per year with approximately 3-feet of bank remaining before the headworks Structure is undermined suggest failure should be expected within four to five years, or an estimated 20% probability of failing this year."

The primary objectives of the Calistoga Riverside Ponds Relocation Project are to:

- Line the ponds to prevent percolation and meet Cease and Desist Order requirements from the SFBRWQCB
- Reduce the risk of failure of headworks and riverside pond due to flooding and associated bank erosion
- Raise the berms along the East and West ponds to move the ponds out of the 100-year floodway and floodplain

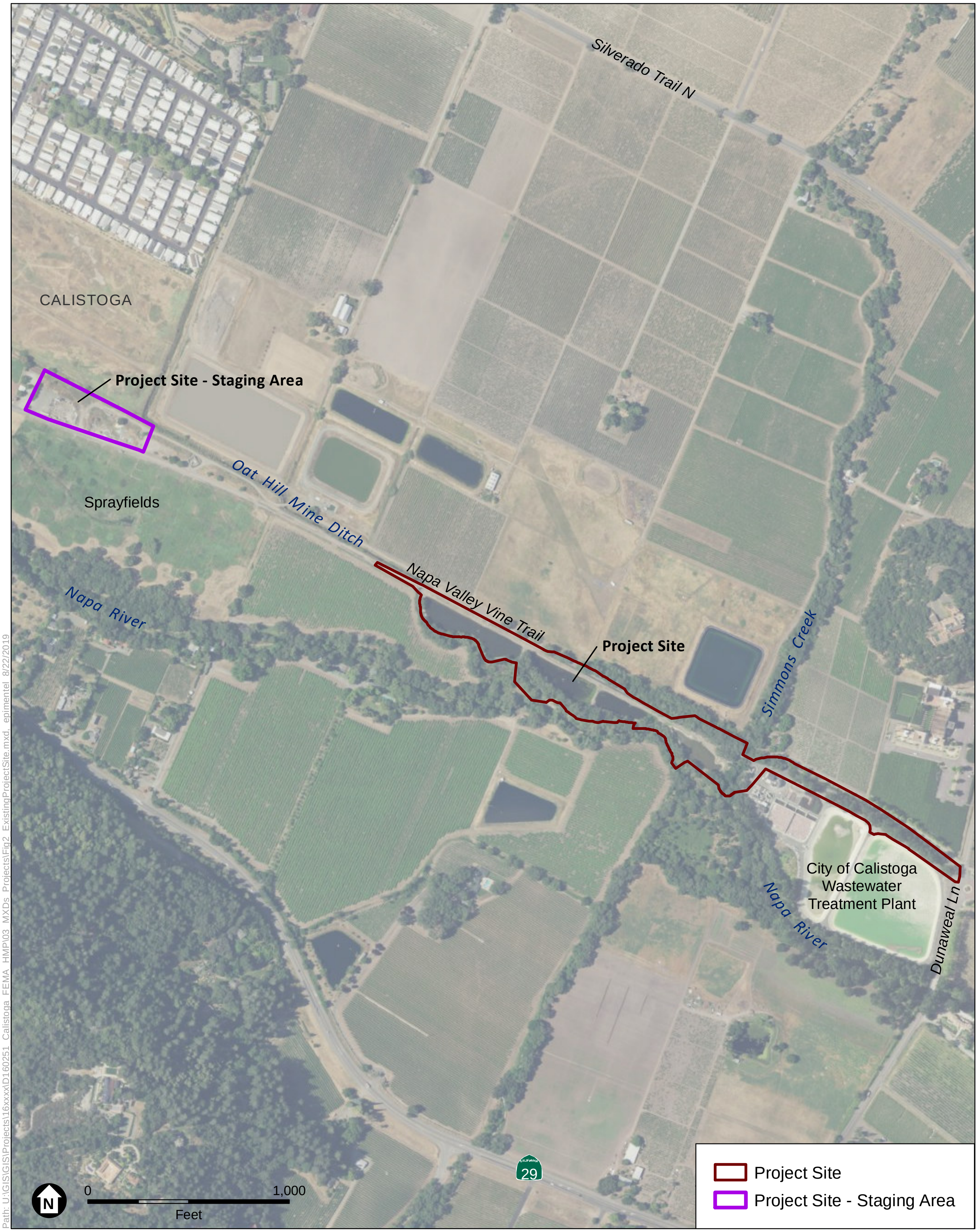
Another objective is to improve stormwater conveyance at the project site, and to separate stormwater and wastewater outflows, currently comingled in the outfall pipe into the Napa River.

SOURCE: Esri, 2015; ESA, 2019

Calistoga Riverside Ponds

Figure 1
Regional Location

ESA



SOURCE: USDA, 2016; ESA, 2019

Calistoga Riverside Ponds

Figure 2
Existing Project Site

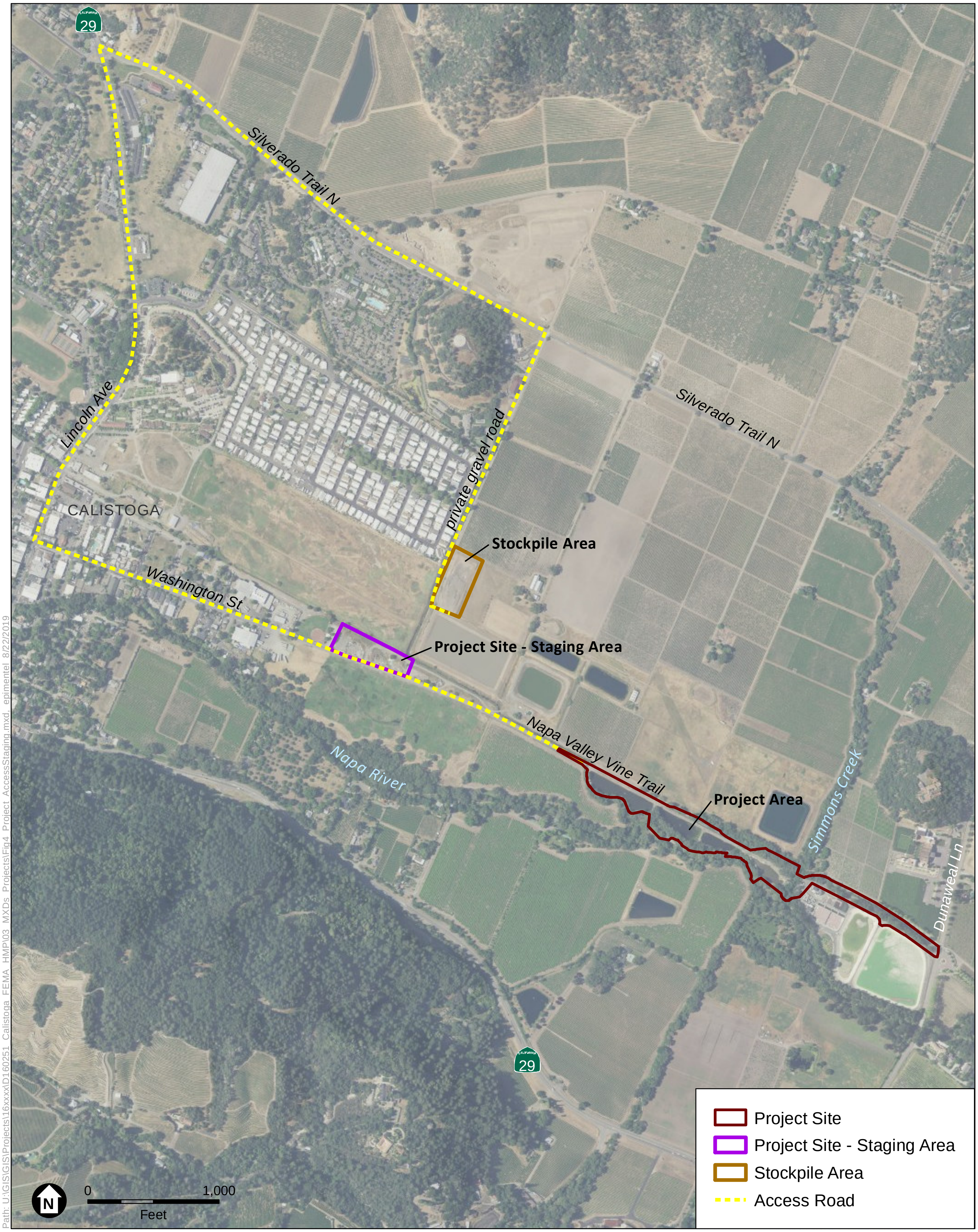
ESA

SOURCE: USGS 7.5' Topographic Quadrangle (Calistoga, 2018); ESA, 2019

Calistoga Riverside Ponds

Figure 3
Topographic Map

ESA



SOURCE: USDA, 2016; ESA, 2019

Calistoga Riverside Ponds

Figure 4
Staging and Stockpile

ESA

Project Description

The proposed Project, a refined version of Alternative No. 2 in the Engineers Report (Kennedy/ Jenks, 2016), would protect the riverside ponds from flooding, line them to prevent percolation, protect WWTP headworks structure from failing into Simmons Creek and provide a new pipe for higher conveyance to the new pond and install valve controls to better automate Napa River discharges. The Project would protect the riverside ponds, WWTP headworks structure, and associated critical infrastructure from flooding, erosion, and catastrophic bank failure that threatens the continuous uninterrupted operation of the City WWTP by relocating the riverside ponds and associated water conveyance and treatment utilities; realigning river channels away from infrastructure, restoring a vegetated riparian buffer of sufficient width, and stabilizing channel banks between the riverside ponds and headworks structure and the adjacent active river channels to protect the facilities from subsequent erosion. **Figure 5** shows these project elements on the project site. A Stormwater Pollution Prevention Plan (SWPPP) will be implemented for all construction activities. Flooding risk would be reduced by elevating riverside pond berms and headworks protection infrastructure above the 100-year flood elevation.

Relocate Riverside Ponds and Associated Infrastructure

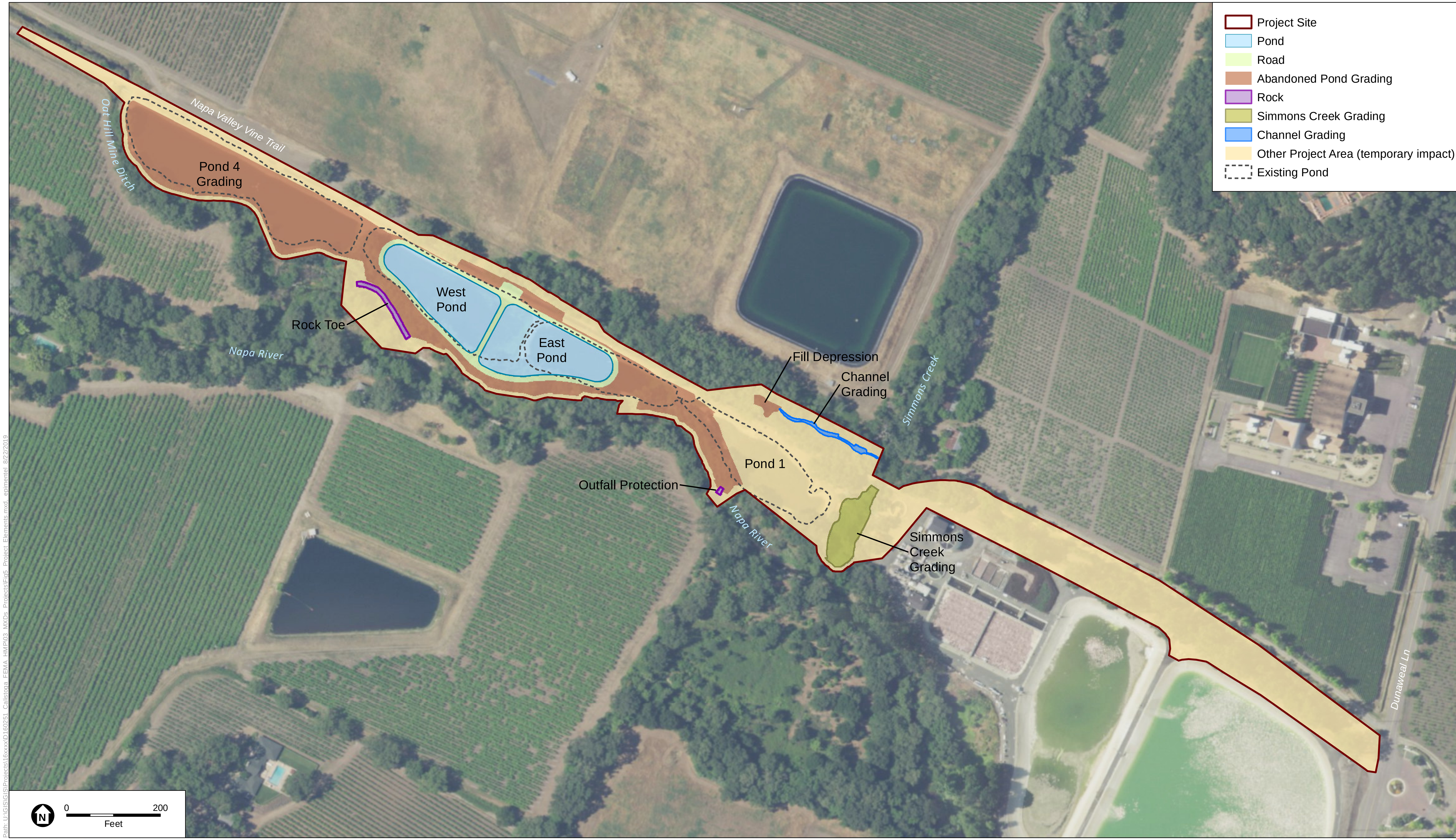
To maximize the floodplain buffer width between the ponds and along the Napa River and the Oat Hill Mine Ditch tributary, the four existing ponds would be abandoned and replaced by two lined ponds on the approximate footprint of existing Ponds 2 and 3 outside of the 100-year floodplain, and above the 100-year flood elevation.

To reconfigure the site of the four existing wastewater treatment ponds, the grading footprint would be cleared and grubbed, erosion control measures would be installed, and the SWPPP would be implemented. Existing piping and utility infrastructure would be removed prior to site regrading. 86 trees would be removed from the Project site.

Existing Pond 4 and associated infrastructure would be abandoned. The floodplain on the Pond 4 footprint would be re-contoured and revegetated.

Existing Pond 1 would be abandoned, re-contoured, and revegetated. The general basin shape of Pond 1 will be retain, which would provide the function of storage of emergency overflow from the new ponds in the unlikely event that the system controls fail.

After abandoning Ponds 1 and 4, Pond 2 and 3 would be converted to the new East and West ponds. The East and West ponds would first be excavated. The material from the bottom of the ponds would be reused on site as fill. The interior berms would be relocated and rebuilt with a raised top elevation with either clay material from the stockpile that originated from other pond berms, or with appropriate imported soil. A 20-foot wide flat shoulder would be graded to surround the base of the East and West ponds on the floodplain and to separate the ponds from each other as well as from the newly graded and stabilized channel banks. The new East and West ponds would have the same or slightly larger storage capacity (a minimum of 1.8 MG) for treated wastewater as the four existing ponds.



SOURCE: USDA, 2016; ESA, 2019

Calistoga Riverside Ponds

Figure 5
Project Elements

ESA

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To ensure that water quality objectives can be achieved with the reconfiguration of the ponds, the New ponds would be plumbed to include existing SolarBee mixers and sprinklers for aeration. New instrumentation and associated equipment would be installed including: flowmeters, check valves, automated outlet control valves, electrical, communication, and Supervisory Control and Data Acquisition (SCADA) systems. Additional facilities would be installed to convey treated wastewater from the West pond to the East pond, and from the East pond to the outfall facility, to provide electrical and SCADA control outlet control valve to the Napa River (based on river gauge flows near Dunaweal) and aeration, and for other ancillary facilities.

The East and West ponds would be fitted with an underdrain, lined,[2] and provided access points for maintenance. A subliner underdrain and dewatering system would be installed on the bottom of the ponds, consisting of a 4-inch layer of permeable material overlain by a grid bottom with 12-inch x 12-inch trenches filled with permeable material and 6-inch perforated polyvinyl chloride (PVC) pipe, 50-foot O.C. Cleanouts would be installed at the end of 6-inch perforated pipes. A dewatering well (14-inch C905 pipe with submersible pump and level instrument) would be installed to pump out the 6-inch perforated PVC pipes. A 12-oz protective filter fabric would be installed over the completed liner subgrade and dewatering system. A 60-mil[3] HDPE smooth liner would then be installed followed by pipe-liner penetrations. One liner access stairway and associated lanyards, and one dinghy access point would be installed to each pond.

To provide mixing, the existing SolarBee aerators would be relocated to the East and West ponds, and moorings would be installed.

Electrical service upgrades would be installed to support all improvements including operation of automated valves, flow meters, and other associated infrastructure.

The East and West ponds would be fitted with inlet pipes to deliver wastewater between the WWTP and the ponds. An 18-inch PVC C905 pipe would be installed that connects to the existing 10-inch RWL pipe and 18-inch RWL pipe, with a total of eight isolation valves at two locations: (1) at the northwest corner of West pond and (2) at the northwest corner of East pond. A meter would be installed at each pond inlet with a magmeter, extra spool piece, and branch tee with valves and cam fittings for hose connections. There would be four valves total. A pump pad would be installed adjacent to the meter vault for placing a temporary mobile pump in the event that the ponds need to be pumped out. A pump discharge hose would be connected to the cam fitting described above. A liner-pipe penetration would be installed for the pond inlets with an attached hose on the pond slope and a tee fitting at 3 feet above the pond bottom.

A component for transferring water between the East and West ponds would be installed, which would consist of either: (1) a sluice gate with stop logs; or, (2) high water and low water pipes with valves; or (3) a hybrid, such as a pipe to a manhole with adjustable interior baffles.

[2] The liner along the bottom of the ponds would be a 60-mil High Density Polyethylene (HDPE) smooth liner

[3] A mil is defined as 1/1000th on and inch, or 0.0001 inch.

An outlet would be installed in the new West pond, which would either consist of relocating the existing floating intake structure from Pond 1, or it would be a new outlet structure. A sampling station would be installed.

An effluent line and outfall pipe would be installed to discharge treated wastewater from the New East pond to the Napa River. A new 18-inch HDPE outfall pipe would be installed from the outlet on the downstream east end of the new East pond at a concrete box with a flow meter and an automated knife gate. The existing flow meter would be relocated to measure discharge into the Napa River. The automated knife gate would control discharge based on existing river gauge flow volumes (located near the Dunaweal bridge, approximately 1,700 linear feet [LF] downstream of the outfall) and in accordance with National Pollutant Discharge Elimination System (NPDES) river discharge requirements. The 18-inch HDPE outfall pipe would flow east from the concrete box east parallel to, and between, the Vine Trail and the newly stabilized Napa River bank, to the outfall pipe junction at the downstream end of the stabilized channel bank. There it would connect to the existing 24-inch HDPE outfall pipe, which runs perpendicular to the slope from a depression on the north side of the Vine Trail berm south to where it drains into the Napa River. Unlike the current condition, the new outfall pipe configuration would not carry stormwater from north of the Vine Trail berm comingled with effluent from the treatment ponds. As explained in the section below on improving stormwater conveyance, the section of the existing 24-inch HDPE outfall pipe that runs between the depression north of the Vine Trail and the new point of connection with the 18-inch HDPE outfall pipe would either be capped and abandoned in place, or demolished where possible. The stormwater flows would be re-routed through a new open channel north of the bike trail and discharge directly into Simmons Creek. Modifications would be made near the open end of the existing 28-inch HDPE outfall pipe. Erosion control and bank stabilization improvements would be installed at the base of the outfall pipe to protect the Napa River channel bank from erosion.

To accommodate emergency overflows, a spillway would be constructed at the downstream end of the East pond. Emergency overflows would be routed via a drainage swale to the reconfigured Pond 1 emergency storage area.

New lighting would be installed to illuminate key areas as necessary. Likely locations include: at the inlet to the new West pond; in between the East and West ponds where the pond water transfer infrastructure is located; at the outlet to the new East pond; at the point of connection of the new outlet pipe from the East pond and the 28-inch outfall pipe to the Napa River; at the existing shed in the footprint of Pond 1 where the electrical controls for the outfall pipe are located; and at locations where electrical controls would require illumination. Solar batteries would be installed where necessary to power the light-emitting diode (LED) lighting.

Stabilize and Protect Riverside Pond Channel Banks

To stabilize the river channel banks along the riverside ponds, trees would be removed, and vegetation would be cleared and grubbed within the grading footprint. Approximately 600 linear feet of the channel bank at the confluence of the Oat Hill Mine Ditch and the Napa River would be graded to a stable 3:1 slope along the entire footprint of the New ponds.

To maintain bank toe stability, a 225 feet long buried rock toe protection structure would be installed at the base of the slope along the upstream-most section of the graded channel bank, at the outside of the meander bend which is currently migrating northward into the west end of existing Pond 3, or what will be the west end of the new West pond. The Oat Hill Mine Ditch would be dewatered per the description in the section below to allow access for equipment to install the rock slope protection (RSP), which would be buried in a trench in the channel bed/toe area for toe stability. No exposed RSP is expected with this Project to adequately provide scour countermeasures. Conceptually, the extent of the buried/planted RSP revetment would remain at the toe of the slope and may extend up to 10 vertical feet up the channel bank to prevent toe failure and bank instability. Biotechnical stabilization methods and materials are expected to be installed on the remaining channel bank areas in the excavated and scour potential areas.

Starting approximately 60 feet downstream of the graded channel bank protecting the New Ponds, approximately 360 LF of the Napa River channel bank would be graded to a stable slope and revegetated to stabilize erosion that is occurring on the outside of the meander bend which is migrating northward between existing Ponds 1 and 2, or what will be the downstream end of the New East pond.

Where possible, large trees removed for the project would be salvaged and stockpiled for reuse as instream habitat enhancement and bank protection structures.

Erosion control measures would be installed following grading. A temporary irrigation system would be established for plant re-establishment. The 2.64 acres of graded areas for the abandoned ponds would be revegetated with native riparian upland vegetation**.**

Stormwater Conveyance Ditch

The existing 28-inch HDPE outfall pipe from the riverside ponds to the Napa River drains both wastewater from the ponds and stormwater from an isolated depression located north of the Vine Trail berm. Stormwater conveyance from the depression would be rerouted to Simmons Creek. To separate the stormwater runoff from wastewater, the existing 28-inch HDPE pipe would be closed at the depression, abandoned to the point of connection with the 18-inch HDPE pipe from the New Ponds. The depression would then be filled in and graded to route stormwater eastward into the existing swale that drains the north side of the Vine Trail berm into Simmons Creek upstream of the concrete bridge on the Vine Trail. Vegetation would be removed as necessary for access and grading along the swale to create positive drainage towards Simmons Creek. Erosion control measures would be installed following grading. A temporary irrigation system would be established for plant re-establishment. The 0.03 acre of graded areas along the stormwater conveyance ditch would be revegetated with native riparian upland vegetation.

Realign Simmons Creek to Protect Headworks Structure

To protect the WWTP headworks from failure due to channel bank erosion and flooding, the Simmons Creek channel would be realigned westward away from the structure, and the channel banks would be stabilized and restored. Construction access to realign the Simmons Creek channel and stabilize the channel bank below the headworks structure would be from the west bank of Simmons Creek in the graded footprint of the existing Pond 1. Simmons Creek would be dewatered per the description in the section below to allow access for equipment to realign the channel, while protecting existing 27-inch sewer trunk line supports and 18-inch recycle water line supports (the old 18-inch trunk line would be removed, along with its bank supports). Biotechnical stabilization methods and materials would be installed on the channel bank areas in the excavated and scour potential areas on both sides of the river channel. The restored channel would be widened and engineered with biotechnical stabilization methods to reduce the erosive power of the flood flows, while improving aquatic habitat, and maintaining fish passage to this anadromous tributary. The Project would also improve conveyance capacity and reduce the potential for localized streambed scour.

Where possible, large trees removed for the project would be salvaged and stockpiled for reuse as instream habitat enhancement and bank protection structures. Erosion control measures would be installed following grading. A temporary irrigation system would be established for plant re-establishment. The 0.21 acres of graded Simmons Creek channel bank areas would be revegetated with native riparian upland vegetation.

14-inch Force Main

Upgrades to the WWTP headworks structure include a new 14-inch Force Main (FM). The 14-inch FM would be extended mainly along the existing bike path from the connection at the existing effluent pump station to the existing 18-inch recycle waterline crossing over Simon's Creek. A section of fence would be removed and trees would be cleared as needed to perform the crossing to the bike path. The fence section would be repaired and the area revegetated upon completion of the FM installation. The FM would be installed under the Vine Trail bike path. Access to create the utility trench in the Vine Trail would be provided by sawcutting the existing road and bike path pavement along the 14-inch FM alignment. A 30-inch wide pipe trench would be constructed to provide 3 feet of minimum cover. The buried FM would be installed on 6-inch pipe bedding with 12-inch pipe cover, and AWWA C905 DR21 PVC Water Pipe with gasketed joints and MJ fittings. The total estimated FM length is 900 LF.

The Vine Trail bike path would be damaged from construction traffic and creation of the FM utility trench. To ensure that the path is restored to its pre-construction condition, photos and videos will be taken of the Vine Trail prior to construction. Following construction, the bike path will be improved as necessary and repaved with new asphalt.

Modifications to the Road up to the Berm

To make the berm road accessible, the Vine Trail would be widened to allow travel at the bike path elevation north of the existing Pond 1 footprint. The slope of the path would remain gentle to accommodate bicycle and pedestrian traffic.

Effluent Pump Station Site Modifications

Modifications would be made to the effluent pump station as follows. The existing piping in Valve Box US-5 would be modified to accommodate the new 14-inch FM tie-in. The Valve Box and 6-inch piping may need to be demolished and upsized. Gate valves would be installed to control the flow to the existing 10-inch TS or to the new 14-inch FM. It may be possible to reuse the existing 6-inch gate valve for the existing 10-inch TS. Valves would be installed to allow for reverse flow from the new East and West ponds back into Effluent Pump Station and the 20-MG Storage pond if needed for treatment. There would also be a pipe connection from the existing 10-inch to the existing WWTP equalization pond to provide the treatment plant operators the ability to run riverside pond water back for re-treatment purposes in case of an unforeseen upset in the process.

Underground Utilities

There is a 28-inch culvert draining stormwater from a depression north of the Vine Trail berm to the Napa River, which would be closed off and removed where possible. Additional underground utilities, including any sewer, gas, electrical, water and telecommunications lines, would be identified during the design phase.

Right of Way

The Project would take place within existing City Right of Way / Easements. No temporary construction easements from private property owners would be required to construct the Project. Neither are any land acquisitions required.

Access to the site from the south would be through the Dunaweal Avenue entrance to the WWTP, which is located alongside the Lower Washington Street Bike Path section of the Napa Valley Vine Trail. Access to the site from the north would be obtained by turning east off of Lincoln Avenue onto Washington Street, then traveling east past the Public Works Corporation Yard onto the Lower Washington Street Bike Path section of the Napa Valley Vine Trail.

Temporary Detours

Roadway: No lane closures or full street closures are anticipated to be required to safely and adequately construct the Project.

Pedestrian/Cyclist: The Washington Street Bike Path section of the Vine Trail would be closed to pedestrian and bicyclist traffic during construction for safety. The City will notice the public about the trail closure approximately one month prior to the start of construction.

Construction

Schedule

Overall construction is anticipated to take approximately 6 months during Spring and Summer. Construction would occur over approximately 26 weeks (130 days), generally on weekdays, Monday through Friday, from 7:00 a.m. to 7:00 p.m. The schedule may include Saturday work between 7:00 a.m. to 7:00 p.m. Construction of the Proposed Project would include the phased activities and associated construction equipment shown in **Tables 1** and **2**.

It is anticipated that backhoes, bobcats, bulldozers/loaders, dump trucks, excavators, front-end loaders, graders, haul trucks, pavers, rollers/compactors, scrapers, seed sprayers, and water trucks may be required to construct the Proposed Project.

Staging Areas

Construction staging for the Proposed Project would be located at two separate locations: on site and off site (Figure 4).

On-Site Staging Areas

On-site construction staging areas would be located under the trees on the west side of the Simmons Creek Bridge, and in abandoned footprints of Pond 4 and 1. Construction workers can park cars at the staging area on the west side of the Simmons Creek Bridge. If necessary, a construction trailer can be staged at this location as well.

TABLE 1. ANTICIPATED CONSTRUCTION PHASES AND ACTIVITIES

Phase	Activity	Approximate Duration (hours/day for # weeks)
1	**Site Preparation** • Clearing & Grubbing: Clear and remove trees, vegetation and debris from all grading footprints • Implement SWPPP • Trenching • Abandon utilities in all grading footprints	6 hours (hrs)/day for 10 days (2 weeks)
2	Napa Valley Vine Trail Realignment Make berm road and Vine Trail bike path modifications to accommodate access	8 hrs/day for 10 days (2 weeks)
3	**Earthwork** • Grade Riverside Ponds Floodplain: Abandon existing Ponds 1,2,3,4: Restore Pond 4 footprint; Re-grade Pond 1 footprint to function as temporary overflow storage; Construct new East and West Ponds on previous footprint of Ponds 2 and 3 • Grade and stabilize channel slopes along riverside ponds on Oat Hill Mine Ditch and the Napa River • Dewater Oat Hill Mine Ditch • Install rock toe protection along Oat Hill Mine Ditch • Dewater Simmons Creek • Realign channel and stabilize banks of Simmons Creek • Disconnect drainage pipe from depression north of the berm and grade to existing stormwater conveyance ditch draining to Simmons Creek • Install new pond infrastructure • Install outlet pipe and connect to outfall pipe • Install force main (FM) • Make effluent pump station modifications	6 hrs/day for 30 days (6 weeks)
4	**Restoration and Revegetation** • Restore all access and haul roads to pre-construction condition • Install Erosion control, temporary irrigation and native vegetation in all graded areas	3 hrs/day for 30 days (6 weeks)

SOURCE: Environmental Science Associates, 2019

Off-Site Staging and Stockpile Areas

An off-site staging area owned by the City of Calistoga if available for use if necessary to stage construction equipment, materials, construction trailers and other items needed for construction activities. The staging area is located at the City of Calistoga Bone Yard. The Bone Yard is located 0.4 miles west of the Project on the east side of the baseball diamond at the end of Washington Street where the Vine Trail begins. Other nearby land uses include undeveloped parcels, a self-storage facility, and commercial buildings and operations. The fenced-in yard has been used historically to store surplus materials and park construction- and maintenance- related equipment. If needed, possible activities at the corporation yard staging area would be: Overnight parking and temporary storage of construction equipment applicable for the project (**Table 2**); Fueling and maintenance of construction equipment; Temporary storage of construction materials including rebar, wood, masonry materials, greases, oils, trash receptacles and other miscellaneous raw construction materials.

TABLE 2. PROPOSED CONSTRUCTION EQUIPMENT

Equipment Construction Purpose	Equipment Construction Purpose	Phase in Use
Asphalt Concrete Paver	Repave roads and pave new piece of trail. Pave over the trench	Trenching, Vine Trail
Backhoe	For trenching.	Trenching
Bulldozer/Loader	Transport of rock material, earthwork construction, cleaning and grubbing. Dirt or gravel manipulation	Earthwork
Dump Truck – assume 10 cubic yards (CY)	Fill material delivery/surplus removal. Offhaul of materials.	Hauling
Excavator	For earthwork. Soil manipulation	Earthwork
Haul Truck	For import of rock material, but not used on-site. construction; clearing and grubbing	Hauling
Roller / Compactor	Asphalt paving	Trenching, Vine Trail, Earthwork
Truck with Seed Sprayer	Hydroseed, Landscaping	Revegetation
Saw cutters	Sawcut asphalt and create utility trench	Trenching
Water Truck	Earthwork construction; clearing and grubbing	Revegetation

SOURCE: Environmental Science Associates, 2019

The City of Calistoga stockpile site is used as a borrow pile to store and import dirt. The off-site stockpile area is located on City property adjacent to the northwest corner of the 16 MG wastewater pond, 0.3 miles northwest (0.6 miles driving distance) from the Project site (Figure 4). The stockpile footprint is approximately 2 acres, and currently stores a 5 feet high pile of clay soil that originated from previous pond berms. Access to the stockpile and upper ponds is via the paved Vine Trail and Washington Street from the south, two narrow (10 feet wide) concrete bridges that cross the Oat Mine Hill Ditch and a drainage ditch, and via dirt roads north of the berm that exit along a mobile home park and vineyards to the paved arterial Silverado Trail. The Silverado Trail links to Washington Street via Lincoln Avenue through Calistoga (Highway 29) to create an alternate access loop from the stockpile to the Project site.

Excavation is not expected at either the off-site staging area or stockpile site. Aggregate base may be applied to certain locations at the Bone Yard if needed. No disturbances to any existing vegetation or trees would occur at the staging area. Activities associated with the off-site staging area would be encompassed in the Project's Erosion and Sediment Control Plan (ESCP) as part of the construction contract. All applicable Best Management Practices (BMPs) related to equipment and material storage would be applicable to this staging area as well as the Project site. For the purposes of analysis, it is assumed that trucks would not be dual purpose (i.e., an empty truck would enter the Project site, and be filled with an off-haul load only).

Water Source for Construction and Dust Control

The City will provide a nearby offsite source for recycled water from the WWTP to be used for dust control on the roads and graded areas during construction to protect water quality and surrounding vineyards. The construction water station would be created 0.1 miles east of the Bone Yard, 0.3 miles west along the Vine Trail from the Project.

Project Site Access and Haul Routes

Construction site access and haul routes are depicted in Figure 4. A SWPPP will be implemented on all roads to protect water quality. The condition of existing roads will be documented with photos and videos prior to construction, and will be restored appropriately following construction.

Construction equipment and cars may access the Project from the west via Washington Street and the Vine Trail. Entrance to the Project from the east is via the WWTP entrance gate on Dunaweal Lane, through the WWTP, and the WWTP west exit gate, over the Simmons Creek bridge. The narrow width (10 feet) of the bridge over Simmons Creek between the WWTP and the riverside ponds site constrains the size of vehicles that can enter via the WWTP to the east.

No soil is expected to be offhauled from the demolition of the riverside ponds and realignment of Simmons Creek. Instead, cut and fill is expected to be balanced in the onsite grading areas, and clay soil would be imported from either the stockpile or an alternative source to construct the berms of the new ponds. If any offhaul is required, such as any potential excavated spoils, mud or detritus from the base of the demolished ponds, or rip rap material that can be stored for reuse, it would be trucked to the stockpile area miscellaneous pipes, appurtenances, and asphalt would be offhauled to the nearest landfill. Clay material may have to be imported to build the new pond berms.

Access to the stockpile and upper ponds is via the paved Vine Trail and Washington Street from the south, two narrow (10 feet wide) concrete bridges that cross the Oat Mine Hill Ditch and a drainage ditch, and via dirt roads north of the berm that exit along a mobile home park and vineyards to the paved arterial Silverado Trail. The narrow width of the bridges along the haul route from the Project to the stockpile will constrain the size of the trucks used to import and offhaul material to the stockpile site from the south via the Vine Trail berm crossing. Large trucks can access the stockpile via a longer haul route via Washington Street, Lincoln Avenue (Highway 29) and the Silverado Trail.

Approximately 770 truck trips (1540 one-way truck trips), would be required over the course of construction for mass grading and structural deliveries, assuming each truck could contain up to 10 tons of material or 37 CY depending on material type (aggregate, native soil, topsoil, etc.). It is assumed that almost all of the excavated material could be reused for backfill, to use conservative estimates. The majority of construction equipment operation, specifically on- road truck trips, would occur during Site Preparation and Earthwork (Phases 1 and 3 respectively; approximately 8 weeks) would result in the following spoils volumes and associated haul truck activities presented in **Table 3**. In total, construction would require 2550 truck trips (5100 one-way trips). This would result in up to a maximum of 64 one-way truck trips per day.

TABLE 3. ESTIMATED OFFHAUL AND DELIVERY

Material	Quantity (CY)	Truck Trips	One-Way Truck Trips
Cut Material from on-site	5500	550	1100
Fill	12300	1230	2460
Import from stockpile	6800	680	1360
Rock import	900	90	180
Total Truck Trips	25500	2550	5100

Temporary Dewatering

A temporary channel water diversion system would be required on the Oat Hill Mine Ditch tributary to the Napa River, but not on the Napa River, to install a rock toe structure to protect the channel bank upstream of the new riverside ponds from stream scour. Temporary dewatering will be required on Simmons Creek to realign the channel away from the headworks, and to stabilize the channel banks.

Overall, in-channel work would occur between June and October of the construction year during the summer/early fall months when water levels are at their lowest levels and flood risks are statistically least likely.

Construction impacts to the adjacent waterways would be minimized by the installation and maintenance of a water diversion plan when construction activities are required in the channel. It is expected that river flows would be diverted around work areas to restore the riverbank adjacent to the riverside ponds along the Oat Hill Mine Ditch, as well as when realigning Simmons Creek away from the headworks structure and stabilizing the channel bank. Diversion structures will adhere to RWQCB and CDFW permit requirements including biological screening, sensitive species relocation, and biological monitoring. The water diversion system may include screened pumps, a temporary pipe network, siltation baffles, and coffer dams to route flow around the immediate work area, maintain dewatered conditions, and return flow to the downstream channel network without causing harm to biological resources or affecting water quality.

Prior to the commencement of in-channel work, water in the work area would be removed and discharged in accordance with the applicable stormwater BMPs. It is anticipated that all water removed from the site be pumped into a temporary siltation pond/desilting basin, Baker tank, or similar detention device in order to allow adequate time for settling of sediments prior to their release downstream. Following adequate settling time, water would be released or pumped downstream at an appropriate rate to maintain downstream flows during construction. During the dewatering process, a biological monitor would be onsite to perform any aquatic species protection measures required by resource agencies. If ground water is encountered in the work area between the isolation barriers, the water would be discharged in accordance with the applicable stormwater BMPs. Impacted waters located in the work area behind the coffer dam would either be treated or disposed of per RWQCB requirements.

After water has been removed from the work area, visqueen would be placed on top of the channel floor to prevent construction debris from falling onto channel bottom. Upon completion of construction activities, the visqueen, cofferdam, and water diversion pipe would be removed and flow returned to the stream channels through the work area with the least disturbance to the substrate.

Project Workforce

Construction would require a 5-person crew, with a maximum of 7 construction workers during periods when multiple activities (e.g., trenching, earthwork, hauling, etc.) are occurring concurrently. Commuter traffic related to the Proposed Project would be comprised of light duty trucks (approximately 50 percent would be diesel and 50 percent gasoline powered) that employees would use to commute to and from the Project site. This would result in an average of 10 one-way vehicle trips per day (assuming that each worker commutes in their own vehicle), with an estimated commute of 20 miles each way to the Project site. In addition to construction workers, archaeological and biological monitors would also be present at the Project site.

Operations and Maintenance

New Riverside Ponds and Supply Piping

No additional employees would need to be hired to maintain the Project. The existing chemical treatment protocol would not be modified. The new East and West ponds would be fitted with SCADA system to control water levels, regulate discharge to the Napa River, and provide an alarm if water level exceeds the design elevation. To manage emergency overflows, the new riverside ponds would be graded with an overflow pathway directed towards a temporary storage area in the footprint of Pond 1. To conduct periodic inspection and maintenance, the new ponds may require water drawdown and liner inspection, detritus removal. The ponds would be fitted with quick couplers for connection to portable pumps which could aid the drawdown process. The ponds would also have stairs and boat ramps to facilitate access. The new supply piping will require minimal maintenance and will be controlled by integrating the above-mentioned SCADA controls into the existing control system.

Restored and Stabilized Channel Slopes

The restored channel areas would be monitored for geomorphic stability and revegetation establishment. If project elements do not meet established performance criteria, then specific maintenance work would be triggered including placement of erosion control measures, minor adjustment of rock features, weeding, replanting and irrigation management. Once the establishment and monitoring period has formally ended the project area would be inspected by staff periodically (annually) to confirm long term geomorphic stability.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this Project, potentially involving at least one impact that requires mitigation to be reduced to a level of "Less Than Significant" as indicated by the Environmental Checklist on the following pages.

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

The following Environmental Checklist is used to describe the impacts of the Project, as detailed in the Project Description and the attached plans **(Appendix A-F)**. Potential environmental impacts are classified as follows:

- **Potentially Significant Impact**: An environmental impact that could be significant and for which no feasible mitigation is known. If any potentially significant impacts are identified in this Checklist, an EIR must be prepared.
- **Less Than Significant Impact with Mitigation Incorporation**: An environmental impact that requires the incorporation of mitigation measures to reduce that impact to a less-than-significant level.
- **Less Than Significant Impact**: An environmental impact may occur, however, the impact would not be considered significant based on CEQA environmental standards.
- **No Impact**: No environmental impacts would occur.

Approach to Cumulative Analysis

Two approaches to a cumulative impact analysis are provided in CEQA Guidelines Section 15130(b)(1): (a) the analysis can be based on a list of past, present, and reasonably foreseeable future projects producing closely-related impacts that could combine with those of a proposed project, or (b) a summary of projections contained in a general plan or related planning document can be used to determine cumulative impacts. The following factors were used to determine an appropriate list of individual projects to be considered in this cumulative analysis:

- **Similar Environmental Impacts.** A relevant project contributes to effects on resources that are also affected by the proposed project. A relevant future project is defined as one that is "reasonably foreseeable," such as a proposed project for which an application has been filed with the approving agency or has approved funding.

- **Geographic Scope and Location.** A relevant project is located within the geographic area within which effects could combine. The geographic scope varies on a resource-by-resource basis. For example, the geographic scope for evaluating cumulative effects to air quality consists of the affected air basin.
- **Timing and Duration of Implementation.** Effects associated with activities for a relevant project (e.g., short-term construction or demolition, or long-term operations) would likely coincide in timing with the related effects of the proposed project.

Based on these criteria, the plans and projects identified in **Table 4** in the Project site vicinity are examples of the types of projects considered in the cumulative impact analysis.

As described in the environmental assessment below, the majority of the Project effects would be short-term impacts related to construction, rather than long-term Project operation impacts. Therefore, cumulative effects are anticipated to primarily result from construction of the Project in combination with construction of other projects in Calistoga. For this analysis, other past, present, and reasonably-foreseeable future construction projects, particularly other infrastructure projects, in the area have been identified. Construction impacts associated with aesthetics, increased noise, dust, erosion, and access limitations tend to be localized and could be exacerbated if other development or infrastructure projects are occurring within the vicinity of proposed facilities. Due to the short-term, temporary nature of construction-related impacts, and the inclusion of appropriate mitigation measures as established in the assessment below, the Project's contribution to adverse impacts to resources including biological resources, air quality, hydrology and water quality, aesthetic resources, land use and planning, public services, recreation, hazards, and noise, is not cumulatively considerable.

TABLE 4. CUMULATIVE PROJECTS

Planning Jurisdiction	Project Name/Applicant	Project Location	Project Status	Estimated Construction Schedule
City of Calistoga	**Imper Residence –** Single-family dwelling	1998 Cedar Street	Proposed	Unknown
	Roman Spa – Resort Expansion	1300 W Washington	In Review	Unknown
	Lawer Event Center – Tasting room, demonstration winery, restaurant, retail store, event center, 2 apartments	1207 & 1215 Lincoln Avenue, 1213 Elm Street	In Review	Unknown
	Kimball Reservoir Intake Tower, Drain Valve, and other improvements - Improve supply reliability and flood protection	Kimball Canyon Dam (Kimball Reservoir); nearest road Evey Road	Planning and Design	Unknown
	Myriad Winery - Winery	6 Foothill Boulevard	In Review	Unknown
	Rivers-Marie Winery – Winery	900 Foothill Boulevard	NOI issued	Unknown
	Gas Station, Convenience Store, Restaurant, and Car Wash – Gas station, convenience store, restaurant, car wash	2449 Foothill Boulevard	In Review	Unknown
	The Veranda Hotel & Apartments – 170 hotel rooms, 22 apartments, spa, restaurants, and public laundromat	1512 Lincoln Avenue	In Review	Unknown
	Lincoln Avenue Brewery- Brewery and beer garden	1473 Lincoln Avenue	In Review	Unknown
	Eddy Hotel – 82 room hotel	1861 Lincoln Avenue	In Review	
	Amber Way Subdivision – subdivision of 5.9 acres into 13 single family lots	2008 Grant	In Review	
	Calistoga Vista – 50 apartments/condominiums	1506 Grant Street	Approved	Unknown
	Lincoln Avenue Apartments –78 apartments	Lincoln Avenue	Approved	
	Solage Expansion – 11 guest rooms, reception building	755 Silverado Trail	Approved	
	Wappo Guest Accommodations – 3 group guest suites	207 Wappo Avenue	Approved	Unknown
	Calistoga Hills – Resort/Residential Project, 13 single-family dwellings, 20 fractional units, 110 hotel units	411 Foothill Boulevard	Approved	Unknown
	New Vine Homes LLC – 2 Single-family dwelling	1807 & 1809 Michael Way	Approved	2015
	AT&T Services, Inc. – Bank Stabilization Pathway	1310 Lincoln Avenue	Approved	Under Construction
	Four Seasons Resort & Residences – 85 guest rooms, resort facilities, restaurant, 21 single-family dwellings	400 Silverado Trail	Approved	Under Construction
	Lake Street Pavement Rehabilitation- installation of stormdrains, utility vaults, grinding existing asphalt, roadway paving, striping, and signage.	Lake Street between Grant and Fair Way	Approved	Construction Completed

TABLE 4. CUMULATIVE PROJECTS

Planning Jurisdiction	Project Name/Applicant	Project Location	Project Status	Estimated Construction Schedule
	Grant Street Phase II Drainage Improvements- 805 LF of stormdrain facilities, channel improvements, retaining wall, landscape revegetation	Grant Street, Calistoga	Approved	Construction Completed
	Berry Street Bridge Replacement	Bridge No. 21C0115, Berry Street over Napa River, Calistoga, CA	Completed	Completed
	Brannon Street Lincoln Crosswalk	Intersection of Brannon and Lincoln Avenue	In construction	2019
	Washington Street Pavement Reconstruction	Washington Street (Lincoln to North Oak)	In Design	
	Myrtledale Street/Grant Street Overlay and Pedestrian Pathway	Myrtledale/Grant St.	In Design	
Napa County Resource Conservation District	**Pioneer Park Napa River concrete footpath/fish passage barrier removal**	1308 Cedar Street	Planning	2020
Napa County Department of Public Works	**Greenwood Avenue Fish Passage Project**	Greenwood Avenue at its intersection with the Napa River, north of the city of Calistoga, Napa County	Completed	Completed
Caltrans	**State Route 29 Napa River Bridge Replacement Project –** Removal of existing bridge and replacement with single-span bridge 72 feet wide by 76 feet long	State Route 29 (Lincoln Avenue) at the Napa River	Proposed	Under Construction

NOTES:

The projects described in the table are likely to fluctuate due to schedule changes or other unknown factors. This analysis assumes these projects would be implemented concurrently with implementation of the Project, with the exception of the Napa River Bridge replacement on Lincoln Avenue and the Pioneer Park concrete footpath/ fish passage barrier removal.

Other projects in unincorporated Napa County were considered; however, the spatial and geographic scope do not overlap with the Project. Napa County Current Project list is available at www.countyofnapa.org/PBES/CurrentProjects/.

SOURCES:

City of Calistoga, 2019. City staff and Proposed and Approved Development Projects in the City of Calistoga, February, 2019. Available online at: http://www.ci.calistoga.ca.us/home/showdocument?id=31673, accessed May 9, 2019.

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Napa County Resource Conservation District, 2011. Napa River Fish Barrier Plan.

Napa County Department of Public Works. 2014. Greenwood Avenue Fish Passage Project Initial Study Mitigated Negative Declaration, October 2014.

State of California Department of Transportation (Caltrans), 2012. Troutdale Creek Bridge Replacement Project, Initial Study with Proposed Mitigated Negative Declaration, August 2012. Available online at: http://www.dot.ca.gov/dist4/documents/troutdalecreek/es4w0900_troutdale_creek_bridge_ispmnd.pdf, accessed December 23, 2014.

State of California Department of Transportation (Caltrans), 2014. SR 29 Napa River Bridge Replacement Project, Initial Study with Proposed Mitigated Negative Declaration, October 2014. Available online at: http://www.dot.ca.gov/dist4/documents/29NapaRiverBridgeReplacement/Napa-Bridge-10-6-14MND-Napa.pdf.

I. AESTHETICS

Except as provided in Public Resources Code (PRC) Section 21099, would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	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 publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☒	☐	☐
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Environmental Setting

Calistoga and its Planning Area include many scenic vistas offering important views of Calistoga's surrounding scenic resources. The Planning Area is approximately four times as large as the city itself and includes higher terrain, extending almost to the mountain ridgelines and encompasses portions of unincorporated Napa County (City of Calistoga, 2003). For the purposes of this analysis, the study area includes the Project site, staging areas, and the surrounding area. Such areas include the Silverado Trail scenic corridor, views of the rural and undeveloped lands surrounding the City, and Calistoga's hillside areas. Views of the surrounding countryside, ridgelines and hilltops are an important contributor to the quality of life and community identity as Calistoga (City of Calistoga, 2012).

Regulatory Setting

In 2001, the County of Napa developed a Viewshed Protection Ordinance which sets forth hillside development standards to minimize the impact of man-made structure and grading on views from designated public roads in the County. The ordinance is intended to preserve the unique scenic quality of Napa County and protect the ridgelines and hillsides of the county from insensitive development (Napa County, 2008).

The Open Space and Conservation element of the City of Calistoga's General Plan (GP) includes the following goals, objectives, and policies to preserve the visual character and aesthetic resources of the City of Calistoga (City of Calistoga, 2012; City of Calistoga, 2003).

Objective OSC-1.3: Conserve Calistoga's native trees and vegetation, which are important biological and aesthetic resources within the Planning Area.

Goal OSC-5. Preserve and enhance Calistoga's open spaces that provide scenic resources and contribute to the City's aesthetic character.

***Policy P5.1-1*:** The City shall ensure that development safeguards scenic vistas and gateways and maintains the rural small-town character of the following roadways:

- Silverado Trail
- Highway 29, up-valley of Silverado Trail
- Highway 128/29, down-valley of Lincoln Avenue
- Highway 128 up-valley from Petrified Forest Road.
- Tubbs Lane
- Lincoln Avenue
- Foothill Boulevard
- Petrified Forest Road

Strategies to accomplish this include:

- Retaining landscaped pedestrian/ bicycle pathways.
- Limiting structures adjacent to roadways to one story.
- Setting structures back from roadways.
- Implementing design review for development along scenic corridors.
- Implementing setbacks and screening from roadways.
- Limiting or prohibiting certain types of development, particularly that with "big box" or strip commercial characteristics

Objective OSC-5.4 Minimize obtrusive glare and wasted energy from excessive nighttime lighting and preserve views of the nighttime sky.

***Policy P5.4-1*:** The importance of views of the nighttime sky should be acknowledged as a significant scenic resource in Calistoga.

The only scenic vista, resource, and corridor in the Planning Area that would be visible from the Project site would be the rural lands along the Silverado Trail, which is also designated as a scenic corridor by the City GP and the Napa County GP. Highway 128/29, approximately 1-mile south of the Project is a designated scenic corridor, but views of the Project study area (i.e., Highway 128/29; up valley of Silverado Trail, down-valley of Lincoln Avenue, and up-valley from Petrified Forest Road) are not available from this Highway. No other scenic resources, including scenic vistas and/or scenic corridors would be visible from the Project or be included in the study area.

I. a) Less than Significant Impact. The Project would be located within the Silverado Trail scenic vista, as designated by the City GP. The Silverado Trail is located approximately 1 mile north of the Project and contains scenic and rural views of the City's agricultural landscape. Views of the Project would be seen at a vantage point from the Silverado Trail scenic vista when facing south. Construction equipment would be visible, at a distance, for a temporary period up to 6 months. The majority of construction equipment would be stored off-site at the Bone Yard staging area, which would not be visible from the Silverado Trail. On-site staging areas would be located on the west side of the Simmons Creek Bridge. On-site staging equipment would not be visible from the Silverado Trail scenic vista. Following construction, views of the riverside ponds would change because the number of ponds would be reduced from four to two; however, the main visual characteristic of tertiary-treated wastewater ponds would remain the same. Therefore, the Project would not include a substantial adverse impact to the Silverado Trail scenic vista, as the change would be minimal at a distance and temporary. The Project would not substantially change the small-town rural character , as discussed in Policy P5.1-1, of the City of Calistoga and the impact would be less than significant.

I. b) Less than Significant Impact with Mitigation Incorporation. Impacts to the Silverado Trail scenic resource are addressed in question a), above. There would be no designated state scenic highways located in the Project study area (Caltrans, 2019). Although Highway 29, which is located approximately 1-mile south of the Project site, is designated as a scenic corridor and an eligible state scenic highway, it is not currently recognized by the state as a state scenic highway and therefore any impacts to it would not be significant (City of Calistoga, 2014). Furthermore, views of the project from Highway 29 are blocked by trees and vegetation along the west bank of the Napa River and would not impact views from this designated scenic corridor (City of Calistoga, 2014). There would be a less-than-significant impact on the scenic resources of the Silverado Trail, as described in question a), as well as the Highway 29 scenic corridor.

The Project would require the removal of 103 trees on just under an acre of land (0.95 acre), which are considered a scenic resource. However, native plantings and repairs would be implemented to any landscaping areas damaged during construction to offset tree removals at the Project site and would be in accordance with the City-approved Tree Protection and Replacement Plan. In order to ensure tree protection, **Mitigation Measure BIO-8: Tree Protection Plan** would be implemented. Refer to Section IV, *Biological Resources*, for more details on tree removal and the Calistoga Municipal Code. With the implementation of MM BIO-8, there would be a less-than-significant impact with regard to scenic resources.

I. c) Less than Significant Impact with Mitigation Incorporation. The Project study area is located within a non-urbanized area, as the City of Calistoga is not listed under the designated urbanized area[4] by the U.S Bureau of the Census. The closest urbanized area to the Project site would be located in the City of Santa Rosa, approximately 22 miles southwest of the study area (U.S Bureau of the Census, 2012).

The Project site and surrounding area has a visual character that is representative of the City of Calistoga and contributes to public views of the natural landscape from public trails, such as the Napa Valley Vine Trail and the Silverado Trail scenic corridor, which are located directly adjacent to the north and approximately 1 mile from the Project site, respectively. The surrounding area of the Project site consists of small ponds, trees, riparian vegetation, and agricultural lands. The Project site consists of the WWTP facility, associated infrastructure, riverside ponds, trees, and vegetation. The overall visual quality of the Project site is moderate; it is representative of the general character of the surrounding area.

The Project would reconfigure the four existing ponds into two realigned ponds and require tree removal, which would permanently change the visual character of the Project site. However, the ending visual appearance of the Project would be compatible with the existing visual character of the surrounding agricultural land since the Project would restore all landscape characteristics to its original visual character through the implementation of **Mitigation Measure AES-1**. The Project would not affect the overall pattern elements (rural textures, green/natural colors, and open space) in areas in which grading is required since the site would be revegetated with native riparian upland vegetation and conserve Calistoga's native landscape (i.e., trees and vegetation). Mitigation Measure AES-1 would include inspection, following construction, by the City in order to ensure the visual character of Calistoga is preserved. All channel banks, access roads, and flood plains would be restored following construction of the Project.

There are two publicly accessible vantage points in which the Project site would be visible: Lower Washington Street Bike Path of the Vine Trail and the Silverado Trail corridor. The Lower Washington Street Bike Path section of the Vine Trail would be closed during construction, but views of the Project site would be visible during operation and maintenance. The Silverado Trail corridor is located approximately one mile north of the Project. Because of the predominantly flat agricultural landscape, the Project site would be visible from this scenic corridor when facing south.

The receptors (viewers) that could be affected by construction of the Project include recreational uses of the aforementioned trails, motorists, bikers, scattered residences, and passersby. Short-term construction activities would involve temporary disturbances to the visual character of the area. The presence of construction equipment, supplies, signage, earthwork, and debris represent some visual intrusion and increase visual contrast; however, this effect would be temporary and would not permanently affect the visual character. In order to ensure revegetation and restoration of the Project site, following construction activities, Mitigation Measure AES-1: Revegetation and Site Restoration would be implemented. MM AES-1 would preserve the visual character of the Project

[4] CEQA Guidelines Section 15387 defines "urbanized area" as an urbanized central city or a group of contiguous cities with a population of 50,000 or more, together with adjacent densely populated areas having a population density of at least 1,000 persons per square mile. A Lead Agency shall determine whether a particular area meets the criteria in this section either by examining the area or by referring to a map prepared by the U.S. Bureau of the Census which designated the area as urbanized. Therefore, use of the term "urbanized area" in Section 15182 is limited to areas mapped and designated as urbanized by the U.S. Bureau of the Census. (U.S Bureau of the Census, 2012)

site and would remain compatible with the existing visual corridor after construction. In order to uphold the General Plan goals, objectives, and policies related to aesthetic resources, the Project would include revegetation and restoration of the native landscape in the study area and undergo review by the City through MM AES-1 to maintain the overall visual character of the City of Calistoga. Under this criterion, impacts with respect to the visual character and quality of the Project site would be less than significant with implementation of the mitigation measure described below.

Mitigation Measure AES-1: Revegetation and Site Restoration.

At the conclusion of construction, all Project debris shall be removed from the site, the City shall conduct a visual inspection to ensure that all disturbed areas shall be restored to level consistent with or better than baseline (existing) conditions. Impacted pathways shall be repaved, impacted trees shall be replaced in appropriate mitigation quantities on site, and disturbed soils shall be revegetated with a native seed mix typical of the surrounding area. Plantings shall be monitored by City parks staff and irrigated, as appropriate, to ensure revegetation success.

I. d) Less than Significant Impact. Temporary lighting would be used during construction between the times of 7:00 a.m. and 7:00 p.m. on weekdays and Saturdays. However, lighting used during this time would not generate a sharp contrast during daylight hours. Construction that would require lighting at night during the winter months would be temporary and only used within the City of Calistoga allocated construction hours. Of those walking or biking the Vine Trail at night, lights and glare from on-site construction equipment could be visible from the trail along the ponds during occasional or emergency maintenance of facility infrastructure. Night time viewers would be significantly less than day time viewers and the need for nighttime lights would be temporary and minimal. Construction equipment potentially causing glare would be removed following construction, all other equipment would be stored off-site at an existing staging yard. Temporary lighting used during construction would be less than significant and used on occasion during the 6-month construction period.

Operation and maintenance would result in the implementation of new lighting but would not be visible to most members of the public located in urban areas near the City. New lighting would be used in order to illuminate areas around the East and West ponds where infrastructure and electrical controls would be needed. Light-emitting diode (LED) lighting would be installed where necessary and directed downwards. Views of Project lighting or glare from the Silverado Trail would be negligible at over a mile away. Lights surrounding the Project site would not be left on during the nighttime and would only be used as necessary for occasional operation and maintenance. Light sources generated from implementation of the Project would not create a source of substantial light or glare, which would adversely affect day or nighttime views in the surrounding area. Under this criterion, there would be a less than significant impact.

I. Cumulative) Less Than Cumulatively Considerable. The geographic scope for potential cumulative aesthetics impacts includes areas adjacent to the Project location. Cumulative projects, mentioned in Table 4, could have impacts on aesthetic resources in the Project vicinity if the Project in combination with other projects in these areas could result in a substantial adverse effect on a scenic vista, substantially damage a scenic resource, substantially degrade the existing visual character of the site and its surroundings, or result in a source of substantial light or glare. The closest approved development projects to the Project site, approximately one mile, mentioned in

Table 4 would be the Solage Expansion and the Four Seasons Resort & Residences, both located along the Silverado Trail. These two housing projects would be located northwest of the Project site and closer to urban development. Both of these Projects would not be included in the south facing view shed on the Silverado Trail of the rural plains that the Project site is currently located. As a result, there would be no known cumulative projects that would include substantial changes to the aesthetic resources of areas immediately adjacent to the Project. Further, as described above, the Project would not result in adverse effects on the existing aesthetic resources because all impacts related to alterations of aesthetic resources would be restored following construction with the implementation of MM AES-1. Thus, the Project would not result in a significant cumulative impact on aesthetic resources.

II. AGRICULTURE AND FORESTRY RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	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 PRC section 12220(g)), timberland (as defined by PRC section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☒	☐

Environmental Setting

Agricultural land comprises approximately one-fifth of the City of Calistoga Planning Area. In 1990, Napa County passed Measure J, which protects all agricultural land from being subdivided or converted to other lands uses without a countywide vote (City of Calistoga, 2014). As a result, much of the landscape located in the City of Calistoga and Napa County is designated and used for agriculture. However, the Project itself is not designated as land of agricultural importance by the California Department of Conservation (DOC) or the City of Calistoga. Vineyards located directly adjacent to the Project site are located in unincorporated Napa County and are designated as Prime Farmland and Unique Farmland by the DOC (DOC, 2016).

II. a, b) No Impact. The footprint of the Project is located upon "Urban and Built-Up Land," as designated by the DOC Farmland Mapping and Monitoring Program (FMMP) (DOC, 2016). Therefore, the Project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use as no Project activities would occur upon lands designated as agriculture. The Project would not be under a Williamson Act contract[5]. However, designated Prime Farmland is located on parcels directly adjacent southeast and northwest of the Project. Additionally, two designated parcels located northeast and southwest of the Project are classified as Unique Farmland. Discussion of potential indirect impacts to these parcels are discussed further in question e, located below.

II. c, d) No Impact. The Project would not occur on land zoned as forest land or timberland, and therefore, would not result in the loss of forest land or conversion of any forest land to non-forest use.

II. e) Less than Significant Impact. As stated above under question a through d, the Project would not be constructed or maintained upon any land designated as Farmland or forest land. Although the Project is not directly located upon designated farmland or forest land, several parcels surrounding the Project are currently used and designated for agricultural use. All agricultural land directly adjacent to the Project would be located in unincorporated Napa County. During construction, the City would provide a nearby offsite source for recycled water from the WWTP to be used for dust control on the roads and graded areas to protect water quality and surrounding vineyards. Construction activities could temporarily affect agricultural production and limit access to agricultural lands (i.e. vineyards) that surround the Project, but would not result in any permanent conversion of farmland or forest land such that other changes in the existing environment would occur. Under this criterion, there would be a less than significant impact.

II. Cumulative) Less than Significant Impact. The geographic scope for potential cumulative agriculture and forest impacts includes areas adjacent to the Project location. Cumulative impacts on agriculture and forestry resources in the Project vicinity could occur if the Project in combination with other projects listed in Table 4 could result in a substantial adverse effect on important farmland, timberland, or conversion of farmland. There are no know forestry resources in the immediate vicinity of the Project that could be affected by other cumulative projects, therefore, there would be no cumulative impact to forestry resources.

The City of Calistoga and the surrounding Napa County communities are heavily reliant on vineyards and agricultural production. Adverse impacts to agricultural resources could occur to surrounding farmland if construction schedules were to overlap near the Project site. Cumulative Projects listed on Table 4 such as the Eisele Estate Vineyard Project includes conversion of oak woodland to vineyard, ultimately enhancing agricultural resources in the vicinity of the Project. No other cumulative projects would be located adjacent to the Project site such that agricultural resources would deteriorate or result in non-agricultural use due to construction, operation, or maintenance. In addition, BMPs would be applied to all construction activities to ensure the

5 The Williamson Act, also known as the California Land Conservation Act of 196, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments which are much lower than normal because they are based upon farming and open space uses as opposed to full market value.

minimization of dust and preserve water quality for the surrounding vineyards. Therefore, the Project would not result in any potential conversion of agricultural land and would not contribute to a cumulative impact related to agricultural resources.

III. AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district may be relied upon to make the following determinations. Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	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 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?	☐	☒	☐	☐

III. a) Less than Significant Impact with Mitigation Incorporation. The Project site is located within the San Francisco Bay Area Air Basin (SFBAAB), which is regulated by the Bay Area Air Quality Management District (BAAQMD). The SFBAAB is currently designated as a nonattainment area for state and national ozone standards, state respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$) standards, and the federal $PM_{2.5}$ (24-hour) standard (BAAQMD, 2017a). The most recently adopted air quality plan to address nonattainment issues for the Bay Area is the 2017 Bay Area Clean Air Plan (2017 CAP, BAAQMD 2017b). The 2017 CAP provides a regional strategy to protect public health and protect the climate by continuing progress toward attaining all state and federal air quality standards; eliminating health risk disparities from exposure to air pollution among Bay Area communities; transitioning the region to a post-carbon economy needed to achieve greenhouse gas (GHG) reduction targets for 2030 and 2050; and providing a regional climate protection strategy that will put the Bay Area on a pathway to achieve those GHG reduction targets. The 2017 CAP includes a wide range of 85 control measures designed to decrease emissions of the air pollutants that are most harmful to Bay Area residents, such as particulate matter, ozone, and toxic air contaminants; to reduce emissions of methane and other "super-GHGs" that are potent climate pollutants in the near-term; and to decrease emissions of carbon dioxide by reducing fossil fuel combustion (BAAQMD, 2017b).

The BAAQMD CEQA Guidelines recommend that a project's consistency with the current CAP be evaluated using the following three criteria:

1) Would the project support the goals of the Air Quality Plan?

2) Would the project include applicable control measures from the CAP?

3) Would the project not disrupt or hinder implementation of any control measures from the CAP?

If these questions (listed above) can be concluded in the affirmative with substantial evidence, then the BAAQMD would consider the project to be consistent with air quality plans prepared for the Bay Area (BAAQMD, 2017c).

The primary goals of the 2017 CAP are to attain air quality standards, reduce population exposure to air pollutants and protect public health in the Bay Area, and reduce GHG emissions and protect the climate. The BAAQMD-recommended guidance for determining if a project supports the goals in the current CAP is to compare the estimated project emissions with BAAQMD thresholds of significance. If project emissions would not exceed the thresholds of significance after the application of all feasible mitigation measures, the project would be consistent with the goals of the 2017 CAP. As indicated in the following discussion with regard to Section III. b), the Project would result in a potential significant impact related to construction emissions that could be reduced to less-than-significant with implementation of Mitigation Measure AQ-1. If Mitigation Measure AQ-1, *Implement BAAQMD Basic Construction Mitigation Measures*, is implemented, the Projectwould not result in short-term adverse air quality impacts. Section III. b) also discloses that the long-term air quality impacts associated with Project would be less than significant. With implementation of Mitigation Measure AQ-1, the Project would support the primary goals of the 2017 CAP.

As noted above, the 2017 CAP contains 85 control measures aimed at reducing air pollution in the Bay Area. Projects that incorporate all feasible air quality plan control measures are considered consistent with the 2017 CAP. The 2017 CAP does not contain any measures that would be specific to the proposed Project; therefore, no inconsistency with the 2017 CAP is identified. With no specific control measures from the 2017 CAP applicable to the Project, the Project would not hinder implementation of CAP control measures.

In summary, the answers to the three criteria listed above to evaluate Project consistency with the 2017 CAP are in the affirmative and, therefore, the Project as mitigated would not conflict with or obstruct implementation of the 2017 CAP. This would be a less-than-significant impact with incorporation of mitigation.

III. b) Less Than Significant Impact with Mitigation Incorporation. The Federal Clean Air Act and the California Clean Air Act both require the establishment of standards for ambient concentrations of air pollutants, called Ambient Air Quality Standards (AAQS). The federal AAQS, established by U.S. Environmental Protection Agency (USEPA), are typically higher (less stringent) or the same as the state AAQS, which are established by the California Air Resources Board (CARB) and enforced by the BAAQMD based on the Project's location within the SFBAAB.

The SFBAAB experiences violations of ozone and particulate matter (PM_{10} and $PM_{2.5}$) standards. Therefore, the Project area currently is designated as a non-attainment area for violation of the State 1-hour and 8-hour ozone standards, the federal ozone 8-hour standard, the state PM_{10} 24-hour and annual average standards, the state $PM_{2.5}$ annual average standard, and the federal $PM_{2.5}$

24-hour standard. The Project area is designated as attainment for all other state and federal standards (BAAQMD, 2017a).

Project Construction

Construction activities associated with the Project would involve the use of equipment that would emit exhaust containing ozone precursors (i.e., reactive organic gases [ROG] and nitrogen oxides [NO_x]), PM_{10}, and $PM_{2.5}$. On-site and off-site vehicle activity associated with material transport and construction worker commutes would also generate emissions. Emission levels that would be associated with these activities would vary depending on the number and types of equipment used, duration of use, operation schedules, and the number of construction workers. Equipment exhaust emissions of ROG and NO_x from these activities would incrementally add to the regional atmospheric loading of ozone precursors during Project construction.

For a conservative air quality analysis, it is assumed that cconstruction activities that would be associated with the Project would occur entirely in 2019 over a condensed period of 80 work days. Project-related exhaust emissions would be generated from the use of heavy-duty diesel off-road construction equipment and from vehicle trips associated with the delivery of clay material from the stockpile location, delivery of rock material, and delivery of other materials and equipment to the Project site, and from daily construction worker commute trips. Based on the activities that would be necessary to construct the Project, it is estimated that required construction equipment would include a paver, backhoe, bulldozer/loader, dump truck, excavator, haul truck, roller/compactor, a truck to spread seed, saw cutters, and a water truck to relocate the ponds (see Project Description **Table 2**). It is assumed that each phase of construction would require an average of five construction workers per day commuting to and from the Project site, requiring 10 one-way worker trips per day. It is also assumed that each construction phase would require an average of two one-way vender trips per day to deliver miscellaneous materials and supplies to the Project site. A total of up to 1,600 one-way haul truck trips would be required to deliver materials and supplies to the Project site during the 80-workday construction period.

Air pollutant emissions of ROG, NO_x, PM_{10}, and $PM_{2.5}$ that would be generated by off-road construction equipment (e.g., backhoe and bulldozer) were estimated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2. The Project-specific construction schedule and equipment requirements that would be used during the three construction phases of the Project were used to determine daily emissions. Average daily construction emissions were estimated by dividing the total construction emissions by the number of workdays. All assumptions and calculations used to estimate the Project-related construction emissions are provided in Appendix E. Estimated average daily emissions are shown in **Table 5** and are compared to the BAAQMD exhaust emissions thresholds.

TABLE 5 AVERAGE DAILY CONSTRUCTION-RELATED POLLUTANT EMISSIONS (POUNDS/DAY)

Construction Year	**ROG**	**NO_x**	**Exhaust PM_{10}***	**Exhaust $PM_{2.5}$***
2019	1.3	15.7	0.6	0.5
BAAQMD Construction Threshold	54	54	82	54
Significant Impact?	No	No	No	No

* BAAQMD's construction-related significance thresholds for PM_{10} and $PM_{2.5}$ apply to exhaust emissions only and not to fugitive dust.

While developing the significance thresholds, the BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If the Project would exceed one or more of the identified significance thresholds, its emissions would be cumulatively considerable (BAAQMD, 2017c). As indicated in Table 5, the average daily construction exhaust emissions would not exceed the BAAQMD's significance thresholds. Therefore, impacts associated with the potential for construction-related exhaust emissions to result in a cumulatively considerable net increase of any criteria pollutant for which the region is non-attainment under an applicable federal or state ambient air quality standard would be less than significant.

In addition to exhaust emissions, emissions of fugitive dust would also be generated by construction activities associated with excavation and earth disturbance, travel on paved and unpaved roads, etc. Such emissions could result in a potential significant impact. With regard to fugitive dust emissions, the BAAQMD Guidelines focus on implementation of recommended dust control measures rather than a quantitative comparison of estimated emissions to a significance threshold. For all projects, the BAAQMD recommends the implementation of its Basic Control Mitigation Measures (BAAQMD, 2017c). The implementation of the BAAQMD's fugitive dust Basic Control Mitigation Measures, which are listed in Mitigation Measure AQ-1 would reduce the potential significant impact associated with fugitive dust emissions to a less-than-significant level.

Mitigation Measure AQ-1: Implement BAAQMD Basic Mitigation Measures.

The City of Calistoga and/or its construction contractors shall implement the following BAAQMD basic control measures:

- *All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times a day.*
- *All haul trucks transporting soil, sand, or other loose material off-site shall be covered.*
- *All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.*
- *Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California Airborne Toxics Control Measure Tile 13, Section 2485 of California of Regulations). Clear signage shall be provided for construction workers at all access points.*

- *All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.*
- *A publicly-visible sign with the telephone number and person to contact at the City of Calistoga regarding dust complaints shall be posted at the Project site. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.*

Project Operation

Once construction is complete, the Project would result in no new sources of air pollutants. Therefore, there would be no net change in long-term conditions as a result of the Project compared to the baseline conditions, and there would be no long-term operational cumulative impact.

III. c) Less Than Significant Impact with Mitigation Incorporation. The BAAQMD recommends that lead agencies assess the incremental toxic air contaminant (TAC) exposure risk to all sensitive receptors within a 1,000-foot radius of a project's fence line. Long-term operation of the Project would not result in new TAC emissions. However, construction activities associated with the Project would generate diesel particulate matter (DPM), which is considered to be a TAC. The majority of DPM exhaust emissions that would be generated at the Project site would be due to the use of diesel off-road equipment. The nearest residence to the Riverside Ponds site is off Foothill Boulevard, located approximately 350 feet southwest of the western-most portion of site, and the nearest residences to the stockpile site are at the Calistoga Springs mobile home park at a distance of approximately 100 feet to the west. The anticipated haul route for the movement of materials from the stockpile to the Project site would cross through populous areas of Calistoga, which include schools.

The majority of DPM exhaust emissions that would be generated during construction would be from the use of diesel off-road equipment with a smaller amount generated by the use of heavy duty trucks to deliver materials and equipment to the site. The prevailing wind direction in the Project area is westerly and the residences in the immediate vicinity are to the west and southwest of the site. Therefore, the residences tend to be upwind, which would generally limit their exposure to Project-related emissions.

The dose to which receptors are exposed is the primary factor affecting health risk from exposure to TACs. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments should be based on a 9, 30, and/or 70-year exposure periods to determine the health risk to sensitive receptors from cancer or chronic non-cancer health effects of TAC emissions (such as DPM). However, OEHHA also states that such health risk assessments should be limited to the duration of the emission-producing activities associated with the Project, unless the activities occur for less than six months. Activities that would last more than two months, but less than six months, are recommended to be evaluated as if they would last for six months. The OEHHA does not recommend assessing cancer risk for projects that would last for two months or less (OEHHA, 2015).

A health risk assessment (HRA) was conducted for construction activities that would be associated with the Project (see Appendix E). The HRA quantified cancer risks, chronic non-cancer health hazards, and average annual $PM_{2.5}$ concentrations for nearby receptors based on the Project's annual average PM_{10} emissions, and compared these to the BAAQMD's corresponding thresholds of significance. To evaluate cancer health impacts, the maximum incremental cancer risk from inhalation exposure to TACs was calculated following the guidelines established by OEHHA. Non-cancer health risk is based on hazard indices established by OEHHA for chronic (long-term) exposures. The annual average $PM_{2.5}$ concentration was calculated for exhaust emissions only because implementation of the dust control measures included in Mitigation Measure AQ-1 are considered the significance threshold for fugitive particulate matter. The $PM_{2.5}$ exhaust concentration was calculated assuming construction activity would be contained within one year.

The analysis was conducted under the assumption that construction of the Project would occur over 80 workdays or approximately four months starting in 2019. Because of the short-term duration, exposure was evaluated as if the Project were to last six months. The annual average construction emissions associated with the Project was determined for the purpose of the HRA. It was assumed that the maximum exposed individual (MEI) in the vicinity of the Project site would be exposed to the annual average TAC concentrations throughout the construction period; however, during the actual construction process, the location of equipment would vary within the Project site, and TAC concentrations at the MEI would change. Discrete cartesian receptors were created to allow for an examination of TAC concentrations throughout the vicinity of construction activities.

Construction-related emissions of DPM (using PM_{10} exhaust as a surrogate) associated with the Project were calculated using emissions rates derived from CalEEMod. This assumption is also conservative (since DPM represents a portion of total particulate emissions from exhaust), but is consistent with regulatory guidance.

Annual average emission rates for construction were converted from pounds per day, see Table 5, to grams per second to estimate annual average concentrations. AERMOD was set up to assume a constant emission during an entire construction period. The location of the MEI receptor for cancer risk, non-cancer chronic risk, and annual average $PM_{2.5}$ concentration during the construction phase was located on Champagne Street on the southwest edge of the Chateau Calistoga Mobile Home park.

Once the Project's DPM concentration at the MEI was estimated, OEHHA's Risk Assessment Guidelines were used to calculated the risk (OEHHA, 2015). Detailed air modeling and health risk methodologies and calculations are presented in Appendix E. The exposure duration was considered to be six months with exposure starting in the third trimester. The inclusion of this lifestage applies the most conservative weighting for exposures to account for potential increased sensitivity to carcinogens from late pregnancy through childhood known as an Age Specific Factor. As the MEI receptor was identified as a residence, the OEHHA default breathing rates and fraction at time of residence for all age groups were also included.

Table 6 presents the health risk assessment results for the Project's construction period derived utilizing the OEHHA calculation methodologies.

TABLE 6. PROJECT CONSTRUCTION HEALTH RISK ASSESSMENT RESULTS[A]

Parameters	Cancer Risk[b]	$PM_{2.5}$[c]	Chronic HI[d]
Maximum Exposed Individual Receptor (Resident)	1.1	0.007	0.005
BAAQMD Thresholds of Significance	**10**	**0.3**	**1.0**
Exceeds Threshold?	*No*	*No*	*No*

NOTE: Refer to Appendix E (Health Risk Assessment)

a The results represent the health risks associated with construction of the Project.

b Chances in 1 million.

c Particulate Matter of 2.5 microns or less concentration is expressed as annual average in micrograms per cubic meter ($\mu g/m^3$). This concentration is for exhaust emissions only.

d Hazard Indices (HI) are dimensionless.

Based on the assessment methods described above, the MEI would be exposed to an incremental cancer risk of 1.1 in 1 million, which is below the BAAQMD threshold of 10 in 1 million. The maximum annual average $PM_{2.5}$ exhaust concentration would be up to 0.007 $\mu g/m^3$ at the MEI, which is below the BAAQMD's significance threshold of 0.3 $\mu g/m^3$. TAC exposure from the Project's construction emissions would result in a maximum chronic hazard index of 0.005, which is below the BAAQMD threshold of 1.0. The impact related to exposing sensitive receptors to substantial pollutant concentrations would be less than significant.

III. d) Less than Significant Impact. Similar to the existing Riverside Ponds, the proposed new East and West Ponds would continue to store treated wastewater prior to being discharged to Napa River. The treated wastewater does not generate odors and existing operation of the Riverside Ponds has not been found to be the source of any odor complaints from the public associated with the Dunaweal Wastewater Treatment Plant. Therefore, the Project would not result in the long-term exposure of nearby residences to odors that would adversely affect a substantial number of people. However, during construction, proposed desludging activities at Ponds 2 and 3 may result in the generation of short-term odors at the site due to the handling of organic materials that would be exposed to the atmosphere. The sludge is proposed to be balanced and remain on-site. The odor exposure period for residences near Ponds 2 and 3 would be approximately one week during the sludge handling activities. The closest residence to Ponds 2 and 3 is approximately 700 feet upwind to the southwest. This is the only residence within 1,000 feet of Ponds 2 and 3. Although some residences may be exposed to short-term odors associated with proposed desludging activities, a substantial number of residences would not be exposed, and the associated impact would be less than significant.

In addition, diesel equipment that would be used for Project-related construction activities emit odors associated with combustion of diesel fuel some may consider to be objectionable. However, these emissions would be temporary and intermittent in nature and dispersed throughout the construction site; thus, odor impacts associated with diesel combustion during construction activities would be less than significant.

III. Cumulative) Less than Significant Impact. The geographic scope considered for cumulative impacts to air quality is the SFBAAB. In developing mass emissions thresholds of significance for criteria air pollutants and ozone precursors, air districts consider the emission levels for which a project's individual emissions would be cumulatively considerable. Therefore, if a project would exceed the identified construction or operational significance thresholds, its emissions would be cumulatively considerable, and if a project would not exceed the construction or operational significance thresholds, its emissions would not be cumulatively considerable. As described in Section III. b), Project-related construction emissions would not exceed the applicable thresholds of significance for criteria pollutants and ozone precursors and the associated impact would be less than significant level. Therefore, construction of the Project would result not result in a cumulatively considerable net increase in criteria pollutants or ozone precursors, and the associated cumulative impact would be less-than-significant. Long-term operation and maintenance of the Project would not result in an increase in air pollutant emissions relative to existing conditions (see Section III b). Therefore, there would be no long-term cumulative impact.

With regard to impacts on sensitive receptors, the total criteria pollutant and diesel particulate matter (DPM) emissions from Project on-site construction equipment that would occur at the site would not combine with emissions from other cumulative projects to the extent that a significant cumulative impact would occur because, as identified Table 4, *Cumulative Projects*, there are no cumulative projects within a 1,000 feet of the Project site and no cumulative projects within 1,000 feet of the maximum exposed individual (MEI) receptor discussed under section III. c). Additionally, there are no major highway or roadway sources or permitted stationary sources within 1,000 feet MEI. There are, however, two permitted stationary sources within 1,000 feet of the Project site which sits adjacent to residents. For the purposes of a cumulative analysis, a second or supplementary exposed individual (SEI) receptor that is within the Project radius and nearby permitted stationary sources is presented in Table 7. The supplementary exposed individual receptor is a resident located approximately 650 feet south of the Project site on the southern side of Dunaweal Lane. There are no major roadways nearby the Project site or the supplementary exposed individual receptor.

Based on the assessment methods described above, when combined with the emissions from the other adjacent sources, the SEI receptor would be exposed to a cumulative cancer risk of 28.7 in 1 million, which is below the BAAQMD cumulative threshold of 100 in 1 million. The cumulative annual average $PM_{2.5}$ concentration would be up to 0.062 $\mu g/m^3$ at the SEI receptor, which is below the BAAQMD's significance threshold of 0.8 $\mu g/m^3$. TAC exposure from the combination of the Project's construction emissions and the nearby sources would result in a maximum chronic hazard index of 0.02, which is below the BAAQMD thresholds of 10.0. The cumulative impact related to exposing sensitive receptors to substantial pollutant concentrations would be less than significant.

Odor impacts that would be associated with the Project would be limited to construction-related combustion of diesel fuels and handling of organic sludge materials. The impact would be less than significant because construction activities would be intermittent and spatially dispersed, and associated odors would dissipate quickly. There is no existing adverse cumulative condition related to odors to which the Project could contribute. Given the proximity of cumulative projects to the Project components and the expected duration of sensitive receptor exposure to Project-related diesel fumes and organic sludge odors, projects in the cumulative scenario are not expected to cause diesel-related odors that would intermingle with those of the Project and, thereby, cause a significant cumulative effect. The cumulative impact would be less than significant.

TABLE 7. PROJECT CUMULATIVE HEALTH RISK ASSESSMENT RESULTS[a]

Parameters	**Cancer Risk**[b]	**$PM_{2.5}$**[c]	**Chronic HI**[d]
Supplementary Exposed Individual Receptor (Resident)			
Project Impact	0.77	0.005	0.003
Sterling Vineyards (Plant No. 17597)	17.1	0.034	0.007
City of Calistoga (Plant No. 3471)	10.8	0.023	0.010
Total Cumulative Risk	**28.7**	**0.062**	**0.020**
BAAQMD Thresholds of Significance	**100**	**0.8**	**10.0**
Exceeds Threshold?	*No*	*No*	*No*

NOTE: Refer to Appendix E (Health Risk Assessment)

a The results represent the health risks associated with construction of the Project and nearby cumulative sources.

b Chances in 1 million.

c Particulate Matter of 2.5 microns or less concentration is expressed as annual average in micrograms per cubic meter ($\mu g/m^3$).

d Hazard Indices (HI) are dimensionless.

References

Bay Area Air Quality Management District (BAAQMD), 2017a. Air Quality Standards and Attainment Status, available at http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status, last updated January 5, 2017.

BAAQMD, 2017b. Spare the Air: Cool the Climate – Final 2017 Clean Air Plan, adopted April 19.

Office of Environmental Health Hazard assessment (OEHHA), 2015. Air Toxics Hotspot Program, Risk Assessment Guidelines - Guidance Manual for Preparation of Health Risk Assessments, February.

IV. BIOLOGICAL RESOURCES

Would the Project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	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 identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Methods and Approach

Biological resources at the Project site and surrounding Project area were identified by Environmental Science Associates (ESA) biologists through a review of pertinent literature, database queries, and field reconnaissance. The primary sources of data referenced for this study included the following:

- California Natural Diversity Database (CNDDB) (CDFW, 2019)
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS, 2019)
- Calistoga Riverside Pond Relocation Project Habitat Assessment (ESA, 2019a) (Appendix B)
- Calistoga Riverside Pond Relocation Project Wetland Delineation (ESA, 2019b) (Appendix C)

Biological resources on the Project site were reviewed by an ESA biologist during a habitat assessment survey conducted on March 21, 2019. During the survey, general habitat conditions were noted and species observations were recorded. A wetland delineation was also conducted in April 2019. The findings of the survey, literature review, and database queries were used to assess the potential for special-status species presence at the Project site and the surrounding Project area (see Appendix A, for the table of special-status species potential to occur, and Appendix B, for the site habitat assessment, and Appendix C for the site delineation report). **Figure 6** shows the CNDDB records of special-status species in the vicinity of the Project site.

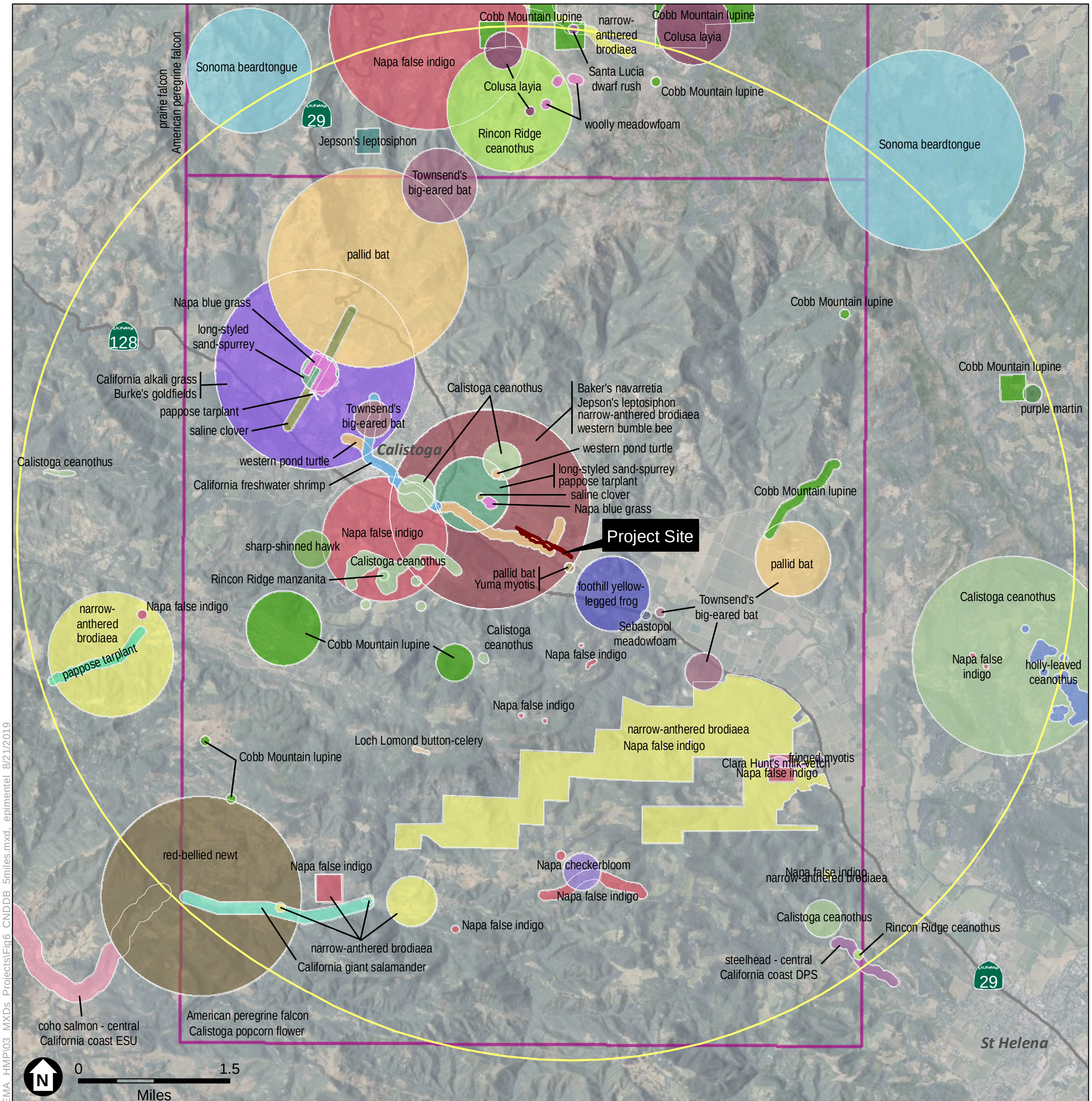
Environmental Setting

The property is located on the east/northeast side of the Napa River. The Napa River watershed covers an area of approximately 426 square miles and is contained on three sides by mountains to the north, west, and east. The watershed is typical of the California coastal range with northwest-southeast trending topography. The Napa River runs through the center of the watershed on the valley floor. draining numerous tributaries on its 55-mile course from the headwaters of Mt. St. Helena in the Mayacamas Mountain range to San Pablo Bay.

Vegetation Communities and Habitat Types

Oak woodland. Oak woodland lines the northern portion of the study area. Dominant overstory vegetation includes valley oak (*Quercus lobata*) and coast live oak (*Quercus agrifolia*), with a row of ornamental fan palms (*Washingtonia filifera*). Dominant understory vegetation includes ripgut grass (*Bromus diandrus*), tall sock-destroyer (*Torilis arvensis*), and radish (*Raphanus* sp.).

Western scrub jay (*Aphelocoma californica*), western gray squirrel (*Sciurus griseus*). Chestnut-backed chickadee (Poecile rufescens), oak titmouse (*Baeolophus inornatus*), black phoebe (*Sayornis nigricans*), dark-eyed junco (*Junco hyemalis*), northern flicker (*Colaptes auratus*), Lawrence's goldfinch (*Carduelis lawrencei*), and western bluebird (*Sialia mexicana*) were observed foraging within the oak woodland.



Project Site	Colusa layia	Sonoma beardtongue	pappose tarplant
5-mile Search Area	Jepson's leptosiphon	Townsend's big-eared bat	purple martin
Baker's navarretia	Loch Lomond button-celery	Yuma myotis	red-bellied newt
Burke's goldfields	Napa blue grass	coho salmon - central California coast ESU	saline clover
California alkali grass	Napa checkerbloom	foothill yellow-legged frog	sharp-shinned hawk
California freshwater shrimp	Napa false indigo	fringed myotis	steelhead - central California coast DPS
California giant salamander	Rincon Ridge ceanothus	holly-leaved ceanothus	western bumble bee
Calistoga ceanothus	Rincon Ridge manzanita	long-styled sand-spurrey	western pond turtle
Clara Hunt's milk-vetch	Santa Lucia dwarf rush	narrow-anthered brodiaea	woolly meadowfoam
Cobb Mountain lupine	Sebastopol meadowfoam	pallid bat	

SOURCE: USDA, 2016; CNDDB, 2019; ESA, 2019

Calistoga Riverside Ponds

Figure 6
CNDDB Occurrences within 5 miles of the Project Site

ESA

Riparian woodland. Riparian woodland borders the Napa River along the southern portion of the study area and borders Simmons Creek through the central portion of the study area. Dominant overstory vegetation includes valley oak, coast live oak, western sycamore (*Platanus racemosa*), and willow (*Salix* sp.) with blue elderberry (*Sambucus nigra* ssp. *caerulea*), citrus (*Prunus* sp.), and birch (*Betula* sp.) interspersed throughout. Dominant understory vegetation includes Himalayan blackberry (*Rubus armeniacus*), snowberry (*Symphoricarpos* sp.), rose (*Rosa* sp.), western poison oak (*Toxicodendron diversilobum*), poison hemlock (*Conium maculatum*), California buckeye (*Aesculus californica*), tall sock-destroyer, ripgut grass, and greater periwinkle (*Vinca major*).

An active red shouldered hawk (*Buteo lineatus*) nest was observed within the riparian woodland to the west of the Napa River. Belted kingfisher (*Megaceryle alcyon*), acorn woodpecker (*Melanerpes formicivorus*), California quail (Callipepla californica), and marsh wren (*Cistothorus palustris*) were observed foraging within the riparian woodland. Several inactive stick nests were observed within the riparian woodland.

Disturbed/Developed. Disturbed areas include graded access roads and road shoulders around the storage ponds. The vegetation along the northern access road and road shoulders were unidentifiable since the area appeared to have been burned from fire or herbicide application. Vegetation within the remainder of the disturbed areas is largely lacking aside from ripgut grass, tall sock-destroyer, and common groundsel (*Senecio vulgaris*). Disturbed areas may host commonly occurring wildlife such as California vole (*Microtus californicus*) and western fence lizard (*Sceloporus occidentalis*).

Developed land occurs along the northern portion of the study area and includes paved roads and road shoulders. Minimal vegetation occurs along these areas. Developed habitat does not provide suitable habitat for most species, although, buildings and bridges may be used by bat species for day or night roosts and by birds for nesting.

Storage Pond. Four manmade storage ponds occur within the study area, comprising 3.9 acres. The storage ponds are used to store and release treated effluent to the Napa River via direct discharge and spreading fields. The storage ponds contained ponded water at the time of the March 2019 surveys. While the majority of the storage ponds lack vegetation within or along the banks, emergent vegetation consisting of cattail (*Typha* sp.), water starwort (*Callitriche heterophylla*), and watercress (*Nasturtium officinale*) occur in some areas of the storage ponds.

Western pond turtle (*Emys marmorata*), red-eared slider (*Trachemys scripta*), bufflehead (*Bucephala albeola*), American bullfrog (*Lithobates catesbeianus*), mallard (Anas platyrhynchos), great blue heron (*Ardea herodias*), mosquitofish (*Gambusia affinis*), and great egret (*Ardea alba*) were observed within the storage ponds.

Manmade storage ponds are excluded by rule from jurisdiction under the Clean Water Act (ESA, 2019b).

Wetlands and Other Waters

Drainages. Perennial, intermittent, and ephemeral drainages occur within the study area. These include the Napa River (perennial), Simmons Creek (intermittent), Oat Hill Mine Ditch (intermittent), and a manmade ephemeral drainage ditch. Dominant vegetation surrounding the perennial and intermittent drainages includes those described under the riparian woodland habitat. Dominant vegetation surrounding the ephemeral drainage ditch includes Himalayan blackberry and coast live oak. One river lamprey (*Lampetra ayresi*) was observed swimming in the Napa River during the March 2019 biological surveys.

Regulatory Framework

Federal, state, and local regulations potentially applicable to the Proposed Project relative to biological resource impacts are presented in Appendix B.

Special-Status Species

Special-status species are those plants and animals that, because of their recognized rarity or vulnerability to various causes of habitat loss or population decline, are recognized by federal, state, or other agencies. Some of these species receive specific protection that is defined by federal or state endangered species legislation. Others have been designated as "sensitive" on the basis of adopted policies and expertise of state resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies such as counties, cities, and special districts to meet local conservation objectives. Sources and definitions of listed and special-status species are provided in the site Habitat Assessment (Appendix B, ESA 2019a).

A total of 16 special-status species were identified as having moderate or high potential to occur on the Project site (**Table 8**). The full list of species with potential to occur is provided as Appendix A. The potential for each species to occur at the Project site and adjacent Project area was assessed based previous biological studies, a reconnaissance survey on March 21, 2019, an analysis of existing literature and database queries described above, and species-specific habitat requirements (see ESA, 2019a). Only species with a moderate or high potential for occurrence are discussed further in this section. Species that are absent, not expected to occur, or have a low potential to occur within the Project site or Project area due to lack of suitable habitat or range were eliminated from the discussion.

Special-Status Plant Species

Of the 64 special-status species identified in Table A-1 (Appendix A), 5 were determined to have moderate or high potential to occur on the Project site and in the Project area. These special-status plants are associated with riparian areas, grasslands and oak woodlands. Special-status plants identified by CNDDB or CNPS database searches with low or no potential to occur within the Project area are not discussed further.

Special-Status Wildlife

Of the 25 special-status species identified in Table A-1 (Appendix A), 12 were determined to have moderate or high potential to occur on the Project site and in the Project area. These special-status wildlife species are associated with riparian and riverine areas, grasslands and oak woodlands. Species descriptions for these species are found in the site Habitat Assessment report (Appendix B, ESA 2019a). Special-status wildlife identified by CNDDB which have low or no potential to occur within the Project area are not discussed further.

In addition to the special-status species listed above, a number of nesting migratory birds have potential to build nests and rear young onsite.

TABLE 8. SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence within the Study Area
Plants				
Gratiola heterosepala	Boggs Lake hedge-hyssop	--/SE/1B.2	Annual herb found on clay substrate in marshes and swamps (lake margins) and vernal pools from 33 to 7,792 feet (10 to 2,375 meters). Blooms April through August.	Moderate. The storage ponds provide suitable habitat for this species.
Layia septentrionalis	Colusa layia	--/--/1B.2	Annual herb found in chaparral, cismontane woodland, and valley and foothill grassland, which is occasionally on sandy, serpentine substrate, from 328 to 3,592 feet (100 to 1,095 meters). Blooms April through May.	Moderate. The oak woodland provides suitable habitat for this species.
Microseris paludosa	Marsh microseris	--/--/1B.2	Perennial herb found in closed-cone coniferous forest, cismontane woodland, coastal scrub, and valley and foothill grasslands from 16 to 1,165 feet (5 to 355 meters). Blooms April through June, occasionally July.	Moderate. The oak woodland provides suitable habitat for this species.
Navarretia leucocephala ssp. bakeri	Baker’s navarretia	--/--/1B.1	Annual herb found in mesic areas of cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, and vernal pools from 16 to 5,709 feet (5 to 1,740 meters). Blooms April through July.	Moderate. The oak woodland within the study area provides suitable habitat for this species.
Trichostema ruygtii	Napa bluecurls	--/--/1B.2	Annual herb found in chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland, and vernal pools from 98 to 2,231 feet (30 to 680 meters). Blooms June through October.	Moderate. The oak woodland within the study area provides suitable habitat for this species.
Invertebrates				
Syncaris pacifica	California freshwater shrimp	FE/SE/--	Inhabits small, perennial coastal streams with low gradients below381 feet (116 meters). Found in tributary streams in the lower Russian River drainage that drain to the Pacific Ocean, coastal streams that drain to the Pacific Ocean, streams that drain to Tomales Bay, and streams that drain to San Pablo Bay.	High. The perennial drainage (Napa River) provides habitat for this species.

TABLE 8. SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence within the Study Area
Fish				
Oncorhynchus mykiss	Steelhead – California Central Coast DPS	FT, CH/--/--	Requires cold, freshwater streams with suitable gravel for spawning. Rears in rivers and tributaries to the San Francisco Bay.	High. The study area provides habitat for this species, and it has been documented within the Napa River watershed and tributary streams. The Napa River is designated Critical Habitat for this species.
Entosphenus tridentatus	Pacific lamprey	--/CSC/--	Adult lamprey live in the ocean before migrating and holding over in freshwater streams; upon spawning, adults die and as ammocoetes live in the silt/sand substrate for 5 to 7 years, before transforming to juveniles and migrating to the ocean.	High. The perennial drainage (Napa River) provides habitat for this species.
Amphibians				
Dicamptodon ensatus	California giant salamander	--/CSC/--	Occurs in wet coastal forests in clear, cold permanent and semi-permanent streams and seepages. Occurs from 0 to 3,002 feet (0 to 915 meters). The range of this species occurs from the coastline above San Francisco Bay inland to Clear Lake.	Moderate. The perennial and intermittent drainages within the study area provide habitat for this species.
Rana boylii	Foothill yellow-legged frog	--/SC,CSC/--	Inhabits partially-shaded, shallow perennial and intermittent streams and riffles with a rocky substrate in a variety of habitats. Need at least some cobble-sized substrate for egg-laying. Rarely encountered far from permanent water sources.	Moderate. The perennial and intermittent drainages within the study area provide habitat for this species.
Rana draytonii	California red-legged frog	FT/CSC/--	Found in permanent and temporary pools of streams, marshes, and ponds with dense grassy and/or shrubby vegetation from 0 to 4,921 feet (0 to 1,500 meters). Northern habitat range begins from Sonoma County and Napa County south to Los Angeles County, occurring on the western side of the Sierra Nevada Mountains.	Moderate. The perennial and intermittent drainages within the study area provide habitat for this species.

TABLE 8. SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence within the Study Area
Reptiles				
Emys marmorata	Western pond turtle	--/CSC/--	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6,000 feet (1,829 feet). Need basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 kilometers from water for egg-laying.	Present. This species was observed within the storage ponds during the biological surveys. The storage ponds provide aquatic habitat and the ruderal/disturbed areas surrounding the ponds provide upland habitat.
Birds				
Buteo swainsoni	Swainson's hawk	--/ST/--	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, alfalfa, or grain fields supporting rodent populations. Northern habitat summer range in California begins in central Tehama south to Kern County. Predominant breeding habitat is located in the Central Valley.	Moderate. The trees within the study area provide nesting habitat. While no foraging habitat occurs within the study area, the vineyards in the vicinity of the study area provide suitable foraging areas.
Elanus leucurus	White-tailed kite	--/FP/--	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	High. The trees within and in the vicinity of the study area provide nesting habitat for this species.
Progne subis	Purple martin	--/CSC/--	Inhabits woodlands and low elevation coniferous forest of Douglas-fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*), and Monterey pine (*Pinus radiata*). Nests primarily in old woodpecker cavities, also in human-made structures. Nest often located in tall, isolated tree/ snag.	Moderate. The study area does provide nesting habitat for this species. There were numerous snags with woodpecker holes present.

TABLE 8. SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence within the Study Area
Mammals				
Antrozous pallidus	Pallid bat	--/CSC/--	Inhabits oak woodland, savannah, and riparian habitats. Roosts in crevices and hollows in trees, rocks, cliffs, bridges, and buildings.	High. The trees within the oak woodland and riparian woodland and the developed areas associated with the bridge provide suitable roosting habitat for this species.
Corynorhinus townsendii	Townsend's big-eared bat	--/CSC/--	Throughout California in a wide variety of habitats. Most common in mesic sites. Maternity roosts are found in caves, tunnels, mines, or other human-made structures. May use separate sites for night, day, hibernation, or maternity roosts.	High. The developed areas associated with the bridge provide suitable day and night roosting habitat for this species.

KEY:

Federal: (USFWS)
FE = Listed as Endangered by the Federal Government
FT = Listed as Threatened by the Federal Government
FC = Candidate for listing by the Federal Government
(PD) = Proposed for Delisting

State: (CDFW)
SE = Listed as Endangered by the State of California
ST = Listed as Threatened by the State of California
SR = Listed as Rare by the State of California (plants only)
SC = Candidate for listing by the State of California
CSC = California Species of Special Concern
FP = CDFW Fully Protected Species

California Rare Plant Rank (CRPR):
Rank 1A = Plants presumed extinct in California
Rank 1B = Plants rare, threatened, or endangered in California and elsewhere
Rank 2 = Plants rare, threatened, or endangered in California but more common elsewhere

IV. a) Less than Significant with Mitigation Incorporation.

Special-status Plants and Wildlife

Project activities including vegetation removal, tree trimming, and grading could result in harm to special-status wildlife including frogs, western pond turtle, and California giant salamander, if present. Project activities could also damage or destroy individual rare plants, if present on site. Human and vehicle traffic could trample or kill individuals of special-status wildlife or plants, or could disturb wildlife and reduce fitness by interfering with feeding or reproduction. Disturbance to special-status plants or wildlife would be a significant impact. Implementation of **Mitigation**

Measures BIO-1 and **BIO-2** would reduce potential impacts on special-status plants and wildlife to a less-than-significant level by requiring rare plant surveys and avoidance, pre-construction surveys, and exclusion fencing, and by seasonally avoiding work in channels to protect special-status fish (e.g., steelhead and Pacific lamprey) and California freshwater shrimp.

Mitigation Measure BIO-1: Protection of Rare Plants.

- *A qualified biologist shall conduct a pre-construction survey for the five special-status plant species with the potential to occur within the area of disturbance (see Table 5 above). The survey shall follow the procedures outlined in the CDFW (2018) rare plant survey protocol.*

- *If special-status plants are found, the City shall coordinate with USFWS and CDFW, as appropriate, to provide preservation and avoidance measures commensurate with the standards provided in applicable USFWS and CDFW protocols for the affected species. The preservation and avoidance measures shall include, at a minimum, appropriate buffer areas clearly marked during project activities (e.g., greater than 20 feet), monitoring by a qualified plant biologist, and development and implementation of a replanting plan, if necessary.*

Mitigation Measure BIO-2: Protection of Special-status Wildlife.

- *In-water construction work with the potential to result in short-term impacts to sensitive aquatic species, including California freshwater shrimp and steelhead, such as project activities that are expected to create turbidity or disturb the streambed, shall be conducted only from June 15 through October 15.*

- *All construction personnel shall attend an environmental education program delivered by a qualified biologist. The training shall include an explanation as how to best avoid the accidental take of California freshwater shrimp, steelhead, Pacific lamprey, California red-legged frog, foothill yellow-legged frog, California giant salamander, western pond turtle, nesting birds and bats. The training session shall be mandatory for contractors and all construction personnel. The field meeting shall include topics on species identification, descriptions, habitat requirements and required minimization and avoidance measures.*

- *The contractor shall provide closed garbage containers for the disposal of all trash items. Work sites shall be cleaned of litter daily. No pets, excluding service animals, shall be allowed in construction areas. Nighttime lighting, if used, shall be minimized and directed downward, and construction hours shall be limited to 6 am to 6 pm Monday through Friday.*

- *Prior to commencing work, a qualified biologist shall survey the entire construction footprint for special-status amphibians and reptiles. At the beginning of each workday that includes initial ground disturbance within 150 feet of aquatic habitat, including grading, excavation, and vegetation-removal activities, a qualified biologist shall conduct onsite monitoring for the presence of special-status species in the area where ground disturbance or vegetation removal shall occur.*

- *Before ground-disturbing activity occurs in habitat areas, the contractor shall install temporary exclusion/silt barrier fencing around the perimeter of the construction site.*

Fencing shall be installed to the extent necessary to exclude special-status amphibians and reptiles from the construction area, and to minimize impacts to natural habitat. Fencing material shall provide for wildlife exclusion as well as maintenance of water quality. Construction personnel and construction activity shall avoid areas outside the fencing. The need for and exact location of the fencing shall be determined by a qualified biologist, with the goal of protecting sensitive biological habitat and water quality. The fencing shall be checked weekly and maintained until construction is complete at individual work sites. The fence shall contain exit funnels to allow any wildlife within the construction area to leave without human intervention while preventing entry into the construction zone. Exit funnels shall be placed at ground level no more than 100 feet apart along the fence, or as modified by a qualified biologist or as directed by resource agencies with primary jurisdiction over special-status wildlife species.

- *All excavated or deep-walled holes or trenches greater than one-foot deep shall be covered at the end of each workday using plywood, steel plates, or similar materials, or escape ramps shall be constructed to allow animals to exit. Before such holes are filled, they shall be thoroughly inspected for trapped animals.*
- *If a special-status species is present and identified within the work area during construction, the biologist shall be notified, work shall cease in the vicinity of the animal, and the animal shall be allowed to relocate of its own volition.*

Nesting Birds and Roosting Bats

Project activities involving tree or vegetation removal and grading could also cause disturbance to nesting birds and roosting bats on or in the vicinity of the Project site. Migratory birds, including special-status species, could nest in shrubs or trees within the Project site. Injury, death, nest disturbance or abandonment due to Project activities would be a significant impact. Implementation of **Mitigation Measure BIO-3** would reduce potential impacts on nesting birds to a less-than-significant level by requiring seasonal avoidance or pre-construction surveys, and implementing avoidance measures if active nests are located. Pallid bats and Townsend’s big-eared bats (both California Species of Special Concern) could roost in tree cavities in the mature trees within the Project site. Direct mortality of an individual or disturbance to maternity colonies of special-status bats would be a significant impact. Implementation of **Mitigation Measure BIO-4** would reduce potential impacts on special-status bats to a less-than-significant level by requiring pre-construction surveys, and implementing avoidance measures if potential roosting habitat or active roosts are located.

Mitigation Measure BIO-3: Nesting Bird Protection.

Nesting birds and their nests shall be protected during construction by use of the following measures:

- *Removal of riparian vegetation and trimming or removal of trees shall occur outside the bird nesting season (February 1 to August 30), to the extent feasible.*
- *If construction activities during bird nesting season cannot be fully avoided, a qualified wildlife biologist shall conduct pre-construction nesting surveys within 7 days prior to the start of such activities or after any construction breaks of 14 days or more. Surveys shall be performed for the Project site and suitable habitat within 250 feet of the Project site in*

order to locate any active passerine (perching bird) nests and within 500 feet of the Project site to locate any active raptor (birds of prey) nests.

- *If active nests are located during the pre-construction bird nesting surveys, the wildlife biologist shall evaluate if the schedule of construction activities could affect the active nests and the following measures shall be implemented based on their determination:*
  - *If construction is not likely to affect the active nest, it may proceed without restriction; however, a biologist shall regularly monitor the nest to confirm there is no adverse effect and may revise their determination at any time during the nesting season. In this case, the following measure would apply:*
  - *If construction may affect the active nest, the biologist shall establish a no-disturbance buffer. Typically, these buffer distances are between 100 feet and 250 feet for passerines and between 300 feet and 500 feet for raptors. These distances may be adjusted depending on the level of surrounding ambient activity (e.g., if the Project site is adjacent to a road or community development) or if an obstruction, such as a tree or building, obscures line-of-sight between the nest and construction. For bird species that are regulated as federal and/or State sensitive species (i.e., fully protected, endangered, threatened, species of special concern), a City representative, supported by the wildlife biologist, shall confer with the USFWS and/or CDFW regarding modifying nest buffers and allowable construction within the buffer.*
- *To be evaluated on a case-by-case basis, birds that begin nesting within the Project site and survey buffers amid construction activities shall be assumed to be habituated to construction-related or similar noise and disturbance levels and minimum work exclusion zones of 25 feet shall be established around active nests in these cases.*

Mitigation Measure BIO-4: Roosting Special-Status Bat Protection.

A qualified biologist shall conduct a pre-construction survey for special-status bats in advance of tree trimming to characterize potential bat habitat and identify active roost sites. Should potential roosting habitat or active bat roosts be found in trees to be disturbed, the following measures shall be implemented:

- *Trimming or removal of trees and disturbance to bridge structures shall occur when bats are active, approximately between the periods of March 1 to April 15 and August 15 to October 15; outside of bat maternity roosting season (approximately April 15 to August 15) and outside of months of winter torpor (approximately October 15 to February 28), to the extent feasible.*
- *If trimming or removal of trees and disturbance to bridge structures during the periods when bats are active is not feasible and bat roosts being used for maternity or hibernation purposes are found on or in the immediate vicinity of the Project site where these activities are planned, a no-disturbance buffer as determined by a qualified biologist shall be established around these roost sites until they are determined to be no longer in-use as maternity or hibernation roosts.*

- *Buffer distances may be adjusted around roosts depending on the level of surrounding ambient activity (i.e., if the Project site is adjacent to a road) and if an obstruction, such as a building structure, is within line-of-sight between the roost and construction. If pallid bat or any other State-sensitive species is detected, a City representative, supported by the wildlife biologist, shall confer with CDFW regarding modifying roost buffers and allowable construction within the buffer, and modifying construction around maternity and hibernation roosts.*

- *The qualified biologist shall be present during tree trimming if bat roosts are present. Trees with roosts shall be disturbed only when no rain is occurring or is forecast to occur within the next 3 days and when daytime temperatures are at least 50°F. Branches and limbs not containing cavities or fissures in which bats could roost shall be cut only using chainsaws. Branches or limbs containing roost sites shall be trimmed the following day, under the supervision of the qualified biologist, also using chainsaws.*

- *Bat roosts that become established during remediation shall be presumed to be unaffected, and no buffer would be necessary.*

Special-status Aquatic Species

Implementation of the Project would require construction and maintenance work adjacent to and within the active creek channel. **Mitigation Measure BIO-2** will ensure that Project activities including vegetation removal, tree trimming, and grading that occur adjacent to the stream corridor will have a less than significant effect on the active channel and that seasonal avoidance of work protects sensitive aquatic species. However, additional mitigation is required to ensure in-water construction activities, such as the realignment of Simmons Creek, would not result in significant impacts on special-status fish species or California freshwater shrimp due to creek flow diversions. **Mitigation Measure BIO-5** will ensure that impacts from construction will occur at less than significant levels by providing for relocation of fish as needed.

Mitigation Measure BIO-5: Relocation of Special-Status Fish and California Freshwater Shrimp.

If necessary and as specified in and authorized by regulatory permits, fish and California freshwater shrimp shall be captured and relocated to avoid injury and mortality and minimize disturbance during construction. The NMFS would be the point of contact for any fish relocation activities and results; and the USFWS and CDFW would be the lead for California freshwater shrimp. Handling of special-status fish and shrimp could result in increased stress or mortality if conducted with insufficient care. The following relocation plan contains sufficient detail related to handling protocol to minimize impacts to these special-status species. The process shall follow these guidelines:

a. The federal lead agency shall consult with NMFS and USFWS (under Section 7 of the federal Endangered Species Act) and CDFW for state listed species to confirm preservation and avoidance measures commensurate with the agency standards for the affected species.

b. Prior to and during the initiation of construction activities, a qualified, regulatory agency -approved biologist shall be present during installation and removal of creek diversions.

c. *For sites that require flow diversion and exclusion, the work area will be blocked by placing fine-meshed nets or screens above and below the work area to prevent state or federally listed species from re-entering the work area. To minimize entanglement, mesh diameter will not exceed 1/8 inch. The bottom edge of the net or screen will be secured to the channel bed to prevent fish from passing under the screen and avoid scour by flow. Exclusion screening will be placed in low velocity areas to minimize impingement. Screens will be checked twice daily (at the beginning and end of each work day) and cleaned of debris to permit free flow of water. Block nets will remain in place in order to prevent aquatic species from re-entering the project area following relocation.*

d. *Before removal and relocation begins, a qualified biologist will identify the most appropriate release location(s). In general, release locations should have water temperatures similar to (<3.6°F difference) the capture location and offer ample habitat (e.g., depth, velocity, cover, connectivity) for released fish and/or shrimp, and should be selected to minimize the likelihood of reentering the work area or becoming impinged on exclusion nets or screens.*

e. *The means of capture will depend on the nature of the work site, and will be selected by a qualified biologist. Complex stream habitat may require the use of electrofishing equipment (e.g., Smith-root LR-24 backpack electrofisher) to capture fish, whereas in outlet pools, California freshwater shrimp may be captured by pumping down the pool and then seining or dipnetting. Electrofishing will be used only as a last resort; if electrofishing is necessary, it will be conducted only by properly trained personnel following the NMFS guidelines dated June 2000 (NMFS, 2000).*

f. *When feasible, initial relocation efforts will be performed several days prior to the scheduled start of construction. To the extent feasible, flow diversions and species relocation will be performed during morning periods. The qualified biologist will survey the flow exclosures throughout the diversion effort to verify that no state or federally listed fish or aquatic invertebrates are present. Afternoon pumping activities should generally not occur and pumping should be limited to days when ambient air temperatures are not expected to be high. Air and water temperatures will be measured periodically, and flow diversion and species relocation activities will be suspended if temperatures exceed the limits allowed by NMFS guidelines (e.g., electrofishing should not occur when water temperatures are above 18°C) (NMFS, 2000).*

g. *Handling of fish and California freshwater shrimp will be minimized. When fish handling is necessary, personnel will wet hands or nets before touching them.*

h. *Prior to translocation, any state or federally listed species that are collected during surveys will be temporarily held in cool, aerated, shaded water using a five-gallon container with a lid. Overcrowding in containers will be avoided; at least two containers will be used and no more than 25 fish will be kept in each bucket. Aeration will be provided with a battery-powered external bubbler. Fish will be protected from jostling and noise, and will not be removed from the container until the time of release. A thermometer will be placed in each holding container and partial water changes will be conducted as necessary to maintain a stable water temperature. Special-status fish and shrimp will not be held more than 30* *minutes. If water temperature reaches or exceeds NMFS limits, the fish and other aquatic species will be released and relocation operations will cease.*

i. *If state or federally listed fish or shrimp are abundant, capture will cease periodically to allow release and minimize the time spent in holding containers.*

j. *Fish will not be anesthetized or measured. However, they will be visually identified to species level, and year classes will be estimated and recorded.*

k. *Reports on fish relocation activities will be submitted to NMFS in a timely fashion, as will reports on California freshwater shrimp to USFWS and CDFW.*

l. *If mortality during relocation exceeds three percent (or as determined by NMFS), relocation will cease and NMFS will be contacted immediately or as soon as feasible.*

IV. b) Less than Significant with Mitigation Incorporation. Vegetation communities in the Project are shown on **Figure 7**. Oak woodland and riparian woodland are sensitive natural communities under CEQA that occur within the project area. Construction of ponds, access routes and other Project elements would occur within oak woodland and riparian woodland habitat.

Grading the existing ephemeral drainage ditch to convey stormwater into Simmons Creek would temporarily impact 0.04 acre of the ephemeral drainage ditch within the oak woodland understory. The majority of the grading would occur within the oak woodland understory, although one oak tree would be removed. As described in the project description, the area would be revegetated within native vegetation following construction.

Grading for the riverside pond relocation, stabilizing the Oat Hill Mine Ditch channel bank, realigning Simmons Creek, and installation of the outfall structure in the Napa River would occur within riparian woodland and include the removal of approximately 0.9 acre existing riparian woodland vegetation. These areas would be revegetated within native riparian vegetation. Temporary impacts to the ephemeral drainage, Oat Hill Mine Ditch, Simmons Creek, and the Napa River are considered significant unless they are monitored post-construction to ensure that the sites are restored. Implementation of **Mitigation Measure BIO-6** would reduce this impact to a less-than-significant level, by ensuring the successful restoration of temporarily impacted sensitive natural communities.

Approximately 0.1 acre of the riparian woodland within the construction footprint would be permanently lost from the creation of the new East and West ponds and new access road around the ponds. This permanent loss is a significant impact. However, the project includes regrading, bank stabilization, and native riparian revegetation of approximately 0.7 acre of existing riparian woodland along Oat Hill Mine Ditch, Napa River, and Simmons Creek. When compared to the permanently impacted riparian area, the enhanced riparian woodland would equate to an enhanced-to-impact ratio of 7:1. If the enhanced areas of the project (i.e., the enhanced riparian corridor) do not adequately provide restored floodplain habitat to offset the permanent habitat loss due to construction of the East and West ponds, a significant impact would result. Implementation of **Mitigation Measure BIO-6** would reduce this impact to a less than significant level by ensuring that the loss of permanently impacted riparian habitat is offset by riparian habitat enhancements.

Potential indirect impacts to sensitive natural communities would include increased spread of invasive non-native plant species. These impacts would be significant. Implementation of **Mitigation Measure BIO-6** would reduce this impacts to a less-than-significant level, by ensuring that equipment is weed-free.

Mitigation Measure BIO-6: Protection for and Restoration of Sensitive Natural Communities

- *No construction activities, parking, or staging shall occur outside of designated areas.*
- *During construction, as much understory vegetation and as many trees as possible will be retained. All trees to remain during construction within the grading area will be flagged for avoidance, and trimmed if necessary to ensure their trunks and/or limbs to not get disturbed during construction.*
- *All vehicles and equipment entering each Project site shall be clean of noxious weeds and pathogens. All construction equipment shall be washed thoroughly to remove all dirt, plant, and other foreign material prior to entering the Project sites.*
- *Certified weed-free permanent and temporary erosion control measures shall be implemented to minimize erosion and sedimentation during and after construction.*
- *The City shall prepare a Habitat Restoration and Monitoring Plan (HRMP) for restoration of sensitive natural communities and jurisdictional waters following construction activities. This plan shall include protocols for restoring these areas, replanting of vegetation removed prior to or during construction, success criteria, and management and monitoring of the plants and channel banks to ensure site success.*
- *The HRMP shall describe a five-year riparian monitoring program that assesses the survival and health of on-site plantings. Appropriate performance standards may include, but are not limited to: a 75 percent survival rate of restoration plantings; absence of invasive plant species in restored areas; and self-sustaining conditions (i.e., plant viability without supplemental water) at the end of five years and shall be submitted to the appropriate regulatory agencies for review and approval. The plan shall contain vegetation management protocols, protocols for monitoring replanting success, and an adaptive management plan if success criteria are not being met. The plan shall include interim thresholds for planting success and alternative management approaches, such as weed control or additional replanting, to undertake if thresholds are not met.*
- *The plan shall specify that areas impacted from construction-related activity shall be replanted or reseeded with native trees, shrubs, wetland vegetation, and herbaceous species under guidance from a qualified biologist.*

IV. c) Less than Significant with Mitigation Incorporation. The aquatic resources delineation conducted for the Project site in 2019 (Appendix C) identified approximately 0.88 acre of potentially jurisdictional aquatic resources within the 14.26-acre area studied, in addition to approximately 3.72 acres of storage ponds which are not jurisdictional. Potentially jurisdictional waters included approximately 0.5 acres of perennial drainages (the Napa River), approximately

0.32 acre of intermittent drainage (Simmons Creek and Oat Hill Mine Ditch), and approximately 0.04 acre of ephemeral drainage ditch. No potentially jurisdictional wetlands were identified within the project site. Impacts to riparian areas, which may be considered waters of the State, are described above in Impact IV. b. above.

Four project elements would occur within waters of the U.S.: stabilization of the Oat Hill Mine Ditch channel bank along the riverside ponds, realignment of Simmons Creek to protect the existing WWTP headworks structure, grading the existing ephemeral drainage ditch to convey stormwater into Simmons Creek, and installation of a new outfall structure within the Napa River at the base of the existing 24-inch HDPE outfall pipe. The impact areas are shown on **Figure 8.**

Bank stabilization of the Oat Hill Mine Ditch channel bank would temporarily impact 0.07 acre of waters of the U.S. within Oat Hill Mine Ditch. The temporary impacts would be from installation of temporary cofferdams and dewatering during construction, grading, and installation of the planted rock toe slope. Additionally, the channel above the rock toe slope would be laid back, resulting in a wider channel and net gain in waters of the U.S./state at this location. As described in the project description, all disturbed areas would be revegetated with native plants following construction.

Realignment of Simmons Creek to protect the existing WWTP headworks structure would temporarily impact 0.05 acre of waters of the U.S. within Simmons Creek. Temporary impacts would be from installation of temporary cofferdams and dewatering during construction, grading, and installation of biotechnical slope stabilization features and native vegetation on the bank. The new creek channel would be wider than existing conditions, resulting in an increase in waters of the U.S./state.

Approximately 0.04 acre of the manmade ephemeral drainage ditch would be regraded and sloped to improve drainage and connectivity to Simmons Creek. A portion of the ditch would be partially filled and graded and a portion of the ditch would just be regraded. Following construction, the drainage ditch would be revegetated with native vegetation and it is assumed that, although the drainage would be partially regraded, it would be the same size as the existing ditch, and there would be no permanent loss of waters of the U.S./state.

Temporary impacts from construction of these features may include increased erosion or sediment deposition into waterways from ground disturbance. These potential effects would be less than significant with compliance with City of Calistoga's Stormwater Protection Ordinance (City of Calistoga, 2015) and implementation of BMPs identified in the project Stormwater Pollution Prevention Plan (SWPPP). Further, as stated in the project description, all disturbed areas would be revegetated with native plants following construction completion. Impacts to the Oat Hill Mine Ditch, Simmons Creek, and the ephemeral drainage are considered significant unless they are monitored post-construction to ensure that the sites are restored. Implementation of Mitigation Measure BIO-6 would reduce this impact to a less-than-significant level, by ensuring the successful restoration of temporarily impacted waters of the U.S./state.

Construction of the new outfall structure would result in permanent fill of approximately 10 square feet of the waters of the U.S. within the Napa River. The outfall structure would consist of buried rock slope protection and planted with native riparian vegetation. This small loss would be offset by the reduced erosion at the existing outfall and by the greater project benefits to waters of the U.S./state from reducing bank erosion at the Oat Hill Mine Ditch and Simmons Creek. Therefore, this impact would be less than significant. Temporary impacts from construction would be less than significant with implementation of BMPs identified in the project's SWPPP.

IV. d) Less than Significant Impact with Mitigation. Project construction has the potential to interfere with the movement of CCC steelhead when in transit between spawning habitat in the Napa River watershed and San Francisco Bay. While it is unlikely that construction and maintenance along the levee and bank habitat will interfere with migration, in the absence of applicable mitigation, in-water construction required for the realignment of Simmons Creek could potentially block passage for migrating individuals, resulting in a significant impact. The application of **Mitigation Measures BIO-2** and **BIO-5** would reduce these potential impacts to a less than significant level.

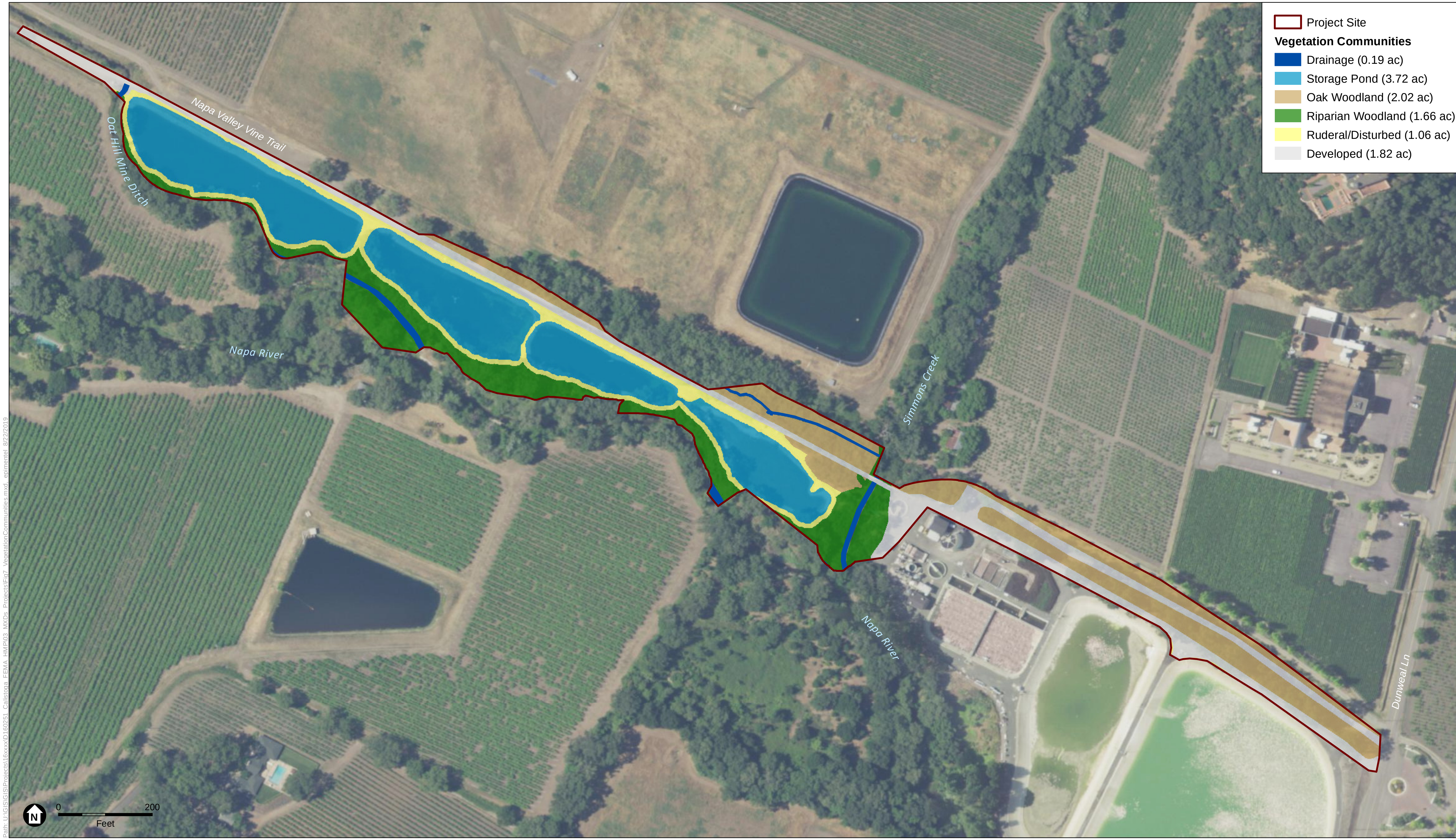
Implementation of **Mitigation Measure BIO-2** would restrict construction with the potential to impact the stream corridor from June 15 to October 15 when water temperatures and limited flow would likely exclude steelhead from the Project site. Implementation of **Mitigation Measure BIO-5** requires relocation of aquatic species from Simmons Creek as needed, and would be implemented before construction can occur within the active channel, and before dewatering or water diversion can occur. Implementation of **Mitigation Measure BIO-5** would ensure that any special-status aquatic species present within the active channel are moved and relocated to non-impacted habitat.

IV. e) Less than Significant with Mitigation Incorporation. According to the conceptual plan for the project, 86 trees are anticipated to require removal, primarily valley oak (*Quercus lobata*), with a few California bay (*Umbelluria californica*), coast live oak (*Quercus agrifolia*), ash (*Fraxinus* sp.), and plum (*Prunus* sp.) trees, ranging in size from 3 inches to 48 inches diameter at breast height. All valley oaks, native oaks larger than six inches, and any tree greater than 12 inches would be considered a protected tree under the City's Municipal Code. Removal of protected trees would be a significant impact. Implementation of **Mitigation Measure BIO-8** would reduce this impact to a less-than-significant level by requiring adherence to a tree protection plan and obtaining a permit from the City.

Mitigation Measure BIO-8: Tree Protection Plan.

A Tree Protection and Replacement Plan consistent with Calistoga Municipal Code Chapter 19.01 shall be reviewed and approved by the City of Calistoga before construction and tree removal commences. All requirements and restrictions contained in Chapter 19.01 shall be complied with, including the incorporation of replacement trees for those trees slated for removal at a ratio of 1:1 or greater, determined in coordination with the City Public Works Department, as well as any recommendations of the Project arborist, to ensure the survival of replaced trees.

IV. f) No Impact. There is no applicable Habitat Conservation Plan, Natural Community Conservation Plan, or similar vehicle covering the Project site. Thus, no impact would occur.

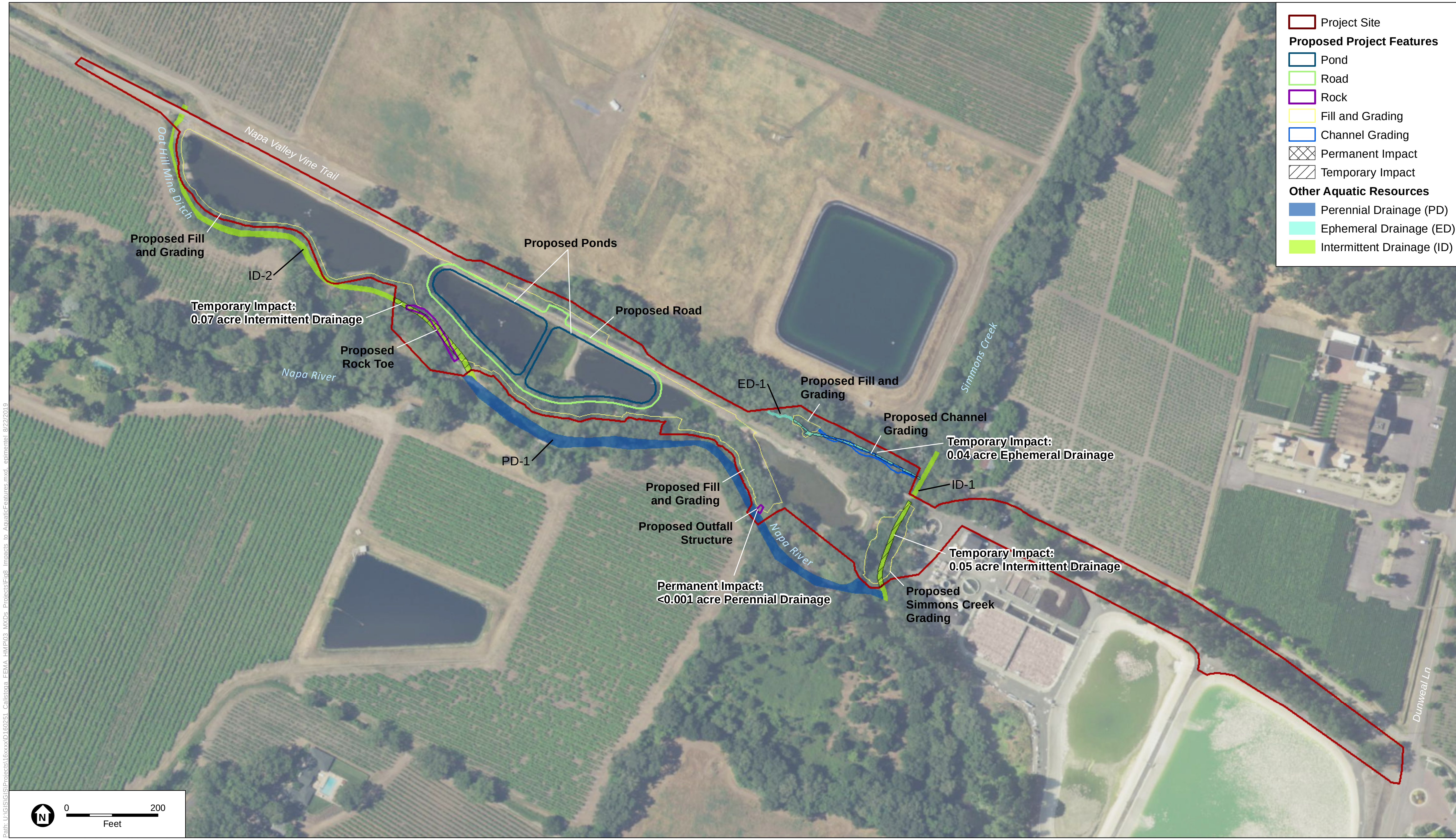


SOURCE: USDA, 2016; ESA, 2019

Calistoga Riverside Ponds

Figure 7
Vegetation Communities

ESA



SOURCE: USDA, 2016; ESA, 2019

Calistoga Riverside Ponds

Figure 8
Impacts to Aquatic Resources

ESA

IV. Cumulative) Less Than Significant Impact. When considered in combination with other reasonably-foreseeable projects, the proposed Project would not contribute to a cumulative impact on any special-status species or its habitat.

Mitigation measures that are incorporated into the proposed Project would avoid and minimize project impacts to special-status plants and wildlife, migratory birds and bats, sensitive natural communities, and waters of the U.S. (i.e., working outside of the sensitive period for these species, performing focused surveys, and/or establishing protective buffers; restoring or replacing impacted areas). If sensitive communities or habitat for special-status species, migratory birds, and bats is present for other cumulative projects, the implementation of similar measures would be required. As a result of these considerations, the Project would not contribute to a significant cumulative impact on special-status species, migratory birds, and bats; sensitive natural communities, or waters of the U.S.

V. CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section § 15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section § 15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

This section examines the potential impacts of the Project on cultural resources. Tribal cultural resources are discussed separately in Section XVII. For the purposes of this analysis, the term cultural resource is defined as follows:

- *Cultural resource* – indigenous and historic-era sites, structures, districts, and landscapes, or other evidence associated with human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or other reason. These resources include the following types of CEQA-defined resources: historical resources, archaeological resources, and human remains.

The term *indigenous*, rather than *prehistoric*, is used as a synonym for Native American-related (except when quoting), while *pre-contact* is used as a chronological adjective to refer to the period prior to Euroamerican arrival in the subject area. Indigenous and pre-contact are often, but not always, synonymous, since the former refers to a cultural affiliation and the latter chronological.

This section relies upon the information and findings presented in the following technical report prepared for the Project by ESA:

- *Calistoga Riverside Ponds Relocation Project, Calistoga, Napa County, California: Cultural Resources Inventory and Evaluation Report* (Hoffman, 2019)

Additional details on background context, Native American correspondence, and cultural resources identified are presented in the technical report.

Key Terms

Architectural Resource

This resource type includes historic-era buildings, structures (e.g., bridges, canals, roads, utility lines, railroads), objects (e.g., monuments, boundary markers), and districts. Residences, cabins, barns, lighthouses, military-related features, industrial buildings, and bridges are some examples of architectural resources.

Archaeological Resource

This resource type consists of indigenous or pre-contact, and historic-era archaeological resources. Indigenous archaeological resources consist of village sites, temporary camps, lithic scatters, roasting pits/hearths, milling features, petroglyphs, rock features, and burials. Associated artifacts include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (midden) containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs). Historic-era archaeological resources consist of town sites, homesteads, agricultural or ranching features, mining-related features, refuse concentrations, and features or artifacts associated with early military and industrial land uses. Associated artifacts include stone, concrete, or adobe footings and walls; artifact filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. If a resource is considered a ruin (e.g., building lacking structural elements, structure lacking historic configuration, etc.), it is classified as an archaeological resource.

CEQA Area of Potential Effects (C-APE). For the purposes of this section, the C-APE is defined as the both the horizontal and vertical maximum extents of potential direct impacts to cultural resources that could result from the Project, and encompasses the footprint of Project actions, including staging areas. The C-APE comprises approximately 13.0 acres, and extends vertically to the maximum depth of proposed Project ground-disturbing activities, varying according to specific location. Due to the nature of the Project and its minimal potential for indirect impacts, a single C-APE has been defined to account for impacts to archaeological and architectural resources.

Setting

Physiography

The Napa River, along with its tributaries, is the principal watershed for the western portion of Napa County. The Napa River flows from near Calistoga to its delta at San Pablo Bay. The river flows within a valley formed by the downward movement of the valley floor along faults that occur at the edges of the valley. Mayacama Mountain rises to the west side of the Napa Valley while Howell Mountain forms the eastern border. The valley narrows in width gradually from south to north, from approximately 5 miles near San Pablo Bay to approximately 1 mile near Calistoga. The valley is abruptly pinched off by mountains to the north of Calistoga. The Napa River was quite different prior to historic-era modifications, as it consisted of a complex system of side channels and sloughs diverging and rejoining the main channel at a number of different locations. The C-APE is along the left (north) bank of the Napa River and both banks of Simmons Creek just north of its confluence with the Napa River. The C-APE ranges in elevation from 310 to 360 feet above mean sea level, with an overall slight east-southeast aspect.

Geology and Soils

Napa County lies within the geologically complex region of California referred to as the Coast Ranges geomorphic province. The Coast Ranges province lies between the Pacific Ocean and the Great Valley (Sacramento and San Joaquin Valleys) provinces and stretches from the Oregon border to the Santa Ynez Mountains near Santa Barbara. Much of the Coast Range province is composed of marine sedimentary deposits and volcanic rocks that form northwest-trending mountain ridges and valleys, running subparallel to the San Andreas Fault Zone. The Northern Coast Ranges are composed largely of the Franciscan Complex or Assemblage, which consists primarily of greywacke, shale, greenstone (altered volcanic rocks), basalt, chert (ancient silica-rich ocean deposits), and sandstone that originated as ancient sea floor sediments. Franciscan rocks are overlain by volcanic cones and flows of the Quien Sabe, Sonoma, and Clear Lake volcanic fields. Other rocks interbedded with the complex's greywackes included shale, limestone, chert, and serpentine. Napa County has many geological formations of igneous, sedimentary, and metamorphic origins. In general, the landscape is dominated by sandstones and shales with sandstones forming ridges and shales forming the valleys.

The geology and soils within the C-APE were particularly advantageous to the pre-contact inhabitants of this location. While productive soils allowed for a fertile base for flora and fauna, several sources of raw materials for stone tools occur within the Project vicinity. The Franciscan Complex, accessible within the Sulphur Creek watershed, is made up of seafloor sediments and altered volcanics, which provided ready sources of sandstone, shale, chert, greenstone, and metagraywacke. More importantly, Sonoma Volcanics, accessible at Glass Mountain, provided basalt, andesite, rhyolite, and obsidian.

The surficial geology of the C-APE consists of Quaternary (Holocene and Late Pleistocence) generalized alluvium and late Holocene stream channel deposits. The former are sand, silt, and gravels, and mostly undissected by later erosion. The latter are loose sand, gravel, and cobbles with minor clay and silt that was deposited within active, natural stream channels (Graymer et al., 2007). The surficial geology of the areas immediately surrounding the C-APE also consist of Quaternary alluvial deposits (Graymer et al., 2007). Napa Glass Mountain, the primary source of obsidian in Napa Valley, is located approximately 4.5 miles downriver (southeast) of the C-APE.

Soils in the C-APE consist of Bale series loam and Riverwash (floodplain deposits) (USDA, 2019). Bale series loams are very deep, somewhat poorly drained grayish brown and brown loams, formed in stratified, gravelly and sandy alluvium from mixed sources (USDA, 2019). Riverwash represent historic-era and modern flood deposits. Both Bale series loams and Riverwash are likely historic-era and modern in age. Historic and modern use of the C-APE, specifically that associated with wastewater treatment, has resulted in a large degree of ground disturbance. However, the specific depths of this disturbance varies throughout the C-APE.

Flora and Fauna

Prior to historic-era modifications to the area, most recently the majority of the C-APE was an area of vernal pools and swales. The extreme westernmost portion of the C-APE was characterized by wet meadows and willow groves, while the easternmost portion of the C-APE was a Valley oak and Live oak savanna (Grossinger, 2012). Current vegetation in the C-APE primarily corresponds to the Riparian Forest vegetative community, and supports a wide variety of fish, mollusks, waterfowl, turtles, and large and small mammals.

Ethnography

Prior to the Euro-American occupation of California, the C-APE was the territory of the Wappo. “Wappo” is a name derived from the Spanish term “guapo,” which means “brave”. Although the Wappo name for themselves is unknown, the western Wappo who lived along the Russian River in Alexander Valley called themselves “Mishewal,” which is the name still used by the present-day Mishewal-Wappo Tribe of the Alexander Valley.

The territory of the Wappo was unusual in that it was discontinuous and included portions of several drainages; it stretched from near present-day Asti and Geyserville on the Russian River in the northwest to the delta of the Napa River at San Pablo Bay in the southeast. The Wappo also occupied a small detached territory along Cole Creek and the south shore of the main body of Clear Lake. The Wappo tribelet *Mayacma* (also variably spelled *Mayacoma* and *Mayakma*) was ethnographically documented as living in the Calistoga area. Three Wappo villages, *Maiyákma*, *Nihlektsonoma*, and *Tsélmenan* were ethnographically documented in the area; *Maiyákma* was approximately 1 mile south of Calistoga (likely at the base of the Mayacama Mountains, while *Nihlektsonoma* was just northeast of Calistoga, and *Tsélmenan* was approximately 1 mile north of Calistoga, near the foothills (Barrett, 1908: 270-271, Map).

While the Wappo belong linguistically to the Yukian Family, none of their neighbors spoke a Yukian language. The closest Yukian speakers to the Wappo were the Yuki and the Huchnom located over 40 miles to the north and separated from the Wappo by the Hokan-speaking Pomo. However, Wappo speech is quite different from both Yuki and Huchnom. Many common traits, including kinship terminologies and burial practices, are more closely shared between the Wappo and the Pomo, which is unusual given the distinct linguistic differences between the groups. This may indicate a great deal of interaction between the two groups over time.

The Wappo settlement system was semi-sedentary with large permanent or semi-permanent villages that were situated near fresh water sources and in environments with diverse and abundant resources. It has also been suggested that larger towns were occupied during the winter and the population dispersed to smaller camps during the summer months (Driver, 1936:183). The territory occupied by the Wappo was rich in desirable resources, particularly in raw materials for stone tool manufacture. Obsidian sourced to the Napa Valley has been found at archaeological sites throughout central California. The Wappo were an important part of a regional trade network.

Pre-contact Period

As proposed by Fredrickson (1973, 1974), the sequence of temporal change consists of four major chronological periods: the Early Lithic Period, the Paleo-Indian Period, the Archaic Period, and the Emergent Period. The Archaic and Emergent Periods are further subdivided. The Archaic Period consists of a Lower, Middle, and Upper, and the Emergent Period consists of a Lower and Upper. With the exception of the Early Lithic Period, each period is distinguished by at least one corresponding cultural pattern. Cultural materials from the Early Lithic Period have yet to be identified in California. This period was created by Fredrickson (1973:113) as a hypothetical precursor to the Paleo-Indian Period.

Paleo-Indian Period. Within the North Coast Ranges, the first demonstrated entry of humans was during the Paleo-Indian Period (12000 to 8000 years before present [BP]). Only one site has been identified that dates to this period, the Borax Lake Site (CA-LAK-36). This period remains little understood, but Fredrickson (1992, in Hughes, 1994:100) has hypothesized that the period was characterized by lacustrine sites with a probable hunting emphasis and no evidence of milling technology. Trade and exchange was probably on an individual basis. The primary social unit was likely the extended family. Resources were likely acquired through mobility rather than trade. The Paleo-Indian Period in the North Coast Ranges is associated with the Post Pattern, which was named after Chester C. Post, the amateur collector who brought the Borax Lake Site to the attention of archaeologists. There is no known local variant of this pattern for the Napa Valley. The Post Pattern is characterized by Borax Lake fluted projectile points, flaked crescent points, and single-shoulder points. Due to the paucity of sites and artifacts associated with the Post Pattern, little inference can be made about the culture. However, from the lithic assemblage, it is likely that the dart and atlatl were used for hunting game and crescent points may have been used as transverse projectile points for the hunting birds.

Lower Archaic Period. The Paleo-Indian Period was followed by the Lower Archaic Period (8000 to 5000 BP). During this period, the ancient lakes, which had been the subsistence base during the Paleo-Indian Period, began to dry up as a result of climate change. An increased emphasis on plant foods can be inferred by the abundant appearance of milling stones. This period is often termed the “Milling Stone Horizon” in southern California. The appearance of milling technology may also indicate less emphasis on hunting as individuals became more familiar with the local plant resources. Most artifacts during this period were manufactured of local materials and trade was limited. The primary social unit remained the extended family (Fredrickson, 1992, in Hughes, 1994:100). The Lower Archaic Period in the North Coast Ranges is associated with the Borax Lake Pattern. This pattern was initially defined at the Borax Lake Site (CA-LAK-36) and the local variant of the pattern in the Clear Lake Basin is known as the Borax Lake Aspect of the Borax Lake Pattern. Fredrickson (1973:207-208) initially identified Borax Lake Pattern components at the Hultman Site (CA-NAP-131), located upstream from the current Project C-APE. However, revisions in the cultural chronology of the region have identified this component as belonging to the Hultman Aspect of the Mendocino Pattern (White and Fredrickson, 1992:45). The relationship between the Borax Lake Pattern and the Mendocino Pattern is not fully understood, so we have sided with the earlier work of Fredrickson (1973) and assumed the possibility for Borax Lake Pattern assemblages within the Napa Valley. Due to the low occurrence of sites associated with the Borax Lake Pattern, it remains difficult to characterize this culture. However, milling stones and handstones are prevalent. These artifacts are often found in association with concave-base and stemless projectile points. Wide-stemmed points occur in smaller numbers.

Middle Archaic Period. While the Paleo-Indian and the Lower Archaic Periods are poorly understood at this time, the Middle Archaic Period (5000 to 2500 BP) is represented by better chronologically-controlled assemblages that allow for more inferences concerning pre-contact lifeways. This period is characterized by the introduction of the mortar and pestle, which has been used to infer the development of an acorn-based economy. Increased sedentism developed during this period and was accompanied by population growth and expansion. In the periodization used by some archaeologists, the Middle Archaic Period is termed the “Early Period” or “Early Horizon”. Population growth and expansion during the Middle Archaic Period was accompanied by increasing cultural complexity and interaction. In the North Coast Ranges, two distinct cultural patterns emerge during this period: the Berkeley Pattern; and, the Mendocino Pattern. In the Napa Valley, the period is associated with both the Houx Aspect of the Berkeley Pattern and, the Hultman Aspect of the Mendocino Pattern. The relationship between these cultural patterns is not fully understood. However, White and Fredrickson (1992:85; White et al., 2002) have argued that the Houx Aspect of the Berkeley Pattern was an indigenous development in the Clear Lake Basin whereas the Mendocino Pattern was intrusive to the region.

The Berkeley Pattern is best exemplified in the Napa Valley at the Goddard Site (CA-NAP-1), located on the west bank of the Napa River near Oakville, and the Kolb Site (CA-NAP-32), located on the west bank of the Napa River near Rutherford. The type site for the Houx Aspect of the Berkeley Pattern is the Houx Site (CA-LAK-261,) located in the Excelsior Valley of Lake County. The Berkeley Pattern is distinguished by the predominance of mortars and pestles, ulna awls and flakers, shouldered bifaces and bipoints, and Excelsior and leaf-shaped points. The dependence on the acorn was established in this period and continued to historic times. The type site for the Hultman Aspect of the Mendocino Pattern is the Hultman Site (CA-NAP-131), located approximately 6 miles downstream (southeast) of the current Project C-APE. This cultural pattern is distinct from the Berkeley Pattern throughout the North Coast Ranges and the Bay Area. The Mendocino Pattern is distinguished by leaf-shaped, concave-base, and large notched projectile points, millingstones and mullers, and a lack of beads. The Hultman Aspect represents a southerly variation of the Mendocino Pattern, which also has a more northerly Mendocino Aspect. The Hultman Aspect is distinguished from the Mendocino Aspect by a predominance of leaf-shaped rather than large notched projectile points, and the more common use of obsidian rather than chert.

Upper Archaic Period. The general trend towards increasing population growth and the expansion of settlement continued into the Upper Archaic Period (2500 to 1100 BP), which has also been termed the "Middle Period" or the "Middle Horizon". Fredrickson (1974:48) suggested that the Upper Archaic Period "seems to have been marked by ever increasing socio-political complexity, a growth of status distinctions based on wealth, the emergence of group-oriented religious activities, and greater complexity of the exchange systems". Yet, territorial boundaries do not seem to have been firmly established in this period. The Houx Aspect of the Berkeley Pattern and the Hultman Aspect of the Mendocino Pattern continue into the Upper Archaic Period in the Napa Valley. The southern portion of the North Coast Ranges is also associated with these cultural patterns. This demonstrates a cultural affinity established from the San Francisco Bay into the North Coast Ranges. The cultural patterns show significant continuity from the Middle Archaic to the Upper Archaic Periods. For the Houx Aspect of the Berkeley Pattern, mortars and pestles dominate the groundstone assemblage. Stone tools are predominately shouldered bifaces and bipoints as well as Excelsior and leaf-shaped points. Fredrickson (1973:200) has suggested a hunting emphasis during this period due to the prevalence of projectile points found at CA-LAK-261. This pattern also shows an increase in *Olivella* beads, abalone ornaments, and incised bone artifacts.

Emergent Period. In the ensuing Emergent Period (1100 to 200 BP), pre-contact cultures in California "reached levels of sociocultural complexity usually considered correlates of agricultural societies" (Fredrickson, 1973:38). This period is also referred to as the "Late Period" or "Late Horizon". The Emergent Period is divided into a Lower Emergent Period (1100 to 500 BP) and an Upper Emergent Period (500 to 200 BP). During the Lower Emergent Period, bow and arrow technology was introduced and rapidly replaced the dart and atlatl. Territorial boundaries became well established. Regularized exchange networks flourished. The Upper Emergent Period witnessed the continued growth and elaboration of the exchange system as well as the development of some degree of specialization. The cultural manifestation of the Emergent Period was the Augustine Pattern. While the Augustine Pattern was prevalent throughout the entire San Francisco Bay and North Coast Ranges, the particular variant of the pattern in the Napa Valley was the St. Helena Aspect. This aspect differentiated the Napa Valley from the Clear Lake Aspect of the surrounding North Coast Ranges. The St. Helena Aspect of the Augustine Pattern is best exemplified at CA-NAP-129, located upstream of the current Project C-APE. The St. Helena Aspect is distinguished by the use of small, serrated projectile points with either parallel or corner-notched stems. Corner-notched points without serrations became more common towards the Historic Period. Well-shaped mortars and pestles are prevalent. Larger shouldered bifaces, bipoints, and leaf-shaped points are absent. Bone awls are common and probably indicate increased production of basketry. Associated with basketry, the hopper mortar became more prevalent. Tubular tobacco pipes are also quite common. There is also an increase in beads and ornaments made from shell, stone, and bone. This coincides with an increase in trade items from greater distances.

Archaeological Investigations at P-28-000846. Pre-contact archaeological site P-28-000846 is located approximately 25 feet south of the central portion of the C-APE, along the left (north) bank of the Napa River, just east of its confluence with Simmons Creek and approximately 250 meters east of the boundary of P-24-002526 as originally recorded. The site was originally recorded in 1953 by Heizer et al. (1953), who described it as a large pre-contact village site consisting of a large depression at the top of a mound with a "abundant" obsidian flakes and likely midden soil, and measuring approximately 450 by 300 feet in area, 6 feet tall, and a depth of 8 feet. Stoll re-recorded the site in 1959 (Stoll, 1959), and noted obsidian projectile points, clamshell, bone, beads, other obsidian artifacts, mussel, sea snail, and midden soil. Stoll stated the site dimensions as 250 by 150 feet in area, with a depth of 12 to 15 feet. The site was excavated in 1971 by Lewis Napton of the University of California, Berkeley, with virtually no documentation. Looting, including collection of human remains, of the site have been reported on several occasions. The northern portion of the site was disturbed during the construction of the WWTP, in the early 1970s.

In 2001, Tom Origer conducted a series of backhoe units and hand excavation units in the northern portion of the site as part of upgrades to the WWTP. This investigation yielded 17,436 artifacts, consisting primarily (more than 17,000) pieces of debitage, 8 projectile points, 56 bifaces, 12 other flaked-stone tools, 10 ground-stone fragments, a steatite pipe fragment, and a mortar. The flaked-stone tools were of Napa Valley obsidian, and obsidian hydration results indicated both Emergent Period and Upper Archaic components. The former was in the central portion of the site (mound) and the latter in the northern (non-mound) portion of the site. Carpenter and Mikkelsen (2005:25) elucidate that the early component likely corresponds to the incursion of Miwok Penutian speakers into the area, while late components corresponds to the replacement of them by the Wappo. Origer's excavations suggested that the construction of the WWTP had destroyed much of the northern portion of the site.

Far Western Anthropological Research Group (FWARG) conducted data recovery at the site in 2002, also as part of upgrades to the WWTP. FWARG's investigation consisted of 7 hand excavation units, totaling 1.2 cubic meters, in the northern portion of the site. This investigation yielded over 30,000 artifacts: 31,260 pieces of debitage, 60 projectile points, 4 preforms, 440 bifaces, 3 drills, 1 core tool, 19 cores, 27 formed flake tools, 102 flake tools, 9 bowl mortars, 1 mortar, 10 pestles, 1 millingstone, 14 handstones, 2 battered cobbles, 6 ground-stone fragments, 1 shaped stone, 3 quartz crystals, 2 petrified wood fragments, 1 baked clay fragment, 10 bone fragments, and 1 seed. Based on analyses of the artifacts and site stratigraphy, FWARG concluded that three separate occupations are represented at the site, a Middle-Upper Archaic (3,000 to 2,000 BP), a late Upper Archaic/early Emergent Period (1,000 BP), and a late Emergent Period. The earliest component is by far the best represented at the site, and appears to be associated with the Hultman Aspect of the Mendocino Pattern is the Hultman Site. FWARG also concluded that the site was related to obsidian procurement, reduction, and trade, and that it was likely occupied only for short periods at different times of the year (Carpenter and Mikkelsen, 2005).

Archaeological Investigations at P-28-002526. Two previous cultural resources investigations were conducted for preliminary geotechnical work for the Project and included the Project footprint portion of the C-APE (Farrell, 2018; Hoffman, 2018). That project consisted of four geotechnical borings, within the current Project footprint portion of the C-APE, to assist the overall Project design, with the Federal Emergency Management Agency (FEMA) acting as lead federal agency. Historic property identification efforts, including a records search and a pedestrian archaeological survey, were conducted for that project, resulting in the identification of a previously unrecorded indigenous archaeological resource P-24-002526 within that the current Project C-APE (Farrell, 2018). FEMA assumed P-24-002526 National Register-eligible for the purposes of that project only, and required the following as Special Conditions in FEMA's Record of Environmental Consideration (REC): hand-augering and dry-screening of excavated sediment (i.e., subsurface survey) by an archaeologist and tribal monitor at each boring location to a depth of 5 feet prior to carrying out the geotechnical borings; and archaeological and tribal monitoring of geotechnical borings.

In November 2018, ESA, accompanied by a tribal monitor from the Middletown Rancheria of Pomo Indians of California, conducted the subsurface survey and monitoring required by FEMA's REC. No archaeological material was identified during the subsurface survey or monitoring. All hand-auger units (AU[s]) were conducted in the berm/road on the south side of Pond 4, within the current C-APE. AU-1 was excavated approximately 2 meters west of Soil Boring 1, AU-2 approximately 3 meters southeast of Soil Boring 2, and AU-3 approximately 2 meters west of Soil Boring 3. Soil observed in AU-1 consisted of slightly loose light brown sandy loam with less than 3% gravels, while this soil was observed in AU-2 and AU-3 to a depth of 60 and 80 centimeters, respectively, and underlain by soft moist-to-wet light brownish-gray silty clay. AU-2 and AU-3 were terminated above the target depth of 160 centimeters, at 90 and 120 centimeters, respectively, due to encountering water.

Historic Period

Spanish and Mexican Period. The area was first explored by Euroamericans in 1823 by Father José Altamira and Alfred Jose Sanchez. Fearing Russian encroachment they headed north from San Francisco, passing through San Rafael and Olompali, exploring the Sonoma, Napa, and Suisun Plains for potential sites for new missions. Mission San Francisco Solano, the northernmost Spanish Mission, was established in 1823 in Sonoma. Following secularization of the missions in 1833, the awarding of land grants accelerated and encouraged the European and American settlement of the Valley (Hunt and Gunn, 1926). George Yount first arrived in the Napa Valley in 1831. General Mariano Vallejo awarded Rancho Caymus (11,887 acres), the first land grant to a

European in Napa Valley, to Yount in 1836. Governor Juan Alvarado granted Rancho Carne Humana to Edward Turner Bale in 1841. Rancho Carne Humana encompassed approximately 18,000 acres, including the C-APE, in Napa Valley north of Rancho Caymus.

American Period. In 1848, after a brief conflict, Mexico ceded California to the United States. With the discovery of gold that same year and the subsequent gold rush of the early 1850s, the population of California grew exponentially. As a previously established American-occupied area, Napa County drew in many of the miners disillusioned by the gold fields and the severe winter in the Sierra Nevada. Saw mills, timber harvesting, and cattle ranches provided employment within Napa Valley. Between 1840 and 1845 many emigrant American families settled in the Napa Valley area. It was in 1848 that Napa City was laid out by Nathan Coombs on property he acquired from Nicholas Higuera's Rancho Entre-Napa. The burgeoning population helped build Napa City from a tent city along Main Street to the primary business and economic center for the Napa Valley it is today.

Calistoga. T.J. DeWoody, Napa County Surveyor, completed the first survey of Calistoga in 1860, and surveyed the town and adjoining area again in 1866. During this time Samuel Brannan owned most of the land in the north end of Napa Valley, but soon after the last survey he commenced selling off tracts of land. Brannan purchased the land at the north end of Napa Valley in 1859, hoping to capitalize on the area's mineral waters and natural hot springs. Brannan wanted to build a hot springs resort to rival Saratoga Springs, New York. He purchased more than 2,000 acres and sold off plots of land to finance his Calistoga Hot Springs. In 1862, Brannan opened his Hot Springs Hotel, and wealthy San Franciscans journeyed to Calistoga during the summer to relax and enjoy their natural volcanic hot springs. Brannan established the Napa Valley Railroad in order to simplify the long journey for visitors, with the railroad reaching Calistoga by 1868 (Gregory, 1912). That same year, Sam Brannan donated the lot for the first church established in Calistoga, a Methodist church at Cedar and Spring Avenues. Throughout the remainder of the 19th century, development of the town centered along Lincoln Avenue, the railroad, and the Napa River, with hotels, stores, and houses spread throughout (Hunt and Gunn, 1926).

Viticulture and Winemaking. George Yount planted the first grapes in the Napa Valley in 1839. Soon after, other pioneers, such as John Patchett and Hamilton Walker Crabb, helped introduce the first *Vitis vinifera* grapes to the area. Charles Krug is credited with establishing Napa Valley's first commercial winery in 1861. His success sparked a wave of new growth in the wine industry, and by 1889 there were more than 140 wineries in operation in the Valley. Calistoga pioneer Samuel Brannan was also one of the first to cultivate grapes in the Valley.

The early 20th century was not kind to the Napa wine industry. In the first decade of the 1900s phylloxera aphid (*Daktulosphaira vitifoliae*) infested and killed off most of the vineyards. Many landowners gave up on wine grapes and replanted with other crops, primarily fruit and nut trees. Those that survived the phylloxera epidemic were hit again in 1920 with the Volstead Act, which outlawed almost all commercial sale of alcohol. The Volstead Act was repealed in 1933, but by then most of the old vineyards were gone and the wineries shuttered. The Napa wine industry slowly regrew and is now the most prominent wine producing region in the U.S. (Napa Valley Wine Museum and Weber, 2004). Today the area's economy is based on viticulture, wine making, and tourism based on the wine industry. One factor that has made Napa Valley a prime wine grape growing region is its unique soil composition. A key factor in this soil development was the Napa

River, which has changed alignments over time and flooded the area on a regular basis. Flooding has been good for soil development, but is not good for growing grapes, or for the communities in the reach of the river's flood plain. Since settlers began keeping track of such notable events, more than 20 serious floods have been recorded from 1862 to the present day.

Napa Valley Railroad. As stated above, Samuel Brannan funded construction of the Napa Valley Railroad (NVRR) in an effort to attract more visitors to his resort in Calistoga. The railroad was originally constructed in 1864 and operated for passenger service until 1930; it was the third passenger railroad in California at the time of its construction. The original line ran from Napa Junction, approximately 9 miles south of the City of Napa, to Calistoga, traversing virtually the entire Napa Valley. Stations along the line were located at Napa, Oakville, Yountville, Rutherford, St. Helena, and Calistoga, and various spurs were also eventually constructed. The NVRR was critical to the development of agriculture, especially the wine industry, in Napa Valley. By the late 1920s, the automobile began to overtake railroads as the primary form of passenger transportation (Germano, 2006). A portion of St. Helena to Calistoga segment of the railroad was formerly present in the C-APE, at the location of the current Napa Valley Vine Trail. The resource has been formally recorded, as district P-28-001547, and was previously determined eligible for the National Register of Historic Places (National Register); however, it has since been reevaluated as not eligible for the National Register due to a lack of integrity (Germano, 2006). No evidence of the resource remains in the C-APE.

Methods and Approach

Records Search

As part of a preliminary phase (geotechnical borings) of the Project, Tetra Tech, Inc. requested a cultural resources records search of the C-APE and vicinity from the Northwest Information Center (NWIC) at Sonoma State University, Rohnert Park. The NWIC maintains the official California Historical Resources Information System (CHRIS) records of previous cultural resources studies and recorded cultural resources for the C-APE and vicinity. The study area for the records search consisted of the C-APE with a 1-mile buffer. On March 25, 2019, ESA staff conducted a records search update of the 2017 records search at the NWIC using the same study area (APE with 1-mile buffer). The purpose of the records search and records search update was to: 1) determine whether known cultural resources have previously been recorded in or adjacent to the C-APE; 2) assess the likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby resources; and 3) develop a context for the identification and preliminary evaluation of cultural resources. Records were reviewed in the Historic Property Data File for Napa County that contains information on sites of recognized historical significance including those evaluated for listing in the National Register, the California Register of Historical Resources (California Register), the California Inventory of Historical Resources, California Historical Landmarks, and California Points of Historical Interest.

The NWIC has record of 68 previously recorded cultural resources in the records search area, three of which are in the C-APE: P-24-000966, -001547, and -002526. Of these 68 resources, 43 are (historic-era) architectural resources, 4 are historic-era archaeological sites, 17 are pre-contact/indigenous archaeological sites, 2 are archaeological sites with both pre-contact and historic-era components, and 2 have both an (historic-era) architectural component and a pre-contact archaeological component. Fifteen of these resources were recorded within 0.5 mile of the

C-APE. Two of the cultural resources previously recorded in the C-APE are historic-era resourcesassociated with one another: the Southern Pacific Railroad (P-24-000966), which is a contributor to the NVRR Historic District (P-24-001547). These resources are no longer extant in the C-APE. The other cultural resource previously recorded in the C-APE is archaeological site P-24-002526, which is a very sparse obsidian lithic scatter along the southern edge of the existing ponds at the Wastewater Treatment Plant (WWTP) that was recorded during the preliminary (geotech) phase of the Project.

Native American Correspondence

ESA contacted the California Native American Heritage Commission (NAHC) on March 19, 2019 in request of a search of the NAHC's Sacred Lands File (SLF) and a list of Native American representatives who may have interest in the Project. The NAHC replied to ESA on April 17, 2019, in which they stated that the SLF has no record of sacred sites in the C-APE; the reply also included a list of six Native American representatives to contact regarding these resources and who may be interested in the Project. On April 28, 2019, the City sent letters, via U.S. Postal Service certified mail, to the six Native American contacts provided in the NAHC response. The letters provided information on the Project and requested that the recipients provide information on cultural resources that may be impacted by the Project, if they would like to do so.

The City received a letter dated May 13, 2019 from Yocha Dehe Wintun Nation (YDWN) Interim Director of Cultural Resources Isaac Bojorquez. The letter stated that the Project is outside the YDWN aboriginal territories, that the YDWN declines to comment on the Project, and that the YDWN defers correspondence on the Project to the Mishewal-Wappo Tribe of the Alexander Valley (Mishewal-Wappo) should be contacted for more information. Note, the Mishewal-Wappo were one of the recipients of the City's original April 28, 2019 Project tribal outreach letters. On May 22, 2019, the City received an email from the Federated Indians of Graton Rancheria (FIGR) Tribal Historic Preservation Officer Buffy McQuillen. The email stated that the Project is outside the FIGR's traditional ancestral territory and that they have no comments on the Project. To date, the City has not received any other responses from recipients of the April 28, 2019 Project tribal outreach letters. **Appendix D** provides documentation of the Project correspondence with Native American representatives to date. To date, no California Native American Tribes have requested that the City notify them of projects for potential consultation under PRC Section 21080.3 [i.e., Assembly Bill (AB) 52].

Archaeological Site Sensitivity

One goal of this study is to identify portions of the C-APE that may yield archaeological resources, with particular attention given to the relationship between the likelihood of the presence of any such deposits and their potential for significance. This study uses the term "sensitivity" to discuss this relationship, whereby an area with high sensitivity would be an area with both a high likelihood of encountering archaeological deposits and a high likelihood of any such deposits being significant (i.e., qualifying as an historical resource or unique archaeological resource, under CEQA). **Table 9** summarizes this framework.

TABLE 9. ARCHEOLOGICAL SENSITIVITY FRAMEWORK

Sensitivity	Potential for Presence	Potential for Significance
Low	Low	Moderate
	Moderate	Low
	High	Low
Moderate	Low	High
	Moderate	Moderate
	High	Moderate
High	Moderate	High
	High	Moderate
	High	High

Landforms that predate the earliest estimated periods for human occupation of the region are considered to have very low potential for the presence of buried archaeological sites, while those that postdate human occupation are considered to have a higher potential for presence of buried archaeological sites. The degree of buried site potential presence is inversely related to the estimated date range of a landform. Currently, archaeological research indicates that the earliest evidence for human occupation of California dates to the Late Pleistocene, which ended approximately 11500 BP. Therefore, the potential for presence of buried archaeological deposits in landforms from or predating the Late Pleistocene is very low (Meyer and Rosenthal, 2008:160-161). As discussed earlier, Quaternary generalized alluvium and late Holocene stream channel deposits (Graymer et al., 2007) underlie the C-APE, and native soils in the C-APE consist of Bale series loam and Riverwash (USDA, 2019). Based on the Quaternary age of the C-APE's surficial geology and likely historic-era and modern age of the soils in the C-APE, the C-APE's potential for presence of buried indigenous archaeological deposits is high (see Meyer and Rosenthal, 2007:15).

Historic-era and modern improvement activities, specifically those associated with the WWTP, have disturbed much of the C-APE, though the specific depths of this disturbance vary. This has reduced the potential for intact shallow buried indigenous deposits and surficial indigenous archaeological deposits in such areas. Also, indigenous surficial deposits that may have been present prior to historic-era and modern use of the C-APE could have been covered, thus "capped", by the historic-era and modern ground-disturbing activities throughout the C-APE. However, these same activities may also have damaged or destroyed any such indigenous surficial deposits. The potential significance of any indigenous archaeological resources in the C-APE, if present, is hard to gauge since such deposits may be intact or disturbed from historic-era and modern activities. Regardless, the potential significance of any intact indigenous archaeological resources in the C-APE is moderate, since such resources could provide data important to our understanding of the area's prehistory (California Register Criterion 4). Based on the above analysis, the C-APE has a high sensitivity for both surficial and buried indigenous archaeological resources (moderate and high potential presence, respectively, with moderate potential significance).

As with indigenous resources, predicting the potential presence and significance of any intact historic-era archaeological resources in the C-APE, if present, is difficult. The historic-era development activities and associated use that occurred in the C-APE may have resulted in the creation of surficial and buried historic-era archaeological deposits, such as water control features, foundations, and refuse. However, background research of historic-era topographic maps and aerial photographs did not indicate the clear presence of any buildings in the APE, though did indicate that some form of water retention ponds have been present at the current location of the WWTP ponds since at least the early 1940s. Therefore, the potential presence for both surficial and buried historic-era archaeological deposits in the C-APE is moderate.

Background research of historic topographic maps and aerial photographs did not indicate any clear avenues for significance for the California Register for any buried historic-era archaeological deposits in the C-APE, if present. Also, based on known historic-era archaeological resources previously recorded in similar settings in the Project vicinity, the potential significance of any intact historic-era archaeological resources in the C-APE is low. Based on the above analysis, the C-APE has a low sensitivity for historic-era archaeological resources (moderate potential presence with low potential significance).

Field Survey

On May 23, 2019, ESA conducted a cultural resources pedestrian survey of all non-inundated portions of the Project footprint portion of the C-APE, and on June 17, 2019, ESA conducted a cultural resources pedestrian survey of the Staging area portion of the C-APE. Intensive pedestrian survey methods were used during the survey, consisting of walking parallel transects spaced at no more than 5 meters apart and inspecting the surface for cultural material or evidence thereof. When ground visibility was poor, cleared areas and areas disturbed by rodents along and between the transect lines were checked with special attention. Digital photographs were taken to document ground conditions, and all observations were recorded in the field. Virtually the entire areal extent of the C-APE appears to have been previously disturbed from WWTP-related facilities and activities.

During the pedestrian survey, ESA identified one cultural resource, P-24-002526, in the C-APE. No evidence of previously recorded architectural resource P-24-000966/P-24-001547 (Southern Pacific Railroad/NVRR Historic District) was observed in the C-APE during the field survey. P-24-002526 is an archaeological site comprising a very sparse obsidian lithic scatter along the southern edge of the existing ponds, in the southern portion of the C-APE. The site was originally recorded in 2018 during the preliminary (geotechnical) phase of the Project. During ESA's survey, the site was found to extend slightly beyond the previously recorded boundary; thus, ESA expanded the site boundary to encompass all areas where artifacts were observed. The site consists of 1 obsidian biface and 12 obsidian flakes (representing all stages of reduction). Also present in the site boundary are 6 waterworn obsidian fragments lacking evidence of cultural modifications. Hoffman (2019) evaluated the significance of P-24-002526 and concluded that the site is not eligible for the California Register, as it represents an ephemeral lithic scatter, has likely been disturbed by WWTP-related activities, and may also have been imported by hydrologic (river) activity, and previous subsurface survey at the site did not indicate the presence of any buried archaeological deposits.

Summary

Through background research and Native American correspondence conducted for the Project, three previously recorded cultural resources were identified in the C-APE: P-24-000966, -001547, and -002526. Two of these are architectural resources associated with one another: the Southern Pacific Railroad (P-24-000966), which is a contributor to the NVRR Historic District (P-24-001547). During the pedestrian survey, ESA identified one cultural archaeological resource, previously recorded archaeological site P-24-002526, in the C-APE; no evidence of P-24-000966/P-24-001547 was observed. P-24-002526 comprises a very sparse obsidian lithic scatter along the southern edge of the existing ponds, in the southern portion of the C-APE. Hoffman (2019) evaluated the significance of P-24-002526 and concluded that the site is not eligible for the California Register. Therefore, no historical resources or unique archaeological resources, as defined in CEQA, are present in the C-APE.

Discussion

Approach to Analysis

Historical Resources. Impacts to historical resources are assessed by identifying any activities such as new construction, demolition, or substantial alteration that would affect resources that have been identified as historical. Individual properties and districts identified as historical resources under CEQA include those that are significant because of their association with important events, people, or architectural styles or master architects, or for their informational value (California Register Criteria 1, 2, 3, and 4) and that retain sufficient historic integrity to convey their significance. Criterion 4 is typically applied to the evaluation of archaeological resources and not to architectural resources. Note, historical resources may include architectural resources and archaeological resources.

Once a resource has been identified as significant, it must be determined whether the impacts of the project would "cause a substantial adverse change in the significance" of the resource (CEQA Guidelines Section 15064.5[b]). A substantial adverse change in the significance of a historical resource means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of [the] historical resource would be materially impaired" (CEQA Guidelines Section 15064.5[b][1]). A historical resource is materially impaired through the demolition or alteration of the resource's physical characteristics that convey its historical significance and that justify its inclusion in (or eligibility for inclusion in) the California Register or a qualified local register (CEQA Guidelines Section 15064.5[b][2]). Therefore, material impairment of historical resources constitutes a significant impact.

To avoid redundancy, the impact analysis below discusses impacts to historical resources, under impacts analysis question a, as those impacts to only historic-era architectural resources, including buildings, structures, and objects.

Archaeological Resources. The significance of most pre-contact and historic-era archaeological sites is typically assessed under California Register Criterion 4. This criterion stresses the importance of the information potential contained within a site, rather than its significance as a surviving example of a type or its association with an important person or event. Archaeological resources may qualify as historical resources under the definition provided in CEQA Guidelines Section 15064.5(a), or they may be assessed under CEQA as unique archaeological resources, defined as archaeological artifacts, objects, or sites that contain information needed to answer important scientific research questions (PRC Section 21083.2). A substantial adverse change in the significance of an archaeological resource is assessed similarly to other historical resources; that is, if the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings occurs such that the significance of [the] historical resource would be materially impaired (CEQA Guidelines Section 15064.5[b][1]). As previously stated, a historical resource is materially impaired through the demolition or alteration of the resource's physical characteristics that convey its historical significance and that justify its inclusion in (or eligibility for inclusion in) the California Register or a qualified local register (CEQA Guidelines Section 15064.5[b][2]). Therefore, material impairment of archaeological resources considered historical resources or unique archaeological resources constitutes a significant impact.

To avoid redundancy, the following impact analysis discusses archaeological resources, both as historical resources, according to CEQA Guidelines Section 15064.5, as well as unique archaeological resources, as defined in PRC Section 21083.2(g), under impacts analysis question b.

Human Remains. Human remains, including those buried outside of formal cemeteries, are protected under several state laws, including PRC Section 5097.98 and California Health and Safety Code (HSC) Section 7050.5. These laws are identified above in State Regulations. For the purposes of this analysis, intentional disturbance, mutilation, or removal of interred human remains constitutes a significant impact.

Impacts Analysis

V. a) <u>No Impact</u>. Based on the results of the background research and field survey, two architectural resources older than 50 years of age were identified in the C-APE: P-24-000966, and P-24-001547. These two resources are associated with one another: the Southern Pacific Railroad (P-24-000966), which is a contributor to the NVRR Historic District (P-24-001547). During the cultural resources field survey, no evidence of these resources was identified, and the resource appears to no longer be present in the C-APE. As such, there are no known historical resources, as defined in CEQA Guidelines Section 15064.5, in the C-APE. Therefore, the Project would not impact any historical resources and no mitigation is required.

V. b) <u>Less than Significant with Mitigation Incorporation</u>. Based on the results of the background research and field survey, one archaeological resource, P-24-002526, has been identified in the C-APE. P-24-002526 is an archaeological site comprising a very sparse obsidian lithic scatter along the southern edge of the existing ponds, in the southern portion of the C-APE. The site consists of 1 obsidian biface and 12 obsidian flakes (representing all stages of reduction). Hoffman (2019) evaluated the significance of P-24-002526 and concluded that the site is not eligible for the California Register, as it represents an ephemeral lithic scatter, has likely been disturbed by WWTP-related activities, and may also have been imported by hydrologic (river) activity. As such, there are no known archaeological resources that qualify as historical resources, as defined in CEQA Guidelines Section 15064.5, or unique archaeological resources, as defined in PRC Section 21083.2(g) in the C-APE. Therefore, the Project would not impact any archaeological resource, pursuant to CEQA Guidelines Section 15064.5.

However, background research indicates that the C-APE is in the vicinity of several historically documented Native American villages as well as in close proximity to previously recorded pre-contact archaeological site P-28-000846. Also, the archaeological sensitivity analysis conducted for the Project concluded that the C-APE has a high sensitivity for both surficial and buried indigenous archaeological resources. Because the Project would involve ground-disturbing activities that may extend into undisturbed soil, it is possible that such actions could unearth, expose, or disturb subsurface archaeological resources that have not been identified on the surface. If previously unrecorded archaeological deposits are present in the C-APE, and if they are found to qualify as archaeological resources, pursuant to CEQA Guidelines Section 15064, impacts to the resources resulting from the Project would be potentially significant. Such potentially significant impacts would be reduced to a less than significant level by implementing **Mitigation Measure CR-1**.

Mitigation Measure CR-1: Unanticipated Discovery Protocol for Archaeological Resources.

If indigenous or historic-era archaeological resources are encountered during Project development or operation, all activity within 100 feet of the find shall cease and the find shall be flagged for avoidance. The City and a qualified archaeologist, defined as one meeting the U.S. Secretary of the Interior's Professional Qualifications Standards for Archeology, shall be immediately informed of the discovery. The qualified archaeologist shall inspect the find within 24 hours of discovery and notify the City of their initial assessment. Indigenous archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (midden) containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-era materials might include building or structure footings and walls, and deposits of metal, glass, and/or ceramic refuse.

If the City determines, based on recommendations from the qualified archaeologist, that the resource may qualify as a historical resource or unique archaeological resource (as defined in CEQA Guidelines Section 15064.5), or a tribal cultural resource (as defined in PRC Section 21074), the resource shall be avoided if feasible. Avoidance means that no activities associated with the Project that may affect cultural resources shall occur within the boundaries of the resource or any defined buffer zones. If avoidance is not feasible, the City shall consult with appropriate Native American tribes (if the resource is indigenous), and other appropriate interested parties to determine treatment measures to avoid, minimize, or mitigate any potential impacts to the resource pursuant to PRC Section 21083.2, CEQA Guidelines Section 15126.4. This shall include documentation of the resource and may include data recovery or other measures. Treatment for most resources would consist of (but would not be not limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource. The resource and treatment method shall be documented in a professional-level technical report to be filed with CHRIS. Work in the area may commence upon completion of approved treatment and under the direction of the qualified archaeologist.

V. c) Less than Significant with Mitigation Incorporation. No human remains have been identified in the C-APE through archival research, field surveys, or Native American consultation. Also, the land use designations for the C-APE do not include cemetery uses, and no known human remains exist within the C-APE. Therefore, the Project is not anticipated to disturb any human remains.

However, since the nature of the Project would involve ground-disturbing activities, it is possible that such actions could unearth, expose, or disturb previously unknown human remains. In the event that human remains were discovered during Project construction activities, impacts to the human remains resulting from the Project would be significant if those remains were disturbed or damaged. Such impacts would be reduced to a less than significant level by implementing **Mitigation Measure CR-2**, which would require construction workers in the area to cease work and follow appropriate State law if human remains are discovered.

Mitigation Measure CR-2: Unanticipated Discovery Protocol for Human Remains.

If human remains are uncovered during Project construction, all work shall immediately halt at the find and the Napa County Coroner shall be contacted to evaluate the remains, and follow the procedures and protocols set forth in CEQA Guidelines Section 15064.5(e)(1). If the County Coroner determines that the remains are Native American, the County Coroner shall contact the NAHC, in accordance with HSC Section 7050.5(c) and PRC Section 5097.98. Per PRC Section 5097.98, the City shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the City has discussed and conferred, as prescribed in this section (PRC Section 5097.98), with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains.

V. Cumulative) <u>Less than Significant with Mitigation Incorporation</u>. The geographic scope of potential cumulative impacts on cultural resources encompasses the C-APE and vicinity. All cumulative projects identified in the vicinity (see Table 4) are assumed to cause some degree of ground disturbance during construction and, thus, contribute to a potential cumulative impact on buried cultural resources. The Project would not contribute to a cumulatively considerable impact to historical resources. Background research suggests that the potential for Project activities to encounter archaeological resources or human remains is low. However, as described in Questions V.b and V.c, above, the Project does have the potential to impact as-yet unrecorded archaeological resources or human remains that may be present in the C-APE. Such impacts, in combination with those of the other identified cumulative projects, create the potential for a cumulative impact that would be significant if no mitigation were incorporated. However, with implementation of **Mitigation Measure CR-1** and **CR-2**, the Project's contribution to the potential cumulative impact would be less than cumulatively considerable and, therefore, would be less than significant.

VI. ENERGY

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	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?	☐	☐	☐	☒

VI. a) Less Than Significant Impact. The Project would utilize energy primarily in the form of transportation fuels including diesel and gasoline consumed during Project construction. Once the project construction is completed, operation of the Project would not include the use of additional diesel or gasoline fuel. Neither propane or natural gas are anticipated to be required during Project construction or operation.

Construction

Construction of the Project is expected to last approximately 80 workdays. Equipment required during construction would include heavy-duty equipment such as an excavator, bulldozer, loader, dump trucks, and water trucks, that all typically consume diesel fuel. Additionally, offsite vehicles would be required to transport equipment, materials, and workers to the Project site during construction. A total of up to 1,600 one-way haul truck trips and approximately two one-way vender delivery trips would be required to deliver materials and supplies to the Project site. It is assumed that haul trucks and vender trucks would be diesel-fueled. Approximately five construction workers would commute to the Project site each workday during construction, resulting in up to 10 one-way trips during Project construction. The majority of worker trips are anticipated to utilize gasoline.

Construction equipment, haul trucks, vender trucks, and worker vehicles would consume fuel during Project construction. Due to the scope of the Project, the small construction crew required for the Project, as well as the limited duration of construction activities, the consumption of fuel energy during construction would be temporary, localized, and would not represent a significant amount of fuel relative to the 53 million gallons of gasoline and 14 million gallons of diesel that were sold in Napa County in 2017 (CEC, 2018). Vehicles used for Project construction and operation would be required to comply with all federal and state fuel efficiency standards. Additionally, there are no Project characteristics or features that would be inefficient or that would result in the use of equipment and vehicles in a manner that would be less energy efficient than similar projects. Although Project construction would result in the consumption of energy, the energy consumption would not be wasteful, inefficient, or unnecessary. The impacts during construction would be less than significant.

Operations

Operation of the Project would include a proposed Supervisory Control and Data Acquisition (SCADA) system to control automated outlet valves that would require a small amount of electricity. In addition, a temporary mobile pump may be used on occasion in the event that water needs to be pumped out of the ponds of the East and West Ponds. However, it is assumed that any required pumping would be similar to pumping that occurs under baseline conditions for Ponds 2 and 3, and therefore no net increase in project-associated energy consumption would occur. Any energy consumption that would be associated with the Project would not be wasteful, inefficient, or unnecessary. The impacts during operations would be less than significant.

VI. b) No Impact. As described above, the Project would require the consumption of transportation fuels during construction of the Project, and there would be virtually no increase in energy consumption during operations. The Project would not conflict with any federal or state plans for energy efficiency. Additionally, the Project would not conflict with any energy efficiency policies outlined in the Conservation Element of Napa County's General Plan (Napa County, 2009). The Project would not conflict with any local plans or policies related to renewable energy or energy efficiency.

In terms of energy usage from heavy-duty vehicles used during construction, the U.S. Environmental Protection Agency and National Highway Traffic Safety Administration (NHTSA) established a comprehensive Heavy-Duty National Program that reduces greenhouse gas emissions and increases fuel efficiency for on-road medium- and heavy-duty vehicles beginning with model year 2018 (USEPA, 2018). CARB's On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation also requires diesel trucks that operate in California to be upgraded to reduce emissions, such that by 2023 nearly all trucks would have 2010 model year engines or equivalent (CARB, 2014). Vehicles used during Project construction would be required to comply these regulations; therefore, the Project would not impede the efficient use of fuel for heavy-duty vehicles. Off-road equipment during construction would be subject to off-road equipment regulations such as Tier 4 standards or the Off-Road Regulation implemented by CARB, and would not impede the implementation of CARB's energy efficiency programs.

In terms of light-duty vehicle energy usage, as described above, the NHTSA required manufacturers of light-duty vehicles to meet an estimated combined passenger car and light truck average fuel economy level of 34.1 miles per gallon (mpg) by model year 2016. In the course of more than 30 years, the National Energy Conservation Policy Act regulatory program has resulted in improved fuel economy throughout the United States' vehicle fleet, and has also protected against inefficient, wasteful, and unnecessary use of energy. Vehicles used by Project construction and maintenance workers would incorporate these standards and programs; therefore, the Project would not impede the efficient use of fuel for light-duty vehicles.

The Project would not conflict with any state, federal, or local plans or policies related to renewable energy or energy conservation. The Project would have no impact associated with a plan or policy conflict.

VI. Cumulative) Less than Significant Impact. The geographic scope of potential cumulative effects with respect to energy conservation includes the electric grid and natural gas system to which the Project would receive energy from, areas from which transportation fuels would be provided (for this IS/MND, publicly available fuel sources in the vicinity of the Project site), and the cumulative projects identified in Table 6.1. Given the small percentage of the Project's fuel and energy use compared to existing fuel and energy use in the region, the Project's impact is less-than-significant. Incremental impacts related to the use of fuel or energy in a wasteful or inefficient manner and related to adversely affecting existing energy resources are not expected to combine with the incremental impacts of other projects to cause an adverse cumulative impact associated with energy. The operational energy requirements would be negligible. The Project's incremental cumulative impact relating to the consumption of energy would be less than significant.

References

California Energy Commission (CEC), 2018. California Annual Retail Fuel Outlet Report Results (CEC-A15) Energy Assessments Division, September 27, 2018.

California Air Resources Board (CARB), 2014. California Greenhouse Gas Inventory for 2000–2012 – by Category as Defined in the 2008 Scoping Plan, March 24, 2014. Available online at: http://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_00-12_2014-03-24.pdf. Accessed June 20, 2014.

Napa County, 2009. Conservation Element of Napa County's General Plan, June 23, 2009.

U.S. Environmental Protection Agency (USEPA), 2019. Detailed Fact Sheet: EPA and NHTSA Propose Standards to Reduce Greenhouse Gas Emissions and Improve Fuel Efficiency of Medium- and Heavy-Duty Vehicles for Model Year 2018 and Beyond, Accessed online (https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/detailed-fact-sheet.pdf), June 13, 2019.

VII. GEOLOGY AND SOILS

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	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 or based on other substantial evidence of a known fault?	☐	☐	☒	☐
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 by the Uniform Building Code, creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

VII. a.i) Less than Significant Impact. The San Francisco Bay Area generally experiences a high level of seismic activity due to its tectonic setting. Surface rupture occurs when the ground surface is broken due to fault movement during earthquakes. Such hazards are generally assumed to occur in the vicinity of an active fault trace. Active fault lines within a 20 mile radius of the Project include the Maacama fault zone, Rodgers Creek fault, Alexander-Redwood Hill fault zone, Collayomi fault, West Napa fault, and the Concord-Green Valley fault (CGS, 2010).

The State Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) prohibits the development of structures for human occupancy across active fault traces. Under the Alquist-Priolo Act, the California Geological Survey (CGS) has established zones on either side of the active fault that delimits areas susceptible to surface fault rupture.[6] These zones are referred to as Earthquake Fault Zones (EFZs) and are shown on official maps published by the CGS. The Project site is not located within an EFZ. The closest active faults are the Maacama fault located approximately 6.2 miles southwest of the Project site, the Rogers Creek fault approximately 10.7 miles also to the southwest, and the West Napa fault is located approximately 25 miles to the southeast (A3GEO, 2019). No active faults are known to traverse through the Project site; therefore, the possibility of surface fault rupture onsite is negligible. Although fault rupture is not necessarily bound by the limits of an EFZ and movement along an unknown fault is possible, it is considered unlikely to occur in areas outside of the mapped EFZ. Therefore, based on the locations of known faults relative to the Project location, the potential for fault rupture across the Project site is considered less than significant.

VII. a) ii) and iii) Less than Significant Impact with Mitigation Incorporation. The Project site is located in a seismically-active region. In the Long-Term Time-Dependent Probabilities for the Third Uniform California Earthquake Rupture Forecast (UCERF3), the 2014 Working Group on California Earthquake Probabilities indicate that there is a 72 percent likelihood of a magnitude 6.7 or higher earthquake occurring in the Bay Area in the next 30 years (Field, et al., 2015). The Project site could experience a range of groundshaking effects during an earthquake on one of the aforementioned Bay Area faults.[7] Depending on a variety of factors such as distance to the epicenter, magnitude of the event, and behavior of underlying materials, groundshaking could be significant. According to Earthquake Planning Scenarios generated by the USGS, ruptures on either the Rogers Creek fault (M 7.3) or Maacama fault (M 7.4) could produce strong to very strong ground shaking (USGS, 2016a; USGS 2016b). Depending on the size of the event, some areas could experience ground shaking violent enough to cause some moderate damage to structures (USGS 2016a; USGS 2016b). On August 24, 2014 the M_w 6.0 South Napa earthquake occurred on the West Napa fault, approximately 30 miles to the south-southeast, and was the

6 CGS designates zones that are most likely to experience fault rupture, although surface fault rupture is not necessarily restricted to those specifically zoned areas. An active fault is defined by the State of California as a fault that has had surface displacement within Holocene time (approximately the last 11,000 years). A potentially active fault is defined as a fault that has shown evidence of surface displacement during the Quaternary (last 1.6 million years), unless direct geologic evidence demonstrates inactivity for all of the Holocene or longer. This definition does not mean that faults lacking evidence of surface displacement are necessarily inactive. A fault can be considered sufficiently active if there is some evidence that Holocene displacement occurred on one or more of its segments or branches. A structure for human occupancy is one that is intended for supporting or sheltering any use or occupancy, which is expected to have a human occupancy rate of more than 2,000 person hours per year.

7 Shaking intensity is a measure of ground shaking effects at a particular location, and can vary depending on the overall magnitude of the earthquake, distance to the fault, focus of earthquake energy, and type of underlying geologic material. The Modified Mercalli intensity (MMI) scale is commonly used to measure earthquake effects due to ground shaking. The MMI values for intensity range from I (earthquake not felt) to XII (damage nearly total).

second largest earthquake to hit the San Francisco Bay area since the 1989 M_w 6.9 Loma Prieta earthquake. The earthquake caused moderate intensity groundshaking in Calistoga (A3GEO, 2019).

Seismic shaking of this intensity can trigger ground failures caused by liquefaction, potentially resulting in foundation damage, disruption of utility service, and roadway damage.[8] The soils most susceptible to liquefaction are clean, loose, uniformly graded, saturated, sands, and occur close to the ground surface, usually at depths of less than 50 feet. Based on the preliminary geotechnical report, groundwater was encountered at depths of 6.9 to 114 feet below ground surface (bgs) (A3GEO, 2019). The near-surface soils are predominantly clay, sand, and gravel. The geotechnical investigation concluded the liquefaction potential at the Project site is very high (A3GEO, 2019). The Holocene-age surface deposits are generally less consolidated, weaker, and more susceptible to liquefaction (A3GEO, 2019).

The Project would not include the construction of any habitable structures. Although seismic groundshaking or liquefaction may occur at the site, the potential damage would be minimized through the implementation of building code requirements. Project improvements would be required to adhere to the most current version of the California Building Code (CBC), which includes specifications and seismic design criteria that are created to minimize damage from anticipated groundshaking and secondary effects of liquefaction.

Upon certification of the CEQA document, the Project applicant would prepare the final design, including a supplemental report to accompany the Preliminary Geotechnical Investigation Report by A3GEO Inc., which would address site-specific geotechnical hazards that were not addressed, and which may impact the Project. The supplemental geotechnical report would include the results and recommendations from A3GEO, Inc.'s geotechnical conditions investigation, updated to include information regarding the final project design (i.e., analysis of site-specific geotechnical hazards). Compliance with all the applicable design parameters would reduce the impacts associated with seismic ground shaking. This report shall address specific geotechnical hazards that were not addressed in the Preliminary Geotechnical Investigation Report (i.e., a seismic hazards evaluation, including analyses of liquefaction, lateral spreading, and seismic slope stability) and provide recommendations for mitigating such hazards.

Implementation of **Mitigation Measure GEO-1** would require the Project to adhere to and implement the recommendations from the Geotechnical Conditions Report by A3GEO, as well as the supplemental report that will accompany it, and adherence to the recommendations in those reports would reduce this impact to a less than significant.

Mitigation Measure GEO-1: Implementation of Design Criteria recommended in Geotechnical Report.

The structural requirements of the CBC are applicable to certain structural components of the Project, including retaining walls, screen walls, fences, and control shelters. The Lead Agency and/or its contractors shall design such structures to comply with such CBC standards and shall adhere to and implement all design recommendations and parameters established in the Project's

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8 Liquefaction is the process by which saturated, loose, fine-grained, granular, soil, like sand, behaves like a dense fluid when subjected to prolonged shaking during an earthquake.

Geotechnical Investigation Report by A3GEO Inc. In addition, The Lead Agency shall retain a California registered professional engineer(s) to prepare a supplemental geotechnical report. This report shall address specific geotechnical hazards that were not addressed in the Geotechnical Investigation Report (i.e., seismic ground shaking and liquefaction), and provide recommendations for mitigating such hazards.

The recommendations shall ensure that when incorporated, the Project shall not increase the potential for ground failure, and slope instability, and shall be resistant to damage from ground shaking, and ground failure. Incorporation of the design criteria and the geotechnical recommendations into Project construction would limit the potential damage to less-than-significant levels.

VII. a) iv) <u>Less than Significant Impact</u>. Landslides generally are any type of ground movement that occurs primarily due to gravity acting on relatively weak soils and bedrock on an over-steepened slope. Slope instability is often initiated or accelerated from soil saturation and groundwater pressure, though may also be aggravated by grading activity, such as removal of toe support by excavation or addition of new loads, such as fill placement. Areas that are more prone to landslides include old landslides, the bases or tops of steep or filled slopes, and drainage hollows.

Given that the Project site is relatively flat, there are no slopes that would be susceptible to landslides, resulting in a minimal risk for landslides at the Project site. Therefore, the exposure of people or structures to potential substantial adverse effects due to landslides would be less than significant.

VII. b) <u>Less than Significant Impact</u>. Construction activities associated with the Project, such as dewatering, excavation, grading, and grubbing of the site, would occur to reconfigure and upgrade two of the existing riverside ponds and separate the conveyance of stormwater from the wastewater outfall. If uncontrolled or not managed, soil erosion resulting from Project construction would be a significant impact, as these activities could increase the susceptibility of soils to erosion by wind and/or water, and subsequently result in significant soil loss or erosion. To avoid any impact due to erosion and loss of topsoil the Project would implement a water diversion plan, erosion control measures, and a SWPPP.

The Project would comply with the terms of the City of Calistoga's Ordinance 707, which specifies that an erosion and sediment control plan or approved SWPPP be prepared. Dewatering activities would take place in accordance with applicable NPDES requirements. Stormwater management would be maintained in accordance with an approved stormwater facilities operation and maintenance plan per requirements in the City of Calistoga's Stormwater Protection Ordinance (City of Calistoga, 2015). To ensure that all employed measures meet the City's standards, and are in compliance with the NPDES Construction General Permit, a SWPPP would be implemented as part of the Proposed Project and would include an erosion and sediment control plan and specific BMPs designed to prevent run-on and runoff of pollutants, and minimize site erosion to the maximum extent practicable.

The ESCP and SWPPP would identify implementation measures necessary to mitigate potential construction-related runoff, soil erosion, and loss of topsoil. These measures would include BMPs, such as erosion and sediment control measures and proper control of non-stormwater discharges. During construction, routine inspections of all BMPs shall be conducted to document compliance and identify deficiencies to be corrected. The use of construction BMPs will minimize the potential for erosion and loss of topsoil, and shall include, without limitation, the following:

- Avoid scheduling construction activities during a rain event;
- Be prepared for sudden changes in conditions;
- Construct berms, silt fences, straw bales, fiber rolls, and/or gravel/sand bags berms;
- Cover stockpiled soils during a rain event and monitor perimeter barriers, repair as necessary;
- Stabilize entrances to work area to prevent tracking of dirt or mud onto roadways;
- Implement dust control practices as appropriate on all exposed surfaces. Water used for dust control shall not be applied in a manner such that runoff would be allowed occur.

With implementation of a SWPPP including construction and erosion-control BMPs specifically developed for the Project site, construction activity and associated soil disturbance would not contribute substantially to soil erosion or the loss of topsoil, and impacts would be less than significant.

VII. c) Less than Significant Impact with Mitigation Incorporation. As previously discussed, the Geological Conditions Report by A3GEO Inc. recognizes the possibility of soil liquefaction at the Project site, specifically the Holocene-age deposits. The liquefiable soils and/or the underlying geology would present a significant impact; as such, **Mitigation Measure GEO-1**, described above, would require a final geotechnical investigation to adequately analyze and mitigate for potential impacts related to soil liquefaction, such as damage and/or collapse of infrastructure. If significant impacts arise from that investigation, appropriate design recommendations would be implemented (also required by Mitigation Measure GEO-1). Adherence to these measures would reduce impacts to a less-than-significant level.

VII. d) Less than Significant Impact. Expansive soils are soils that possess a "shrink-swell" characteristic, also referred to as linear extensibility. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying; the volume change is reported as a percent change for the whole soil. Changes in soil moisture can result from rainfall, landscape irrigation, utility leakage, roof drainage, and/or perched groundwater.[9] Expansive soils are typically very fine-grained and have a high to very high percentage of clay. Structural damage may occur incrementally over a long period of time, usually as a result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils. Linear extensibility is used to determine the shrink-swell potential of soils. If the

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9 Perched groundwater is a local saturated zone above the water table that typically exists above an impervious layer (such as clay) of limited extent.

linear extensibility is more than 3 percent, shrinking and swelling may cause damage to building, roads, and other structures. (NRCS, 2018)

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey, the soils present at the Project site have a low linear extensibility rating (NRCS, 2018). Impacts related to expansive soils would be less than significant.

VI. e) No Impact. The Project would not include any elements that would require a septic or other alternative wastewater system. Therefore, there would be no impact.

VI. f) Less than Significant Impact. A significant impact would occur if the Project would destroy a unique paleontological resource or site, or a unique geologic feature. Paleontological resources are the fossilized evidence of past life found in the geologic record. Despite the tremendous volume of sedimentary rock deposits preserved worldwide, and the enormous number of organisms that have lived through time, preservation of plant or animal remains as fossils is an extremely rare occurrence. Because of the infrequency of fossil preservation, fossils—particularly vertebrate fossils—are considered to be nonrenewable resources. Because of their rarity, and the scientific information they can provide, fossils are highly significant records of ancient life.

According to the Society of Vertebrate Paleontology (SVP), rock formations that are considered of paleontological sensitivity are those rock units that have yielded significant vertebrate or invertebrate fossil remains (SVP, 2010). This includes, but is not limited to, sedimentary rock units that contain significant paleontological resources anywhere within its geographic extent. As identified in the Project's geotechnical investigation, the Project site is underlain by modern stream channel deposits adjacent to Holocene alluvium and Holocene stream channel deposits (CGS, 2013), and is not likely to yield significant paleontological remains because they are surface deposits and are too recent to be considered fossil-bearing rock units; therefore the impact would be less than significant.

VIII. GREENHOUSE GAS EMISSIONS

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	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?	☐	☐	☒	☐

VIII. a) Less than Significant Impact. Based on the following analysis, construction and operation of the Project would not generate greenhouse gas (GHG) emissions, that would have a significant impact on the environment.

Construction

To complete the GHG analysis the same conservative assumptions were utilized as those applied in Section III, Air Quality. It is assumed that construction activities that would be associated with the Project would occur in a single year (2019) over approximately four months (i.e. 80 work days). The majority of the Project-related GHG emissions would be generated on-site during construction due to the use of heavy-duty off-road equipment use. A lower volume of emissions would be generated off-site from vehicles transporting equipment, materials, and workers to and from the site. Based on the activities that would be necessary to construct the Project, it is estimated that required construction equipment would include a paver, backhoe, bulldozer/loader, dump truck, excavator, haul truck, roller/compactor, a truck to spread seed, saw cutters, and a water truck. It is assumed that up to five construction workers would commute to the Project site and there would be an average of one vender delivery to the Project site each workday. Up to 1,600 one-way truck trips would be required to deliver materials to the Project site.

The Bay Area Air Quality Management District (BAAQMD) has adopted operational GHG significance thresholds of 1,100 metric tons of carbon dioxide equivalent (CO_2e) per year for projects other than stationary sources and 10,000 metric tons of CO_2e per year for stationary source projects (BAAQMD, 2017c). Since the Project would not include stationary sources of GHG emissions, combined amortized construction and annual operational emissions that exceed the BAAQMD's GHG significance threshold of 1,100 metric tons of CO_2e per year would be considered a significant impact on the environment. Use of this threshold results in approximately 59 percent of all projects being above the significance threshold and having to implement feasible mitigation measures to meet their CEQA obligations. These projects account for approximately 92 percent of all GHG emissions anticipated to occur between now and 2020 from new land use development in the Bay Area (BAAQMD, 2017c). If all land use-related project emissions are mitigated to below this threshold, it would represent an overall reduction in new land use project-related emissions of up to 92 percent.

The BAAQMD GHG significance threshold was developed to focus on emissions reductions by 2020, and that BAAQMD staff and CARB have not yet provided guidance or recommendations for significance thresholds to evaluate consistency with emissions reduction goals for years beyond 2020. The Project would result in virtually no net increase in emissions beyond 2020. In addition, BAAQMD does not have quantitative thresholds of significance for GHG emissions from a project's construction. Instead, BAAQMD recommends lead agencies quantify and disclose GHG emissions that would occur during construction and make a determination on the significance of these construction-related GHG impacts. In the absence of significance thresholds specifically designed to focus on construction emissions, the City, as the lead agency, has determined that the Project's amortized construction-related GHG emissions over its useful life (i.e., 30 years) should be compared to the BAAQMD's operation-related GHG threshold of significance for projects other than stationary sources which, as noted above is, 1,100 metric tons CO_2e (BAAQMD, 2017c).

GHG emissions from construction activities were estimated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2 with the same assumptions as discussed in Section III. Air Quality. The results of the CalEEMod modeling indicate that the Project would generate a total of approximately 81.2 metric tons of CO_2e over the Project construction period. Amortized over an estimated Project life of 30 years, the annual GHG emissions from Project construction would be approximately 2.7 metric tons per year of CO_2e. This is well below the BAAQMD's 1,100 metric tons per year significance threshold. Therefore, the Project would not generate GHG emissions that may have a significant impact on the environment. For the construction and operation GHG emission estimates, refer to Appendix E. This impact would be less than significant.

Operations

Since the Project would have automated valve controls for discharges to Napa River, no additional employees would need to be hired to maintain the Project and it would not generate additional vehicle trips. In addition, it is assumed that any required pumping of the East and West ponds would be similar to pumping that occurs under baseline conditions for Ponds 2 and 3, and there would be no net increase in pumping. Therefore, there would be no net increase in GHG emissions generated during the operation of the Project, with the exception of indirect emissions that would be associated with a negligible amount of electricity required to operate the automated SCADA system.

VIII. b) <u>Less than Significant Impact</u>. The City of Calistoga has adopted a Climate Action Plan that outlines a set of reduction objectives and strategies designed to reduce GHG emissions 15 percent below 2005 levels by 2020 (City of Calistoga, 2014). The Project would not conflict with the objectives of the Climate Action Plan. Therefore, the Project would not result in a conflict with the City of Calistoga Climate Action Plan.

The Project would also be consistent with the BAAQMD 2017 Clean Air Plan (2017 CAP) and Assembly Bill 32 (AB 32). The 2017 CAP contains 35 control measures aimed at reducing GHG emissions in the Bay Area. Projects that incorporate all feasible GHG control measures are considered consistent with the 2017 CAP. The 2017 CAP does not contain any measures specific to the Project and, therefore, no inconsistency with the 2017 CAP is identified. With no specific control measures from the 2017 CAP applicable to the Project, the Project would not hinder implementation of CAP control measures. In addition, since the Project would not result in a substantial increase in GHG emissions, the Project would not conflict with the implementation of the GHG reduction measures found in the 2017 CAP. The BAAQMD GHG thresholds were designed to meet the AB 32 goal of reducing GHG emissions to 1990 levels by 2020. As discussed under Question a), the proposed Project would not result in any temporary or new permanent sources of GHG emissions that would exceed the BAAQMD's 1,100 metric tons per year CO_{2e} significance threshold. Since the BAAQMD GHG significance threshold would not be exceeded, the Project would not result in a cumulatively considerable increase in GHG emissions that would impair the State's ability to implement AB 32. This impact would be less than significant.

VIII. Cumulative) Less than Significant Impact. According to the Governor's Office of Planning and Research (OPR), GHG emissions are inherently a cumulative concern, in that the significance of GHG emissions is determined based on whether such emissions would have a cumulatively considerable impact on global climate change (OPR, 2008). Although the geographic scope of cumulative impacts related to GHG emissions is global, this analysis focuses on impacts associated with potential conflicts with California's reduction goals set forth in AB 32 and the Project's direct and/or indirect generation of GHG emissions. The Project would result in less-than-significant emissions of GHGs and would not conflict with the local or state GHG reduction goals (see Sections VII a) and b)). Therefore, the Project-specific incremental impact associated with GHG emissions would not contribute to a significant cumulative impact, and the incremental impact would be less-than-cumulatively-considerable and less than significant.

IX. HAZARDS AND HAZARDOUS MATERIALS

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	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 Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
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.	☐	☐	☒	☐

IX. a) and b) Less than Significant Impact. Project construction activities would require the use of limited quantities of common hazardous substances, such as gasoline and diesel fuel, oils and lubricants, hydraulic fluid, and solvents to maintain vehicles and motorized equipment. The improper use, storage, handling, transport or disposal of hazardous materials during construction could result in an accidental release exposing construction workers, the public and the environment, including soil and/or ground or surface water.

However, there are numerous laws and regulations that govern the transport, use, storage, handling and disposal of hazardous materials to reduce the potential hazards associated with these activities. California Occupational Safety and Health Administration (CalOSHA) is responsible for developing and enforcing workplace safety standards, including the handling and use of hazardous materials. The Hazardous Materials Release Response Plans and Inventory Act of 1985, codified in Health and Safety Code, Sections 25500 et seq., also known as the Business Plan Act, requires businesses using hazardous materials to prepare a Hazardous Materials Business Plan (HMBP) that describes their facilities, inventories, emergency response plans, and training programs. HMBPs contain basic information on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed. Contractors using hazardous materials during construction would be required to implement their HMBP. Those contractors using and storing hazardous materials are required to submit a HMBP to their local Certified Unified Program Agency (CUPA) and to report releases to their CUPA and the State Office of Emergency Services. The California Office of Emergency Services is responsible for implementing the accident prevention and emergency response programs established under the Act and implementing regulations. Transportation of hazardous materials is regulated by the federal Department of Transportation (USDOT) and Caltrans. Together, federal and state agencies determine driver-training requirements, load labeling procedures, and container specifications designed to minimize the risk of accidental release. Therefore, the transport, use, storage, handling and disposal of hazardous materials for the Project would be adequately controlled through existing regulatory requirements and the potential impact during construction would be less than significant.

The potential for the Project to encounter contaminated soil and groundwater was evaluated utilizing database searches of the State Water Resources Control Board (SWRCB) GeoTracker (SWRCB, 2018) and the California Environmental Protection Agency (Cal EPA) Department of Toxic Substances Control (DTSC) EnviroStor databases (DTSC, 2018). These databases were reviewed to identify known environmental cases listed within a 0.25-mile radius of the Project site and staging area. Review of the databases did not identify any known environmental cases in the vicinity of the Project or staging area. Thus, it is unlikely that Project construction would intercept or release contaminated soils or groundwater into the environment during construction; therefore this impact is considered less than significant.

The Project would implement a water diversion plan, erosion control measures, and a SWPPP to ensure that the Project would not adversely impact the Napa River or its tributaries. The Project would comply with the terms of the City of Calistoga's Ordinance 707, which specifies that an erosion and sediment control plan or approved SWPPP be prepared. Dewatering activities would take place in accordance with applicable NPDES requirements. Stormwater management would be maintained in accordance with an approved stormwater facilities operation and maintenance plan per requirements in the City of Calistoga's Stormwater Protection Ordinance (City of Calistoga, 2015). The Project would adhere to the sustainability goal for the Napa Valley Subbasin toward the protection of groundwater quantity and quality. To ensure that all measures for the protection of water quality are employed as part of the project that meet the City's standards, and in compliance with the NPDES Construction General Permit, a SWPPP would be implemented as part of the Proposed Project and would include an erosion and sediment control plan and specific BMPs designed to prevent run-on and runoff of pollutants, and minimize site erosion to the maximum extent practicable.

An ESCP and SWPPP would identify implementation measures necessary to mitigate potential water quality degradation as a result of construction-related runoff. These measures would include BMPs and other standard pollution prevention actions, such as erosion and sediment control measures, proper control of non-stormwater discharges, and hazardous spill prevention and response. During construction, routine inspections of all BMPs shall be conducted to document compliance and identify deficiencies to be corrected. The use of construction BMPs will minimize the potential for erosion and loss of topsoil, and shall include, without limitation, the following:

- Avoid scheduling construction activities during a rain event, but be prepared for sudden changes in conditions;
- Construct berms, silt fences, straw bales, fiber rolls, and/or gravel/sand bags berms;
- Cover stockpiled soils during a rain event and monitor perimeter barriers, repair as necessary;
- Stabilize entrances to work area to prevent tracking of dirt or mud onto roadways;
- Manage/store hazardous materials and wastes to prevent spill;
- Designate appropriate areas for equipment fueling and maintenance to prevent spills of leaks of liquids; and
- Implement dust control practices as appropriate on all exposed surfaces. Water used for dust control shall not be applied in a manner such that runoff would be allowed occur.

With implementation of a SWPPP including BMPs specifically developed for the Project site, construction activity and associated soil disturbance would not substantially degrade ground or surface water quality; impacts would be less than significant.

IX. c) No Impact. There are no schools located within 0.25-mile of the Project. The nearest school is Calistoga Elementary School, approximately 1 mile northwest of the Project. There would be no impact related to potential exposure of hazardous emissions or acutely hazardous materials, substances, or wastes within 0.25-miles from a school.

IX. d) No Impact. The Project site and staging area is not included on any of the environmental databases maintained by the SWRCB (2018) or the DTSC (Cortese List) (2018). Therefore, the Project would not cause a significant hazard to the public or the environment related to a known hazardous materials sites; no impact would occur.

IX. e) No Impact. The Project is not located within an airport land use plan or within two miles of an airport or within the vicinity of an active private air strip. Though land northwest of the Project site is zoned Commercial Airport, this area is currently closed has not been used as an airport since 1999 (Napa Valley Register, 2017). The nearest airport to the Project site is Angwin-Parrett Field, approximately 6.5 miles east. Therefore, there would be no impact with regard to air traffic hazards or excessive noise.

IX. f) Less than Significant Impact. The Project site is not identified by the City of Calistoga General Plan as a designated assembly area, however the southeastern edge of the Project site is bordered by Dunaweal Lane which is marked as a major arterial road in the City of Calistoga General Plan (City of Calistoga, 2014). The Project would not include the closure or obstruction of Dunaweal Lane, nor or there any required lane or full street closures anticipated to safely and adequately construct the Project. Therefore, the Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan, and would result in a less-than-significant impact.

IX. g) Less than Significant Impact. According to California Department of Forestry and Fire Protection's (CAL FIRE) Fire Hazard Severity Zone map, the Project site and staging area would not be within an area designated as very high or high fire hazard zones (CAL FIRE, 2007; 2008). The Project would be located in an urban area and would not include components that would increase the risk of fire beyond existing conditions. In addition, the Project would not construct any habitable structures. Therefore, there is a less-than-significant impact associated with wildland fires.

X. HYDROLOGY AND WATER QUALITY

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	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?	☐	☐	☒	☐

Environmental Setting

The City-owned Dunaweal WWTP is a tertiary treatment facility consisting of the headworks structure, aeration basins, and includes secondary and tertiary treatment and disinfection of wastewater. The WWTP is permitted to discharge tertiary treated and de-chlorinated effluent to the Napa River at three discharge locations subject to NPDES permit limitations, per Order No. R2-2016-0018 (SFRWQCB, 2016). Prior to discharge, treated effluent is polished and stored in the existing four riverside ponds comprising 2.7 acres adjacent to and north of the WWTP. Recycled water (tertiary treated effluent) stored in the riverside ponds can be returned for further treatment if water quality does not meet effluent limitations for discharge.

The Project would be located in the City of Calistoga in the Napa River watershed, which encompasses the uppermost 21.8 square miles of the 426-square mile Napa River watershed (hydrologic unit code [HUC] 18050002) and drains the northern extent of the Mayacama Mountains. Elevations in the watershed range from approximately 4,000 feet (NAVD 88) near the top of Mt. St. Helena to approximately 310 feet above sea level at the lowest elevations on the Project site.

The climate near the Project site and contributing Napa River watershed typically involves cool, wet winters and very dry summers with the majority of annual precipitation falling between the months of December and March. Average annual precipitation in the City of Calistoga is 37.5 inches, however, rainfall in excess of 50 inches per year is common in the upper watershed (WRCC, 2016). Surface waters that traverse the Project site include the Napa River, and two of its tributaries: Simmons Creek, and Oat Hill Mine Ditch. The Project site is located within Zone AE Federal Emergency Management Agency (FEMA) Special Flood Hazard Area (SFHA) and the floodway of the Napa River (FEMA, 2008).

Regulatory Setting

Federal and State Regulations, Policies and Plans

Clean Water Act. Under the Clean Water Act (CWA) of 1977, the USEPA seeks to restore and maintain the chemical, physical, and biological integrity of the nation's waters by implementing water quality regulations. Multiple sections of the CWA apply to activities near or within surface or ground water.

Section 404 of the CWA authorizes the USACE to regulate the discharge of dredged or fill material to waters of the U.S., including wetlands (33 United States Code [USC] Section 1344). The USACE issues site-specific individual or general (i.e., Nationwide) permits for such discharges.

Under Section 401 of the CWA, any applicant for a federal license or permit to conduct any activity that may result in any discharge into navigable waters must provide the licensing or permitting agency with a certification that the discharge would comply with the applicable CWA provisions (33 USC Section 1341). If a federal permit is required, such as a USACE Section 404 Nationwide Permit for dredge and fill discharges, the Project proponent must also obtain a Section 401 Water Quality Certification from the RWQCB.

Section 402(p) of the CWA regulates discharges to surface waters through the NPDES Program, a nationwide surface water discharge permit program for municipal and industrial point sources.

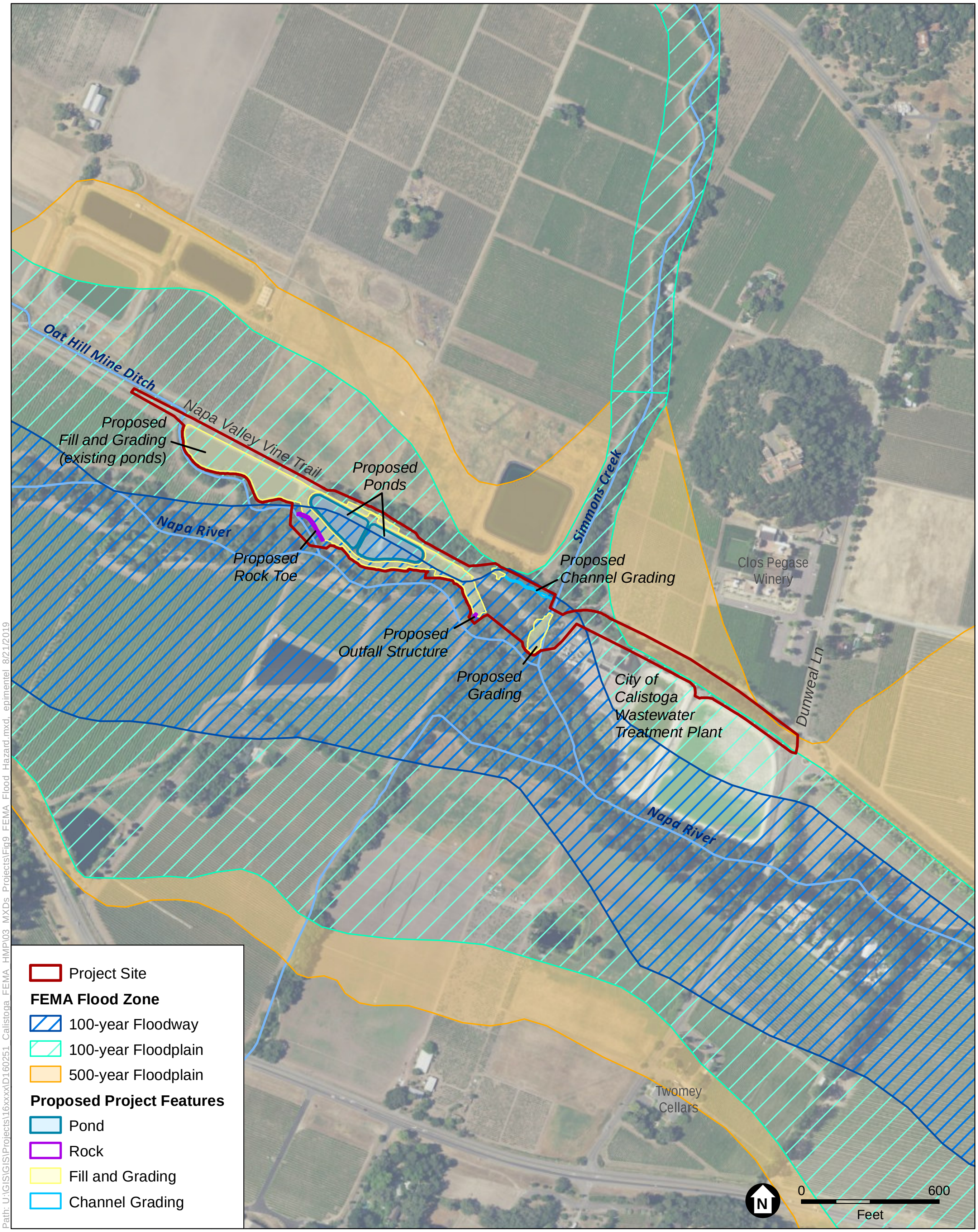
In California, NPDES permitting authority is delegated to and administered by the nine RWQCBs. Under Section 402, the San Francisco Bay RWQCB has set standard conditions for each permittee in the Bay Area, including effluent limitation and monitoring programs. In addition to their responsibility to issue and enforce compliance with NPDES permits, the RWQCBs are responsible for preparation and revision of the relevant regional San Francisco Bay Water Quality Control Plan (Basin Plan), also known as the Basin Plan (discussed further under State regulations).

Section 303 (d) of the CWA requires that each State identify water bodies that are impaired (i.e., do not meet one or more of the water quality standards established by the State, even after point sources of pollution have been equipped with the minimum required levels of pollution control technology).The USEPA approved a revised list of impaired waters pursuant to CWA section 303(d), in October of 2011, which requires identification of specific water bodies where it is expected that water quality standards will not be met after implementation of technology-based effluent limits on point sources. The Regional Water Board has adopted (or plans to establish) total maximum daily loads (TMDLs) for pollutants on the 303(d) List of Water Quality Limited Segments (commonly referred to as the 303(d) list) as a means to achieve water quality standards for the impaired waters. Once a water body is placed on the 303(d) list, it remains on the list until a TMDL is adopted and the water quality standards are attained or sufficient data are demonstrated that the water quality standards have been met and delisting should occur. The Napa River is listed as impaired by nutrients, pathogens, and sediment. San Pablo Bay, to which the Napa River is tributary, is listed for chlordane, Dichlorodiphenyltrichloroethane (DDT), dieldrin, dioxins and furans, mercury, nickel, Polychlorinated biphenyls (PCBs), selenium, and exotic species.

Federal Antidegradation Policy. The federal Antidegradation Policy, established in 1968 under Section 303 of the Clean Water Act, is designed to protect existing uses and water quality and national water resources. Implementation of antidegradation by the states is based on a set of procedures to be followed when evaluating activities that may impact the quality of the waters of the U.S. Antidegradation implementation is an integral component of a comprehensive approach to protecting and enhancing water quality of both surface water and groundwater.

National Flood Insurance Program (NFIP). The FEMA determines flood elevations and floodplain boundaries based on USACE studies. FEMA also distributes the flood insurance rate maps used in the NFIP. These maps identify the locations of special flood hazard areas, including 100-year floodplains.

Federal regulations governing development in a floodplain are set forth in Title 44, Part 60 of the Code of Federal Regulations. Those regulations enable FEMA to require municipalities participating in the NFIP to adopt certain flood hazard reduction standards for construction and development in 100-year floodplains. The NFIP sometimes further divides the one percent annual chance floodplain on a river into a floodway and floodway fringe (FEMA, 2016). The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights (FEMA, 2016). The area between the floodway and the 100-year floodplain boundaries is termed the floodway fringe, which encompasses the portion of the floodplain that could be completely obstructed without increasing the water surface elevation of the 100-year flood by more than 1.0 foot at any point (FEMA, 2016). The flood hazard areas in the vicinity of the Project are shown in **Figure 9**.



SOURCE: USDA, 2016; FEMA, 2019; ESA, 2019

Calistoga Riverside Ponds

Figure 9
FEMA Flood Hazard

ESA

Encroachments are developments or construction within the floodway including fill, new construction, substantial improvements, and other actions. These activities are prohibited within the regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analysis that the proposed encroachment would not result in an increase in flood levels. This is generally demonstrated through a "no rise" certification (FEMA, 2019).

State Regulations, Policies, and Plans

Porter-Cologne Water Quality Control Act. The State of California's Porter-Cologne Water Quality Control Act provides the basis for water quality regulation within California and assigns primary responsibility for the protection and enhancement of water quality to the SWRCB and the nine RWQCBs. Under the Porter-Cologne Act, the SWRCB and RWQCBs also have the responsibility of granting CWA NPDES permits and Waste Discharge Requirements (WDRs) for certain point-source and non-point discharges to waters. The Porter-Cologne Act allows the California SWRCB to adopt statewide Water Quality Control Plans and Basin Water Quality Control Plans, which serve as the legal, technical, and programmatic basis of water quality regulation statewide or for a particular region. The water quality control plans limit impacts on water quality from a variety of sources. The Basin Plan for the San Francisco Bay and the relevant permits are described below.

San Francisco Bay Water Quality Control Plan (Basin Plan). San Francisco Bay waters are under the jurisdiction of the San Francisco Bay RWQCB, which established regulatory standards and objectives for water quality in the Bay in the Water Quality Control Plan for the San Francisco Bay Basin, commonly referred to as the Basin Plan. The Basin Plan identifies existing and potential beneficial uses for surface and ground waters and provides numerical and narrative water quality objectives designed to protect those uses. The preparation and adoption of water quality control plans is required by the California Water Code (Section 13240) and supported by the federal CWA. Because beneficial uses, together with their corresponding water quality objectives, can be defined pursuant to federal regulations as water quality standards, the Basin Plan is a regulatory reference for meeting the state and federal requirements for water quality control. Adoption or revision of surface water standards is subject to the approval of the USEPA.

The Napa River has the following beneficial uses, as designated by the Basin Plan: Agricultural Supply, Municipal and Domestic Supply, Groundwater Recharge, Commercial and Sport Fishing, Cold Freshwater Habitat, Fish Migration, Preservation of Rare and Endangered Species, Fish Spawning, Warm Freshwater Habitat, Wildlife Habitat, Water Contact Recreation, Non-contact Water Recreation, and Navigation.

NPDES General Permit and Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (Order No. 2013-001-DWQ). On February 5, 2013, the SWRCB adopted the General Permit for Waste Discharge Requirements for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems, Order No. 2013-001-DWQ (2013 MS4 permit; SWRCB, 2013). The 2013 Phase II MS4 permit modified the 2003 MS4 permit by establishing the storm water management program requirements in the Order and defining the minimum acceptable elements of the municipal storm water management program (SWRCB, 2013). The required program includes specific elements related to program management, education and outreach on stormwater impacts, public involvement/ participation, illicit discharge detection and elimination, construction site stormwater runoff and control, pollution prevention/good housekeeping for permittee operations, post-construction stormwater management for new development and redevelopment, water quality monitoring requirements, program effectiveness assessment, and annual reporting. Napa County and its cities, including Calistoga, are subject to this permit.

NPDES General Permit for Discharges of Stormwater Associated with Construction Activities. As construction associated with the Project would disturb more than one acre of land surface affecting the quality of stormwater discharges into waters of the United States, the Project would be subject to the *NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities* (Order 2009-0009-DWQ, NPDES No. CAS000002; as amended by Orders 2010-0014-DWQ and 2012-006-DWQ). The permit (commonly referred to as the Construction General Permit) regulates stormwater discharges associated with construction or demolition activities, such as clearing and excavation; construction of buildings; and linear underground projects, including installation of water pipelines and other utility lines. The Construction General Permit requires that storm water discharges and authorized non-storm water discharges not contain pollutants that could cause or contribute to an exceedance of any applicable water quality objective or water quality standards (as identified in the Basin Plan).

The Construction General Permit requires the development and implementation of a SWPPP that includes specific BMPs designed to prevent pollutants from entering stormwater or receiving waters. BMPs include erosion and sediment control, waste and spoils pile management practices, site control measures, etc. and include monitoring elements to address potential unauthorized discharges of pollutants off site. The Construction General Permit also sets post-construction standards and includes provisions requiring post construction monitoring and non-stormwater related measures such as irrigation for erosion control revegetation, practices for dust control, and dewatering discharge controls, in compliance with the Basin Plan.

Sustainable Groundwater Management Act. In 2014, the Sustainable Groundwater Management Act (SGMA) was signed into law in California to provide a framework for sustainable management of the state's groundwater resources. SGMA requires governments and water agencies of high and medium priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. SGMA empowers local agencies to form groundwater sustainability agencies (GSAs) to manage basins in a sustainable manner. The Project site is located in the Napa-Sonoma Valley Groundwater Basin, which is designated as a medium priority groundwater basin (DWR, 2010).

Local Regulations, Plans, Policies

The 2016 Basin Analysis Report for the Napa Valley Subbasin (Napa County, 2016) includes the following SGMA Sustainability Goal for the Napa Valley Subbasin:

> *"To protect and enhance groundwater quantity and quality for all the people who live and work in Napa County, regardless of the source of their water supply. The County and everyone living and working in the county will integrate stewardship principles and measures in groundwater development, use, and management to protect economic, environmental, and social benefits and maintain groundwater sustainability indefinitely without causing undesirable results, including unacceptable economic, environmental, or social consequences."*

City of Calistoga Stormwater Runoff Pollution Control Ordinance. In 2015, the Calistoga City Council approved Ordinance 707, which established compliance practices to promote protection and enhancement of the City's water resources, water courses, fish and wildlife habitats through pollution prevention and requirements for source control and management of stormwater (City of Calistoga, 2015).

X. a) Less than Significant Impact.

Construction

The Project would entail a reconfiguration of the existing facility's four wastewater treatment ponds into a site with two reconstructed ponds to address conditions that currently present water quality vulnerabilities. The Project's construction would include removal and replacement of trees/vegetation and infrastructure. Dewatering, excavation, grading, and grubbing of the site would occur to reconfigure and upgrade two of the existing riverside ponds and separate the conveyance of stormwater from the wastewater outfall, as described in the Project Description. As part of the Project, approximately 360 linear feet of the Napa River channel bank would be graded to a stable slope, and revegetated to stabilize existing erosive conditions. Buried rock slope protection structures would also be implemented to provide for stabilization of the river channel banks adjacent to the reconfigured ponds.

As soil moving activities associated with construction in locations proximal to and within water ways such as the Napa River and its tributaries Oat Hill Mine Ditch and Simmons Creek could contribute sediment, silt, or other water quality contaminants to the receiving waters, the Project would implement a water diversion plan, erosion control measures, and a SWPPP to ensure that the Project would not adversely impact the Napa River or its tributaries. The water diversion plan would include use of a temporary siltation pond, baker tank, and biological monitoring to intercept or otherwise prevent contamination of groundwater.

The Project would comply with the terms of the City of Calistoga's Ordinance 707, which specifies that an erosion and sediment control plan or approved SWPPP be prepared. Dewatering activities would take place in accordance with applicable NPDES requirements. Stormwater management would be maintained in accordance with an approved stormwater facilities operation and maintenance plan per requirements in the City of Calistoga's Stormwater Protection Ordinance (City of Calistoga, 2015). The Project would adhere to the sustainability goal for the Napa Valley Subbasin toward the protection of groundwater quantity and quality. To ensure that all measures for the protection of water quality are employed as part of the project that meet the City's standards, and in compliance with the NPDES Construction General Permit, a SWPPP would be implemented as part of the Proposed Project and would include an erosion and sediment control plan and specific BMPs designed to prevent run-on and runoff of pollutants, and minimize site erosion to the maximum extent practicable.

An ESCP and SWPPP would identify implementation measures necessary to mitigate potential water quality degradation as a result of construction-related runoff. These measures would include BMPs and other standard pollution prevention actions, such as erosion and sediment control measures, proper control of non-stormwater discharges, and hazardous spill prevention and response. During construction, routine inspections of all BMPs shall be conducted to document compliance and identify deficiencies to be corrected. The use of construction BMPs will minimize the potential for erosion and loss of topsoil, and shall include, without limitation, the following:

- Avoid scheduling construction activities during a rain event
- Be prepared for sudden changes in conditions;
- Construct berms, silt fences, straw bales, fiber rolls, and/or gravel/sand bags berms;
- Cover stockpiled soils during a rain event and monitor perimeter barriers, repair as necessary;
- Stabilize entrances to work area to prevent tracking of dirt or mud onto roadways;
- Manage/store hazardous materials and wastes to prevent spill;
- Designate appropriate areas for equipment fueling and maintenance to prevent spills of leaks of liquids; and
- Implement dust control practices as appropriate on all exposed surfaces. Water used for dust control shall not be applied in a manner such that runoff would be allowed occur.

With implementation of a SWPPP including BMPs specifically developed for the Project site, construction activity and associated soil disturbance would not substantially degrade ground or surface water quality; impacts would be less than significant.

Operation

The Project is proposed to occur within City-owned public facilities utilized for treatment of wastewater. The Project would not appreciably alter existing uses of the site or its surroundings. The Project is proposed to address existing conditions which include bank erosion at the riverside ponds along Oat Hill Mine Ditch and the Napa River. As the Project would address these risks, its implementation would improve conditions currently contributing sediment, silt, and other pollutants to the waterways. Following construction, the City would implement post-construction BMPs, in compliance with the Construction General Permit to ensure that the 2.64 acres of graded upland areas would be revegetated with native upland plants. Temporary irrigation would be utilized to provide for successful revegetation and reduce the potential for migration of silt or sediment to receiving waters. Following construction, the revegetated site would be maintained and monitored to ensure the success of plantings intended for erosion and sediment control. Monitoring would include site checks and maintenance of erosion control treatment and irrigation systems for the duration of their intended use. The post-construction BMPs would be incorporated into the Project design permanent post-construction stormwater management features that comply with the Phase II Municipal General Permit (Provision C.3). The stormwater design shall include BMPs consistent with those described in the Napa County Post-Construction Management Requirements, including but not limited to the following:

- Site Design BMPs: Site planning approaches aimed at either preventing or reducing adverse impacts of stormwater pollutants and increases in peak runoff rate, volume, and duration on water quality and beneficial uses. Site design measures that use techniques such as preserving existing vegetation and reducing impervious surfaces when planning the layout of a development or redevelopment project.

- Treatment Control BMPs: Landscape or structural systems designed to treat or remove pollutants in stormwater or to reduce the amount or rate of stormwater. Treatment controls include detention basins, water quality wetlands, vegetated swales, bioretention, filters, and solid separators.

- Installation of energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter the Napa River or other unlined channels in accordance with applicable specifications to minimize erosion. Where practicable, ditches, and other open conveyance systems shall have a vegetated buffer to protect exposed soils and to filter stormwater runoff before entering the conveyance system.

- Native revegetation of the site will be monitored for a period determined through the permitting process to ensure the success of all plantings intended for erosion and sediment control, soil stability, and protection of waterways. Monitoring to include site checks, maintenance, and monitoring of irrigation systems for the duration of their intended use. Site monitoring shall be documented on a monthly basis and provided to the facilities supervisor or other designated City Public Works Department staff member.

With implementation of a SWPPP including BMPs specifically developed for the Project site, post construction activity would not substantially degrade ground or surface water quality; impacts would be less than significant.

X. b) No Impact. The Project is proposed within an existing facility to address current conditions involving pond seepage and other water quality violations. The Project is not proposed in a high priority basin and does not propose uses that would place demands on or otherwise extract groundwater. As described in the Project Description, a work plan will be implemented and will describe appropriate measures to be taken in the event that groundwater is encountered during construction. Site dewatering and diversion would include use of a temporary siltation pond, baker tank and biological monitoring to intercept or otherwise prevent contamination of groundwater. Following construction, the facility's ponds would not be hydrologically connected to the groundwater table. An estimated 2.64 acres of surface area would be restored and returned to (natural) pervious conditions. The Project would not appreciably increase existing impervious surfaces on the site. Therefore, once constructed the Project would not result in impacts with respect to conditions for groundwater infiltration.

X. c) i) through iii) Less than Significant Impact. The Project would include pond reconfiguration, site grading, placement of infrastructure elements, and proposed streambank channel realignment of Simmons Creek, (a tributary of the Napa River). These Project elements would substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river. To ensure that the proposed site alterations do not contribute to erosion and adversely impact water quality, site-specific BMPs would be implemented for construction and operation of the Project. Development and implementation of a SWPPP, in compliance with the NPDES Construction General Permit and the City of Calistoga's Ordinance 707, would ensure that disturbance of the site during construction would not adversely impact or deliver pollutants to waterways. Post-construction BMPs would ensure that revegetation efforts are successful and that ongoing maintenance and monitoring of the site would be implemented. The Project's construction and operational impacts related to erosion or siltation, surface runoff, and stormwater drainage systems would be less than significant with implementation of a SWPPP and post-construction BMPs.

X. c) iv) Less than Significant Impact. The Project, as designed would reconfigure the site's riverside ponds to be constructed at an elevation above of the 100-year flood plain. The proposed Project's East and West Ponds would be protected from bank erosion and flooding along the Napa River and the Oat Hill Mine Ditch tributary by relocating the existing ponds and stabilizing the adjacent channel banks. To maximize the floodplain buffer width between the ponds and the two tributaries, and in compliance with RWQCB requirements, the four existing ponds would be replaced by two lined ponds on the approximate footprint of existing Ponds 2 and 3 and above the 100-year flood elevation. Flooding risk would be reduced by elevating the berms for the proposed Project's ponds and headworks protection infrastructure above the 100-year flood elevation. As a precautionary measure, the berm on the west end of Pond 1 and the floodplain footprint would be regraded to receive and store temporary emergency overflow from the Project's proposed new East pond on the footprint of the existing Pond 2 via a spillway and a drainage swale. Consistent with the terms of the City's NPDES (discharge) permit, treated effluent may be temporarily stored at this location and undergo further treatment (such as aeration) if necessary, to ensure that water quality or discharge violations do not occur. As designed, the Project would include installation of a flow meter, aerator, and SCADA system to remotely monitor water levels, and provide aeration treatment on site. Thus, although the Project would include alteration of the site in a manner which would redirect flood flows; as designed, the treatment train includes allowances to monitor and prevent adverse impacts to waterways during a flood event. The design would include an emergency overflow accommodation where flows would be directed to a reconfigured spillway at the site of existing Pond 1. The Project would be subject to the regulatory floodway, and the Project would complete a FEMA no-rise floodway certification to permit the Project's regulatory floodway encroachment. As demonstrated through Project's Hydrology Report, although the Project would include placement of engineered structures in a special flood hazard area, the proposed encroachment would not result in an increase in flood levels (ESA, 2019). Thus, potential impacts would not have a significant effect on neighboring agricultural properties. Impacts associated with the redirection of flood flows would be less than significant.

X. d) Less than Significant Impact. As the Project is not located in a coastal area (or in an area subject to seiches or tsunamis), these phenomena are not applicable to the Project, as proposed. The Project site is located within the floodplain, however, as described in the criteria question c) iv) above, the design of the Project includes safeguards to monitor, and prevent the delivery of pollutants to receiving waters in the event of the site's inundation by flood. Impacts would be less than significant.

X. e) Less than Significant Impact. The Project as proposed is designed to address conditions that present water quality vulnerabilities for the Napa River and its tributaries on site. As previously discussed, the Project includes elements that would protect infrastructure, such as the wastewater treatment headworks. The Project, once constructed would reduce existing erosive conditions at Simmons Creek which would minimize pollution from entering receiving waters, and otherwise limit discharge violations. To ensure that the Project is constructed and operated in a manner consistent with the terms of the Basin Plan and the SGMA, a SWPPP and post-construction stormwater BMPs would be implemented. Impacts would be less than significant.

X. Cumulative) Less Than Significant Impact. Other projects that would have construction related erosion and sedimentation effects to the Napa River would be subject to the NPDES Construction General Permit and the City's Stormwater Runoff Pollution Control Ordinance, and would therefore be subject to preparation and compliance with stormwater pollution prevention plans, or equivalent due to the scale of these projects. The Project, as designed would address an existing flood hazard by raising the elevation of the berms for the riverside ponds. The Project's contribution to flood effects would be less than cumulatively considerable because it would decrease the risk for flood hazards and would not introduce new risks, compared to existing conditions. Therefore, the cumulative impact would be less than significant.

XI. LAND USE AND PLANNING

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

XI. a) No Impact. The Project would consist of improvements to the Dunaweal WWTP facilities, as well as construction along the Calistoga segment of the Vine Trail, a regional bikeway. Structural elements introduced or replaced as part of the Project would include liner for two of the four existing effluent storage ponds, piping and associated appurtenances. The construction along the Vine Trail would involve installation of a 14-inch FM would be installed under bike path. The Project would not include any structures that would physically divide the existing community.

XI. b) No Impact. Land uses in the study area are governed by the City of Calistoga's General Plan and the local zoning code. The Project would be constructed within the City of Calistoga, predominantly upon lands zoned as "public/quasi-public" at and adjacent to the WWTP, including the Project site's spray fields and holding ponds (Calistoga, 2015a). The Project would utilize the City's Calistoga corporation yard (zoned as light industrial) as a staging area for construction materials and equipment. Land uses surrounding the Project site in the unincorporated areas of northern Napa County consist of agricultural/vineyards and open space lands. The uses proposed as part of the Project are consistent with allowable uses identified in the Calistoga General Plan (Calistoga, 2015b). No change of zoning or land use is proposed or required as part of the Project.

The Project would include construction in waterways such as the Napa River and Simmons Creek, under the jurisdiction of federal and state resource agencies. The Project would comply with all requirements of consulting agencies with jurisdictional or other resource authority in the affected Project lands and habitats. As described in Section IX, Hydrology and Water Quality, the Project is proposed for the purposes of addressing a Cease and Desist Order (CDO) from the SFBRWQCB and to reduce risk (under existing conditions) of structural failures at the WWTP headworks due to flooding and bank erosion. The Project proposes to reconfigure the ponds and raise the berm for the new ponds to an elevation above the FEMA 100-year floodway, in compliance with the CDO. In order to build the Project, a FEMA no-rise certification would be required. As documented in the Project's Hydrology Report, the Project would not conflict with FEMA floodplain management objectives (ESA, 2019). As the Project would comply with all regulatory requirements and would not introduce new land uses to the site or surroundings, there would be no conflict with respect to land use and planning, attributable to the Project.

XI. Cumulative) No Impact. As the Project would have no impact with respect to land use, would not introduce new land uses to the site or surroundings, and would not conflict with existing and planned uses of the site, the Project would not have any impact that would be cumulatively considerable with respect to land use.

XII. MINERAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	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?	☐	☐	☐	☒

XII. a) and b) No Impact. The Project site, including the offsite staging area, is located in an area that has not been surveyed by the California Geological Survey (CDMG, 1987). The only active mine in the vicinity of the Project is the Mark West Quarry, located approximately 5 miles to the southwest (USGS, 2003). According to the Department of Conservation Division of Oil, Gas, and Geothermal Resources (DOGGR), there are no active geothermal well located on or near the Project site (DOGGR, 2019). The City of Calistoga General Plan indicates that the city is located above a geothermal aquifer, which is used locally in the spa and mineral water industry (City of Calistoga, 2014). However, Project construction activities, including excavation, would not be at a depth that would interfere with geothermal wells, nor would the Project involve mining onsite. Therefore, the construction or operation of the Project would not alter, destroy, or limit access to any existing significant mineral resources.

XII. Cumulative) Less Than Significant Impact. The geographic scope for potential cumulative impact to mineral resources includes areas adjacent to the Project location. Cumulative impacts to mineral resources in the Project vicinity could occur if the Project in combination with other projects in these areas would result in the loss of known mineral resource that would be of value to the region/state or result in the loss of availability of a locally-important mineral resource recovery site delineated in a local general plan, specific plan or other land use plan. However, the Project site is not designated as a statewide-, regionally-, or locally-important mineral resource recovery site, and the Project would result in no impact on mineral resources. Therefore, there would be a less than significant cumulative impact on mineral resources.

XIII. NOISE

Would the project result in:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	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 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 or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

XIII. a) Less Than Significant Impact. The Project would consist of short-term construction activities in the vicinity of the riverside ponds site and the stockpile site. Once the Project is completed, solar bee aerators would be deployed within the new East and West ponds. However these aerators are currently deployed in the existing Ponds 2 and 3 and therefore would not represent a new noise source within the Project area.

Construction noise levels at and near the Project site would fluctuate depending on the type, number, and duration of use of various pieces of construction equipment. The nearest residence to the riverside ponds site is off Foothill Boulevard, located approximately 350 feet southwest of the western-most portion of site, and the nearest residences to the stockpile site are at Calistoga Springs mobile home park at a distance of approximately 100 feet to the west.

Table 10 shows typical noise levels produced by various types of construction equipment that would operate at the Project site. Adverse effects of noise from construction activities tend to be greatest when construction activities occur during the noise-sensitive times of the day (early morning, evening, or nighttime hours), in areas immediately adjacent to sensitive receptors, or when construction noise lasts for extended periods of time. Combined noise levels from construction equipment at the closest residence to the riverside ponds site would be up to 69 A-weighted decibels (dBA) steady-state acoustical energy level (L_{eq}) and at the closest residence to the stockpile site would be up to 71 dBA L_{eq}. These noise levels would be generated at the riverside ponds site over a period of approximately 80 work days (approximately 4 months) and at the stockpile site over a period of approximately 30 workdays (approximately 1.5 months).

TABLE 10. REFERENCE CONSTRUCTION EQUIPMENT NOISE LEVELS

Type of Equipment	Maximum Sound Level (L_{max}), dBA	Hourly L_{eq}, dBA/Percent Used[1]
Closest Residence to the Riverside Ponds Site (350 feet)		
Backhoe	61	57/40
Paver	60	57/50
Saw Cutter	73	66/20
Excavator	64	60/40
Roller	63	56/20
Dump Truck	60	56/40
Water Truck	60	56/40
Seed Truck	60	56/40
Bulldozer	65	61/40
Loader	62	58/40
Combined Noise Level	73	69
Residences near Stockpile Site (100 feet)		
Dump Truck	70	66/40
Loader	73	69/40
Combined Noise Level	73	71

NOTES:
1 "Percent used" were obtained from the Federal Highway Administration (FHWA) Roadway Construction Noise Model.

SOURCE: FHWA, 2006.

In addition to on-site construction noise, the Project would result in off-site traffic noise along the access route to the Project site associated with commuting workers and haul truck deliveries. Access route roads include Washington Street, Lincoln Avenue, and Silverado Trail. Using algorithms from the FHWA's *Traffic Noise Model Technical Manual* and estimated construction traffic peak-hour trips, L_{eq} traffic noise levels were estimated along the access route. For a conservative analysis, it is estimated that there would be up to 5 automobiles, 1 medium-duty truck, and 10 heavy-duty truck trips during peak-hour construction activities travelling at a rate of 25 miles per hour. The resultant off-site traffic noise levels associated with peak-hour conditions during construction of the Project would be approximately 60 dBA L_{eq} at a distance of 50 feet from the center of the roadway.

According to Chapter 8.20.025 of the City of Calistoga municipal code, noise generated associated with "professional construction activity" would result in violation of the City's code if it occurs on Sundays or between 7:00 p.m. and 7:00 a.m. any time during the week. Construction would occur on weekdays, Monday through Friday, from 7:00 a.m. to 7:00 p.m. and would not include work on Sundays or City holidays. The City of Calistoga General Plan Noise Element does not include noise standards that would be applicable to construction of the Project. Since Project-related construction activities would only occur within the allowed construction hours identified in the City's code and there are no applicable general plan noise standards, the Project would not generate a substantial increase in noise levels in excess of standards established in the local general plan or noise ordinance. Although there are no applicable local policies or standards available to judge the significance of short-term daytime construction noise levels, the Federal Transit Administration (FTA)'s *Transit Noise and Vibration Impact Assessment* has identified a daytime 1-hour L_{eq} level of 90 dBA as a noise level where adverse community reaction could occur at residential land uses (FTA, 20186). This noise level is used here to assess whether construction-related noise levels would cause a substantial temporary or periodic increase in ambient noise levels at sensitive receptor locations. Although Project-related on-site and off-site construction noise levels would likely be audible at the nearest sensitive receptor locations, they would not exceed the 90 dBA L_{eq} threshold, and therefore would not result in a significant noise increase impact. The temporary increase in ambient noise levels would cause a less-than-significant impact.

XIII. b) <u>Less Than Significant Impact</u>. Vibration can be interpreted as energy transmitted as waves through the ground. These energy waves generally dissipate with distance from the vibration source. Since energy is lost during the transfer of energy from one particle to another, vibration attenuates rapidly with distance. Operations and maintenance of the Project would not include any sources of vibration that would be considered excessive. Groundborne vibration and noise associated with some construction activities, including the use of pile drivers, blasting, and jack hammers can cause excessive vibration. The Project would not include any such activities. Groundborne vibration and noise levels generated by equipment required to construct the Project would be minimal and would not be perceptible beyond a distance of 25 feet from the source (FTA, 2018). No existing structures are located close enough to the Project site such that any damage related to groundborne vibration from construction activities would occur. The nearest structure is located approximately 350 feet from the Project site. From this distance, groundborne vibration from Project construction equipment would not be expected to be noticeable. This would be a less-than-significant impact.

XIII. c) <u>No Impact</u>. The Project is not subject to an airport land use plan or within two miles of a public airport, and is not located in the vicinity of a private airstrip. The nearest airport is Anguin/Parrett field over 7 miles to the east. There would be no impact related to airport- or airstrip-related noise levels.

XIII. Cumulative) <u>Less Than Significant Impact</u>. Construction of the Project would result in less-than-significant impacts from construction activities and there would be no new long-term operation and maintenance-related noise impacts associated with the Project; however, incremental noise-related construction impacts could combine with noise generated by projects in the cumulative scenario to cause or contribute to a significant cumulative effect. Noise levels tend to diminish quickly with distance from a source; therefore, the geographic scope for cumulative impacts associated with noise would be limited to projects located within approximately 500 feet of the Project. None of the cumulative projects listed in Table 4, Cumulative Projects, would be located within 500 feet of the Project. Even if construction of the closest cumulative projects were to occur simultaneously with construction of the Project, the potential for the combined noise and vibration levels at nearby sensitive receptors to result in a noticeable increase beyond those associated with only the Project would be negligible. Therefore, no significant cumulative effect would occur, and the Project-specific incremental contribution to cumulative conditions during construction would not be cumulatively considerable. The cumulative noise exposure impact would be less than significant.

XIV. POPULATION AND HOUSING

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

XIV. a) No Impact. In general, a project would be considered growth-inducing if its implementation would result in substantial population increase and/or new development that might not occur if the project were not implemented. The Project would not directly induce growth because the Project is limited to improvements of the WWTP facilities and associated infrastructure improvements (as opposed to construction of housing or commercial development). The Project would not involve the development of new housing to attract additional population, nor would it induce growth by establishing substantial permanent employment opportunities that could stimulate population growth. Although some workers might temporarily relocate from other areas, any population increase due to this relocation would be negligible and temporary (approximately 6 months of construction). Therefore, the Project would not induce substantial or permanent population growth, either directly or indirectly. Under this criterion, there would be no impact.

XIV. b) No Impact. The Project does not include the removal of any residential structures. Therefore, no housing or people would be displaced as a result of the Project and construction of additional housing would not be required.

XIV. Cumulative) No Impact. The geographic scope for potential cumulative population and housing impacts includes the City of Calistoga and the North Bay area. Table 4 includes the plans and projects that would occur in the Project site vicinity. Project construction could occur concurrent with other construction activity within the City. The size of the regional construction work force and the surrounding region is expected to accommodate the demand for construction labor. The Project's direct contribution of population and housing growth would be negligible and workers are expected to be drawn from the local labor pool. Therefore, the cumulative growth-inducing impact of Project construction in combination with other concurrent construction projects within the City would be less than significant. Operation of the Project would have no impact associated with direct inducement of population growth because the Project would not create housing, and thus would not affect population projections and policies in the City's General Plan.

Moreover, the Project would not indirectly contribute to population growth through the extension of roads or other infrastructure into areas lacking such services. Therefore, operation of the Project would not contribute to a direct cumulative growth inducement impact.

XV. PUBLIC SERVICES

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

Environmental Setting

Fire and police services are primarily provided in the Calistoga by the City of Calistoga Fire Department and the City of Calistoga Police Department, located at 1113 Washington Street and 1234 Washington Street, respectively. The Fire Department has one full-time fire chief and three full-time firefighters. The Department has up to 15 part-time firefighters and a response time of approximately one minute during the day and within three minutes during the evening (City of Calistoga, 2014).

The Police Department currently has a service ratio of 2.2 police officers per thousand civilians in the City of Calistoga, which exceeds standard industry ratios. Response times are approximately five minutes outside the city limits, depending on location (City of Calistoga, 2014).

XV. a) <u>Less than Significant Impact</u>. The Project is limited to improvements of the WWTP facilities and associated infrastructure improvements and new public facilities or services would be required as a result of the Project.

Construction activities at the Project site would be served by the Calistoga Fire Department and the Calistoga Police Department, in the event of an emergency or accident onsite (City of Calistoga, 2014). The Project would include the relocation of the Calistoga riverside ponds and associated water treatment infrastructure; realigning and stabilizing river channel banks; as well as restoring vegetative riparian buffers. The relocation, reconstruction, and stabilization of the riverside ponds would not lead to any significant increased demand for emergency fire and police services, and would not affect service ratios nor necessitate new or expanded governmental facilities further from existing. The purpose of the Project is to provide a safe and healthy riparian zone, while protecting the Headwater and associated facilities from subsequent erosion. The Project is intended to prevent a further devastating accident at the Headwater facilities that could trigger a larger need for either fire or police protection. If an emergency or accident onsite were to occur during construction of the Project, it would only require a minimal amount of staff from the Calistoga Fire and/or Police departments, which could be accommodated within the existing staffing of the departments, and would not substantially alter response times Under this criterion, there would be less than a significant impact for fire and police protection.

The closest schools to the Project site would be the Calistoga Elementary School, Calistoga Junior-Senior High School, and Palisades Continuation High School. All schools are located approximately 2.5 miles west of the Project site and would not be significantly impacted by Project construction (including staging areas) or operation, such that a new or physically altered school facilities would be needed. Under this criterion, there would be no impacts related to schools.

The closest recreational facility and/or park relative to the Project site would be the Vine Trail and the Little League Ball Park. The Vine Trail would run directly adjacent and parallel to the Project site and the Little League Ball Park would be located approximately 0.4 miles west of the City of Calistoga Bone Yard staging yard. Alterations to the Napa Valley Vine Trail bike path would result in a temporary closure, approximately 2 weeks, to pedestrians and bicyclists during construction for safety reasons. The City would notify the public about the trail closure approximately one month prior to the start of construction. This could result in the temporary use of other parks or recreational facilities located in the vicinity of the Project. However, the closure would be temporary and alterations to the Napa Valley Vine Trail would be restored and accommodate for increased access for future use. The use of the Calistoga Bone Yard staging yard is a previously contained site and would not restrict use or include any adverse physical impacts to the Little League Ball Park. Therefore, no significant impacts would occur to either of these park facilities during construction (including staging) or operation, such that a new or physically altered facility would be needed. Under this criterion, there would be no impacts related to parks.

The Project would not include the provision of any new, or altered additional public facilities such as libraries. Therefore, there would be no impact related to other public facilities.

XV. Cumulative) <u>Less than Significant Impact</u>. The geographic scope for potential cumulative public service includes land uses within the City of Calistoga that would be served by the same police/fire emergency responders and schools. In the event that the construction schedule for the Project and other cumulative projects listed in Table 4 overlap, incidents could occur during construction requiring law enforcement, fire protection, or emergency medical services. However, any incremental increase in demand for these services during construction would be temporary and could be accommodated by existing services. The effect would be minimal as the number of public service members would be sufficient to cover several areas at a given time. While other cumulative projects listed in Table 4, including residential development and hospitality projects, would increase demand for public services including increased service ratios for emergency services, and could increase capacity demand in local schools, the Project, once constructed, is not intended to increase demand for public services further from existing conditions. Therefore, demand for public services would be within the current capacity. Therefore, the Project in combination with other projects in the cumulative scenario would have less than significant cumulative impacts related to public services.

XVI. RECREATION

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

XVI. a) Less than Significant Impact. As stated in Section XIII, *Population and Housing*, The Project would not introduce a new population that would increase the use of any recreational facilities within the Project study area such that substantial deterioration would occur or be accelerated for these facilities. However, temporary construction activities would result in short-term disturbance to recreational facilities near the Project site, such as the Napa Valley Vine Trail (Vine Trail) and the Little League Ball Park. The Vine Trail is an 18-mile asphalt and concrete recreational trail available for use by both pedestrians and cyclists. During construction, the Washington Street Bike Path section for the Vine Trail would be temporarily closed to pedestrian and bicyclist traffic for safety reasons. The City would notify the public about the trail closure approximately one month prior to the start of construction. The closest park to the Project would be the Little League Ball Park, which is located approximately 0.4 miles west of the project and directly adjacent to the Bone Yard staging yard. The Little League Ball Park is located at the end of Washington Street where the Vine Trail begins. The fenced-in Calistoga Bone Yard has been historically used to store surplus materials and would be used during construction of the Project. The site is currently fenced and not available for public access, but the Project could result in a possible decrease in use of the Little League Ball Park due to the disturbance of construction trucks and materials. A temporary construction disturbance to the Vine Trail and Little League Ball Park could result in the use of other nearby recreational facilities. The potential increase in use of other existing regional recreation facilities would be temporary and incremental. As a result, the Project would not contribute to any substantial physical deterioration of other nearby recreational facilities and the impact would be less than significant.

XVI. b) Less than Significant Impact. The Project would not include the construction of any new recreational facilities, but would consist of modification to the Vine Trail to accommodate public access. Construction activities include upgrades to the WWTP headworks structure that would require a 14-inch FM that would be installed under the Vine Trail bike path. Construction of the FM includes sawcutting the existing road and bike path pavement. The Lower Washington Street Bike Path section of the Vine Trail would be temporarily closed for a period of 2 weeks during construction. Following construction, the path would be restored to its pre-construction condition and public access would continue. Photos and videos taken prior to construction activities would be used as reference for the re-pavement and restoration of the Vine Trail bike path. Construction of the FM utility trench would temporarily alter the Vine Trail bike path, and an additional widening of the Vine Trail bike path would be used to accommodate bicycle and pedestrian traffic. The permanent widening of the bike path would improve public access and traffic along the Vine Trail. A SWPPP would be implemented during construction to maintain water quality and contain any sources of dust or stormwater runoff that could adversely affect the surrounding environment. Therefore, the Project would not have any adverse physical effect on the environment resulting from the modification of existing recreational facilities. Under this criterion, the impact would be less than significant.

XVI. Cumulative) Less than Significant Impact. The geographic scope for potential cumulative recreation impacts includes other projects in the City of Calistoga. Some of the projects identified in Table 4 could be under construction at the same time as the Project. Cumulative impacts could occur if additional recreation facilities are required as a result of the cumulative projects or if increased use of existing facilities could result in the degradation or deterioration of existing facilities. The Project would include temporary impacts to the adjacent Napa Valley Vine Trail during a 2-week closure period for construction, and would temporarily decrease the amount of recreational facilities available to the public. It is therefore possible that some of the use that would have occurred at the Vine Trail during the construction period would be shifted to other recreational facilities within the City of Calistoga or Napa County. If construction of Project facilities would occur during the same time frame and in the same vicinity as some other planned and proposed projects, displayed in Table 4, additional park and/or recreational facility closures could shift public access and recreational use to other park facilities within the City or other jurisdictional areas. This increased use of those facilities could cause congestion or other adverse effects. However, given the brief construction period associated with the Project, there is a low probability of other project listed in Table 4 that may include additional recreation closures occurring simultaneously with this Project. Therefore, simultaneous construction of these projects would not substantially increase the use of existing neighborhood and regional parks or other recreational facilities, and substantially physical deterioration would be less than significant.

XVII. TRANSPORTATION

Would the project:	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	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) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☐	☒
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d) Result in inadequate emergency access?	☐	☐	☒	☐

Project Setting

Regional access for the Project site is provided by Highway 29 (Lincoln Avenue) from the north and east and from Highway 29/128 (Foothill Boulevard) from the north, west, and south. Local access to the Project site is provided via the WWTP entrance gate on Dunaweal Lane. Access for construction-related activities would occur from the west via Washington Street and the Vine Trail and from the east via the WWTP entrance gate on Dunaweal Lane, through the WWTP, and the WWTP west exit gate, over the Simmons Creek bridge.

Highway 29 and *Highway 128* are two highly-traveled regional roadways. Highway 29 is an arterial road that runs north-south, connecting the City of Calistoga to the City of Napa. Highway 128 is an arterial road that runs east-west.

Washington Street is designated as a collector road that runs east-west. In the vicinity of the Project site, Washington Street is a two-lane road with sidewalks and street parking. The intersection of Washington Street and Lincoln Avenue currently operates at LOS A conditions (City of Calistoga, 2014a).

Dunaweal Lane is designated as a collector road that runs north-south (Napa County, 2019). In the vicinity of the Project site, Dunaweal Lane is a two-lane road with no sidewalks or street parking. Although no intersection counts/operational analysis is currently available for the intersections of Dunaweal Lane and Highway 29/128 and Silverado Trail, the latest available traffic volumes

(March 2003) along the segment of Dunaweal Lane between these two intersection indicates very light traffic, with approximately 1,500 daily vehicles for both travel directions combined (Napa County, 2017). Based on the typical capacity of an undivided 2-lane local roadway, 1,500 daily vehicles would equate to LOS C or better operations (FDOT, 2012).

The following goals and policies pertaining to walkable communities have been proposed for inclusion in the public draft Napa Countywide Pedestrian Plan and are relevant to the proposed Project (NVTA, 2016).

> **Goal 1:** Provide a connected network of pedestrian sidewalks, trails, and pathways in the County and its jurisdictions that are safe and accessible to a variety of users that foster community interactions.
>
> > ***Policy 1A*****:** Protect the character and context of the County and its jurisdictions
> >
> > ***Policy 1B*****:** Prioritize safe routes to school, safe routes to transit, and safe routes for seniors within the County
> >
> > ***Policy 1D*****:** Work to reduce the rate of pedestrian collisions

XVII. a) Less Than Significant with Mitigation Incorporation. Construction of the Project would include temporary disruptions to circulation, as described below. Following construction, no additional employees (i.e., no additional vehicle trips) would be needed to perform operation and maintenance activities as compared to the existing WWTP facilities. As such, the analysis of potential conflicts with plans or policies related to the circulation system is focused on Project construction.

Construction activities that would generate off-site traffic include the delivery of construction vehicles and equipment to the Project site, the daily arrival and departure of construction workers, and the delivery of materials throughout the construction period. Construction equipment would be delivered to and removed from the Project site in phases for the different construction activities, as outlined in the Project Description. The highest number of truck trips would occur during the approximate 30-workday earthwork phase. During this phase, trucks would be used to haul approximately 7,700 CY of material to/from the Project site. Assuming a truck capacity of 10 CY, a total of 770 round trips (1,540 one-way) would be generated. That equates to, on average, 51 one-way truck trips per day, or about four trucks either entering or leaving the Project site each hour. There would be on average five construction workers on site per day, with a maximum of seven during periods when multiple activities (e.g., trenching, earthwork, hauling, etc.) are occurring concurrently. Assuming that each worker would travel to/from the Project site in their own vehicle, this would result in a maximum of 14 one-way vehicle trips per day. Based on permitted construction hours (7:00 a.m. to 7:00 p.m.), most if not all construction workers would arrive at the worksite prior to the morning peak commute period, which generally occurs between 7:00 a.m. to 9:00 a.m., and would depart the worksite after the evening peak commute period, which generally occurs between 4:00 p.m. to 6:00 p.m. Workers would park their vehicles at the designated on-site staging area located on the west side of the Simmons Creek Bridge.

Construction-generated traffic would be temporary, and therefore, would not result in any long-term degradation in operating conditions on any locally-used roadways. No lane closures or full street closures would be required to accommodate Project construction activities; however, the Washington Street Bike Path section of the Vine Trail would be closed to pedestrians and bicyclists during all phases of Project construction for safety reasons. The Napa VINE provides regional bus service to the Project area that could be temporarily delayed during construction, however such disruptions would not present ongoing impacts. The impact of construction-related traffic would temporarily decrease capacities of streets in the Project area because of the slower movements and larger turning radii of construction vehicles compared to passenger vehicles. The public could experience delays if traveling behind a large or heavy truck. The addition of construction-related truck traffic would not be substantial in relation to traffic flow conditions on Highway 29 and Highway 128 or Washington Street and Dunaweal Lane. The Project trips would fall within the normal daily fluctuations of traffic volumes on area roadways, and while the traffic generated by construction activities would be noticeable and may increase traffic volumes on the local roadways serving the construction site, the effect on traffic flow during the six-month construction period would be minimal because of the existing acceptable levels of service at area intersections.

As noted above, construction of the Project would require a temporary closure of the Washington Street Bike Path section of the Vine Trail. The Napa Valley Vine Trail Project Plan describes an initiative to build a walking and bicycling trail connecting the entire Napa Valley. This proposed 47-mile Vine Trail is seen as the key link in a Napa County-wide trail system, which also includes portions of the region-wide Bay Trail and Ridge Trail. The Trail project is a partnership between the NVTA and the Napa Valley Vine Trail Coalition (NVTA, 2016). The one-mile segment of the trail that would be closed during construction of the Project is a discontinuous segment that does not currently connect to the rest of the trail network, which is currently completed between downtown Yountville and downtown Napa. As such, its temporary closure would not affect regional trail access for bicycles and pedestrians. For local access, parallel roadways such as SR 129 and Silverado Trail, both of which have either existing or proposed Class II Bike Lanes[10] (City of Calistoga, 2014b), can be used as alternatives while the Project is being constructed.

To minimize the potential impact that construction activities may have on vehicle delay and pedestrian and bicycle safety, the following mitigation measure would be required:

Mitigation Measure TRAN-1: Construction Traffic Management Plan (CTMP)

To ensure that construction of the Project does not adversely interfere with local traffic safety and circulation, a CTMP shall be prepared for the Project. The CTMP would be subject to review and approval by the City of Calistoga, and shall include, but not be limited to the following elements:

1. *The contractor shall provide flaggers as needed to temporarily hold traffic to safely stage equipment in advance of and/or during construction.*
2. *The contractor shall coordinate with the City of Calistoga's Police Department to ensure that the movement, staging, and storage of materials in and near the proposed offsite staging and stockpile areas does not interfere with law enforcement activities, emergency response, or evacuation procedures.*

[10] Class II facilities provide a striped and signed lane for one-way bicycle travel on a street or highway.

3. *The contractor shall install advance warning signs to alert motorists and Napa Valley Vine Trail users of the work zone and temporary trail closure. Advance warning signs might be reflective signs, cones, or barricades. Signage should state the anticipated duration for construction, and reflect that the work is scheduled to occur between the hours of 7:00 am to 7:00 pm, Monday through Friday.*

4. *Signage shall be installed at both ends of the Napa Valley Vine Trail segment affected by Project construction, directing pedestrians and bicyclists to detours facilities.*

5. *Work shall be confined to the immediate Project site and work shall be performed in a manner that would be least disruptive to the public.*

XVII. b) No Impact. In accordance with Senate Bill (SB) 743, the new CEQA Guidelines section 15064.3, subdivision (b) was adopted in December 2018 by the California Natural Resources Agency. These revisions to the CEQA Guidelines criteria for determining the significance of transportation impacts are primarily focused on projects within transit priority areas, and shifts the focus from driver delay to reduction of greenhouse gas emissions, creation of multimodal networks, and promotion of a mix of land uses. Vehicle miles traveled, or VMT, is a measure of the total number of miles driven to or from a development and is sometimes expressed as an average per trip or per person.

The newly adopted guidance provides that a lead agency may elect to be governed by the provisions of this section immediately. Beginning on July 1, 2020, the provisions of this section shall apply statewide. The County is currently engaged in this process and has not yet formally adopted its updated transportation significance thresholds or its updated transportation impact analysis procedures. Since the regulations of SB 743 have not been finalized or adopted by the County, delay and level-of-service are the measures used in this IS/MND to determine the significance of transportation impacts (see impact discussion a, above). As such, no further analysis is required and no impacts related to CEQA Guidelines section 15064.3, subdivision (b) would occur.

XVII. c) No Impact. Neither construction nor operation of the Project would alter the physical configuration of the existing roadway network serving the area, and would not introduce unsafe design features. The land uses adjacent to and included in the project area include the WWTP and Sewer Treatment Ponds site, agricultural, and urban land uses (i.e., wineries). Due to the sparsely developed rural and agricultural nature of the project area, this area is not inhabited by residents. As such, the temporary introduction of construction equipment required to construct the project on roadways in and around the project site would be compatible with existing uses and would not pose a safety hazard. Furthermore, the project does not propose to make any changes to public roadways. Therefore, no impact would occur.

XVII. d) Less Than Significant Impact. The project would be located in a lightly developed area with multiple access roads allowing adequate egress/ingress to the project site in the event of an emergency. Therefore, the project would allow for adequate emergency access. As described under impact discussion a), project-related operations and maintenance traffic would not change with implementation of the project, and therefore would not significantly affect roadway operations. Furthermore, the project would not require closures of public roads, which could inhibit access by emergency vehicles. During construction of the project, heavy construction-related vehicles could interfere with emergency response to the site or emergency evacuation procedures in the event of an emergency (e.g., slowing vehicles traveling behind the truck). However, given that there are no emergency response stations and only a limited number of businesses (i.e., wineries) in the immediate vicinity of the project site, it is not likely that heavy construction-related traffic would result in inadequate emergency access. As such, the impact would be less than significant.

XVII. Cumulative) Less Than Significant Impact. The potential for cumulative transportation impacts exists where there are multiple projects proposed in an area that have overlapping construction schedules and/or project operations that could result in a substantial contribution to increased traffic levels throughout the surrounding roadway network. The cumulative analysis includes only other projects that do, or could contribute traffic to the same roadway segments as the Project. The volume of traffic generated would not be particularly large during construction and no increase in volume above existing levels would be generated during operation and maintenance activities. Table 4 includes projects that could result in increased traffic on area roadways. The Project's contribution to transportation impacts would be less than cumulatively considerable as a result of the short-term nature of construction and lack of long-term transportation impacts. Cumulative impacts associated with transportation would be temporary and less than significant.

XVIII. TRIBAL CULTURAL RESOURCES

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

This section relies upon the information and findings presented in the following technical report prepared for the Project by ESA:

- *Calistoga Riverside Ponds Relocation Project, Napa County, California: Cultural Resources Inventory Report* (Hoffman, 2019)

Additional details on background context, Native American correspondence, and cultural resources identified are presented in the technical report. Much of the background context and methods used for the analysis of potential impacts from the Project on tribal cultural resources and cultural resources is the same. Therefore, to avoid redundancy, this information, which is presented in Section V (*Cultural Resources*), is not repeated here.

Key Terms

Tribal Cultural Resource

This resource type consists of sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are listed, or determined to be eligible for listing, in the National Register, California Register, or a local register of historical resources.

Background Context

Section V (*Cultural Resources*) presents the ethnographic setting and pre-contact setting for the Project Area and vicinity.

Methods and Approach

Records Search

The methods for the CHRIS records search are presented in Section V (*Cultural Resources*). The results are summarized below.

The NWIC has record of 68 previously recorded cultural resources in the 1-mile search area, three of which are in the Project Area: P-24-000966, -001547, and -002526. Of these 68 resources, 43 are (historic-era) architectural resources, 4 are historic-era archaeological sites, 17 are pre-contact/indigenous archaeological sites, 2 are archaeological sites with both pre-contact and historic-era components, and 2 have both an (historic-era) architectural component and a pre-contact archaeological component. Fifteen of these resources were recorded within 0.5 mile of the Project Area. Two of the cultural resources previously recorded in the Project Area are associated with one another: the Southern Pacific Railroad (P-24-000966), which is a contributor to the NVRR Historic District (P-24-001547). These resources are no longer extant in the C-APE. The other cultural resource previously recorded in the Project Area is archaeological site P-24-002526, which is a very sparse obsidian lithic scatter along the southern edge of the existing ponds at the WWTP that was recorded during the preliminary (geotech) phase of the Project by Tetra Tech, Inc.

Native American Correspondence

ESA contacted the California NAHC on March 19, 2019 in request of a search of the NAHC's SLF and a list of Native American representatives who may have interest in the Project. The NAHC replied to ESA on April 17, 2019, in which they stated that the SLF has no record of sacred sites in the Project Area; the reply also included a list of six Native American representatives to contact regarding these resources and who may be interested in the Project. On April 28, 2019, the City sent letters, via U.S. Postal Service certified mail, to the six Native American contacts provided in the NAHC response. The letters provided information on the Project and requested that the recipients provide information on cultural resources that may be impacted by the Project, if they would like to do so.

The City received a letter dated May 13, 2019 from YDWN Interim Director of Cultural Resources Isaac Bojorquez. The letter stated that the Project is outside the YDWN aboriginal territories, that the YDWN declines to comment on the Project, and that the YDWN defers correspondence on the Project to the (Mishewal-Wappo) should be contacted for more information. Note, the Mishewal-Wappo were one of the recipients of the City's original April 28, 2019 Project tribal outreach letters. On May 22, 2019, the City received an email from the FIGR Tribal Historic Preservation Officer Buffy McQuillen. The email stated that the Project is outside the FIGR's traditional ancestral territory and that they have no comments on the Project. To date, the City has not received any other responses from recipients of the April 28, 2019 Project tribal outreach letters. Appendix D provides documentation of the Project correspondence with Native American representatives to date. To date, no California Native American Tribes have requested that the City notify them of projects for potential consultation under PRC Section 21080.3 [i.e., Assembly Bill (AB) 52].

Archaeological Sensitivity Analysis

The methods for the archaeological sensitivity analysis are presented in Section V (*Cultural Resources*). Summarized, the Project Area has a high sensitivity for both surficial and buried indigenous archaeological resources (moderate and high potential presence, respectively, with moderate potential significance).

Field Survey

The methods for the field survey are presented in Section V (*Cultural Resources*). The results are summarized below.

During the pedestrian survey, ESA identified one cultural resource, P-24-002526, in the Project Area. P-24-002526 is an archaeological site comprising a very sparse obsidian lithic scatter along the southern edge of the existing ponds, in the southern portion of the Project Area. The site consists of 1 obsidian biface and 12 obsidian flakes (representing all stages of reduction). Also present in the site boundary are 6 waterworn obsidian fragments lacking evidence of cultural modifications. Hoffman (2019) evaluated the significance of P-24-002526 and concluded that the site is not eligible for the California Register, as it represents an ephemeral lithic scatter, has likely been disturbed by WWTP-related activities, and may also have been imported by hydrologic (river) activity. Though the resource is indigenous in origin, it represents an ephemeral (possibly out of context) lithic scatter and outreach to Native American representatives for the Project has not resulted in the identification of any potential tribal cultural resources in the Project Area; thus P-24-002526 does not appear to be a potential tribal cultural resource.

Summary

Through background research, Native American correspondence, and field survey conducted for the Project, no tribal cultural resources, including any indigenous archaeological resources or human remains that could qualify as tribal cultural resources, were identified in the Project Area.

Discussion

Approach to Analysis

Effective for projects for which a notice of preparation or notice of negative declaration/mitigated negative declaration was filed on or after July 1, 2015, CEQA requires that a project's impacts on tribal cultural resources be considered as part of the overall analysis of project impacts (PRC Sections 21080.3.1, 21084.2, and 21084.3). The significance of a tribal cultural resource is assessed by evaluating: 1) its eligibility for listing on the California Register; 2) eligibility as a unique archaeological resource pursuant to PRC Section 21083.2; and 3) its listing status on the NAHC's SLF. Additionally, a lead agency can independently determine a resource to be a tribal cultural resource. Because California Native American Tribes are considered experts with respect to tribal cultural resources, the analysis of whether project impacts may result in a substantial adverse change to the significance of a tribal cultural resource is heavily dependent on consultation efforts conducted between the lead agency and relevant California Native American tribes during the CEQA process. To avoid redundancy, the two impact discussion questions from CEQA Guidelines Appendix G relating to tribal cultural resources are discussed together below.

To date, no California Native American Tribes have requested that the City notify them of projects for potential consultation under PRC Section 21080.3 [i.e., AB 52].

Impacts Analysis

As mentioned above, to avoid redundancy, the two impacts discussion questions pertaining to tribal cultural resources are discussed together in the current section.

No tribal cultural resources, as defined in PRC Section 21074, have been identified in the Project Area through archival research, field survey, or Native American consultation. Therefore, the Project is not anticipated to impact any tribal cultural resources.

However, because the Project would involve ground-disturbing activities that may extend into undisturbed soil, it is possible that such actions could unearth, expose, or disturb subsurface archaeological resources that were not identified on the surface. If previously unrecorded archaeological deposits are present in the Project Area, and if they are found to qualify as tribal cultural resources, pursuant to PRC Section 21074, any impacts to the resource resulting from the Project would be potentially significant. Such potentially significant impacts would be reduced to a less than significant level by implementing **Mitigation Measures CR-1** and **CR-2** (see discussions for Cultural Resources impacts).

XIX. UTILITIES AND SERVICE SYSTEMS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	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 or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☐	☒
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate 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?	☐	☐	☒	☐
The following criterion is also considered in this analysis:				
f) Result in a substantial adverse effect related to disruption, relocation, accidental damage to existing utilities.	☐	☒	☐	☐

XIX. a) Less than Significant Impact. Although Project construction would involve the relocation, rerouting, and realigning of City of Calistoga riverside ponds and associated WWTP infrastructure, including Simmons Creek, the Project would not result in the need or expansion of any additional facilities. Temporary dewatering would be included during construction in order to stabilize the banks and realign Simmons Creek. Water in the work area would be removed and discharged in accordance with the applicable stormwater BMPs. As further described in Section X, Hydrology and Water Quality, the SWPPP would detail proposed dewatering procedures, ensuring that they are completed in accordance with relevant RWQCB standards and requirements. Project operation and maintenance activities would be substantially similar to operation and maintenance of existing facilities. Additionally, no changes or additions to existing staffing for operation and maintenance activities are proposed, and therefore would not require new or expanded facilities. Therefore, Project construction, operation, and maintenance would not require any new or expanded construction of additional water, wastewater, or stormwater treatment infrastructure. The Project would have a less than significant impact with respect to water, wastewater treatment or storm water facilities. Additionally, the Project would not require or result in any relocation or construction of new or expanded electric power, natural gas, or telecommunication facilities. Under this criterion there would be a no impact with respect to electric power, natural gas, or telecommunication facilities.

XIX. b) No Impact. No permanent long-term water supply is required for the Project. Water used for dust control during construction would be provided by the City at an offsite source for recycled water from the WWTP. The Project is not anticipated to induce growth or demand during operation and maintenance. Therefore, no additional water, further from existing use, would be required in result of the Project. Under this criterion, there would be no impact.

XIX. c) No Impact. The Project is located within the Dunaweal WWTP and Sewer Treatment Ponds site, located on Dunaweal Lane approximately 0.6 miles westward between the Napa Valley Vine Trail berm to the north, and the Oat Hill Mine Ditch and Napa River to the south (see Figures 2 and 3 for details on the Project vicinity). The WWTP serves approximately half the area within the City limits. The other parts of Calistoga use private septic systems to dispose of their wastewater. Construction of the Project would result in the realignment two of the WWTP ponds which would have the same or slightly larger storage capacity (a minimum of 1.8 MG) for treated wastewater as the four existing ponds. As stated above in question a), no changes or additions to existing staffing for operation and maintenance activities are proposed. No changes to the WWTP capacity are proposed as part of the Project. Therefore, demand would remain the same. Under this criterion, there would be no impact.

XIX. d, e) Less than Significant Impact. The anticipated volume of solid waste generated by construction activities would be one truckload's worth of off-haul (10 CY), which would be hauled and appropriately disposed of at the Clover Flat Landfill. The Clover Flat Landfill has a permitted capacity of approximately 600 tons per day and approximately 2.8 million cubic yards of remaining capacity (CalRecycle, 2019). Although the Project could increase the total waste generation in the area, the temporary incremental contribution of the Project could be reasonably accommodated by the landfill. Reusable construction debris would be recycled, and organics and soils reused on site or composted, as feasible, in compliance with federal, State, and local statutes and regulations related to solid waste. Given the existing landfill's capacity, the Project's contribution would be negligible and would not result in the local landfill exceeding its permitted capacity. Therefore, the impact would be less than significant.

XIX. f) Less than Significant Impact with Mitigation Incorporation. The Project would include utility work on the existing WWTP facility including stormwater drainage and wastewater treatment pipes. Additional underground utilities, including any sewer, gas, electrical, water and telecommunication lines, would be identified during the design phase. An outage to any of these utilities during construction would be considered a significant impact. In addition to the potential disruption to known utilities, due to grading, demolition and/or excavation activities within the WWTP facility and associated infrastructure, accidental damage to other unknown underground utilities could also have potential to occur. Project avoidance to all surrounding overhead utility lines and known utilities can be reasonably assumed. However, accidental rupture of or damage to existing utilities could result in significant safety hazards for construction workers and the public.

To ensure that the Project complies with the existing regulations and codes established to avoid or minimize the potential for disrupting utilities and utility services, the contractor shall be required to incorporate **Mitigation Measure UTIL-1**, which include stipulations for the identification and protection or temporary disconnection of utility lines; notification and coordination with emergency response providers; and reconnection of utilities, following construction. Such measures would reduce potential impacts associated with construction to less-than-significant levels.

Mitigation Measure UTIL-1: Utility Safety and Emergency Response Plan.

- *Prior to construction activities, the locations of overhead and underground utility lines, such as natural gas, electricity, sewer, telephone, cable, and water that may be encountered during construction work will be determined. Pursuant to various provisions of California law, the City or its contractor(s) is required to notify USA (Underground Services Alert) North so that utility companies may be advised of the work and may field-mark or otherwise protect and warn the contractor of their existing utility lines. Information regarding the location of existing utilities shall be reviewed before construction activities begin. Utilities may be located by customary techniques such as geophysical methods and hand excavation.*

- *Contract specifications shall include procedures for the excavation, support, and fill of areas around subsurface utilities, cables, and pipes. If the Project encounters overhead electric and/or telephone lines during pipeline construction, coordination with appropriate telecommunication service providers shall occur to de-energize overhead electric lines as required by the federal and State OSHA regulations.*

- *As required by CalOSHA (Section 1926.651), while any excavation is open, measures will be taken to protect, support, or remove underground utilities as necessary to safeguard employees. If construction activities result in damage to high-priority utility lines, the Calistoga Fire Department will be immediately notified to protect worker and public safety.*

- *As part of contract specifications, the contractor(s) will be required to provide updates on excavations planned for the upcoming week and to specify when construction would occur near a high-priority[11] utility. At the beginning of each week when this work would take place, per CalOSHA, the contractor is required to hold safety tailgate meetings and to*

[11] Electric, water, and/or sewer lines.

document contents of meeting. The City or its contractor(s) shall promptly notify utility providers to reconnect any disconnected utility lines as soon as it is safe to do so.

- *As required by CalOSHA, an emergency response plan will be developed prior to the commencement of construction activities. The emergency response plan shall identify measures to be taken in response to a leak or explosion resulting from a utility rupture. In addition, the City of Calistoga's Police Department and/or other appropriate emergency response department (to be determined in consultation with the City of Calistoga) shall be notified whenever damage to any utility results in a threat to public safety.*

Through implementation of MM UTIL-1, including compliance with relevant provisions of the City's Public Works Code and CalOSHA requirements, there would be a less-than-significant impact to existing utilities.

XIX. Cumulative) Less than Significant Impact. The geographic scope for potential cumulative utilities and service system impacts encompasses projects in the vicinity of the City of Calistoga WWTP**.** Some of the projects identified in Table 4 would be under construction at the same time as the Project. Cumulative impacts could occur if additional utility facilities are required as a result of the cumulative projects or if increased use of existing facilities could result in the degradation or deterioration of existing facilities. Particular development or hospitality projects mentioned in Table 4 could result in increased demand for water, wastewater, and stormwater generation and capacity. Such developments would be subject to local water and wastewater connection fees to fund the cost of expansion of the wastewater conveyance and treatment system, if necessary. However, the Project would not contribute to a demand in additional wastewater and would not require water, further from the water provided offsite from the City during construction; therefore, the cumulative contribution would not be considerable. Increased waste generation from the Project and cumulative development in and of itself would not be significant relative to landfill capacity, particularly since waste generation would be exclusively construction related. Given the existing remaining capacity relative to the potential increment of Project waste in addition to waste from other cumulative projects, the Project would not have a cumulatively considerable contribution for waste disposal.

Concurrent implementation of this Project in conjunction with other cumulative projects could cause service disruptions for the same set of customers within a short timeframe. However, the Project's impacts related to damaging existing utilities and disrupting utility services, and relocation of utilities would be less than significant with compliance with relevant regulations and implementation of MM UTIL-1. These requirements would apply to cumulative projects as well. Collectively, implementation of these regulatory requirements would ensure that existing utilities are accurately located and protected during construction and that emergency response procedures are in place to address the situation if an existing utility is damaged during construction. Therefore, potential cumulative impacts related to disruption of utility operations or accidental damage to existing utilities and relocation of regional or local utilities would not be cumulatively considerable.

XX. WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	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?	☐	☐	☐	☒

The Project site and staging areas are located within the Calistoga city limits, therefore not in the State Responsibility Area (CAL FIRE, 2008). Wildland fire behavior in Napa Valley is influenced by terrain, vegetation, seasonal weather, and prevailing winds. The steep, wooded terrain of the Mayacama foothills in northwest Napa Valley is considered highly susceptible to the spread of wildland fires. Additionally, characteristic southerly winds which originate in San Francisco Bay, and seasonal high velocity north winds which occur in the dry season have a significant influence on fire behavior (Napa County, 2013). Calistoga has been identified as a community at risk for wildfires due to its location in the Wildland Urban Interface (WUI) (CAL FIRE, 2017).[12] The nearby Very High Fire Hazard Severity Zone, located approximately 0.25 miles west of the Project (on a forested hill) is separated from the Project site by two agricultural water storage ponds and a cultivated vineyard. The Project site itself is relatively flat, contains on site recycled water, and is located adjacent to perennial waterways. The Project does not propose or include any housing,

[12] The wildland-urban interface is roughly defined as the zone where natural areas and development meet.

inhabitable, or flammable structures. The reconfiguring of the riverside ponds as part of the Project would be located approximately 0.25 miles east of a Very High Fire Hazard Severity Zone (CAL FIRE, 2008).

XX. a) Less Than Significant Impact. In 2017, the County of Napa developed a Multi-Jurisdictional Emergency Operations Plan. The document includes a "Base Plan" and an Annex for each participating jurisdiction which identifies resource lists, call lists, responsibilities, and any plan specific to that jurisdiction. The City of Calistoga prepared an Annex to this Multi-Jurisdictional Emergency Operations Plan. No specific assembly areas, shelter sites, or evacuation routes were identified in either the Base Plan or the City of Calistoga's Annex. Evacuation routes would be identified by the Emergency Operation Center in coordination with local emergency responders and agencies (Napa County, 2017). The Project would not have any effect on execution of this plan.

As described in Section VIII, Hazards, question f), while the Project is not located in an area identified as a general evacuations assembly area, it is located approximately 0.40 miles North of Highway 29, which is designated in the City of Calistoga General Plan as an emergency evacuation route (City of Calistoga, 2014). However, no closure or obstruction of Highway 29 is proposed or required as part of the Project; thus, the Project would not impair or interfere with the implementation of this emergency response plan.

XX. b) Less Than Significant Impact. During Project construction, heavy equipment, such as excavators, dozers, and dump trucks, would be used. The presence and use of heavy equipment and vehicles would introduce a slight risk of ignition, as a spark from a piece of equipment or a vehicle could ignite surrounding vegetation and result in a fire. However, due to the existing site conditions, and proximity to recycled water (on site) which could be used in an emergency situation, the risk of a construction ignition resulting in a fire would be very low. Furthermore, as describe in the Project Description, considering the limited duration of the construction period and the small size of the construction crew and equipment required, the increase in fire risk introduced by construction of the Project would be minimal and temporary. The Project involves the reconfiguration of riverside ponds with no flammable or inhabitable structures proposed as part of the Project. With respect to fire risk, operation of the site and surroundings would continue as under existing conditions. Although the Project is located near lands susceptible to the spread of wildland fire, the physical characteristics of the Project site and proximity to water would decrease that risk. Thus, under operations, the Project would have no impact with regard to any increased risk for spread of wildland fire. Overall impacts would be less than significant, associated with construction.

XX. c) Less Than Significant Impact. The Project includes the reconfiguration of effluent storage ponds, site grading, excavation, and placement of erosion control measures including site revegetation and irrigation to support the plantings. These components of the Project would not increase fire risk. The Project would not require the installation or maintenance of infrastructure which could exacerbate fire risk or result in ongoing impacts to the environment. Impacts, primarily related to construction (as discussed in question b) would be limited in duration and less than significant.

XX. d) No Impact. The Project site is relatively level and there are no residences located immediately downslope or downstream of the Project site. The closest residence is located approximately 600 feet northwest of the Project upstream along the Napa River. As described under question b), the Project's construction would result in a minimal increase in wildfire risk. The Project would be designed, constructed, and maintained such that the slope instability would not occur. Therefore, there would be no impact.

XX. Cumulative) Less Than Significant Impact. There are multiple projects that could undergo construction in a timeframe that overlaps with that of the Project (see Table 4). Similar to the Project, the construction of these projects would involve grading activities and the use of large equipment, which could pose risks for ignition within or near a fire-prone region. The Project does not propose or include any flammable or inhabitable structures, and the Project is proposed in a location proximal to waterways and on a site with access to recycled water; thus, due to the location and low level of risk due to these site conditions, the Project's contribution to impacts related to regional wildfire risk would be less than cumulatively considerable.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporation	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 a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☒	☐	☐
c) Does the project have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

XXI. a) Less Than Significant Impact with Mitigation Incorporation. With implementation of the standard mitigation measures and additional recommended mitigation measures, the Project would not have the potential to degrade the quality of the environment, including the visual character of the Project site, fish or wildlife species or their habitat, plant or animal communities, important examples of the major periods of California history or prehistory, or the continued operation of utilities and utility services.

XXI. b) Less Than Significant Impact with Mitigation Incorporation. The potential for the Project to generate cumulatively considerable impacts is discussed within each analysis above. As noted above, the Project would result in short-term construction-related impacts. With incorporation of mitigation measures, these impacts would be reduced to less than significant levels. The Project would not result in any residual impacts that are cumulatively considerable when viewed with past, current or future projects.

XXI. c) Less Than Significant Impact with Mitigation Incorporation. As reviewed for each issue area, the Project would result in short-term construction-related impacts that would be reduced to a less than significant level with implementation of the mitigation measures presented above. Although the Project would temporary affect access to, and use of, the Napa Valley Vine Trail, the area of disturbance and duration of construction would be limited and temporary. Therefore, the Project would not result in any environmental effects that would cause substantial direct or indirect adverse effects on human beings.

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ENVIRONMENTAL DETERMINATION

On the basis of this initial evaluation, I find that although the Project could have a significant effect on the environment, there would not be a significant effect in this case because revisions to the Project have been made by or agreed to by the Project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

Derek Rayner, Public Works Department, City of Calistoga	8/27/19 Date

Authorized Agent's Signature Ariel Frink, ESA	8/27/19 Date

APPENDIX A

Regionally Occurring Special Status Species

TABLE A-1
SPECIAL-STATUS PLANT SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Regulatory Status (Federal/State/ Local/CNPS)	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence
Allium peninsulare var. *franciscanum*	Franciscan onion	--/--/1B.2	Perennial bulbiferous herb found in cismontane woodland and valley and foothill grasslands in clay, volcanic, and often serpentinite soils from 52 to 305 meters.	(April) May-June	**No.** The study area does not have volcanic or serpentinite soils present.
Alopecurus aequalis var. *sonomensis*	Sonoma alopecurus	FE/--/1B.1	Perennial herb found in freshwater marshes and swamps and riparian scrub from 5 to 365 meters. Known from Marin and Sonoma counties.	May-July	**No**. The study area occurs outside of the known extant geographic range for this species.
Amorpha californica var. *napensis*	Napa false indigo	--/--/1B.2	Perennial deciduous shrub found in broadleafed upland forest, occasionally in openings, chaparral, and cismontane woodland from 120 to 2,000 meters.	April-July	**No**. The study area is outside of the known elevation range for this species.
Amsinckia lunaris	Bent-flowered fiddleneck	--/--/1B.2	Annual herb found in coastal bluff scrub, cismontane woodland, and valley and foothill grassland from 3 to 500 meters.	March-June	**No**. While the oak woodland provides suitable habitat, this species was not observed during the March 2019 biological surveys conducted during the evident and identifiable blooming period.
Arctostaphylos manzanita ssp. *elegans*	Konocti manzanita	--/--/1B.3	Perennial evergreen shrub found in chaparral, cismontane woodland, lower montane coniferous forest in volcanic soil from 395 to 1,615 meters.	(January) March-May (July)	**No.** The study area is outside of the known elevation range for this species, and does not have volcanic soil present.
Arctostaphylos stanfordiana var. *repens*	Rincon Ridge manzanita	--/--/1B.1	Perennial evergreen shrub found occasionally in rhyolitic substrate in chaparral and cismontane woodland from 75 to 370 meters.	February-April (occasionally May)	**No**. While the oak woodland provides suitable habitat, this species was not observed during the March 2019 biological surveys conducted during the evident and identifiable blooming period.
Astragalus claranus	Clara Hunt's milk-vetch	FE/CT/1B	Annual herb found on serpentinite or volcanic, rocky, clay substrate on chaparral, occasionally in openings, cismontane woodland, and valley and foothill grassland from 75 to 275 meters.	March-May	No. While the oak woodland provides suitable habitat, this species was not observed during the March 2019 biological surveys conducted during the evident and identifiable blooming period.
Astragalus rattanii var. *jepsonianus*	Jepson's milk-vetch	--/--/1B.2	Annual herb often found on serpentinite substrate in chaparral, cismontane woodland, and valley and foothill grassland from 295 to 700 meters.	March-June	**No**. The study area is outside of the known elevation range for this species, does not have serpentinite soil present.

TABLE A-1
SPECIAL-STATUS PLANT SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Regulatory Status (Federal/State/ Local/CNPS)	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence
Balsamorhiza macrolepis	big-scale balsamroot	--/--/1B.2	Perennial herb found on serpentinite substrate in chaparral, cismontane woodland, and valley and foothill grasslands from 45 to 1,555 meters.	March-June	**No**. The study area does not have serpentinite soil present.
Blennosperma bakeri	Sonoma sunshine	FE/SE/1B.1	Annual herb found in mesic valley and foothill grassland and vernal pools from 10 to 110 meters.	March-May	**No**. While the oak woodland provides suitable habitat, this species was not observed during the March 2019 biological surveys conducted during the evident and identifiable blooming period.
Brodiaea leptandra	Narrow-anthered brodiaea	--/--/1B.2	Perennial bulbiferous herb found on volcanic substrate in broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland from 110 to 915 meters.	May-July	**No**. The study area is outside of the known elevation range for this species and does not have volcanic substrates present.
Ceanothus confusus	Rincon Ridge ceanothus	--/--/1B.1	Perennial evergreen shrub found on volcanic or serpentinite substrate in closed-cone coniferous forest, chaparral, and cismontane woodland from 75 to 1,065 meters.	February-June	**No.** The study area does not have volcanic or serpentinite soils required for this species to inhabit.
Ceanothus divergens	Calistoga ceanothus	--/--/1B.2	Perennial evergreen shrub found in chaparral, which occasionally occurs on serpentinite or volcanic, rocky substrate, from 170 to 950 meters.	February-April	**No**. The study area is outside of the known elevation range for this species and does not have volcanic or serpentinite substrates present.
Ceanothus purpureus	Holly-leaved ceanothus	--/--/1B.2	Perennial evergreen shrub found on volcanic, rocky substrate in chaparral and cismontane woodland from 120 to 640 meters.	February-June	**No**. The study area is outside of the known elevation range for this species. The
Ceanothus sonomensis	Sonoma ceanothus	--/--/1B.2	Perennial evergreen shrub occasionally found on sandy, serpentinite, or volcanic substrate in chaparral from 215 to 800 meters.	February-April	**No**. The study area is outside of the known elevation range and does not provide habitat for this species.

TABLE A-1
SPECIAL-STATUS PLANT SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Regulatory Status (Federal/State/ Local/CNPS)	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence
Centromadia parryi ssp. *parryi*	Pappose tarplant	--/--/1B.2	Annual herb found on alkaline substrate in chaparral, coastal prairie, meadows and seeps, marshes and swamps, which is occasionally comprised of coastal salt, and valley and foothill grassland, which are occasionally vernally mesic, from 0 to 420 meters.	May-November	**No.** The study area does not provide habitat for this species.
Cryptantha clevelandii var. *dissita*	Serpentine cryptantha	--/--/1B.2	Annual herb found in chaparral, which is occasionally serpentinite, from 395 to 580 meters.	April-June	**No**. The study area is outside of the known elevation range and does not provide habitat for this species.
Downingia pusilla	Dwarf downingia	--/--/2B.2	Annual herb found occasionally in mesic areas within valley and foothill grassland and vernal pools from 1 to 445 meters.	March-May	**No**. The study area does not provide suitable habitat for this species.
Erigeron greenei	Greene's narrow-leaved daisy	--/--/1B.2	Perennial herb found occasionally on serpentinite or volcanic substrate in chaparral from 80 to 1,005 meters.	May-September	**No**. The study area does not have chaparral habitat or volcanic or serpentinite substrate.
Eriogonum nervulosum	Snow Mountain buckwheat	--/--/1B.2	Perennial rhizomatous herb found on serpentinite substrate in chaparral from 300 to 2,105 meters.	June-September	**No**. The study area is outside of the known elevation range for this species and does not have chaparral habitat with serpentinite substrate.
Eryngium constancei	Loch Lomond button-celery	FE/SE/1B.1	Annual to perennial herb found in vernal pools from 460 to 855 meters.	April-June	**No**. The study area is outside of the known elevation range for this species and does not have vernal pools present.
Eryngium jepsonii	Jepson’s coyote thistle	--/--/1B.2	Perennial herb found on clay substrate in valley and foothill grassland and vernal pools from 3 to 300 meters.	April-August	**No**. The study area does not provide suitable habitat for this species.
Fritillaria liliacea	Fragrant fritillary	--/--/1B.2	Perennial bulbiferous herb found on serpentinite substrate in cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland from 3 to 410 meters.	February-April	**No.** The study area does not have serpentinite substrate present.

TABLE A-1
SPECIAL-STATUS PLANT SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Regulatory Status (Federal/State/ Local/CNPS)	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence
Fritillaria pluriflora	Adobe-lily	--/--/1B.2	Perennial bulbiferous herb found on adobe substrate in chaparral, cismontane woodland, and valley and foothill grassland from 60 to 705 meters.	February-April	**No**. While the oak woodland provides habitat, this species was not observed during the March 2019 biological surveys conducted within the evident and identifiable blooming period.
Gratiola heterosepala	Boggs Lake hedge-hyssop	--/SE/1B.2	Annual herb found on clay substrate in marshes and swamps (lake margins) and vernal pools from 10 to 2,375 meters.	April-August	**Moderate.** The study area may have potential suitable habitat along the margins of the manmade storage ponds.
Harmonia hallii	Hall's harmonia	--/--/1B.2	Annual herb found occasionally on serpentinite substrate in chaparral from 305 to 987 meters.	April-June	**No**. The study area is outside of the known elevation range for this species and does not have chaparral habitat with serpentinite substrates.
Hemizonia congesta ssp. *congesta*	Congested-headed hayfield tarplant	--/--/1B.2	Annual herb found in valley and foothill grassland, sometimes roadsides from 20 to 560 meters.	April-November	**No**. The study area does not provide suitable habitat for this species.
Hesperolinon bicarpellatum	Two-carpellate western flax	--/--/1B.2	Annual herb found in chaparral, which is usually on serpentinite substrate, from 60 to 1,005 meters.	May-July	**No**. The study area does not have chaparral habitat with serpentinite substrates present.
Hesperolinon sharsmithiae	Sharsmith's western flax	--/--/1B.2	Annual herb found on serpentinite substrate in chaparral from 270 to 300 meters.	May-July	**No**. The study area is outside of the known elevation range for this species and does not have chaparral habitat with serpentinite substrates.
Juncus luciensis	Santa Lucia dwarf rush	--/--/1B.2	Annual herb found in chaparral, great basin scrub, lower montane coniferous forest, meadows and seeps, and vernal pools from 300 to 2,040 meters.	April-July	**No**. The study area is outside of the known elevation range for this species and does not have suitable habitat types present.
Lasthenia burkei	Burke's goldfields	FE/SE/1B.1	Annual herb found in meadows and seeps (mesic) and vernal pools from 15 to 600 meters.	April-June	**No**. The study area does not provide suitable habitat for this species.
Lasthenia conjugens	Contra Costa goldfields	FE, CH/--/1B.1	Annual herb found on mesic soils in cismontane woodland, playas that are occasionally alkaline, valley and foothill grassland, and vernal pools from 0 to 470 meters.	March-June	**No**. While the oak woodland provides habitat, this species was not observed during the March 2019 biological surveys conducted within the evident and identifiable blooming period.

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SPECIAL-STATUS PLANT SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Regulatory Status (Federal/State/ Local/CNPS)	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence
Layia septentrionalis	Colusa layia	--/--/1B.2	Annual herb found in chaparral, cismontane woodland, and valley and foothill grassland, which is occasionally on sandy, serpentine substrate, from 100 to 1,095 meters.	April-May	**Moderate.** The oak woodland provides suitable habitat for this species.
Leptosiphon jepsonii	Jepson's leptosiphon	--/--/1B.2	Annual herb found usually on volcanic substrate in chaparral, cismontane woodland, and valley and foothill grassland from 100 to 500 meters.	March-May	**Low.** While the study area does not have volcanic substrates present, the oak woodland provides suitable habitat for this species.
Limnanthes vinculans	Sebastopol meadowfoam	FE/CE/1B.1	Annual herb found in vernally mesic substrate in meadows and seeps, valley and foothill grassland, and vernal pools from 15 to 305 meters.	April-May	**No**. The study area does not provide suitable habitat for this species.
Lupinus sericatus	Cobb Mountain lupine	--/--/1B.2	Perennial herb found in broadleafed upland forest, chaparral, cismontane woodland, and lower montane coniferous forest from 275 to 1,525 meters.	March-June	**No**. The study area is outside of the known elevation range for this species.
Microseris paludosa	Marsh microseris	--/--/1B.2	Perennial herb found in closed-cone coniferous forest, cismontane woodland, coastal scrub, and valley and foothill grasslands from 5 to 355 meters.	April-June (July)	**Moderate.** The oak woodland provides suitable habitat for this species.
Navarretia leucocephala ssp. *bakeri*	Baker's navarretia	--/--/1B.1	Annual herb found in mesic areas of cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, and vernal pools from 5 to 1,740 meters.	April–July	**Moderate.** The oak woodland within the study area provides suitable habitat for this species.
Navarretia leucocephala ssp. *plieantha*	Many-flowered navarretia	FE/SE/1B.2	Annual herb found in vernal pools, which is occasionally comprised of volcanic ash flow, from 30 to 950 meters.	May-June	**No.** The study area does not provide suitable habitat for this species.
Navarretia myersii ssp. *deminuta*	Small pincushion navarretia	--/--/1B.1	Annual herb found in vernal pools, which is occasionally comprised of clay loam.	April-May	**No.** The study area does not have vernal pools present.

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Scientific Name	Common Name	Regulatory Status (Federal/State/ Local/CNPS)	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence
Navarretia paradoxinota	Porter's navarretia	--/--/1B.3	Annual herb found on serpentinite, openings, vernally mesic, and often drainages in meadows and seeps from 165 to 840 meters.	May-June (occasionally July)	**No**. The study area is outside of the known elevation range for this species and does not have serpentinite substrate present.
Navarretia rosulata	Marin County navarretia	--/--/1B.2	Annual herb found on serpentinite, rocky substrate in closed-cone coniferous forest and chaparral from 200 to 635 meters.	May-July	**No**. The study area is outside of the known elevation range for this species and does not have serpentinite substrate present.
Penstemon newberryi var. *sonomensis*	Sonoma beardtongue	--/--/1B.3	Perennial herb found occasionally on rocky substrate in chaparral from 700 to 1,370 meters.	April-August	**No**. The study area is outside of the known elevation range for this species and does not have chaparral habitat present.
Plagiobothrys strictus	Calistoga popcornflower	FE/ST/1B.1	Annual herb found on alkaline areas near thermal springs in meadows and seeps, valley and foothill grassland and vernal pools from 90 to 160 meters.	March-June	**No.** The study area does not provide suitable habitat for this species.
Poa napensis	Napa blue grass	FE/CE/1B.1	Perennial herb found on alkaline areas near thermal springs in meadows and seeps and valley and foothill grassland from 100 to 200 meters.	May-August	**No.** The study area does not provide suitable habitat for this species.
Puccinellia simplex	California alkali grass	--/--/1B.2	Annual herb found on alkaline, vernally mesic substrates in sinks, flats, and lake margins in chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools from 2 to 930 meters.	March-May	**No.** The study area does not provide suitable habitat for this species.
Sidalcea hickmanii ssp. *napensis*	Napa checkerbloom	--/--/1B.1	Perennial herb found on rhyolitic substrate in chaparral from 415 to 610 meters.	April-June	**No.** The study area is outside of the known elevation range for this species and does not have rhyolitic substrates (lava flows) present.
Sidalcea oregano ssp. *hydrophila*	Marsh checkerbloom	--/--/1B.2	Perennial herb found on mesic substrate in meadows and seeps and riparian forest from 1,100 to 2,300 meters.	(occasionally June) July-August	**No.** The study area is outside of the known elevation range for this species.
Sidalcea oregana ssp. *valida*	Kenwood Marsh checkerbloom	FE/CE/1B.1	Perennial rhizomatous herb found in freshwater marshes and seeps from 115 to 150 meters.	June-September	**No.** The study area is outside of the known elevation range and does not provide habitat for this species.

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SPECIAL-STATUS PLANT SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Regulatory Status (Federal/State/ Local/CNPS)	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence
Spergularia macrotheca var. *longistyla*	Long-styled sand-spurrey	--/--/1B.2	Perennial herb found on alkaline substrates in meadows and seeps and marshes and swamps from 0 to 255 meters.	February-May	**No.** The study area does not provide suitable habitat for this species.
Streptanthus batrachopus	Tamalpais jewelflower	--/--/1B.3	Annual herb found on serpentinite substrates in closed-cone coniferous forest and chaparral from 305 to 650 meters.	April-July	**No.** The study area is outside of the known elevation range for this species and does not have closed-cone coniferous forest or chaparral present.
Streptanthus brachiatus ssp. *brachiatus*	Socrates Mine jewelflower	--/--/1B.2	Perennial herb usually found on serpentinite substrate in closed-cone coniferous forest and chaparral from 545 to 1,000 meters.	May-June	**No.** The study area is outside of the known elevation range for this species and does not have closed-cone coniferous forest or chaparral habitat with serpentinite present.
Streptanthus brachiatus ssp. *hoffmanii*	Freed's jewelflower	--/--/1B.2	Perennial herb found on serpentinite substrate in chaparral and cismontane woodland from 490 to 1,220 meters.	May-June	**No.** The study area is outside of the known elevation range for this species and does not have serpentinite substrates present.
Streptanthus hesperidis	Green jewelflower	--/--/1B.2	Annual herb found on serpentinite, rocky substrate in chaparral, which occur occasionally in openings, and cismontane woodland from 130 to 760 meters.	May-July	**No.** The study area is outside of the known elevation range for this species and does not have serpentinite substrates present.
Streptanthus morrisonii var. *elatus*	Three Peaks jewelflower	--/--/1B.2	Perennial herb found occasionally on serpentinite substrate in chaparral from 90 to 815 meters.	June-September	**No.** The study area does not have serpentinite substrate in chaparral habitat present.
Streptanthus morrisonii ssp. *kruckebergii*	Kruckeberg's jewelflower	--/--/1B.2	Perennial herb found in cismontane woodland (serpentinite) from 215 to 1,035 meters.	April-July	**No.** The study area is outside of the known elevation range for this species and does not have serpentinite substrates present.
Streptanthus vernalis	Early jewelflower	--/--/1B.2	Annual herb found on serpentinite substrate in closed-cone coniferous forest and chaparral.	March-May	**No.** The study area does not support closed-cone coniferous forest or chaparral habitat.
Stuckenia filiformis ssp. *alpina*	slender-leaved pondweed	--/--/2B.2	Perennial rhizomatous herb (aquatic) found in marshes and swamps (assorted shallow freshwater) from 300 to 2,150 meters.	May-July	**No.** The study area is outside of the known elevation range for this species.

Table A-1
Special-Status Plant Species with the Potential to Occur at the Study Area

Scientific Name	Common Name	Regulatory Status (Federal/State/ Local/CNPS)	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence
Trichostema ruygtii	Napa bluecurls	--/--/1B.2	Annual herb found in chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland, and vernal pools from 30 to 680 meters.	June-October.	**Moderate.** The oak woodland within the study area provides suitable habitat for this species.
Trifolium amoenum	Two-fork clover	FE/--/1B.1	Annual herb found in coastal bluff scrub and valley and foothill grassland (sometimes serpentinite) from 5 to 415 meters.	April-June	**No.** The study area does not provide suitable habitat for this species.
Trifolium buckwestiorum	Santa Cruz clover	--/--/1B.1	Annual herb found on gravelly and margin substrate in broadleafed upland forest, cismontane woodland and coastal prairie from 105 to 610 meters.	April-October	**No.** While the oak woodland provides habitat, the study area occurs outside of the known extant elevation range required for this species to inhabit.
Trifolium hydrophilum	Saline clover	--/--/1B.2	Annual herb found in marshes and swamps, valley and foothill grassland (mesic, alkaline) and vernal pools from 0 to 300 meters.	April-June	**No.** The study area does not provide suitable habitat for this species.
Triquetrella californica	Coastal triquetrella	--/--/1B.2	Moss found on soil substrate in coastal bluff scrub and coastal scrub from 10 to 100 meters.	n/a	**No.** The study area does not support coastal bluff scrub or coastal scrub habitat.
Viburnum ellipticum	Oval-leaved viburnum	--/--/2B.3	Perennial deciduous shrub found in chaparral, cismontane woodland, and lower montane coniferous forest from 215 to 1,400 meters.	May-June	**No.** The study area is outside of the known elevation range for this species.

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Rank 1A = Plants presumed extinct in California
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Rank 2 = Plants rare, threatened, or endangered in California but more common elsewhere

SOURCES: CDFW, 2019; CNPS, 2019; and USFWS, 2019; CalFlora, 2019; Nature Serve, 2019.

TABLE A-2
SPECIAL-STATUS WILDLIFE SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence
Amphibians				
Ambystoma californiense	California tiger salamander	FT/ST/--	Found in vernal pools, ephemeral wetlands, and seasonal ponds, including constructed stockponds, in grassland and oak savannah plant communities from 3 to 1,054 meters. The northern habitat ranges from Yolo County to the east side of Lake Berryessa south to San Luis Obispo County.	**No.** While storage ponds within the study area provide suitable aquatic habitat, the study area is outside of the known extant geographic range for this species.
Dicamptodon ensatus	California giant salamander	--/CSC/--	Occurs in wet coastal forests in near clear, cold permanent and semi-permanent streams and seepages. Occurs from sea level to near 915 meters. The range of this species occurs from the coastline above San Francisco Bay inland to Clear Lake.	**Moderate.** The study area does have permanent perennial and intermittent drainages that could support this species. The study area is located within the known range for this species.
Rana boylii	Foothill yellow-legged frog	--/SC,CSC/--	Partly-shaded, shallow perennial and intermittent streams and riffles with a rocky substrate in a variety of habitats. Need at least some cobble-sized substrate for egg-laying. Rarely encountered far from permanent water sources.	**Moderate.** The study area has shallow perennial and intermittent drainages with rocky substrates. The perennial and intermittent drainages within and adjacent to the study area provide habitat for this species. The study area falls within the known range for this species.
Rana draytonii	California red-legged frog	FT/CSC/--	Found in permanent and temporary pools of streams, marshes, and ponds with dense grassy and/or shrubby vegetation from 0 to 1,500 meters. Northern habitat range begins from Sonoma County and Napa County south to Los Angeles County, occurring on the western side of the Sierra Nevada Mountains.	**Moderate**. The study area has permanent source of water with suitable vegetation present. The study area is within the known range for this species.
Taricha rivularis	Red-bellied newt	--/CSC/--	Found in coastal woodlands and redwood forest along the coast of northern California. Found in a stream or river dweller. Larvae retreat into vegetation and under stones during the day. Known from Humboldt, Mendocino, Lake, and Sonoma counties.	**None.** While the oak woodland and drainages provide habitat the study area occurs outside of the known extant geographic range for this species. The closest CNDDB occurrence record is located 3.9 miles to the south west and is dated 1970.
Birds				
Agelaius tricolor	Tricolored blackbird	--/SC,CSC/--	Highly colonial species, most numerous in central valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony. Forages in grassland and cropland. Nests in cattails, tules, and blackberries large enough for at least 50 nesting pairs.	**Low**. The study area does not provide foraging habitat or a large enough substrate for a nesting colony.

TABLE A-2
SPECIAL-STATUS WILDLIFE SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence
Birds (cont.)				
Buteo swainsoni	Swainson's hawk	--/ST/--	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, alfalfa, or grain fields supporting rodent populations. Northern habitat summer range in California begins in central Tehama south to Kern County. Predominant breeding habitat is located in the Central Valley.	**Moderate.** The trees within the study area provide nesting habitat. While no foraging habitat occurs within the study area, the vineyards in the vicinity of the study area provide suitable foraging areas. There are no CNDDB occurrence records within 10 miles of the study area, and the study area is located outside of the known range for this species.
Coturnicops noveboracensis	Yellow rail	--/CSC/--	Shallow marshes and wet meadows. Nest placement is on the ground in sedge marshes. This bird winters in drier fresh-water and brackish marshes, as well as dense, deep grass and rice/ hay fields. Predominately known in the Gulf of Mexico and East coast, and north into Canada. Has a very limited wintering range in the San Francisco Bay Area and breeding range on the northern California/ Oregon border.	**No**. The study area does not provide habitat for this species.
Cypseloides niger	Black swift	--/CSC/--	Nesting habitat includes dark, moist, and inaccessible ledges and crevices, often behind waterfalls. Breeds very locally in the Sierra Nevada and Cascade Range. Forages widely over many habitats.	**No**. The study area does not provide nesting habitat for this species.
Elanus leucurus	White-tailed kite	--/FP/--	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**High.** The trees within and in the vicinity of the study area provide nesting habitat for this species.
Falco peregrinus anatum	American peregrine falcon	--/FP/--	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression on a ledge or skyscraper.	**Low.** While the study area occurs within the extant geographic range, the study area does not provide suitable nesting habitat for this species.
Haliaeetus leucocephalus	Bald eagle	--/SE,FP/--	Requires large bodies of water, or free flowing rivers with abundant fish, and adjacent snags or other perches. They winter throughout California near lakes, reservoirs, rivers, and some rangelands and coastal wetlands. Nesting is usually restricted to mountainous habitats near reservoirs, lakes, and rivers in northern California. Bald eagles usually nest in large coniferous trees within one mile of permanent water.	**Low. While the oak woodland and riparian woodland provide marginal nesting habitat, the study area does not occur within a mountainous region and no CNDDB occurrences have been documented within 5 miles of the study area.**

TABLE A-2
SPECIAL-STATUS WILDLIFE SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence
Birds (cont.)				
Progne subis	Purple martin	--/CSC/--	Inhabits woodlands, low elevation coniferous forest of Douglas-fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*), and Monterey pine (*Pinus radiata*). Nests primarily in old woodpecker cavities, also in human-made structures. Nest often located in tall, isolated tree/snag.	**Moderate.** The study area does provide nesting habitat for this species. There were numerous snags with woodpecker holes present.
Strix occidentalis caurina	Northern spotted owl	FT/ST/--	Prefers forest strands with large-diameter trees and varied vegetation levels, this subspecies lives among oak and other hardwoods. Nest placement is a dense section of forest that is well protected from open sky by dense tree canopy. Likely a broken-off treetop or tree-trunk hollow, or old nest from squirrel or bird of prey.	**Low.** The study area provides large diameter trees for nesting, but likely the vegetation is not dense enough to provide high quality habitat, and the study area is outside of the known geographic range.
Fish				
Hysterocarpus traskii pomo	Russian River tule perch	--/CSC/--	Only freshwater member of the surfperch family. This subspecies is only known from the Russian River Basin. It inhabits lowland waterways with complex submerged cover and prefers water temperatures below 22 degrees Celsius. Lifespan is short, with few living longer than two years. Perch are sexually mature in first year of life. Females give birth in spring to relative large numbers of young.	**No**. The study area does not include the Russian River Basin.
Hypomesus transpacificus	Delta smelt	FT/SE/--	Open surface waters in the Sacramento/San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Found in Delta estuaries with dense aquatic vegetation and low occurrence of predators. May be affected by downstream sedimentation.	**No**. The study area does not occur within the known range of this species. The closest known record is located over 32-miles south in the San Francisco Delta.
Oncorhynchus kisutch pop. 4	Coho salmon – central California coast ESU and EFH	FE, CH/SE/--	Anadromous fish species that spawns and spends a portion of its life in fresh inland streams, maturing in the open ocean.	**No**. The study area does not occur within the known range of this species.
Oncorhynchus mykiss irideus pop. 8	Steelhead – central California coast DPS	FT, CH/--/--	Anadromous fish species that spawns and spends a portion of its life in fresh inland streams, maturing in the open ocean.	**High**. The Napa River within the study area provides habitat for this species.
Entosphenus tridentatus	Pacific lamprey	--/CSC/--	Adult lamprey live in the ocean before migrating and holding over in freshwater streams; upon spawning, adults die and as ammocoetes live in the silt/sand substrate for 5 to 7 years, before transforming to juveniles and migrating to the ocean.	**High.** The perennial drainage (Napa River) provides habitat for this species.

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SPECIAL-STATUS WILDLIFE SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence
Invertebrates				
Syncaris pacifica	California freshwater shrimp	FE/SE/--	Inhabit small, perennial coastal streams with low gradients below 116 meters. Found in tributary streams in the lower Russian River drainage that drain to the Pacific Ocean, coastal streams that drain to the Pacific Ocean, streams that drain to Tomales Bay, and streams that drain to San Pablo Bay.	**High**. The study area does provide habitat for this species in the Napa River, Simmons Creek, and Oat Hill Mine Ditch.
Mammals				
Antrozous pallidus	Pallid bat	--/CSC/--	Inhabits oak woodland, savannah, and riparian habitats. Roosts in crevices and hollows in trees, rocks, cliffs, bridges, and buildings.	**High.** The trees within the oak woodland and riparian woodland provide suitable roosting habitat for this species.
Corynorhinus townsendii	Townsend's big-eared bat	--/CSC/--	Throughout California in a wide variety of habitats. Most common in mesic sites. Maternity roosts are found in caves, tunnels, mines, or other human-made structures. May use separate sites for night, day, hibernation, or maternity roosts.	**High.** The study area can be considered mesic with sites for night and potentially day roosts, such as buildings and bridges. The study area does not provide suitable habitat for maternity roosts.
Pekania pennanti	Fisher –West Coast DPS	--/ST, CSC/--	Occurs in intermediate to large-tree stages of coniferous forest and deciduous-riparian habitats with a high percent of canopy closure. Habitat ranges from the Oregon and California border along the coast line to Sonoma County. The inland range follows the Sierra Nevada Mountain range to Kern County.	**No.** The study area is located outside of the known range for this species, and does not provide suitable habitat.
Taxidea taxus	American badger	--/CSC/--	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils, and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	**Low.** The study area does not provide suitable habitat for burrowing and does not have drier open stages of shrub.
Reptiles				
Chelonia mydas	Green sea turtle East Pacific DPS	FT/--/--	Inhabit shallow tropical and subtropical waters and coastline beaches associated with the Pacific Ocean, Atlantic Ocean, Mediterranean Sea, and northern Indian Ocean.	**No.** The study area does not provide suitable habitat for this species.
Emys marmorata	Western pond turtle	--/CSC/--	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6,000 feet. Need basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 kilometers from water for egg-laying.	**Present**. This species was observed within the storage ponds during the biological surveys. The storage ponds provide aquatic habitat and the ruderal/disturbed areas surrounding the ponds provide upland habitat.

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APPENDIX B

Habitat Assessment

CALISTOGA RIVERSIDE POND RELOCATION PROJECT

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Prepared for
City of Calistoga

April 2019

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EXECUTIVE SUMMARY

Environmental Science Associates (ESA) conducted biological surveys within the approximately 14.26-acre Calistoga Riverside Ponds property (study area), located in the City of Calistoga, California. The applicant proposes to protect the existing wastewater treatment plant (WWTP) headworks from flooding and erosion that threatens the WWTP's continuous operation. The purpose of this report is to describe site conditions and assess the suitability of the study area to support special status species and sensitive habitat types. This report may be used in support of regulatory permitting and the California Environmental Quality Act (CEQA) compliance.

The following habitat types occur within the study area: oak woodland, riparian woodland, ruderal/disturbed, developed, storage ponds, and perennial, intermittent, and ephemeral drainages. Aquatic resources include the storage ponds and the drainages, which may be considered jurisdictional. Oak trees within the oak woodland and riparian woodland may be protected under the City of Calistoga's tree ordinance.

The study area provides suitable habitat for special status plants, including Boggs Lake hedge-hyssop (*Gratiola heterosepala*), Colusa layia (*Layia septentrionalis*), marsh microseris (*Microseris paludosa*), Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*), and Napa bluecurls (*Trichostema ruygtii*).

The study area provides suitable habitat for foothill yellow-legged frog (*Rana boylii*), California red-legged frog (*Rana draytonii*), California giant salamander (*Dicamptodon ensatus*), western pond turtle (*Emys marmorata*), California freshwater shrimp (*Syncaris pacifica*), steelhead – Central California Coast Distinct Population Segment (DPS) (*Oncorhynchus mykiss irideus* pop. 8), Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*), purple martin (*Progne subis*), pallid bat (*Antrozous pallidus*), and Townsend's big-eared bat (*Corynorhinus townsendii*).

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CHAPTER 1
Introduction

1.1 Background and Purpose

This Habitat Assessment Report (report) was prepared for the approximately 14.26-acre existing wastewater treatment plant (WWTP) located within the City of Calistoga, California (**Figures 1** and **2**). The purpose of this report is to describe site conditions and assess the suitability of the study area to support special status species and sensitive habitat types.

1.2 Project Description

The project would protect the WWTP headworks structure and associated critical infrastructure from flooding and erosion that threatens the continuous uninterrupted operation of the City of Calistoga's (City) WWTP. This would be achieved by abandoning some of the Riverside storage ponds, creating a new pond with appropriate capacity, and restoring the channels of the Napa River and Simmons Creek, thereby widening the channels and reducing the erosional capacity of the flows.

1.3 Property Location

The study area is bordered by Dunaweal Lane to the east, the Napa Valley Vine Trail to the north, and agriculture to the west and south. The study area corresponds to an unsectioned area of Township 8 North, Range 6 West of the Calistoga, California U.S. Geological Survey (USGS) 7.5-minute series quadrangle. The approximate centroid of the study area is 38º 34′ 18.47″ North, 122º 33′ 34.14″ West. Topography throughout the study area is relatively flat except where the hillslopes descend toward the drainages (**Figure 3**). Elevation within the study area extends from 330 feet in the northeast to 310 feet in the south.

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SOURCE: Esri, 2015; ESA, 2019

Calistoga Riverside Ponds

Figure 1
Regional Location

ESA

SOURCE: USDA, 2016; ESA, 2019

Calistoga Riverside Ponds

Figure 2
Study Area

ESA

SOURCE: USGS 7.5' Topographic Quadrangle (Calistoga, 2018); ESA, 2019

Calistoga Riverside Ponds

Figure 3
Topographic Map

ESA

1.4 Regulatory Context

Biological resources in the study area may fall under the jurisdiction of various regulatory agencies and be subject to their regulations. In general, the greatest legal protections are provided for plant and wildlife species that are formally listed under the Federal Endangered Species Act (FESA) or California Endangered Species Act (CESA). The following regulations and agencies are commonly associated with projects that have the potential to affect biological resources:

- Federal Endangered Species Act
- Migratory Bird Treaty Act
- Bald and Golden Eagle Protection Act
- Clean Water Act, Section 404
- California Endangered Species Act
- Fish and Game Code Section 3503
- Native Plant Protection Act
- Lake or Streambed Alteration Program
- Porter Cologne Water Quality Act
- CEQA Guidelines Section 15380
- Calistoga Municipal Code 19.01.04 (Trees), 19.04 (Watercourses), 19.05 (Stormwater Runoff Pollution Control), 19.08 (Conservation Regulations), 19.10 (CEQA Review and Compliance)

These regulations are presented and discussed in full in **Appendix A**, *Regulatory Context.*

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CHAPTER 2
Methods

2.1 Review of Background Information

Prior to performing the biological surveys, ESA reviewed publicly available data and subscription-based biological resource data. Data sources that assisted in this analysis included:

- Topographic maps (Calistoga and surrounding 8 quadrangles) (USGS, 1958);
- Historic and current aerial imagery (Google Earth, 1993-2018);
- Soil maps from the National Resources Conservation Service (NRCS, 2019a);
- California Wildlife Habitat Relationships (CWHR) database;
- The CDFW California Natural Diversity Database (CNDDB) list of plant and wildlife species documented on the Calistoga and 8 surrounding quadrangles (CDFW, 2019);
- The California Native Plant Society (CNPS) online database of plant species documented on the Calistoga and 8 surrounding quadrangles (CNPS, 2019); and
- A U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) list of species that may occur in the vicinity of the study area (USFWS, 2019).

The USFWS, CDFW, and CNPS lists are provided in **Appendix B**. The CNDDB and CNPS lists include special status species documented on the following 9 quadrangles:

Mount St. Helena	Detert Reservoir	Aetna Springs
Mark West Springs	Calistoga	St. Helena
Santa Rosa	Kenwood	Rutherford

2.2 Survey Methodology

2.2.1 Survey Dates and Personnel

ESA Senior Wildlife Biologist Kelly Bayne and Wildlife Biologist Julie McNamara conducted a wetlands delineation and a reconnaissance-level biological survey within the study area on March 21, 2019. Ms. McNamara conducted an additional biological survey on March 29, 2019. The results of the delineation are summarized herein and are provided in detail under a separate cover (ESA, 2019). Survey conditions were good, with temperatures in the mid to high 50's (Fahrenheit) and cloudy to sunny for both surveys.

2.2.2 Limitations

The majority of the study area was accessible by foot, excluding part of the northern boundary where Himalayan blackberry (*Rubus armeniacus*) thickets precluded access. Binoculars were used in the inaccessible areas to ensure 100 percent of the study area was surveyed. In addition, the biologists did not have access to the southern banks of the Napa River. Therefore, the exact edge on the south side of the Napa River was estimated in the field and with aerial imagery.

2.2.3 Biological Surveys

The biological surveys consisted of conducting a botanical inventory, evaluating biological communities, mapping aquatic features, and documenting habitat for special status species with the potential to occur within the study area. Wetland boundaries, channel courses, and biological communities were recorded using a Global Positioning System (GPS) unit (Trimble GeoXT) with real-time differential correction and an instrument-rated mapping accuracy of +/- 1 meter. Comprehensive lists of plants and wildlife observed during the biological surveys are provided in **Appendices C** and **D**.

CHAPTER 3
Environmental Setting

This chapter provides the environmental baseline for soil types, habitat types, and aquatic features within the study area.

3.1 Soil Types

The Natural Resources Conservation Service (NRCS) has mapped two soil units within the study area. General characteristics associated with these soil types are described below (NRCS, 2019a).

3.1.1 (103) Bale Loam 0 to 2 Percent Slopes

This soil unit occurs on alluvial fans and floodplains with parent material comprised of alluvium derived from rhyolite and/or alluvium derived from igneous rock. This is a somewhat poorly drained soil with a moderate available water storage of about 7.2 inches. The typical profile consists of loam from 0 to 24 inches and stratified gravelly sandy loam to loam from 24 to 60 inches. The hydric soils list for Napa County identifies minor components associated with Clear Lake in alluvial fans of this soil type as hydric (NRCS, 2019b).

3.1.2 (174) Riverwash

This soil unit occurs on floodplains and channels with parent material comprised of sandy and gravelly alluvium. This is an excessively drained soil. The hydric soils list for Napa County identifies floodplains associated with this soil type as hydric (NRCS, 2019b).

3.2 Habitat Types

The following upland habitat types occur within the study area: oak woodland, riparian woodland, ruderal/disturbed, and developed. Aquatic resources include manmade storage pond and drainages. Habitat types within the study area are presented in **Figure 4**. **Table 1** provides a summary of the habitat types by acreages. Dominant vegetation and wildlife observed during the biological surveys are provided under each of the habitat types. Comprehensive lists of plants and wildlife observed within the study area are provided in **Appendices C** and **D**.

TABLE 1
HABITAT TYPES BY ACREAGES

Habitat Type	Acreage[1]
Terrestrial Habitat Types	
Oak Woodland	1.74
Riparian Woodland	2.83
Ruderal/Disturbed	1.17
Developed	3.92
Aquatic Habitat Type	
Manmade Storage Pond	3.72
Drainage	0.88
	14.26

NOTES:
1 GIS calculations may not reflect exact acreage of study area due to rounding.

3.2.1 Oak Woodland

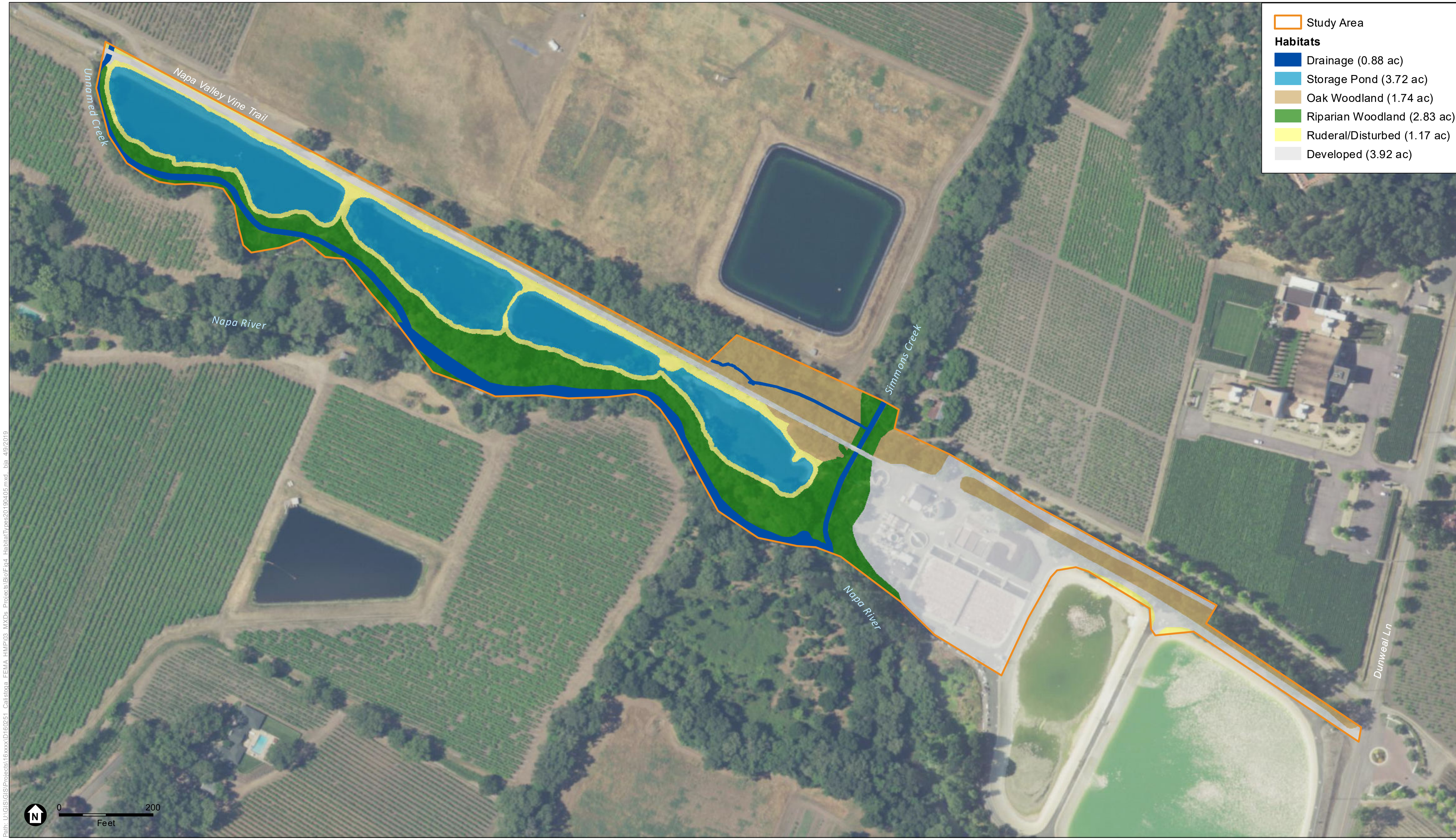
Oak woodland lines the northern portion of the study area. Dominant overstory vegetation includes valley oak (*Quercus lobata*) and coast live oak (*Quercus agrifolia*), with a row of ornamental fan palms (*Washingtonia filifera*). Dominant understory vegetation includes ripgut grass (*Bromus diandrus*), tall sock-destroyer (*Torilis arvensis*), and radish (*Raphanus* sp.).

Western scrub jay (*Aphelocoma californica*), western gray squirrel (*Sciurus griseus*). Chestnut-backed chickadee (*Poecile rufescens*), oak titmouse (*Baeolophus inornatus*), black phoebe (*Sayornis nigricans*), dark-eyed junco (*Junco hyemalis*), northern flicker (*Colaptes auratus*), Lawrence's goldfinch (*Carduelis lawrencei*), and western bluebird (*Sialia mexicana*) were observed foraging within the oak woodland.

3.2.2 Riparian Woodland

Riparian woodland borders the Napa River along the southern portion of the study area and borders Simmons Creek through the central portion of the study area. Dominant overstory vegetation includes valley oak, coast live oak, western sycamore (*Platanus racemosa*), and willow (*Salix* sp.) with blue elderberry (*Sambucus nigra* ssp. *caerulea*), citrus (*Prunus* sp.), and birch (*Betula* sp.) interspersed throughout. Dominant understory vegetation includes Himalayan blackberry (*Rubus armeniacus*), snowberry (*Symphoricarpos* sp.), rose (*Rosa* sp.), western poison oak (*Toxicodendron diversilobum*), poison hemlock (*Conium maculatum*), California buckeye (*Aesculus californica*), tall sock-destroyer, ripgut grass, and greater periwinkle (*Vinca major*).

An active red shouldered hawk (*Buteo lineatus*) nest was observed within the riparian woodland to the west of the Napa River. Belted kingfisher (*Megaceryle alcyon*), acorn woodpecker (*Melanerpes formicivorus*), California quail (*Callipepla californica*), and marsh wren (*Cistothorus palustris*) were observed foraging within the riparian woodland. Several inactive stick nests were observed within the riparian woodland.



SOURCE: USDA, 2016; ESA, 2019

Calistoga Riverside Ponds

Figure 4
Habitat Types

ESA

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3.2.3 Ruderal/Disturbed

Ruderal/disturbed areas include graded access roads and road shoulders around the storage ponds. The vegetation along the northern access road and road shoulders were unidentifiable since the area appeared to have been burned from fire or herbicide application prior to the March 2019 biological surveys. Vegetation within the remainder of the ruderal/disturbed areas is largely lacking aside from ripgut grass, tall sock-destroyer, and common groundsel (*Senecio vulgaris*). Ruderal/disturbed habitat generally does not provide suitable habitat for most species. Although, commonly occurring wildlife may include California vole (*Microtus californicus*) and western fence lizard (*Sceloporus occidentalis*).

3.2.4 Developed

Disturbed/developed occurs along the northern portion of the study area and includes paved roads and road shoulders. Minimal vegetation occurs along these areas. Developed habitat does not provide suitable habitat for most species, although, buildings and bridges may be used by bat species for day or night roosts and by birds for nesting.

3.2.5 Manmade Storage Pond

Four manmade storage ponds occur within the study area. The storage ponds are used to store and release treated effluent to the Napa River via direct discharge and spreading fields. The storage ponds contained ponded water at the time of the March 2019 surveys. While the majority of the storage ponds lack vegetation within or along the banks, emergent vegetation consisting of cattail (*Typha* sp.), water starwort (*Callitriche heterophylla*), and watercress (*Nasturtium officinale*) occur in some areas of the storage ponds.

Western pond turtle (*Emys marmorata*), red-eared slider (*Trachemys scripta*), bufflehead (*Bucephala albeola*), American bullfrog (*Lithobates catesbeianus*), mallard (*Anas platyrhynchos*), great blue heron (*Ardea herodias*), mosquitofish (*Gambusia affinis*), and great egret (*Ardea alba*) were observed within the storage ponds.

3.2.6 Drainage

Perennial, intermittent, and ephemeral drainages occur within the study area. These include the Napa River (perennial), Simmons Creek (intermittent), Oat Hill Mine Ditch (intermittent), and a manmade ephemeral drainage ditch. Dominant vegetation surrounding the perennial and intermittent drainages includes those described under the riparian woodland habitat. Dominant vegetation surrounding the ephemeral drainage ditch includes Himalayan blackberry and coast live oak. One river lamprey (*Lampetra ayresi*) was observed swimming in the Napa River during the March 2019 biological surveys.

3.3 Potential Waters of the U.S.

A total of 4.6 acres of aquatic resources occur within the 14.26-acre study area. Of the 4.6 acres, 3.72 acres of storage ponds may be excluded by rule from being considered jurisdictional based on the 2015 Clean Water Rule paragraphs (b)(3)(i) and (b)(3)(ii). These areas are depicted on habitat map (Figure 4). A detailed discussion of aquatic features are available under a separate cover (ESA, 2019).

3.4 Special Status Species

Special status species are legally protected under the State and federal Endangered Species Acts or other regulations, or are species that are considered sufficiently rare by the scientific community to qualify for such listing. These species are in the following categories:

- Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (FESA) (50 Code of Federal regulations [CFR] 17.12 [listed plants], 17.11 [listed animals] and various notices in the Federal Register [FR] [proposed species]);
- Species that are candidates for possible future listing as threatened or endangered under FESA (61 FR 40, February 28, 1996);
- Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA) (14 California Code of Regulations [CCR] 670.5);
- Plants listed as rare or endangered under the California Native Plant Protection Act (NPPA) (California Fish and Game Code, Section 1900 et seq.);
- Animal species of special concern to the California Department of Fish and Wildlife (CDFW);
- Animals fully protected under Fish and Game Code (California Fish and Game Code, Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]);
- Species that meet the definitions of rare and endangered under CEQA. CEQA Section 15380 provides that a plant or animal species may be treated as “rare or endangered” even if not on one of the official lists (State CEQA Guidelines, Section 15380); and
- Plants considered under the CDFW and CNPS to be “rare, threatened or endangered in California” (California Rare Plant Rank [CRPR] 1A, 1B, and 2) as well as CRPR Rank 3 and 4[1] plant species.

A list of regionally occurring special status species in the vicinity of the study area was compiled based on the CNDDB, USFWS, and CNPS lists (**Appendix B**). The table provides a summary of the special status species, their general habitat requirements, and an assessment of their potential to occur within the vicinity of the study area. The comprehensive list of regionally occurring special status species is presented in **Appendix E**. The “Potential for Occurrence” category is defined as follows:

[1] CRPR 3 and 4 plants may be analyzed under CEQA §15380 if sufficient information is available to assess potential impacts to such plants. Factors such as regional rarity vs. statewide rarity should be considered in determining whether cumulative impacts to a CRPR 3 or 4 plant are significant even if individual project impacts are not. CRPR 3 and 4 plants may be considered regionally significant if, for example, the occurrence is located at the periphery of the species’ range, or exhibits unusual morphology, or occurs in an unusual habitat/substrate. For these reasons, CRPR 3 and 4 plants should be included in the special status species analysis. CRPR 3 and 4 plants are also included in the California Natural Diversity Database Special Plants, Bryophytes, and Lichens List. [Refer to the current online published list available at: http://www.dfg.ca.gov/biogeodata.].

- **No:** The study area does not support suitable habitat for a particular species, does not provide soils required for the species to inhabit, is outside of the species known elevation or geographic range, or was not observed during the evident and identifiable blooming period for a potentially occurring special-status plant;
- **Low:** The study area only provides limited amounts and low quality habitat for a particular species. In addition, the known range for a particular species may be outside of the immediate study area;
- **Moderate:** The study area provides suitable habitat for a particular species;
- **High:** The study area provides ideal habitat conditions for a particular species and/or known populations occur in immediate area and/or within the study area; or
- **Present:** The species was observed during the biological surveys within the study area.

Species without the potential to occur or with low potential are not discussed further. Only special status species observed or with moderate or high potential are discussed further below. **Table 2** summarizes the special status species that occur or with moderate to high potential to occur within the study area.

TABLE 2
SPECIAL STATUS SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence within the Study Area
Plants				
Gratiola heterosepala	Boggs Lake hedge-hyssop	--/SE/1B.2	Annual herb found on clay substrate in marshes and swamps (lake margins) and vernal pools from 33 to 7,792 feet (10 to 2,375 meters). Blooms April through August.	Moderate. The storage ponds provide suitable habitat for this species.
Layia septentrionalis	Colusa layia	--/--/1B.2	Annual herb found in chaparral, cismontane woodland, and valley and foothill grassland, which is occasionally on sandy, serpentine substrate, from 328 to 3,592 feet (100 to 1,095 meters). Blooms April through May.	Moderate. The oak woodland provides suitable habitat for this species.
Microseris paludosa	Marsh microseris	--/--/1B.2	Perennial herb found in closed-cone coniferous forest, cismontane woodland, coastal scrub, and valley and foothill grasslands from 16 to 1,165 feet (5 to 355 meters). Blooms April through June, occasionally July.	Moderate. The oak woodland provides suitable habitat for this species.
Navarretia leucocephala ssp. *bakeri*	Baker's navarretia	--/--/1B.1	Annual herb found in mesic areas of cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, and vernal pools from 16 to 5,709 feet (5 to 1,740 meters). Blooms April through July.	Moderate. The oak woodland within the study area provides suitable habitat for this species.

TABLE 2
SPECIAL STATUS SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence within the Study Area
Plants (cont.)				
Trichostema ruygtii	Napa bluecurls	--/--/1B.2	Annual herb found in chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland, and vernal pools from 98 to 2,231 feet (30 to 680 meters). Blooms June through October.	Moderate. The oak woodland within the study area provides suitable habitat for this species.
Invertebrates				
Syncaris pacifica	California freshwater shrimp	FE/SE/--	Inhabits small, perennial coastal streams with low gradients below381 feet (116 meters). Found in tributary streams in the lower Russian River drainage that drain to the Pacific Ocean, coastal streams that drain to the Pacific Ocean, streams that drain to Tomales Bay, and streams that drain to San Pablo Bay.	High. The perennial drainage (Napa River) provides habitat for this species.
Fish				
Oncorhynchus mykiss irideus pop. 8	Steelhead – Central California Coast DPS	FT, CH/--/--	Anadromous fish species that spawns and spends a portion of its life in fresh inland streams, maturing in the open ocean.	High. The study area does provide habitat for this species, and has been documented within the Napa River watershed and tributary streams. The Napa River is designated Critical Habitat for this species.
Amphibians				
Dicamptodon ensatus	California giant salamander	--/CSC/--	Occurs in wet coastal forests in clear, cold permanent and semi-permanent streams and seepages. Occurs from 0 to 3,002 feet (0 to 915 meters). The range of this species occurs from the coastline above San Francisco Bay inland to Clear Lake.	Moderate. The perennial and intermittent drainages within the study area provide habitat for this species.
Rana boylii	Foothill yellow-legged frog	--/SC,CSC/--	Inhabits partially-shaded, shallow perennial and intermittent streams and riffles with a rocky substrate in a variety of habitats. Need at least some cobble-sized substrate for egg-laying. Rarely encountered far from permanent water sources.	Moderate. The perennial and intermittent drainages within the study area provide habitat for this species.
Rana draytonii	California red-legged frog	FT/CSC/--	Found in permanent and temporary pools of streams, marshes, and ponds with dense grassy and/or shrubby vegetation from 0 to 4,921 feet (0 to 1,500 meters). Northern habitat range begins from Sonoma County and Napa County south to Los Angeles County, occurring on the western side of the Sierra Nevada Mountains.	Moderate. The perennial and intermittent drainages within the study area provide habitat for this species.

TABLE 2
SPECIAL STATUS SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence within the Study Area
Reptiles				
Emys marmorata	Western pond turtle	--/CSC/--	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6,000 feet (1,829 feet). Need basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 kilometers from water for egg-laying.	Present. This species was observed within the storage ponds during the biological surveys. The storage ponds provide aquatic habitat and the ruderal/disturbed areas surrounding the ponds provide upland habitat.
Birds				
Buteo swainsoni	Swainson's hawk	--/ST/--	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, alfalfa, or grain fields supporting rodent populations. Northern habitat summer range in California begins in central Tehama south to Kern County. Predominant breeding habitat is located in the Central Valley.	Moderate. The trees within the study area provide nesting habitat. While no foraging habitat occurs within the study area, the vineyards in the vicinity of the study area provide suitable foraging areas.
Elanus leucurus	White-tailed kite	--/FP/--	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	High. The trees within and in the vicinity of the study area provide nesting habitat for this species.
Progne subis	Purple martin	--/CSC/--	Inhabits woodlands and low elevation coniferous forest of Douglas-fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*), and Monterey pine (*Pinus radiata*). Nests primarily in old woodpecker cavities, also in human-made structures. Nest often located in tall, isolated tree/ snag.	Moderate. The study area does provide nesting habitat for this species. There were numerous snags with woodpecker holes present.
Mammals				
Antrozous pallidus	Pallid bat	--/CSC/--	Inhabits oak woodland, savannah, and riparian habitats. Roosts in crevices and hollows in trees, rocks, cliffs, bridges, and buildings.	High. The trees within the oak woodland and riparian woodland and the developed areas associated with the bridge provide suitable roosting habitat for this species.

TABLE 2
SPECIAL STATUS SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence within the Study Area
Corynorhinus townsendii	Townsend's big-eared bat	--/CSC/--	Throughout California in a wide variety of habitats. Most common in mesic sites. Maternity roosts are found in caves, tunnels, mines, or other human-made structures. May use separate sites for night, day, hibernation, or maternity roosts.	High. The developed areas associated with the bridge provide suitable day and night roosting habitat for this species.

KEY:

Federal: (USFWS)

FE = Listed as Endangered by the Federal Government
FT = Listed as Threatened by the Federal Government
FC = Candidate for listing by the Federal Government
(PD) = Proposed for Delisting

State: (CDFW)

SE = Listed as Endangered by the State of California
ST = Listed as Threatened by the State of California
SR = Listed as Rare by the State of California (plants only)
SC = Candidate for listing by the State of California
CSC = California Species of Special Concern
FP = CDFW Fully Protected Species

California Rare Plant Rank (CRPR):

Rank 1A = Plants presumed extinct in California
Rank 1B = Plants rare, threatened, or endangered in California and elsewhere
Rank 2 = Plants rare, threatened, or endangered in California but more common elsewhere

3.4.1 Special-Status Plants

Boggs Lake Hedge-Hyssop (*Gratiola heterosepala*)

Boggs Lake hedge hyssop is State listed as endangered and has a California Rare Plant Rank (CRPR) of 1B.2.

Boggs Lake hedge hyssop is an annual herb found on clay soils in vernal pools and along the lake margins of marshes and swamps from 33 to 7,792 feet (10 to 2,375 meters). The blooming period is from April through August. The margins of the manmade storage ponds within the study area provides suitable habitat for this species. The March 2019 biological surveys were conducted outside of the evident and identifiable period for Boggs Lake hedge-hyssop. This species could potentially be present within the study area and not have been detected, therefore this species has a moderate potential to occur within the study area.

Colusa layia (*Layia septentrionalis*)

Colusa layia has a CRPR of 1B.2.

Colusa layia is an annual herb found in chaparral, cismontane woodland, and valley and foothill grassland, which is occasionally on sandy, serpentine substrate from 328 to 3,593 feet (100 to 1,095 meters). The blooming period is from April through May. The oak woodland within the study area provides habitat for Colusa layia. While this species was not observed within the study area, the March 2019 biological surveys were conducted outside of the evident and identifiable period. This species could potentially be present within the study area and not have been detected, therefore this species has a moderate potential to occur within the study area.

Marsh microseris (*Microseris paludosa*)

Marsh microseris has a CRPR of 1B.2.

Marsh microseris is a perennial herb found in closed-cone coniferous forest, cismontane woodland, coastal scrub, and valley and foothill grassland from 16 to 1,165 feet (5 to 355 meters). The blooming period is from April through June, sometimes to July. The oak woodland within the study area provides habitat for marsh microseris. While this species was not observed within the study area, the March 2019 biological surveys were conducted outside of the evident and identifiable period. This species could potentially be present within the study area and not have been detected, therefore this species has a moderate potential to occur within the study area.

Baker's navarretia (*Navarretia leucocephala ssp. bakeri*)

Baker's navarretia has a CRPR of 1B.1.

Baker's navarretia is an annual herb found in mesic areas of cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, and vernal pools from 16 to 5,709 feet (5 to 1,740 meters). The blooming period for this species is from April through July. The oak woodland within the study area provides habitat for Baker's navarretia. While this species was not observed within the study area, the March 2019 biological surveys were conducted outside of the evident and identifiable period. This species could potentially be present within the study area and not have been detected, therefore this species has a moderate potential to occur within the study area.

Napa bluecurls (*Trichostema ruygtii*)

Napa bluecurls has a CRPR of 1B.2.

Napa bluecurls is an annual herb found in chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland, and vernal pools from 98 to 2,231 feet (30 to 680 meters). The blooming period for this species is from June through October. The oak woodland within the study area provides habitat for Napa bluecurls. While this species was not observed within the study area, the March 2019 biological surveys were conducted outside of the evident and identifiable period. This species could potentially be present within the study area and not have been detected, therefore this species has a moderate potential to occur within the study area.

3.4.2 Special-Status Amphibians

Foothill Yellow-Legged Frog (*Rana boylii*)

Foothill yellow-legged frogs are a state candidate threatened species and California species of special concern.

Foothill yellow-legged frogs are found in or near rocky streams in a variety of habitats, including valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadow types. This species is rarely encountered far from permanent water, even on rainy nights (CDFW, 2000). Foothill yellow-legged frogs seek refuge in between rocks or leaf litter at the bottom of stream or creek beds when threatened (Nafis, 2015). Breeding and egg laying usually await the end of spring flooding and may commence any time from mid-March to May, depending on local water conditions (CDFW, 2000). Female frogs use the downstream side of rocks as protection for egg masses that are attached to pebbles, rocks, or submerged vegetation (Nafis, 2015).

There is one CNDDB record for this species within 5 miles of the study area. This record is from 1943 is documented within 0.5 mile of the study area along the Napa River. The record states that the occurrence has been extirpated from the vicinity (CDFW, 2019). There are an additional 35 CNDDB records for this species between 5 and 10 miles of the study area. Fourteen of these occurrences were documented within the last 5 years, several on the Mark West Creek just north of Santa Rosa. The riparian woodland surrounding the Napa River provide shading. The Napa River is a permanent water source with rocky to cobble-sized substrate that provides suitable egg-laying habitat for this species. The intermittent drainages may also provide aquatic habitat for this species. Foothill yellow-legged frog was not observed during the March 2019 biological surveys. While this species may be extirpated from the immediate vicinity given the number of extant occurrences documented greater than 5 miles from the study area, this species has a moderate potential to occur within the study area.

California Red-Legged Frog (*Rana draytonii*)

California red-legged frogs are a federally listed threatened species and California species of special concern.

California red-legged frog (CRLF) inhabits ponds, slow-moving creeks, and streams with deep pools that are lined with dense emergent marsh or shrubby riparian vegetation. Submerged root masses and undercut banks are important habitat features for this species. Breeding sites include pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds, lagoons, and artificial impoundments including stock ponds (USFWS, 2011a). CRLF breed between November and March. Embryos hatch 6 to 14 days after fertilization and larvae require 3.5 to 7 months to attain metamorphosis. All of the extant records for CRLF in the Sierra Nevada range are over 800 feet (pers. comm., Jennings 2013). Below this elevation, aquatic habitat generally supports stronger populations of non-native predators associated with warm water habitats such as American bullfrogs (*Lithobates catesbeiana*), Centrarchid fish (pers. comm., Jennings 2013), bass (*Micropterus* sp.), and mosquitofish (*Gambusia affinis*) (USFWS, 2017). CRLF are mostly found in seasonal aquatic habitat rather than in permanent waters because predators including bass, bullfrogs, and mosquitofish are unable to survive once the aquatic features dry up.

There are no CNDDB occurrences within 5 miles of the study area. The nearest occurrence is from 1979 (Occurrence Number 738) and is approximately 7.4 miles northeast of the study area (CDFW, 2019). The record states that there were many other springs and ponds on the same slope that may support this species. The perennial and intermittent drainages within the study area provide marginally suitable habitat for this species given the lack of pools and back waters. The riparian woodland surrounding the drainages provide suitable upland foraging and refugia. While the storage ponds provide habitat, the presence of American bullfrogs and mosquitofish likely precludes CRLF from inhabiting them. CRLF was not observed during the March 2019 biological surveys. This species has a moderate potential to occur within the study area.

California Giant Salamander (*Dicamptodon ensatus*)

California giant salamander is California species of special concern.

California giant salamander is found in and around cold, semi-permanent and permanent streams and seepages in mesic forests from Sonoma and Napa counties to Santa Cruz County. Adults are elusive and seek cover under rocks, logs and other substrate and forage on the forest floor during wet weather. During the breeding season, adults are found under rocks within small to medium-sized streams and create subterranean nests for eggs (Petranka, 1998).

There is one CNDDB record for this species within 5 miles of the study area. The record is from 1985 and is located 3.9 miles south west in Mark West Creek (Occurrence Number 26) (CDFW, 2019). No additional information was provided. This species was not observed during the March 2019 biological surveys of the study area. The perennial and intermittent drainages provide habitat for this species. This species has a moderate potential to occur within the study area.

3.4.3 Special Status Reptiles

Western Pond Turtle (E*mys marmorata*)

Western pond turtle is a California species of special concern.

Western pond turtles are found in ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches with suitable basking sites (Californiaherps, 2019). Suitable aquatic habitat typically has a muddy or rocky bottom and has emergent aquatic vegetation for cover (Stebbins, 2003). Western pond turtles nest and overwinter in areas of sparse vegetation comprised of grassland and forbs with less than ten percent slopes, less than 492 feet (150 meters) from aquatic habitat (Rosenberg et al., 2003). This species also needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 kilometers from water for egg-laying.

There are 2 CNDDB records for this species within 5 miles of the study area. The nearest CNDDB record is from 2017 and was mapped along the Napa River within the study area (occurrence number 455) (CDFW, 2019). The record states that turtles were observed basking in the Napa River and the La Pradera Drainage Ditch. The storage ponds and the perennial and intermittent drainages provide habitat for this species. The ruderal/disturbed areas surrounding the storage ponds and the riparian woodland surrounding the drainages provide upland habitat for this species. Numerous western pond turtles were observed within the manmade storage ponds within the study area during the March 2019 biological surveys. This species occurs within the study area.

3.4.4 Special Status Invertebrates

California Freshwater Shrimp (*Syncaris pacifica*)

California freshwater shrimp are federally listed endangered and state listed as endangered.

California freshwater shrimp are found in low elevation, generally less than 380 feet (116 meters), low gradient (generally less than one percent), freshwater, perennial streams in Marin, Napa, and Sonoma counties. During the winter, habitat includes shallow margins of stream pools containing undercut banks and exposed living fine-root material that provide shelter and refuge from high water velocities associated with winter storm events (USFWS, 2011b). During the summer months, California freshwater shrimp are often associated with submerged leafy branches. It is believed both winter and summer habitat components need to be found in close proximity for this species to persist for prolonged periods. California freshwater shrimp have been known to survive in summer pools, even when flow between pools dries up.

There is one CNDDB record for this species within 5 miles of the study area. Occurrence Number 11 is from 1990 and is located 0.8 mile northwest of the study area on the Napa River (CDFW, 2019). The records states that several adults and juveniles were observed in the Napa River. The Napa River within the study area provides habitat for this species. This species has a high potential to occur within the study area.

3.4.5 Special Status Fish

Steelhead – Central California Coast Distinct Population Segment (DPS) (*Oncorhynchus mykiss irideus* pop. 8)

The Central California Coast steelhead DPS is a federally-listed threatened species. The Napa River is listed as Critical Habitat for Central California Coast steelhead.

This anadromous fish spends time in both fresh and saltwater habitats and requires freshwater spawning and rearing sites. Steelhead require cool water for health, growth, and reproduction, though they tolerate warmer water conditions as well. Estuaries provide critical nursery areas for juvenile Central California Coast steelhead. Cover is an important habitat component for juvenile steelhead, both as a velocity refuge and as a means of avoiding predation. The Central California Coast steelhead DPS includes all naturally-spawning populations below natural and manmade impassable barriers in California streams from the Russian River (inclusive) south to Aptos Creek (inclusive); the drainages of San Francisco, San Pablo, and Suisun Bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin rivers; tributary streams to Suisun Marsh, including Suisun Creek, Green Valley Creek, and an unnamed tributary to Cordelia Slough. The upper reaches of the Napa River near Calistoga have abundant and relatively high-quality spawning and rearing habitat for Central California Coast steelhead.

There is one CNDDB record for this species within 5 miles of the study area. Occurrence Number 27 is from 2004 and is located 4.5 miles southeast of the study area in York Creek along Spring Mountain Road (CDFW, 2019). The record states that steelhead were observed in a perennial creek surrounded by riparian woodland. Central California Coast steelhead have been documented in the Napa River watershed and tributary streams. The Napa River within the study area occurs within designated Critical Habitat. This species has a high potential to occur within the Napa River within the study area.

3.4.6 Special Status Birds

Swainson's Hawk (*Buteo swainsoni*)

Swainson's hawk is a state listed threatened species.

The Swainson's hawk population that nests in the Central Valley winters primarily in Mexico, while the population that nests in the interior portions of North America winters in South America (Bradbury et al., in prep.). Swainson's hawks arrive in the Central Valley between March and early April to establish breeding territories. Breeding occurs from late March to late August, peaking in late May through July (Zeiner et al., 1990). In the Central Valley, Swainson's hawks nest in isolated trees, small groves, or large woodlands next to open grasslands or agricultural fields. This species typically nests near riparian areas; however, it has been known to nest in urban areas as well. Nest locations are usually in close proximity to suitable foraging habitats, which include fallow fields, annual grasslands, irrigated pastures, alfalfa and other hay crops, and low-growing row crops. Swainson's hawks leave their breeding grounds to return to their wintering grounds in late August or early September (Bloom and De Water, 1994).

There are no CNDDB records for this species within 10 miles of the study area. The trees within the oak woodland and riparian woodland provide nesting habitat for this species. While no foraging habitat occurs within the study area, the adjacent vineyards provide suitable foraging habitat. Swainson's hawk was not observed during the March 2019 biological surveys. This species has a moderate potential to occur within the study area.

White-Tailed Kite (*Elanus leucurus*)

While not listed, the white-tailed kite is a state fully protected species under Fish and Game Code, meaning that this species "....may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected" species, although take may be authorized for necessary scientific research.

White-tailed kite is a yearlong resident in coastal and valley lowlands in California. White-tailed kite breed from February to October, peaking from May to August (Zeiner et al., 1990). This species nests near the top of dense oaks, willows, or other large trees. The trees within the oak woodland and riparian woodland provide nesting habitat for this species. No white-tailed kites were observed during the March 2019 biological surveys. This species has a high potential to nest within the study area during the nesting season.

Purple Martin (*Progne subis*)

Purple martin is a California species of special concern.

Purple martin nests in tree cavities, crevices in rocks, and abandoned woodpecker holes in the vicinity of water. This species inhabits woodlands, low elevation coniferous forest of Douglas-fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*), and Monterey pine (*Pinus radiata*). This species forages over fields, water, and marshes.

There is one CNDDB record for this species within 5 miles of the study area. Occurrence Number 12 is from 1941 and is located 4.8 miles east of the study area near Granite Lake. The record states that a single individual was observed (CDFW, 2019). The trees and several snags within the oak woodland and riparian woodland provide nesting habitat for this species. No purple martin were observed during the March 2019 biological surveys of the study area. This species has a moderate potential to nest within the study area during the nesting season.

Migratory Bird Treaty Act (MBTA) and §3503.5 Department of Fish and Game Code

Migratory birds and other birds of prey are protected under 50 CFR 10 of the MBTA and/or Section 3503 of the California Fish and Game Code. The trees within the oak woodland and riparian woodland and the bridge and buildings within the developed areas within the study area provide nesting habitat for migratory birds and other birds of prey. An active red-shouldered hawk nest was observed within the riparian woodland during the March 2019 biological surveys. Nesting birds have a high potential to nest within the study area during the nesting season. The generally accepted nesting season is from February 15 through August 31. A complete list of birds observed foraging within the Study Area is provided in **Appendix B**.

3.4.7 Special Status Mammals

Pallid Bat (*Antrozous pallidus*)

Pallid bat is a California species of special concern.

Pallid bat occurs throughout California except in parts of the high Sierra and the northwestern corner of the state (Zeiner et al., 1990). The pallid bat inhabits a variety of habitats, such as grasslands, shrublands, woodlands, and forests; however, it is most abundant in open, dry habitats with rocky areas for roosting. Pallid bats roost alone, in small groups, or gregariously (WBWG, 2017). Roosts include caves, crevices in rocky outcrops and cliffs, mines, trees, and various man-made structures (e.g., bridges, barns, porches) with unobstructed entrances/exists that are high above the ground, warm, and inaccessible to terrestrial predators. Year-to-year and night-to-night roost reuse is common; however, bats may switch day roosts on a daily and seasonal basis.

There are 3 CNDDB records for this species within 5 miles of the study area. The nearest record is from 2017 (Occurrence Number 436) and is less than 300 feet from the study area on the Napa River under the Dunaweal Lane Bridge. The record states that the bridge was used as a night roost by 4 adults. The trees within the oak woodland and riparian woodland and the bridge associated with the developed areas within the study area provide roosting habitat for this species. No pallid bats were observed during the March 2019 biological surveys. This species has a high the potential to occur within the study area.

Townsend’s big-eared bat (*Corynorhinus townsendii*)

Townsend’s big-eared bat is a California species of special concern.

Townsend’s big-eared bat inhabits coniferous forests, mixed mesophytic forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat (WBWG, 2017). Their typical habitat is arid western desert scrub and pine forest regions. Maternity roosting locations for this species through the west are strongly correlated with the availability of caves and cave-like roosting habitat, including abandoned mines, tunnels, or other human-made structures. This species may use separate sites for night, day, hibernation, or maternity roosts.

There are 5 CNDDB records for this species within 5 miles of the study area. The nearest record (Occurrence Number 450) is from 1955 and is less than a mile southeast of the study area. The occurrence states that 20 Townsend's big-eared bats were observed hibernating in a wooden barn nearby on the Forni Ranch. This location was last visited in 2012 and the barn is still present, but roosting is unknown. The study area does not provide suitable habitat for maternity roosts. The trees within the oak woodland and riparian woodland and the bridge associated with the developed areas within the study area provide roosting habitat for this species. No Townsend's big-eared bats were observed during the March 2019 biological surveys. This species has a high the potential to roost within the study area.

3.5 Wildlife Movement Corridors

Wildlife movement corridors link together areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or by areas of human disturbance or urban development. Topography and other natural factors in combination with urbanization can fragment or separate large open-space areas. The fragmentation of natural habitat can create isolated "islands" of vegetation and habitat that may not provide sufficient area to accommodate sustainable populations and can adversely impact genetic and species diversity. The retention of wildlife movement corridors ameliorates the effects of such fragmentation by allowing animals to move between remaining habitats, which in turn allows depleted populations to be replenished. Such movement may also promote genetic exchange between separated populations.

The study area is not part of major or local wildlife corridor/travel routes according to the CDFW's Essential Habitat Connectivity natural landscape blocks. The study area is located 5.4 miles to the south of Robert Louis Stevenson State Park and 2.8 miles to the west of Rattle Snake Ridge, which are both considered a natural landscape block. Additionally, the study area is surrounded in all directions by established wineries and agricultural fields. The Napa River and surrounding riparian woodland provide small wildlife corridors for species to move to upland habitats.

3.6 Critical Habitat for Listed Fish and Wildlife Species

The USFWS defines the term critical habitat in the federal Endangered Species Act as a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. The study area is not within designated critical habitat for any listed plant. The Napa River, on the south western edge of the study area is designated critical habitat for the Central California Coast steelhead Distinct Population Segment. The upper reaches of the Napa River near Calistoga have abundant and relatively high-quality spawning and rearing habitat for this species. Steelhead occur within the Napa River watershed, but their population has been greatly reduced from historical levels.

3.7 Protected Trees

Under the City of Calistoga Municipal Code Chapter 19.01 the City Council finds it is in the public interest, convenience and necessity to enact regulations controlling the removal of trees within the City of Calistoga (City of Calistoga, 2019). The Municipal Code requires any project to obtain a tree removal permit and create a Tree Protection Plan for any protected tree. A protected tree is defined under Chapter 19.01 as:

1. Any tree with a diameter at breast height (DBH) greater than 12 inches.
2. Any native oak with a DBH greater than 6 inches.
3. Any valley oak, seedling, sapling, or older.
4. Any tree bearing an active nest of a fully protected bird (see Fish and Game Code Section 3511).

The removal or disturbance of any protected tree(s) requires a tree removal permit and a Tree Protection Plan from the City of Calistoga Public Works Department. There are numerous large valley oak trees within the study area that could be considered protected under the City of Calistoga Municipal Code.

CHAPTER 4
References and Report Preparation

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4.2 Document Preparation

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Appendix A
Regulatory Context

Federal

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) administers the Federal Endangered Species Act (FESA) (16 U.S. Code [USC] 153 et seq.), the Migratory Bird Treaty Act (MBTA) (16 USC 703–711), and the Bald and Golden Eagle Protection Act (16 USC 668). These regulations are described below.

Federal Endangered Species Act. Under the FESA, the Secretary of the Interior and the Secretary of Commerce have joint authority to list a species as threatened or endangered (16 USC § 1533(c)). Two federal agencies oversee the FESA: the USFWS has jurisdiction over plants, wildlife, and resident fish, while the National Marine Fisheries Service (NMFS) has jurisdiction over anadromous fish and marine fish and mammals. Section 7 of the FESA mandates that federal agencies consult with the USFWS and NMFS to ensure that federal agency actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species. The FESA prohibits the "take"[2] of any fish or wildlife species listed as threatened or endangered, including the destruction of habitat that could hinder species recovery.

Section 10 requires the issuance of an "incidental take" permit before any public or private action may be taken that could take an endangered or threatened species. The permit requires preparation and implementation of a habitat conservation plan (HCP) that would offset the take of individuals that may occur, incidental to implementation of a proposed project, by providing for the protection of the affected species.

Pursuant to the requirements of the FESA, a federal agency reviewing a project within its jurisdiction must determine whether any federally listed threatened or endangered species may be present in the project area and whether the proposed project will have a potentially significant impact on such species. In addition, the agency is required to determine whether the proposed action is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC § 1536(3), (4)). No federal actions apply to the proposed SMZC GUP project.

Critical Habitat. The USFWS designates critical habitat for listed species under FESA. Critical habitat designations are specific areas within the geographic region that are occupied by a listed species that are determined to be critical to its survival and recovery in accordance with FESA. Federal entities issuing permits or acting as a lead agency must show that their actions do not negatively affect the critical habitat to the extent that it impedes the recovery of the species.

Protection of Nesting Birds - Migratory Bird Treaty Act. The MBTA (16 United States Code § 703 Supp. I, 1989) generally prohibits the killing, possessing, or trading of migratory birds, bird parts, eggs, and nests, except as provided by the statute.

[2] Take is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to engage in any such conduct.

U.S. Army Corps of Engineers

Clean Water Act, Section 404. The U.S. Army Corps of Engineers (USACE) administers Section 404 of the Clean Water Act (CWA). Section 404 regulates activities in wetlands and "other waters of the United States."

State

California Department of Fish and Wildlife

The California Department of Fish and Wildlife (CDFW), formerly identified as the California Department of Fish and Game, administers a number of laws and programs designed to protect fish and wildlife resources under the Fish and Game Code (FGC), such as the California Endangered Species Act (FGC Section 2050, et seq.), Fully Protected Species (FGC Section 3511), Native Plant Protection Act (FGC Sections 1900 to 1913) and Lake or Streambed Alteration Agreement Program (FGC Sections 1600 to 1616). These regulations are described below.

California Endangered Species Act. In 1984, the State of California implemented the California Endangered Species Act (CESA) which prohibits the take of State-listed endangered and threatened species; although, habitat destruction is not included in the State's definition of take. Section 2090 requires State agencies to comply with endangered species protection and recovery and to promote conservation of these species. The CDFW administers the act and authorizes take through California Fish and Game Code Section 2081 agreements (except for designated "fully protected species," see below). Unlike its federal counterpart, CESA protections apply to candidate species that have been petitioned for listing.

Regarding listed rare and endangered plant species, CESA defers to the California Native Plant Protection Act (see below).

Fish and Game Code Section 3503. California Fish and Game Code Section 3503.5 provides that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto. Construction activities that result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment and/or reproductive failure are considered a "take" by CDFW. Any loss of eggs, nests, or young or any activities resulting in nest abandonment would constitute a significant project impact.

Native Plant Protection Act. California Fish and Game Code Section 1900–1913, also known as the Native Plant Protection Act, is intended to preserve, protect, and enhance endangered or rare native plants in California. The act directs CDFW to establish criteria for determining what native plants are rare or endangered. Under Section 1901, a species is endangered when its prospects for survival and reproduction are in immediate jeopardy from one or more cause. A species is rare when, although not threatened with immediate extinction, it is in such small numbers throughout its range that it may become endangered. The act also directs the California Fish and Game Commission to adopt regulations governing the taking, possessing, propagation, or sale of any endangered or rare native plant.

Vascular plants that are identified as rare by the CNPS, but which may have no designated status or protection under federal or State endangered species legislation, are defined as follows:

- **List 1A:** Plants Presumed Extinct.
- **List 1B:** Plants Rare, Threatened, or Endangered in California and elsewhere.
- **List 2:** Plants Rare, Threatened, or Endangered in California, but more numerous elsewhere.
- **List 3:** Plants about Which More Information is Needed – A Review List.
- **List 4:** Plants of Limited Distribution – A Watch List.

In general, plants appearing on CNPS List 1A, 1B, or 2 are considered to meet the criteria of CEQA Guidelines Section 15380 and effects to these species are considered "significant" in this EIR. Additionally, plants listed on CNPS List 1A, 1B or 2 meet the definition of Section 1901, Chapter 10 (Native Plant Protection Act) and Sections 2062 and 2067 (California Endangered Species Act) of the California Fish and Game Code.

Lake or Streambed Alteration Program. The CDFW regulates activities that would interfere with the natural flow of, or substantially alter, the channel, bed, or bank of a lake, river, or stream. Section 1602 of the California Fish and Game Code requires notification of the CDFW for lake or stream alteration activities. If, after notification is complete, the CDFW determines that the activity may substantially adversely affect an existing fish and wildlife resource, the CDFW has authority to issue a Streambed Alteration Agreement under Section 1603 of the California Fish and Game Code. Requirements to protect the integrity of biological resources and water quality are often conditions of Streambed Alteration Agreements. These may include avoidance or minimization of heavy equipment use within stream zones, limitations on work periods to avoid impacts to wildlife and fisheries resources, and measures to restore degraded sites or compensate for permanent habitat losses.

Species of Special Concern. CDFW maintains lists for candidate-endangered species and candidate-threatened species. California candidate species are afforded the same level of protection as listed species. California also designates species of special concern, which are species of limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. These species do not have the same legal protection as listed species or fully protected species, but may be added to official lists in the future. CDFW intends the species of special concern list to be a management tool for consideration in future land use decisions. The *Special Plants* list can be found online at: http://www.dfg.ca.gov/biogeodata/cnddb.pdfs.spplants.pdf; and the *Special Animals* list may be found online at: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/spanimals.pdf.

State Water Resources Control Board

Porter Cologne Water Quality Act. The State Water Resources Control Board (SWRCB), through its nine Regional Water Quality Control Boards (RWQCB), regulates waters of the State through the California Clean Water Act (i.e., Porter-Cologne Act). If the Corps determines wetlands or other waters to be isolated waters and not subject to regulation under the federal

CWA, the RWQCB may choose to exert jurisdiction over these waters under the Porter-Cologne Act as waters of the State.

CEQA Guidelines Section 15380

Although threatened and endangered species are protected by specific federal and State statutes, CEQA Guidelines Section 15380(b) provides that a species not listed on the federal or State list of protected species may be considered rare or endangered if the species can be shown to meet certain specific criteria. These criteria have been modeled after the definition of FESA and the section of Fish and Game Code discussing rare or endangered plants or animals. This section was included in the CEQA Guidelines primarily for situations in which a public agency is reviewing a project that may have a significant effect on a candidate species that has not yet been listed by CDFW or USFWS. CEQA provides the ability to protect species from potential project impacts until the respective agencies have the opportunity to designate the species protection.

CEQA also specifies the protection of other locally or regionally significant resources, including natural communities or habitats. Although natural communities do not presently have legal protection, CEQA requires an assessment of such communities and potential project impacts. Natural communities that are identified as sensitive in the CNDDB are considered by CDFW to be significant resources and fall under the CEQA Guidelines for addressing impacts. Local planning documents such as general and area plans often identify natural communities.

Calistoga Municipal Code 19.01.040

- Calistoga Municipal Code 19.01.040 identifies the following trees as protected:
- Any tree with a diameter at breast height (DBH) greater than 12 inches
- Any native oak with a DBH greater than six inches
- Any valley oak, including seedlings and saplings
- Any tree bearing an active nest of a fully-protected bird

Appendix B
Agency Lists

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Mount St. Helena (3812266) OR Detert Reservoir (3812265) OR Aetna Springs (3812264) OR Mark West Springs (3812256) OR Calistoga (3812255) OR St. Helena (3812254) OR Santa Rosa (3812246) OR Kenwood (3812245) OR Rutherford (3812244))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Accipiter striatus sharp-shinned hawk	ABNKC12020	None	None	G5	S4	WL
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
Allium peninsulare var. franciscanum Franciscan onion	PMLIL021R1	None	None	G5T2	S2	1B.2
Alopecurus aequalis var. sonomensis Sonoma alopecurus	PMPOA07012	Endangered	None	G5T1	S1	1B.1
Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
Amorpha californica var. napensis Napa false indigo	PDFAB08012	None	None	G4T2	S2	1B.2
Amsinckia lunaris bent-flowered fiddleneck	PDBOR01070	None	None	G3	S3	1B.2
Andrena blennospermatis Blennosperma vernal pool andrenid bee	IIHYM35030	None	None	G2	S2	
Anomobryum julaceum slender silver moss	NBMUS80010	None	None	G5?	S2	4.2
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Arctostaphylos manzanita ssp. elegans Konocti manzanita	PDERI04271	None	None	G5T3	S3	1B.3
Arctostaphylos stanfordiana ssp. decumbens Rincon Ridge manzanita	PDERI041G4	None	None	G3T1	S1	1B.1
Astragalus claranus Clara Hunt's milk-vetch	PDFAB0F240	Endangered	Threatened	G1	S1	1B.1
Astragalus rattanii var. jepsonianus Jepson's milk-vetch	PDFAB0F7E1	None	None	G4T3	S3	1B.2
Balsamorhiza macrolepis big-scale balsamroot	PDAST11061	None	None	G2	S2	1B.2
Blennosperma bakeri Sonoma sunshine	PDAST1A010	Endangered	Endangered	G1	S1	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Brodiaea leptandra narrow-anthered brodiaea	PMLIL0C022	None	None	G3?	S3?	1B.2
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Calystegia collina ssp. oxyphylla Mt. Saint Helena morning-glory	PDCON04032	None	None	G4T3	S3	4.2
Ceanothus confusus Rincon Ridge ceanothus	PDRHA04220	None	None	G1	S1	1B.1
Ceanothus divergens Calistoga ceanothus	PDRHA04240	None	None	G2	S2	1B.2
Ceanothus purpureus holly-leaved ceanothus	PDRHA04160	None	None	G2	S2	1B.2
Ceanothus sonomensis Sonoma ceanothus	PDRHA04420	None	None	G2	S2	1B.2
Centromadia parryi ssp. parryi pappose tarplant	PDAST4R0P2	None	None	G3T2	S2	1B.2
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S1S2	SSC
Cryptantha dissita serpentine cryptantha	PDBOR0A0H2	None	None	G2	S2	1B.2
Cypseloides niger black swift	ABNUA01010	None	None	G4	S2	SSC
Dicamptodon ensatus California giant salamander	AAAAH01020	None	None	G3	S2S3	SSC
Downingia pusilla dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Erigeron greenei Greene's narrow-leaved daisy	PDAST3M5G0	None	None	G3	S3	1B.2
Eriogonum nervulosum Snow Mountain buckwheat	PDPGN08440	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Eryngium constancei Loch Lomond button-celery	PDAPI0Z0W0	Endangered	Endangered	G1	S1	1B.1
Eryngium jepsonii Jepson's coyote-thistle	PDAPI0Z130	None	None	G2	S2	1B.2
Falco mexicanus prairie falcon	ABNKD06090	None	None	G5	S4	WL
Falco peregrinus anatum American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
Fritillaria pluriflora adobe-lily	PMLIL0V0F0	None	None	G2G3	S2S3	1B.2
Gratiola heterosepala Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	G2	S2	1B.2
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Harmonia hallii Hall's harmonia	PDAST650A0	None	None	G2	S2	1B.2
Hemizonia congesta ssp. congesta congested-headed hayfield tarplant	PDAST4R065	None	None	G5T2	S2	1B.2
Hesperolinon bicarpellatum two-carpellate western flax	PDLIN01020	None	None	G2	S2	1B.2
Hesperolinon sharsmithiae Sharsmith's western flax	PDLIN010E0	None	None	G2Q	S2	1B.2
Hydrochara rickseckeri Ricksecker's water scavenger beetle	IICOL5V010	None	None	G2?	S2?	
Hydroporus leechi Leech's skyline diving beetle	IICOL55040	None	None	G1?	S1?	
Hysterocarpus traskii pomo Russian River tule perch	AFCQK02011	None	None	G5T4	S4	SSC
Juncus luciensis Santa Lucia dwarf rush	PMJUN013J0	None	None	G3	S3	1B.2
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G5	S3S4	
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Lasthenia burkei Burke's goldfields	PDAST5L010	Endangered	Endangered	G1	S1	1B.1
Lavinia symmetricus navarroensis Navarro roach	AFCJB19023	None	None	G4T1T2	S2S3	SSC
Layia septentrionalis Colusa layia	PDAST5N0F0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Leptosiphon jepsonii Jepson's leptosiphon	PDPLM09140	None	None	G3	S3	1B.2
Limnanthes floccosa ssp. floccosa woolly meadowfoam	PDLIM02043	None	None	G4T4	S3	4.2
Limnanthes vinculans Sebastopol meadowfoam	PDLIM02090	Endangered	Endangered	G1	S1	1B.1
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Lupinus sericatus Cobb Mountain lupine	PDFAB2B3J0	None	None	G2?	S2?	1B.2
Microseris paludosa marsh microseris	PDAST6E0D0	None	None	G2	S2	1B.2
Myotis thysanodes fringed myotis	AMACC01090	None	None	G4	S3	
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Navarretia leucocephala ssp. bakeri Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Navarretia leucocephala ssp. plieantha many-flowered navarretia	PDPLM0C0E5	Endangered	Endangered	G4T1	S1	1B.2
Navarretia myersii ssp. deminuta small pincushion navarretia	PDPLM0C0X2	None	None	G2T1	S1	1B.1
Navarretia paradoxinota Porter's navarretia	PDPLM0C160	None	None	G2	S2	1B.3
Navarretia rosulata Marin County navarretia	PDPLM0C0Z0	None	None	G2	S2	1B.2
Northern Vernal Pool Northern Vernal Pool	CTT44100CA	None	None	G2	S2.1	
Oncorhynchus kisutch pop. 4 coho salmon - central California coast ESU	AFCHA02034	Endangered	Endangered	G4	S2?	
Oncorhynchus mykiss irideus pop. 8 steelhead - central California coast DPS	AFCHA0209G	Threatened	None	G5T2T3Q	S2S3	
Pekania pennanti fisher - West Coast DPS	AMAJF01021	None	Threatened	G5T2T3Q	S2S3	SSC
Penstemon newberryi var. sonomensis Sonoma beardtongue	PDSCR1L483	None	None	G4T2	S2	1B.3
Plagiobothrys strictus Calistoga popcornflower	PDBOR0V120	Endangered	Threatened	G1	S1	1B.1
Poa napensis Napa blue grass	PMPOA4Z1R0	Endangered	Endangered	G1	S1	1B.1
Progne subis purple martin	ABPAU01010	None	None	G5	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Puccinellia simplex California alkali grass	PMPOA53110	None	None	G3	S2	1B.2
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Serpentine Bunchgrass Serpentine Bunchgrass	CTT42130CA	None	None	G2	S2.2	
Sidalcea hickmanii ssp. napensis Napa checkerbloom	PDMAL110A6	None	None	G3T1	S1	1B.1
Sidalcea oregana ssp. hydrophila marsh checkerbloom	PDMAL110K2	None	None	G5T2	S2	1B.2
Sidalcea oregana ssp. valida Kenwood Marsh checkerbloom	PDMAL110K5	Endangered	Endangered	G5T1	S1	1B.1
Spergularia macrotheca var. longistyla long-styled sand-spurrey	PDCAR0W062	None	None	G5T2	S2	1B.2
Streptanthus brachiatus ssp. brachiatus Socrates Mine jewelflower	PDBRA2G072	None	None	G2T1	S1	1B.2
Streptanthus brachiatus ssp. hoffmanii Freed's jewelflower	PDBRA2G071	None	None	G2T2	S2	1B.2
Streptanthus hesperidis green jewelflower	PDBRA2G510	None	None	G2	S2	1B.2
Streptanthus morrisonii ssp. elatus Three Peaks jewelflower	PDBRA2G0S1	None	None	G2T1	S1	1B.2
Streptanthus vernalis early jewelflower	PDBRA2G120	None	None	G1	S1	1B.2
Stuckenia filiformis ssp. alpina slender-leaved pondweed	PMPOT03091	None	None	G5T5	S2S3	2B.2
Stygobromus cherylae Barr's amphipod	ICMAL05D60	None	None	G1	S1	
Syncaris pacifica California freshwater shrimp	ICMAL27010	Endangered	Endangered	G2	S2	
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G4	S2	SSC
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Trachykele hartmani serpentine cypress wood-boring beetle	IICOLX6010	None	None	G1	S1	
Trichostema ruygtii Napa bluecurls	PDLAM220H0	None	None	G1G2	S1S2	1B.2
Trifolium amoenum two-fork clover	PDFAB40040	Endangered	None	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Trifolium buckwestiorum Santa Cruz clover	PDFAB402W0	None	None	G2	S2	1B.1
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Triquetrella californica coastal triquetrella	NBMUS7S010	None	None	G2	S2	1B.2
Valley Needlegrass Grassland Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	
Vandykea tuberculata serpentine cypress long-horned beetle	IICOLX7010	None	None	G1	S1	
Viburnum ellipticum oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3
Wildflower Field Wildflower Field	CTT42300CA	None	None	G2	S2.2	

Record Count: 109

CNPS California Native Plant Society

Plant List

Inventory of Rare and Endangered Plants

105 matches found. *Click on scientific name for details*

Search Criteria

Found in Quads 3812266, 3812265, 3812264, 3812256, 3812255, 3812254, 3812246 3812245 and 3812244;

Modify Search Criteria Export to Excel Modify Columns Modify Sort Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Allium peninsulare var. franciscanum	Franciscan onion	Alliaceae	perennial bulbiferous herb	(Apr)May-Jun	1B.2	S2	G5T2
Alopecurus aequalis var. sonomensis	Sonoma alopecurus	Poaceae	perennial herb	May-Jul	1B.1	S1	G5T1
Amorpha californica var. napensis	Napa false indigo	Fabaceae	perennial deciduous shrub	Apr-Jul	1B.2	S2	G4T2
Amsinckia lunaris	bent-flowered fiddleneck	Boraginaceae	annual herb	Mar-Jun	1B.2	S3	G3
Anomobryum julaceum	slender silver moss	Bryaceae	moss		4.2	S2	G5?
Antirrhinum virga	twig-like snapdragon	Plantaginaceae	perennial herb	Jun-Jul	4.3	S3?	G3?
Arctostaphylos manzanita ssp. elegans	Konocti manzanita	Ericaceae	perennial evergreen shrub	(Jan)Mar-May(Jul)	1B.3	S3	G5T3
Arctostaphylos stanfordiana ssp. decumbens	Rincon Ridge manzanita	Ericaceae	perennial evergreen shrub	Feb-Apr (May)	1B.1	S1	G3T1
Asclepias solanoana	serpentine milkweed	Apocynaceae	perennial herb	May-Jul (Aug)	4.2	S3	G3
Astragalus breweri	Brewer's milk-vetch	Fabaceae	annual herb	Apr-Jun	4.2	S3	G3
Astragalus claranus	Clara Hunt's milk-vetch	Fabaceae	annual herb	Mar-May	1B.1	S1	G1
Astragalus clevelandii	Cleveland's milk-vetch	Fabaceae	perennial herb	Jun-Sep	4.3	S4	G4
Astragalus rattanii var. jepsonianus	Jepson's milk-vetch	Fabaceae	annual herb	Mar-Jun	1B.2	S3	G4T3
Balsamorhiza macrolepis	big-scale balsamroot	Asteraceae	perennial herb	Mar-Jun	1B.2	S2	G2

Blennosperma bakeri	Sonoma sunshine	Asteraceae	annual herb	Mar-May	1B.1	S1	G1
Brodiaea leptandra	narrow-anthered brodiaea	Themidaceae	perennial bulbiferous herb	May-Jul	1B.2	S3?	G3?
Calamagrostis ophitidis	serpentine reed grass	Poaceae	perennial herb	Apr-Jul	4.3	S3	G3
Calandrinia breweri	Brewer's calandrinia	Montiaceae	annual herb	(Jan)Mar-Jun	4.2	S4	G4
Calochortus uniflorus	pink star-tulip	Liliaceae	perennial bulbiferous herb	Apr-Jun	4.2	S4	G4
Calyptridium quadripetalum	four-petaled pussypaws	Montiaceae	annual herb	Apr-Jun	4.3	S4	G4
Calystegia collina ssp. oxyphylla	Mt. Saint Helena morning-glory	Convolvulaceae	perennial rhizomatous herb	Apr-Jun	4.2	S3	G4T3
Calystegia collina ssp. venusta	South Coast Range morning-glory	Convolvulaceae	perennial rhizomatous herb	Apr-Jun	4.3	S4	G4T4
Castilleja ambigua var. ambigua	johnny-nip	Orobanchaceae	annual herb (hemiparasitic)	Mar-Aug	4.2	S3S4	G4T4
Ceanothus confusus	Rincon Ridge ceanothus	Rhamnaceae	perennial evergreen shrub	Feb-Jun	1B.1	S1	G1
Ceanothus divergens	Calistoga ceanothus	Rhamnaceae	perennial evergreen shrub	Feb-Apr	1B.2	S2	G2
Ceanothus gloriosus var. exaltatus	glory brush	Rhamnaceae	perennial evergreen shrub	Mar-Jun (Aug)	4.3	S4	G4T4
Ceanothus purpureus	holly-leaved ceanothus	Rhamnaceae	perennial evergreen shrub	Feb-Jun	1B.2	S2	G2
Ceanothus sonomensis	Sonoma ceanothus	Rhamnaceae	perennial evergreen shrub	Feb-Apr	1B.2	S2	G2
Centromadia parryi ssp. parryi	pappose tarplant	Asteraceae	annual herb	May-Nov	1B.2	S2	G3T2
Clarkia breweri	Brewer's clarkia	Onagraceae	annual herb	Apr-Jun	4.2	S4	G4
Clarkia gracilis ssp. tracyi	Tracy's clarkia	Onagraceae	annual herb	Apr-Jul	4.2	S3	G5T3
Collomia diversifolia	serpentine collomia	Polemoniaceae	annual herb	May-Jun	4.3	S4	G4
Cordylanthus tenuis ssp. brunneus	serpentine bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jul-Aug	4.3	S3	G4G5T3
Cryptantha dissita	serpentine cryptantha	Boraginaceae	annual herb	Apr-Jun	1B.2	S2	G2
Cypripedium montanum	mountain lady's-slipper	Orchidaceae	perennial rhizomatous herb	Mar-Aug	4.2	S4	G4
Delphinium uliginosum	swamp larkspur	Ranunculaceae	perennial herb	May-Jun	4.2	S3	G3
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	Mar-May	2B.2	S2	GU
Erigeron biolettii	streamside daisy	Asteraceae	perennial herb	Jun-Oct	3	S3?	G3?

Erigeron greenei	Greene's narrow-leaved daisy	Asteraceae	perennial herb	May-Sep	1B.2	S3	G3
Eriogonum nervulosum	Snow Mountain buckwheat	Polygonaceae	perennial rhizomatous herb	Jun-Sep	1B.2	S2	G2
Eriogonum umbellatum var. bahiiforme	bay buckwheat	Polygonaceae	perennial herb	Jul-Sep	4.2	S3	G5T3
Eryngium constancei	Loch Lomond button-celery	Apiaceae	annual / perennial herb	Apr-Jun	1B.1	S1	G1
Eryngium jepsonii	Jepson's coyote thistle	Apiaceae	perennial herb	Apr-Aug	1B.2	S2?	G2?
Erythronium helenae	St. Helena fawn lily	Liliaceae	perennial bulbiferous herb	Mar-May	4.2	S3	G3
Fritillaria liliacea	fragrant fritillary	Liliaceae	perennial bulbiferous herb	Feb-Apr	1B.2	S2	G2
Fritillaria pluriflora	adobe-lily	Liliaceae	perennial bulbiferous herb	Feb-Apr	1B.2	S2S3	G2G3
Fritillaria purdyi	Purdy's fritillary	Liliaceae	perennial bulbiferous herb	Mar-Jun	4.3	S4	G4
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	Apr-Aug	1B.2	S2	G2
Harmonia hallii	Hall's harmonia	Asteraceae	annual herb	Apr-Jun	1B.2	S2	G2
Harmonia nutans	nodding harmonia	Asteraceae	annual herb	Mar-May	4.3	S3	G3
Helianthus exilis	serpentine sunflower	Asteraceae	annual herb	Jun-Nov	4.2	S3	G3
Hemizonia congesta ssp. congesta	congested-headed hayfield tarplant	Asteraceae	annual herb	Apr-Nov	1B.2	S2	G5T2
Hesperolinon bicarpellatum	two-carpellate western flax	Linaceae	annual herb	May-Jul	1B.2	S2	G2
Hesperolinon sharsmithiae	Sharsmith's western flax	Linaceae	annual herb	May-Jul	1B.2	S2	G2Q
Iris longipetala	coast iris	Iridaceae	perennial rhizomatous herb	Mar-May	4.2	S3	G3
Juncus luciensis	Santa Lucia dwarf rush	Juncaceae	annual herb	Apr-Jul	1B.2	S3	G3
Lasthenia burkei	Burke's goldfields	Asteraceae	annual herb	Apr-Jun	1B.1	S1	G1
Lasthenia conjugens	Contra Costa goldfields	Asteraceae	annual herb	Mar-Jun	1B.1	S1	G1
Layia septentrionalis	Colusa layia	Asteraceae	annual herb	Apr-May	1B.2	S2	G2
Leptosiphon acicularis	bristly leptosiphon	Polemoniaceae	annual herb	Apr-Jul	4.2	S4?	G4?
Leptosiphon jepsonii	Jepson's leptosiphon	Polemoniaceae	annual herb	Mar-May	1B.2	S3	G3
Lessingia hololeuca	woolly-headed lessingia	Asteraceae	annual herb	Jun-Oct	3	S3?	G3?
Lilium bolanderi	Bolander's lily	Liliaceae	perennial bulbiferous herb	Jun-Jul	4.2	S3S4	G4

Lilium rubescens	redwood lily	Liliaceae	perennial bulbiferous herb	Apr-Aug (Sep)	4.2	S3	G3
Limnanthes floccosa ssp. floccosa	woolly meadowfoam	Limnanthaceae	annual herb	Mar-May (Jun)	4.2	S3	G4T4
Limnanthes vinculans	Sebastopol meadowfoam	Limnanthaceae	annual herb	Apr-May	1B.1	S1	G1
Lomatium repostum	Napa lomatium	Apiaceae	perennial herb	Mar-Jun	4.3	S3	G3
Lupinus sericatus	Cobb Mountain lupine	Fabaceae	perennial herb	Mar-Jun	1B.2	S2?	G2?
Micropus amphibolus	Mt. Diablo cottonweed	Asteraceae	annual herb	Mar-May	3.2	S3S4	G3G4
Microseris paludosa	marsh microseris	Asteraceae	perennial herb	Apr-Jun (Jul)	1B.2	S2	G2
Monardella viridis	green monardella	Lamiaceae	perennial rhizomatous herb	Jun-Sep	4.3	S3	G3
Navarretia cotulifolia	cotula navarretia	Polemoniaceae	annual herb	May-Jun	4.2	S4	G4
Navarretia heterandra	Tehama navarretia	Polemoniaceae	annual herb	Apr-Jun	4.3	S4	G4
Navarretia jepsonii	Jepson's navarretia	Polemoniaceae	annual herb	Apr-Jun	4.3	S4	G4
Navarretia leucocephala ssp. bakeri	Baker's navarretia	Polemoniaceae	annual herb	Apr-Jul	1B.1	S2	G4T2
Navarretia leucocephala ssp. plieantha	many-flowered navarretia	Polemoniaceae	annual herb	May-Jun	1B.2	S1	G4T1
Navarretia myersii ssp. deminuta	small pincushion navarretia	Polemoniaceae	annual herb	Apr-May	1B.1	S1	G2T1
Navarretia paradoxinota	Porter's navarretia	Polemoniaceae	annual herb	May-Jun (Jul)	1B.3	S2	G2
Navarretia rosulata	Marin County navarretia	Polemoniaceae	annual herb	May-Jul	1B.2	S2	G2
Orobanche valida ssp. howellii	Howell's broomrape	Orobanchaceae	perennial herb (parasitic)	Jun-Sep	4.3	S3	G4T3
Penstemon newberryi var. sonomensis	Sonoma beardtongue	Plantaginaceae	perennial herb	Apr-Aug	1B.3	S2	G4T2
Plagiobothrys strictus	Calistoga popcornflower	Boraginaceae	annual herb	Mar-Jun	1B.1	S1	G1
Poa napensis	Napa blue grass	Poaceae	perennial herb	May-Aug	1B.1	S1	G1
Puccinellia simplex	California alkali grass	Poaceae	annual herb	Mar-May	1B.2	S2	G3
Ranunculus lobbii	Lobb's aquatic buttercup	Ranunculaceae	annual herb (aquatic)	Feb-May	4.2	S3	G4
Senecio clevelandii var. clevelandii	Cleveland's ragwort	Asteraceae	perennial herb	Jun-Jul	4.3	S3	G4?T3Q
		Malvaceae	perennial herb	Apr-Jun	1B.1	S1	G3T1

Sidalcea hickmanii ssp. napensis	Napa checkerbloom						
Sidalcea oregana ssp. hydrophila	marsh checkerbloom	Malvaceae	perennial herb	(Jun)Jul-Aug	1B.2	S2	G5T2
Sidalcea oregana ssp. valida	Kenwood Marsh checkerbloom	Malvaceae	perennial rhizomatous herb	Jun-Sep	1B.1	S1	G5T1
Spergularia macrotheca var. longistyla	long-styled sand-spurrey	Caryophyllaceae	perennial herb	Feb-May	1B.2	S2	G5T2
Streptanthus batrachopus	Tamalpais jewelflower	Brassicaceae	annual herb	Apr-Jul	1B.3	S2	G2
Streptanthus brachiatus ssp. brachiatus	Socrates Mine jewelflower	Brassicaceae	perennial herb	May-Jun	1B.2	S1	G2T1
Streptanthus brachiatus ssp. hoffmanii	Freed's jewelflower	Brassicaceae	perennial herb	May-Jul	1B.2	S2	G2T2
Streptanthus hesperidis	green jewelflower	Brassicaceae	annual herb	May-Jul	1B.2	S2	G2
Streptanthus morrisonii ssp. elatus	Three Peaks jewelflower	Brassicaceae	perennial herb	Jun-Sep	1B.2	S1	G2T1
Streptanthus morrisonii ssp. kruckebergii	Kruckeberg's jewelflower	Brassicaceae	perennial herb	Apr-Jul	1B.2	S1	G2T1
Streptanthus vernalis	early jewelflower	Brassicaceae	annual herb	Mar-May	1B.2	S1	G1
Stuckenia filiformis ssp. alpina	slender-leaved pondweed	Potamogetonaceae	perennial rhizomatous herb (aquatic)	May-Jul	2B.2	S2S3	G5T5
Toxicoscordion fontanum	marsh zigadenus	Melanthiaceae	perennial bulbiferous herb	Apr-Jul	4.2	S3	G3
Trichostema ruygtii	Napa bluecurls	Lamiaceae	annual herb	Jun-Oct	1B.2	S1S2	G1G2
Trifolium amoenum	two-fork clover	Fabaceae	annual herb	Apr-Jun	1B.1	S1	G1
Trifolium buckwestiorum	Santa Cruz clover	Fabaceae	annual herb	Apr-Oct	1B.1	S2	G2
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	1B.2	S2	G2
Triquetrella californica	coastal triquetrella	Pottiaceae	moss		1B.2	S2	G2
Viburnum ellipticum	oval-leaved viburnum	Adoxaceae	perennial deciduous shrub	May-Jun	2B.3	S3?	G4G5

Suggested Citation

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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: March 22, 2019
Consultation Code: 08ESMF00-2019-SLI-1445
Event Code: 08ESMF00-2019-E-04654
Project Name: Calistoga Water Treatment Plant

Subject: 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: 08ESMF00-2019-SLI-1445

Event Code: 08ESMF00-2019-E-04654

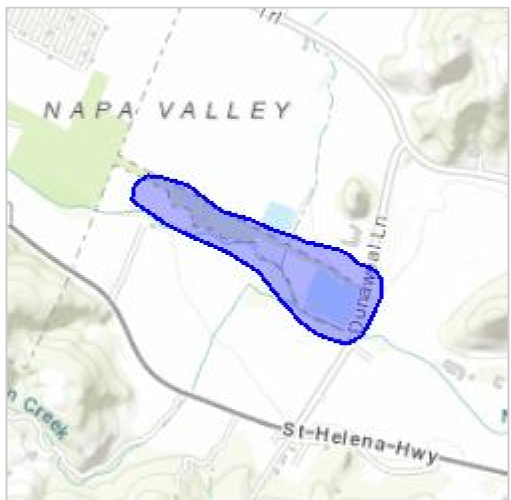
Project Name: Calistoga Water Treatment Plant

Project Type: WASTEWATER FACILITY

Project Description: D160251.01

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/38.57146298795023N122.55804807761271W



Counties: Napa, CA

Endangered Species Act Species

There is a total of 10 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

Reptiles

NAME	STATUS
Green Sea Turtle *Chelonia mydas* Population: East Pacific DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6199	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
California Freshwater Shrimp *Syncaris pacifica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7903	Endangered

Flowering Plants

NAME	STATUS
Burke's Goldfields *Lasthenia burkei* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4338	Endangered
Calistoga Allocarya *Plagiobothrys strictus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6161	Endangered
Clara Hunt's Milk-vetch *Astragalus clarianus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3300	Endangered
Loch Lomond Coyote Thistle *Eryngium constancei* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5106	Endangered
Napa Bluegrass *Poa napensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2266	Endangered

Critical habitats

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

Appendix C
Plants Observed within the Study Area

TABLE C
PLANT SPECIES OBSERVED WITHIN THE STUDY AREA

Family	Scientific Name	Common Name	*
Anacardiaceae	*Toxicodendron diversilobum*	Western poison oak	N
Apiaceae	*Conium maculatum*	Poison hemlock	I
Apiaceae	*Torilis arvensis*	Tall sock-destroyer	I
Apocynaceae	*Vinca major*	Greater periwinkle	I
Arecaceae	*Washingtonia robusta*	Mexican fan palm	I
Asteraceae	*Baccharis pilularis*	Coyote brush	N
Asteraceae	*Centaurea solstitialis*	Yellow star-thistle	I
Asteraceae	*Senecio vulgaris*	Common groundsel	I
Betulaceae	*Betula* sp.	Birch	N
Boraginaceae	*Amsinckia eastwoodiae*	Eastwood's fiddleneck	N
Brassicaceae	*Nasturtium officinale*	Water cress	N
Caprifoliaceae	*Symphoricarpos* sp.	Waxberry, snowberry	N
Cyperaceae	*Cyperus eragrostis*	Nutsedge	N
Fabaceae	*Vicia villosa*	Hairy vetch, winter vetch	I
Fagaceae	*Quercus agrifolia*	Coast live oak, encina	N
Fagaceae	*Quercus lobata*	Valley oak	N
Fagaceae	*Quercus wislizeni*	Interior live oak	N
Geraniaceae	*Erodium botrys*	Storksbill, filaree	I
Geraniaceae	*Geranium molle*	Cranesbill, geranium	I
Lauraceae	*Umbellularia californica*	California bay	N
Montiaceae	*Claytonia perfoliata*	Miner's lettuce	N
Plantaginaceae	*Callitriche heterophylla*	Water starwort	--
Platanaceae	*Platanus racemosa*	Western sycamore	N
Poaceae	*Avena barbata*	Slender wild oat	I
Poaceae	*Bromus diandrus*	Ripgut grass	I
Polygonaceae	*Rumex crispus*	Curly dock	I
Rosaceae	*Heteromeles arbutifolia*	Christmas berry, toyon	N
Rosaceae	*Pyrus* sp.	Pear	I
Rosaceae	*Rosa* sp.	Rose	--
Rosaceae	*Rubus armeniacus*	Himalayan blackberry	I
Salicaceae	*Populus fremontii* ssp. *fremontii*	Alamo or Fremont cottonwood	N
Salicaceae	*Salix* sp.	Willow	--
Sapindaceae	*Aesculus californica*	California buckeye	N
Simaroubaceae	*Ailanthus altissima*	Tree of heaven	I
Typhaceae	*Typha* sp.	Cattail	--

NOTES:
*N=Native; I=Invasive; -- = Unknown

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Appendix D
Wildlife Observed within the Study Area

TABLE D
WILDLIFE SPECIES OBSERVED IN THE STUDY AREA

Common Name	Scientific Name
Amphibians	
American bullfrog	*Lithobates catesbeianus*
California treefrog	*Pseudacris cadaverina*
Reptiles	
Red-eared slider	*Trachemys scripta*
Western pond turtle	*Actinemys marmorata*
Western fence lizard	*Sceloporus occidentalis*
Fish	
Mosquito fish	*Gambusia affinis*
River lamprey	*Lampetra ayresi*
Birds	
California scrub jay	*Aphelocoma californica*
Mallard	*Anas platyrhynchos*
Great egret	*Ardea alba*
Western scrub-jay	*Aphelocoma californica*
Oak titmouse	*Baeolophus inornatus*
Canada goose	*Branta canadensis*
Red-shouldered hawk	*Buteo lineatus*
Green heron	*Butorides virescens*
Turkey vulture	*Cathartes aura*
Northern flicker	*Colaptes auratus*
American crow	*Corvus brachyrhynchos*
Dark-eyed junco	*Junco hyemalis*
Belted kingfisher	*Megaceryle alcyon*
Acorn woodpecker	*Melanerpes formicivorus*
Black phoebe	*Sayornis nigricans*
Yellow-rumped warbler	*Setophaga coronata*
Violet-green swallow	*Tachycineta thalassina*
American robin	*Turdus migratorius*
Mourning dove	*Zenaida macroura*

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Appendix E
Regionally Occurring Special Status Species

Special-Status Plant Species with the Potential to Occur at the Study Area

Scientific Name	Common Name	Regulatory Status (Federal/State/ Local/CNPS)	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence
Allium peninsulare var. *franciscanum*	Franciscan onion	--/--/1B.2	Perennial bulbiferous herb found in cismontane woodland and valley and foothill grasslands in clay, volcanic, and often serpentinite soils from 52 to 305 meters.	(April) May-June	**No.** The study area does not have volcanic or serpentinite soils present.
Alopecurus aequalis var. *sonomensis*	Sonoma alopecurus	FE/--/1B.1	Perennial herb found in freshwater marshes and swamps and riparian scrub from 5 to 365 meters. Known from Marin and Sonoma counties.	May-July	**No**. The study area occurs outside of the known extant geographic range for this species.
Amorpha californica var. *napensis*	Napa false indigo	--/--/1B.2	Perennial deciduous shrub found in broadleafed upland forest, occasionally in openings, chaparral, and cismontane woodland from 120 to 2,000 meters.	April-July	**No**. The study area is outside of the known elevation range for this species.
Amsinckia lunaris	Bent-flowered fiddleneck	--/--/1B.2	Annual herb found in coastal bluff scrub, cismontane woodland, and valley and foothill grassland from 3 to 500 meters.	March-June	**No**. While the oak woodland provides suitable habitat, this species was not observed during the March 2019 biological surveys conducted during the evident and identifiable blooming period.
Arctostaphylos manzanita ssp. *elegans*	Konocti manzanita	--/--/1B.3	Perennial evergreen shrub found in chaparral, cismontane woodland, lower montane coniferous forest in volcanic soil from 395 to 1,615 meters.	(January) March-May (July)	**No.** The study area is outside of the known elevation range for this species, and does not have volcanic soil present.
Arctostaphylos stanfordiana var. *repens*	Rincon Ridge manzanita	--/--/1B.1	Perennial evergreen shrub found occasionally in rhyolitic substrate in chaparral and cismontane woodland from 75 to 370 meters.	February-April (occasionally May)	**No**. While the oak woodland provides suitable habitat, this species was not observed during the March 2019 biological surveys conducted during the evident and identifiable blooming period.
Astragalus claranus	Clara Hunt's milk-vetch	FE/CT/1B	Annual herb found on serpentinite or volcanic, rocky, clay substrate on chaparral, occasionally in openings, cismontane woodland, and valley and foothill grassland from 75 to 275 meters.	March-May	No. While the oak woodland provides suitable habitat, this species was not observed during the March 2019 biological surveys conducted during the evident and identifiable blooming period.
Astragalus rattanii var. *jepsonianus*	Jepson's milk-vetch	--/--/1B.2	Annual herb often found on serpentinite substrate in chaparral, cismontane woodland, and valley and foothill grassland from 295 to 700 meters.	March-June	**No**. The study area is outside of the known elevation range for this species, does not have serpentinite soil present.

SPECIAL-STATUS PLANT SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Regulatory Status (Federal/State/ Local/CNPS)	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence
Balsamorhiza macrolepis	big-scale balsamroot	--/--/1B.2	Perennial herb found on serpentinite substrate in chaparral, cismontane woodland, and valley and foothill grasslands from 45 to 1,555 meters.	March-June	**No**. The study area does not have serpentinite soil present.
Blennosperma bakeri	Sonoma sunshine	FE/SE/1B.1	Annual herb found in mesic valley and foothill grassland and vernal pools from 10 to 110 meters.	March-May	**No**. While the oak woodland provides suitable habitat, this species was not observed during the March 2019 biological surveys conducted during the evident and identifiable blooming period.
Brodiaea leptandra	Narrow-anthered brodiaea	--/--/1B.2	Perennial bulbiferous herb found on volcanic substrate in broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland from 110 to 915 meters.	May-July	**No**. The study area is outside of the known elevation range for this species and does not have volcanic substrates present.
Ceanothus confusus	Rincon Ridge ceanothus	--/--/1B.1	Perennial evergreen shrub found on volcanic or serpentinite substrate in closed-cone coniferous forest, chaparral, and cismontane woodland from 75 to 1,065 meters.	February-June	**No.** The study area does not have volcanic or serpentinite soils required for this species to inhabit.
Ceanothus divergens	Calistoga ceanothus	--/--/1B.2	Perennial evergreen shrub found in chaparral, which occasionally occurs on serpentinite or volcanic, rocky substrate, from 170 to 950 meters.	February-April	**No**. The study area is outside of the known elevation range for this species and does not have volcanic or serpentinite substrates present.
Ceanothus purpureus	Holly-leaved ceanothus	--/--/1B.2	Perennial evergreen shrub found on volcanic, rocky substrate in chaparral and cismontane woodland from 120 to 640 meters.	February-June	**No**. The study area is outside of the known elevation range for this species. The
Ceanothus sonomensis	Sonoma ceanothus	--/--/1B.2	Perennial evergreen shrub occasionally found on sandy, serpentinite, or volcanic substrate in chaparral from 215 to 800 meters.	February-April	**No**. The study area is outside of the known elevation range and does not provide habitat for this species.

Special-Status Plant Species with the Potential to Occur at the Study Area

Scientific Name	Common Name	Regulatory Status (Federal/State/ Local/CNPS)	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence
Centromadia parryi ssp. *parryi*	Pappose tarplant	--/--/1B.2	Annual herb found on alkaline substrate in chaparral, coastal prairie, meadows and seeps, marshes and swamps, which is occasionally comprised of coastal salt, and valley and foothill grassland, which are occasionally vernally mesic, from 0 to 420 meters.	May-November	**No.** The study area does not provide habitat for this species.
Cryptantha clevelandii var. *dissita*	Serpentine cryptantha	--/--/1B.2	Annual herb found in chaparral, which is occasionally serpentinite, from 395 to 580 meters.	April-June	**No**. The study area is outside of the known elevation range and does not provide habitat for this species.
Downingia pusilla	Dwarf downingia	--/--/2B.2	Annual herb found occasionally in mesic areas within valley and foothill grassland and vernal pools from 1 to 445 meters.	March-May	**No**. The study area does not provide suitable habitat for this species.
Erigeron greenei	Greene's narrow-leaved daisy	--/--/1B.2	Perennial herb found occasionally on serpentinite or volcanic substrate in chaparral from 80 to 1,005 meters.	May-September	**No**. The study area does not have chaparral habitat or volcanic or serpentinite substrate.
Eriogonum nervulosum	Snow Mountain buckwheat	--/--/1B.2	Perennial rhizomatous herb found on serpentinite substrate in chaparral from 300 to 2,105 meters.	June-September	**No**. The study area is outside of the known elevation range for this species and does not have chaparral habitat with serpentinite substrate.
Eryngium constancei	Loch Lomond button-celery	FE/SE/1B.1	Annual to perennial herb found in vernal pools from 460 to 855 meters.	April-June	**No**. The study area is outside of the known elevation range for this species and does not have vernal pools present.
Eryngium jepsonii	Jepson's coyote thistle	--/--/1B.2	Perennial herb found on clay substrate in valley and foothill grassland and vernal pools from 3 to 300 meters.	April-August	**No**. The study area does not provide suitable habitat for this species.
Fritillaria liliacea	Fragrant fritillary	--/--/1B.2	Perennial bulbiferous herb found on serpentinite substrate in cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland from 3 to 410 meters.	February-April	**No.** The study area does not have serpentinite substrate present.
Fritillaria pluriflora	Adobe-lily	--/--/1B.2	Perennial bulbiferous herb found on adobe substrate in chaparral, cismontane woodland, and valley and foothill grassland from 60 to 705 meters.	February-April	**No**. While the oak woodland provides habitat, this species was not observed during the March 2019 biological surveys conducted within the evident and identifiable blooming period.

Special-Status Plant Species with the Potential to Occur at the Study Area

Scientific Name	Common Name	Regulatory Status (Federal/State/ Local/CNPS)	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence
Gratiola heterosepala	Boggs Lake hedge-hyssop	--/SE/1B.2	Annual herb found on clay substrate in marshes and swamps (lake margins) and vernal pools from 10 to 2,375 meters.	April-August	**Moderate.** The study area may have potential suitable habitat along the margins of the manmade storage ponds.
Harmonia hallii	Hall's harmonia	--/--/1B.2	Annual herb found occasionally on serpentinite substrate in chaparral from 305 to 987 meters.	April-June	**No**. The study area is outside of the known elevation range for this species and does not have chaparral habitat with serpentinite substrates.
Hemizonia congesta ssp. *congesta*	Congested-headed hayfield tarplant	--/--/1B.2	Annual herb found in valley and foothill grassland, sometimes roadsides from 20 to 560 meters.	April-November	**No**. The study area does not provide suitable habitat for this species.
Hesperolinon bicarpellatum	Two-carpellate western flax	--/--/1B.2	Annual herb found in chaparral, which is usually on serpentinite substrate, from 60 to 1,005 meters.	May-July	**No**. The study area does not have chaparral habitat with serpentinite substrates present.
Hesperolinon sharsmithiae	Sharsmith's western flax	--/--/1B.2	Annual herb found on serpentinite substrate in chaparral from 270 to 300 meters.	May-July	**No**. The study area is outside of the known elevation range for this species and does not have chaparral habitat with serpentinite substrates.
Juncus luciensis	Santa Lucia dwarf rush	--/--/1B.2	Annual herb found in chaparral, great basin scrub, lower montane coniferous forest, meadows and seeps, and vernal pools from 300 to 2,040 meters.	April-July	**No**. The study area is outside of the known elevation range for this species and does not have suitable habitat types present.
Lasthenia burkei	Burke's goldfields	FE/SE/1B.1	Annual herb found in meadows and seeps (mesic) and vernal pools from 15 to 600 meters.	April-June	**No**. The study area does not provide suitable habitat for this species.
Lasthenia conjugens	Contra Costa goldfields	FE, CH/--/1B.1	Annual herb found on mesic soils in cismontane woodland, playas that are occasionally alkaline, valley and foothill grassland, and vernal pools from 0 to 470 meters.	March-June	**No**. While the oak woodland provides habitat, this species was not observed during the March 2019 biological surveys conducted within the evident and identifiable blooming period.
Layia septentrionalis	Colusa layia	--/--/1B.2	Annual herb found in chaparral, cismontane woodland, and valley and foothill grassland, which is occasionally on sandy, serpentine substrate, from 100 to 1,095 meters.	April-May	**Moderate.** The oak woodland provides suitable habitat for this species.

SPECIAL-STATUS PLANT SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Regulatory Status (Federal/State/ Local/CNPS)	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence
Leptosiphon jepsonii	Jepson's leptosiphon	--/--/1B.2	Annual herb found usually on volcanic substrate in chaparral, cismontane woodland, and valley and foothill grassland from 100 to 500 meters.	March-May	**Low.** While the study area does not have volcanic substrates present, the oak woodland provides suitable habitat for this species.
Limnanthes vinculans	Sebastopol meadowfoam	FE/CE/1B.1	Annual herb found in vernally mesic substrate in meadows and seeps, valley and foothill grassland, and vernal pools from 15 to 305 meters.	April-May	**No**. The study area does not provide suitable habitat for this species.
Lupinus sericatus	Cobb Mountain lupine	--/--/1B.2	Perennial herb found in broadleafed upland forest, chaparral, cismontane woodland, and lower montane coniferous forest from 275 to 1,525 meters.	March-June	**No**. The study area is outside of the known elevation range for this species.
Microseris paludosa	Marsh microseris	--/--/1B.2	Perennial herb found in closed-cone coniferous forest, cismontane woodland, coastal scrub, and valley and foothill grasslands from 5 to 355 meters.	April-June (July)	**Moderate.** The oak woodland provides suitable habitat for this species.
Navarretia leucocephala ssp. *bakeri*	Baker's navarretia	--/--/1B.1	Annual herb found in mesic areas of cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, and vernal pools from 5 to 1,740 meters.	April–July	**Moderate.** The oak woodland within the study area provides suitable habitat for this species.
Navarretia leucocephala ssp. *plieantha*	Many-flowered navarretia	FE/SE/1B.2	Annual herb found in vernal pools, which is occasionally comprised of volcanic ash flow, from 30 to 950 meters.	May-June	**No.** The study area does not provide suitable habitat for this species.
Navarretia myersii ssp. *deminuta*	Small pincushion navarretia	--/--/1B.1	Annual herb found in vernal pools, which is occasionally comprised of clay loam.	April-May	**No.** The study area does not have vernal pools present.
Navarretia paradoxinota	Porter's navarretia	--/--/1B.3	Annual herb found on serpentinite, openings, vernally mesic, and often drainages in meadows and seeps from 165 to 840 meters.	May-June (occasionally July)	**No**. The study area is outside of the known elevation range for this species and does not have serpentinite substrate present.
Navarretia rosulata	Marin County navarretia	--/--/1B.2	Annual herb found on serpentinite, rocky substrate in closed-cone coniferous forest and chaparral from 200 to 635 meters.	May-July	**No**. The study area is outside of the known elevation range for this species and does not have serpentinite substrate present.

Special-Status Plant Species with the Potential to Occur at the Study Area

Scientific Name	Common Name	Regulatory Status (Federal/State/ Local/CNPS)	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence
Penstemon newberryi var. *sonomensis*	Sonoma beardtongue	--/--/1B.3	Perennial herb found occasionally on rocky substrate in chaparral from 700 to 1,370 meters.	April-August	**No**. The study area is outside of the known elevation range for this species and does not have chaparral habitat present.
Plagiobothrys strictus	Calistoga popcornflower	FE/ST/1B.1	Annual herb found on alkaline areas near thermal springs in meadows and seeps, valley and foothill grassland and vernal pools from 90 to 160 meters.	March-June	**No.** The study area does not provide suitable habitat for this species.
Poa napensis	Napa blue grass	FE/CE/1B.1	Perennial herb found on alkaline areas near thermal springs in meadows and seeps and valley and foothill grassland from 100 to 200 meters.	May-August	**No.** The study area does not provide suitable habitat for this species.
Puccinellia simplex	California alkali grass	--/--/1B.2	Annual herb found on alkaline, vernally mesic substrates in sinks, flats, and lake margins in chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools from 2 to 930 meters.	March-May	**No.** The study area does not provide suitable habitat for this species.
Sidalcea hickmanii ssp. *napensis*	Napa checkerbloom	--/--/1B.1	Perennial herb found on rhyolitic substrate in chaparral from 415 to 610 meters.	April-June	**No.** The study area is outside of the known elevation range for this species and does not have rhyolitic substrates (lava flows) present.
Sidalcea oregano ssp. *hydrophila*	Marsh checkerbloom	--/--/1B.2	Perennial herb found on mesic substrate in meadows and seeps and riparian forest from 1,100 to 2,300 meters.	(occasionally June) July-August	**No.** The study area is outside of the known elevation range for this species.
Sidalcea oregana ssp. *valida*	Kenwood Marsh checkerbloom	FE/CE/1B.1	Perennial rhizomatous herb found in freshwater marshes and seeps from 115 to 150 meters.	June-September	**No.** The study area is outside of the known elevation range and does not provide habitat for this species.
Spergularia macrotheca var. *longistyla*	Long-styled sand-spurrey	--/--/1B.2	Perennial herb found on alkaline substrates in meadows and seeps and marshes and swamps from 0 to 255 meters.	February-May	**No.** The study area does not provide suitable habitat for this species.
Streptanthus batrachopus	Tamalpais jewelflower	--/--/1B.3	Annual herb found on serpentinite substrates in closed-cone coniferous forest and chaparral from 305 to 650 meters.	April-July	**No.** The study area is outside of the known elevation range for this species and does not have closed-cone coniferous forest or chaparral present.

Special-Status Plant Species with the Potential to Occur at the Study Area

Scientific Name	Common Name	Regulatory Status (Federal/State/ Local/CNPS)	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence
Streptanthus brachiatus ssp. *brachiatus*	Socrates Mine jewelflower	--/--/1B.2	Perennial herb usually found on serpentinite substrate in closed-cone coniferous forest and chaparral from 545 to 1,000 meters.	May-June	**No.** The study area is outside of the known elevation range for this species and does not have closed-cone coniferous forest or chaparral habitat with serpentinite present.
Streptanthus brachiatus ssp. *hoffmanii*	Freed's jewelflower	--/--/1B.2	Perennial herb found on serpentinite substrate in chaparral and cismontane woodland from 490 to 1,220 meters.	May-June	**No.** The study area is outside of the known elevation range for this species and does not have serpentinite substrates present.
Streptanthus hesperidis	Green jewelflower	--/--/1B.2	Annual herb found on serpentinite, rocky substrate in chaparral, which occur occasionally in openings, and cismontane woodland from 130 to 760 meters.	May-July	**No.** The study area is outside of the known elevation range for this species and does not have serpentinite substrates present.
Streptanthus morrisonii var. *elatus*	Three Peaks jewelflower	--/--/1B.2	Perennial herb found occasionally on serpentinite substrate in chaparral from 90 to 815 meters.	June-September	**No.** The study area does not have serpentinite substrate in chaparral habitat present.
Streptanthus morrisonii ssp. *kruckebergii*	Kruckeberg's jewelflower	--/--/1B.2	Perennial herb found in cismontane woodland (serpentinite) from 215 to 1,035 meters.	April-July	**No.** The study area is outside of the known elevation range for this species and does not have serpentinite substrates present.
Streptanthus vernalis	Early jewelflower	--/--/1B.2	Annual herb found on serpentinite substrate in closed-cone coniferous forest and chaparral.	March-May	**No.** The study area does not support closed-cone coniferous forest or chaparral habitat.
Stuckenia filiformis ssp. *alpina*	slender-leaved pondweed	--/--/2B.2	Perennial rhizomatous herb (aquatic) found in marshes and swamps (assorted shallow freshwater) from 300 to 2,150 meters.	May-July	**No.** The study area is outside of the known elevation range for this species.
Trichostema ruygtii	Napa bluecurls	--/--/1B.2	Annual herb found in chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland, and vernal pools from 30 to 680 meters.	June-October.	**Moderate.** The oak woodland within the study area provides suitable habitat for this species.
Trifolium amoenum	Two-fork clover	FE/--/1B.1	Annual herb found in coastal bluff scrub and valley and foothill grassland (sometimes serpentinite) from 5 to 415 meters.	April-June	**No.** The study area does not provide suitable habitat for this species.
Trifolium buckwestiorum	Santa Cruz clover	--/--/1B.1	Annual herb found on gravelly and margin substrate in broadleafed upland forest, cismontane woodland and coastal prairie from 105 to 610 meters.	April-October	**No.** While the oak woodland provides habitat, the study area occurs outside of the known extant elevation range required for this species to inhabit.

SPECIAL-STATUS PLANT SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Regulatory Status (Federal/State/ Local/CNPS)	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence
Trifolium hydrophilum	Saline clover	--/--/1B.2	Annual herb found in marshes and swamps, valley and foothill grassland (mesic, alkaline) and vernal pools from 0 to 300 meters.	April-June	**No.** The study area does not provide suitable habitat for this species.
Triquetrella californica	Coastal triquetrella	--/--/1B.2	Moss found on soil substrate in coastal bluff scrub and coastal scrub from 10 to 100 meters.	n/a	**No.** The study area does not support coastal bluff scrub or coastal scrub habitat.
Viburnum ellipticum	Oval-leaved viburnum	--/--/2B.3	Perennial deciduous shrub found in chaparral, cismontane woodland, and lower montane coniferous forest from 215 to 1,400 meters.	May-June	**No.** The study area is outside of the known elevation range for this species.

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SOURCES: CDFW, 2019; CNPS, 2019; and USFWS, 2019; CalFlora, 2019; Nature Serve, 2019.

Special-Status Wildlife Species with the Potential to Occur at the Study Area

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence
Amphibians				
Ambystoma californiense	California tiger salamander	FT/ST/--	Found in vernal pools, ephemeral wetlands, and seasonal ponds, including constructed stockponds, in grassland and oak savannah plant communities from 3 to 1,054 meters. The northern habitat ranges from Yolo County to the east side of Lake Berryessa south to San Luis Obispo County.	**No.** While storage ponds within the study area provide suitable aquatic habitat, the study area is outside of the known extant geographic range for this species.
Dicamptodon ensatus	California giant salamander	--/CSC/--	Occurs in wet coastal forests in near clear, cold permanent and semi-permanent streams and seepages. Occurs from sea level to near 915 meters. The range of this species occurs from the coastline above San Francisco Bay inland to Clear Lake.	**Moderate.** The study area does have permanent perennial and intermittent drainages that could support this species. The study area is located within the known range for this species.
Rana boylii	Foothill yellow-legged frog	--/SC,CSC/--	Partly-shaded, shallow perennial and intermittent streams and riffles with a rocky substrate in a variety of habitats. Need at least some cobble-sized substrate for egg-laying. Rarely encountered far from permanent water sources.	**Moderate.** The study area has shallow perennial and intermittent drainages with rocky substrates. The perennial and intermittent drainages within and adjacent to the study area provide habitat for this species. The study area falls within the known range for this species.
Rana draytonii	California red-legged frog	FT/CSC/--	Found in permanent and temporary pools of streams, marshes, and ponds with dense grassy and/or shrubby vegetation from 0 to 1,500 meters. Northern habitat range begins from Sonoma County and Napa County south to Los Angeles County, occurring on the western side of the Sierra Nevada Mountains.	**Moderate**. The study area has permanent source of water with suitable vegetation present. The study area is within the known range for this species.
Tricha rivularis	Red-bellied newt	--/CSC/--	Found in coastal woodlands and redwood forest along the coast of northern California. Found in a stream or river dweller. Larvae retreat into vegetation and under stones during the day. Known from Humboldt, Mendocino, Lake, and Sonoma counties.	**None.** While the oak woodland and drainages provide habitat the study area occurs outside of the known extant geographic range for this species. The closest CNDDB occurrence record is located 3.9 miles to the south west and is dated 1970.
Birds				
Agelaius tricolor	Tricolored blackbird	--/SC,CSC/--	Highly colonial species, most numerous in central valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony. Forages in grassland and cropland. Nests in cattails, tules, and blackberries large enough for at least 50 nesting pairs.	**Low**. The study area does not provide foraging habitat or a large enough substrate for a nesting colony.

SPECIAL-STATUS WILDLIFE SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence
Birds (cont.)				
Buteo swainsoni	Swainson's hawk	--/ST/--	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, alfalfa, or grain fields supporting rodent populations. Northern habitat summer range in California begins in central Tehama south to Kern County. Predominant breeding habitat is located in the Central Valley.	**Moderate.** The trees within the study area provide nesting habitat. While no foraging habitat occurs within the study area, the vineyards in the vicinity of the study area provide suitable foraging areas. There are no CNDDB occurrence records within 10 miles of the study area, and the study area is located outside of the known range for this species.
Coturnicops noveboracensis	Yellow rail	--/CSC/--	Shallow marshes and wet meadows. Nest placement is on the ground in sedge marshes. This bird winters in drier fresh-water and brackish marshes, as well as dense, deep grass and rice/ hay fields. Predominately known in the Gulf of Mexico and East coast, and north into Canada. Has a very limited wintering range in the San Francisco Bay Area and breeding range on the northern California/ Oregon border.	**No**. The study area does not provide habitat for this species.
Cypseloides niger	Black swift	--/CSC/--	Nesting habitat includes dark, moist, and inaccessible ledges and crevices, often behind waterfalls. Breeds very locally in the Sierra Nevada and Cascade Range. Forages widely over many habitats.	**No**. The study area does not provide nesting habitat for this species.
Elanus leucurus	White-tailed kite	--/FP/--	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**High.** The trees within and in the vicinity of the study area provide nesting habitat for this species.
Falco peregrinus anatum	American peregrine falcon	--/FP/--	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression on a ledge or skyscraper.	**Low.** While the study area occurs within the extant geographic range, the study area does not provide suitable nesting habitat for this species.
Haliaeetus leucocephalus	Bald eagle	--/SE,FP/--	Requires large bodies of water, or free flowing rivers with abundant fish, and adjacent snags or other perches. They winter throughout California near lakes, reservoirs, rivers, and some rangelands and coastal wetlands. Nesting is usually restricted to mountainous habitats near reservoirs, lakes, and rivers in northern California. Bald eagles usually nest in large coniferous trees within one mile of permanent water.	**Low. While the oak woodland and riparian woodland provide marginal nesting habitat, the study area does not occur within a mountainous region and no CNDDB occurrences have been documented within 5 miles of the study area.**
Progne subis	Purple martin	--/CSC/--	Inhabits woodlands, low elevation coniferous forest of Douglas-fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*), and Monterey pine (*Pinus radiata*). Nests primarily in old woodpecker cavities, also in human-made structures. Nest often located in tall, isolated tree/snag.	**Moderate.** The study area does provide nesting habitat for this species. There were numerous snags with woodpecker holes present.

SPECIAL-STATUS WILDLIFE SPECIES WITH THE POTENTIAL TO OCCUR AT THE STUDY AREA

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence
Birds (cont.)				
Strix occidentalis caurina	Northern spotted owl	FT/ST/--	Prefers forest strands with large-diameter trees and varied vegetation levels, this subspecies lives among oak and other hardwoods. Nest placement is a dense section of forest that is well protected from open sky by dense tree canopy. Likely a broken-off treetop or tree-trunk hollow, or old nest from squirrel or bird of prey.	**Low.** The study area provides large diameter trees for nesting, but likely the vegetation is not dense enough to provide high quality habitat, and the study area is outside of the known geographic range.
Fish				
Hysterocarpus traskii pomo	Russian River tule perch	--/CSC/--	Only freshwater member of the surfperch family. This subspecies is only known from the Russian River Basin. It inhabits lowland waterways with complex submerged cover and prefers water temperatures below 22 degrees Celsius. Lifespan is short, with few living longer than two years. Perch are sexually mature in first year of life. Females give birth in spring to relative large numbers of young.	**No**. The study area does not include the Russian River Basin.
Hypomesus transpacificus	Delta smelt	FT/SE/--	Open surface waters in the Sacramento/San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Found in Delta estuaries with dense aquatic vegetation and low occurrence of predators. May be affected by downstream sedimentation.	**No**. The study area does not occur within the known range of this species. The closest known record is located over 32-miles south in the San Francisco Delta.
Oncorhynchus kisutch pop. 4	Coho salmon – central California coast ESU and EFH	FE, CH/SE/--	Anadromous fish species that spawns and spends a portion of its life in fresh inland streams, maturing in the open ocean.	**No**. The study area does not occur within the known range of this species.
Oncorhynchus mykiss irideus pop. 8	Steelhead – central California coast DPS	FT, CH/--/--	Anadromous fish species that spawns and spends a portion of its life in fresh inland streams, maturing in the open ocean.	**High**. The Napa River within the study area provides habitat for this species.
Invertebrates				
Syncaris pacifica	California freshwater shrimp	FE/SE/--	Inhabit small, perennial coastal streams with low gradients below 116 meters. Found in tributary streams in the lower Russian River drainage that drain to the Pacific Ocean, coastal streams that drain to the Pacific Ocean, streams that drain to Tomales Bay, and streams that drain to San Pablo Bay.	**High**. The study area does provide habitat for this species in the Napa River, Simmons Creek, and Oat Hill Mine Ditch.
Mammals				
Antrozous pallidus	Pallid bat	--/CSC/--	Inhabits oak woodland, savannah, and riparian habitats. Roosts in crevices and hollows in trees, rocks, cliffs, bridges, and buildings.	**High.** The trees within the oak woodland and riparian woodland provide suitable roosting habitat for this species.

Special-Status Wildlife Species with the Potential to Occur at the Study Area

Scientific Name	Common Name	Listing Status: Federal/State/ Other	Habitat Description	Potential for Occurrence
Mammals (cont.)				
Corynorhinus townsendii	Townsend's big-eared bat	--/CSC/--	Throughout California in a wide variety of habitats. Most common in mesic sites. Maternity roosts are found in caves, tunnels, mines, or other human-made structures. May use separate sites for night, day, hibernation, or maternity roosts.	**High.** The study area can be considered mesic with sites for night and potentially day roosts, such as buildings and bridges. The study area does not provide suitable habitat for maternity roosts.
Pekania pennanti	Fisher –West Coast DPS	--/ST, CSC/--	Occurs in intermediate to large-tree stages of coniferous forest and deciduous-riparian habitats with a high percent of canopy closure. Habitat ranges from the Oregon and California border along the coast line to Sonoma County. The inland range follows the Sierra Nevada Mountain range to Kern County.	**No.** The study area is located outside of the known range for this species, and does not provide suitable habitat.
Taxidea taxus	American badger	--/CSC/--	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils, and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	**Low.** The study area does not provide suitable habitat for burrowing and does not have drier open stages of shrub.
Reptiles				
Chelonia mydas	Green sea turtle East Pacific DPS	FT/--/--	Inhabit shallow tropical and subtropical waters and coastline beaches associated with the Pacific Ocean, Atlantic Ocean, Mediterranean Sea, and northern Indian Ocean.	**No.** The study area does not provide suitable habitat for this species.
Emys marmorata	Western pond turtle	--/CSC/--	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6,000 feet. Need basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 kilometers from water for egg-laying.	**Present**. This species was observed within the storage ponds during the biological surveys. The storage ponds provide aquatic habitat and the ruderal/disturbed areas surrounding the ponds provide upland habitat.

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APPENDIX C

Wetland Delineation

CALISTOGA RIVERSIDE POND RELOCATION PROJECT

Aquatic Resources Delineation

Prepared for
City of Calistoga

April 2019

CALISTOGA RIVERSIDE POND RELOCATION PROJECT

Aquatic Resources Delineation

Prepared for
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April 2019

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CHAPTER 1
Introduction

This report has been prepared to document the results and conclusions of aquatic resources delineation field surveys conducted for the Calistoga Riverside Pond Relocation Project (project), located in the City of Calistoga, California (**Figure 1**). The project (study area) occurs within the existing wastewater treatment plant. On behalf of the City of Calistoga, Environmental Science Associates (ESA) investigated the extent of aquatic resources in the study area potentially subject to regulation under Section 404 of the Clean Water Act (CWA).

This report documents the boundaries of the aquatic features within the study area using field data and the best professional judgment of ESA investigators. All conclusions presented should be considered preliminary and subject to change pending official review and verification in writing by the U.S. Army Corps of Engineers (USACE).

1.1 Purpose

The purpose of this investigation is to describe and delineate all potential wetlands and other waters of the U.S. within the study area that may be subject to Section 404 of the Clean Water Act. Information from this report may be used in preparing permit applications for future actions proposed in the study area.

1.2 Location

The approximately 14.26-acre study area is located within the existing wastewater treatment plant in the City of Calistoga. The study area is bordered by Dunaweal Lane to the east, the Napa Valley Vine Trail to the north, and agriculture associated with vineyards and row crops to the west and south. The study area corresponds to an unsectioned area of Township 8 North, Range 6 West of the Calistoga, California U.S. Geological Survey (USGS) 7.5-minute series quadrangle. The approximate centroid of the study area is 38º 34′ 18.47″ North, 122º 33′ 34.14″ West. Topography throughout the study area is relatively flat except where the slopes descend southward to the Napa River. Elevation within the study area extends from 330 feet in the northeast to 310 feet in the south. Aerial imagery and topographic maps of the study area are provided in **Figures 2** and **3**, respectively.

Path: \\sfo-file01\esa\GIS\GIS\Projects\16xxxx\D160251 Calistoga FEMA HMP\03 MXDs Projects\Bio\Fig1 RegionalLocation.mxd, FEP 3/29/2019

SOURCE: Esri, 2015; ESA, 2019

Calistoga Riverside Ponds

Figure 1
Regional Location

ESA

SOURCE: USDA, 2016; ESA, 2019

Calistoga Riverside Ponds

Figure 2
Study Area

ESA

Path: \\sfo-file01\esa\GIS\GIS\Projects\16xxxx\D160251_Calistoga_FEMA_HMP\03_MXDs_Projects\Bio\Fig3_Topo.mxd, FEP 3/29/2019

SOURCE: USGS 7.5' Topographic Quadrangle (Calistoga, 2018); ESA, 2019

Calistoga Riverside Ponds

Figure 3
Topographic Map

ESA

1.3 Responsible Parties

The applicant is:

City of Calistoga
1232 Washington Street
Calistoga, CA 94515

The point of contact for regulatory permitting is:

Kelly Bayne, Senior Biologist
Environmental Science Associates
2600 Capitol Avenue, Suite 200
Sacramento, CA 95816
(916) 564-4500
kbayne@esassoc.com

1.4 Directions to Study Area

Directions to the study area from San Francisco:

- Take U.S. 80 East
- Take exit 33 for CA-37 toward Napa
- Continue onto CA-37 West
- Take exit 19 for CA-29/Sonoma Boulevard toward Napa
- Turn right onto CA-29 North/Sonoma Boulevard
- Turn right onto Dunaweal Lane to the study area on the left.

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CHAPTER 2
Regulatory Setting

2.1 2015 Clean Water Rule

In 2015, the USACE and the Environmental Protection Agency (EPA) issued the Clean Water Rule detailing the process for determining Clean Water Act (CWA) jurisdiction over waters of the United States (WOTUS). The rule is currently in effect in California and 21 other states. The 2015 Clean Water Rule includes a detailed process for determining which areas may be subject to jurisdiction under the CWA, and broadly classifies features into three categories: those that are jurisdictional by rule (Category A below), those that are excluded by rule (Category C below), and those features that require a "significant nexus test" (Category B below) to determine jurisdictional status.

The significant nexus test includes consideration of hydrologic and ecologic factors. For circumstances such as those described in Category B below, the significant nexus test would take into account physical indicators of flow (evidence of an ordinary high water mark [OHWM]), if a hydrologic connection to a Traditional Navigable Water (TNW) exists, and if the aquatic functions of the water body have a significant effect (more than speculative or insubstantial) on the chemical, physical, and biological integrity of a TNW. The USACE and EPA will apply the significant nexus standard to assess the flow characteristics and functions of a potential WOTUS to determine if it significantly affects the chemical, physical, and biological integrity of the downstream TNW.

2015 Clean Water Rule Key Points Summary

Category A: The USACE and EPA will assert jurisdiction over the following waters (jurisdictional by rule):

- TNWs.
- Interstate waters and wetlands.
- Territorial seas.
- Impoundments of waters (reservoirs, etc.).
- Tributaries with the following attributes:
  - Contributes flow to a TNW.
  - Contain bed, banks, and OHWM.
  - Can be natural, man-altered, or man-made.
  - Can have constructed breaks (culverts, pipes, etc.) or natural breaks.

- Waters “adjacent” to TNW and their tributaries, including:
  - Waters that are bordering, contiguous, or neighboring a TNW, interstate water, territorial sea, impoundment or tributary. Includes waters separated from other ‘‘waters of the United States’’ by constructed dikes or barriers, natural river berms, beach dunes or similar.
  - Waters within 100 feet of the OHWM of a TNW, interstate water, territorial sea, impoundment or tributary.
  - Waters within the 100-year floodplain and within 1,500 feet of a TNW, interstate water, territorial sea, impoundment or tributary.
  - Waters within 1,500 feet of the high tide line or OHWM of a TNW or territorial sea.

Category B: The USACE and EPA will decide jurisdiction over the following waters based on a fact-specific analysis to determine whether they have a significant nexus with a TNW unless excluded by rule (significant nexus test):

- Vernal pools that have a significant nexus to a TNW or territorial sea.
- Waters within the 100-year floodplain of a TNW, interstate water or territorial sea.
- Waters within 4,000 feet of the high tide line or OHWM of a TNW, interstate water, territorial sea, impoundment or tributary.

Category C: The USACE and EPA will not assert jurisdiction over the following features (excluded by rule):

- Waste treatment facilities including basins and percolation ponds.
- Prior converted cropland.
- The following types of ditches:
  - Ephemeral ditches that are not a relocated tributary or excavated in a tributary.
  - Intermittent ditches that are not a relocated tributary, excavated in a tributary, or drain wetlands.
  - Ditches that do not flow, either directly or through another water, into a TNW, interstate waters, territorial sea.
- Artificially irrigated areas that would revert to upland.
- Artificial, constructed lakes and ponds created in dry land such as stock watering ponds, irrigation ponds, settling basins, fields flooded for rice growing, cooling ponds
- Swimming pools or reflecting pools in dry land.
- Small ornamental waters created in dry land.
- Water-filled depressions created in dry land from mining or construction activities including pits for fill, sand, or gravel.

- Erosional features including gullies and rills that are not tributaries, non-wetland swales and constructed grass waterways.
- Puddles.
- Groundwater.
- Stormwater control features created in dry land.
- Wastewater recycling structures created in dry land including detention and retention basins, groundwater recharge basins, percolation ponds and water distributary structures.

Significant Nexus

The EPA and the USACE have defined the significant nexus standard as follows:

1. A significant nexus analysis assesses the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of downstream traditional navigable waters; and
2. Significant nexus includes consideration of hydrologic and ecologic factors including:
   a. Volume, duration, and frequency of flow, including consideration of certain physical characteristics of the tributary,
   b. Proximity to the traditional navigable water,
   c. Size of the watershed,
   d. Average annual rainfall,
   e. Average annual winter snow pack,
   f. Potential of tributaries to carry pollutants and flood waters to traditional navigable waters,
   g. Provision of aquatic habitat that supports a traditional navigable water,
   h. Potential of wetlands to trap and filter pollutants or store flood waters, and
   i. Maintenance of water quality in traditional navigable waters.

Traditional Navigable Water

Navigable waters of the United States are defined in 33 CFR § 329.4 as "…those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity."

Traditional navigable waters include all of the "navigable waters of the United States" as defined in 33 CFR § Part 329.4 as well as by numerous decision of the federal courts; those water bodies the USACE has determined are a navigable water of the U.S. pursuant to 33. CFR § 329.14; plus all other waters that are navigable-in-fact. The definition of "navigable-in-fact" comes from a long line of court cases originating with Daniel Ball, 77 U.S. 557 (1870).

2.2 Ordinary High Water Mark (OHWM)

Federal regulations define the OHWM as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas". Under Section 404 of the Clean Water Act (CWA), the OHWM defines the lateral extent of federal jurisdiction in non-tidal waters of the U.S. in the absence of adjacent wetlands.

CHAPTER 3
Methodology

3.1 Pre-field Review

Prior to conducting fieldwork, the following background tasks were performed:

- Review of Calistoga, California U.S. Geologic Survey (USGS) 7.5-minute topographic quadrangle map (USGS, 1958);
- Review of color aerial photography for vegetative, topographic, and hydrographic signatures;
- Review of the online soils mapper (NRCS, 2019a) for information about soils and geomorphology;
- Review of the National Hydric Soils List for Napa County, California (NRCS, 2019b) to determine if any soils mapped within the study area are considered hydric at the level of soil series; and
- Review of the National Wetlands Inventory (U.S Fish and Wildlife Service [USFWS], 2019).

3.2 Field Survey Methods

The aquatic resources delineation was conducted within the study area by ESA biologists Kelly Bayne and Julie McNamara on March 21 and 29, 2019. The delineation used the "Routine Determination Method" as described in the *1987 Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987), hereafter called the "1987 Manual." The 1987 Manual was used in conjunction with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE, 2008a), hereafter called the "Arid West Supplement." For areas where the 1987 Manual and the Arid West Supplement differ, the Arid West Supplement was followed. In addition, the *Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE, 2008b) was referenced to assist in identifying the lateral limits of the stream channels in the study area.

Three positive parameters must normally be present for an area to be considered a wetland: 1) a dominance of wetland vegetation, 2) presence of hydric soils, and 3) presence of wetland hydrology. ESA assessed presence or absence of positive indicators for wetland vegetation, soils, and hydrology per the 1987 Manual and Arid West Supplement guidelines. Data points were taken within suspected wetlands and a paired point taken (where acceptable) in nearby uplands. Data points were recorded on Arid West wetland delineation forms, which are provided as **Appendix A**.

At each data point, a visual assessment of the dominant plant species within a 6-foot radius was made. Dominant species were assessed using the recommended "50/20" rule per the Arid West Supplement. Plants were identified to species using *The Jepson Manual: Vascular Plants of California, second edition* (Baldwin et al., 2012). The *Arid West 2016 Regional Wetland Plant List* (Lichvar et al., 2016) was used to determine the wetland indicator status of all plants. Soils at each data point were characterized by color, texture, organic matter accumulation, and the presence or absence of hydric soil indicators. Color was described using the *Munsell Soil Color Book* (Munsell Color, 2015). Presence of wetland hydrology was determined at each data point by presence of one or more of the primary and/or secondary indicators, per guidance of the Arid West Supplement.

For "other waters of the U.S." to be considered jurisdictional, these features must exhibit adefined bed and bank and an OHWM. Drainages with obvious bed and banks and OHWM were characterized by noting vegetation, geomorphology (e.g., incision) and hydrologic characteristics, and by measuring representative channel bank cross-sections to obtain OHWM. Representative channel cross-section OHWM was recorded in the field and used to map stream channels in geographic information system (GIS), along with high-resolution aerial photographs and detailed topographic data.

3.3 Mapping and Acreage Calculations

All features, including sample points, wetland boundaries, and channel courses were recorded using a Global Positioning System (GPS) unit (Trimble GeoXT) with real-time differential correction and an instrument-rated mapping accuracy of +/- 1 meter. Boundaries of wetlands were demarcated in the field using GPS by walking the margin of the wetland and taking points at set intervals.

In the office, data from sample points and wetland boundaries were downloaded from the GPSunit and mapped using GIS software on an overlay of bothtopography and geo-referenced aerial photography. GPS-determined wetland boundaries and datapoints were visually confirmed. Acreage of wetland and waterway polygons, and the length of linear features were determined using ArcGIS.

3.4 Limitations

The delineators did not have access to the southern banks of the Napa River. Therefore, the exact location of the OHWM on the south side of the Napa River was estimated in the field and with aerial imagery and topographic data.

CHAPTER 4
Setting

4.1 Climate

The climate in the region consists of cool, wet winters and very dry summers with a mean annual precipitation of 34.23 inches and mean annual temperatures ranging from an average maximum temperature of 73.5 degrees Fahrenheit to an average minimum temperature of 44.9 degrees Fahrenheit (Western Regional Climate Center, 2019). Precipitation from October 2018 through March 2019 totaled 41.4 inches, which is 120 percent of the average annual rainfall (CIMIS, 2019). Land use immediately surrounding the study area is characterized by agricultural uses.

4.2 Soils

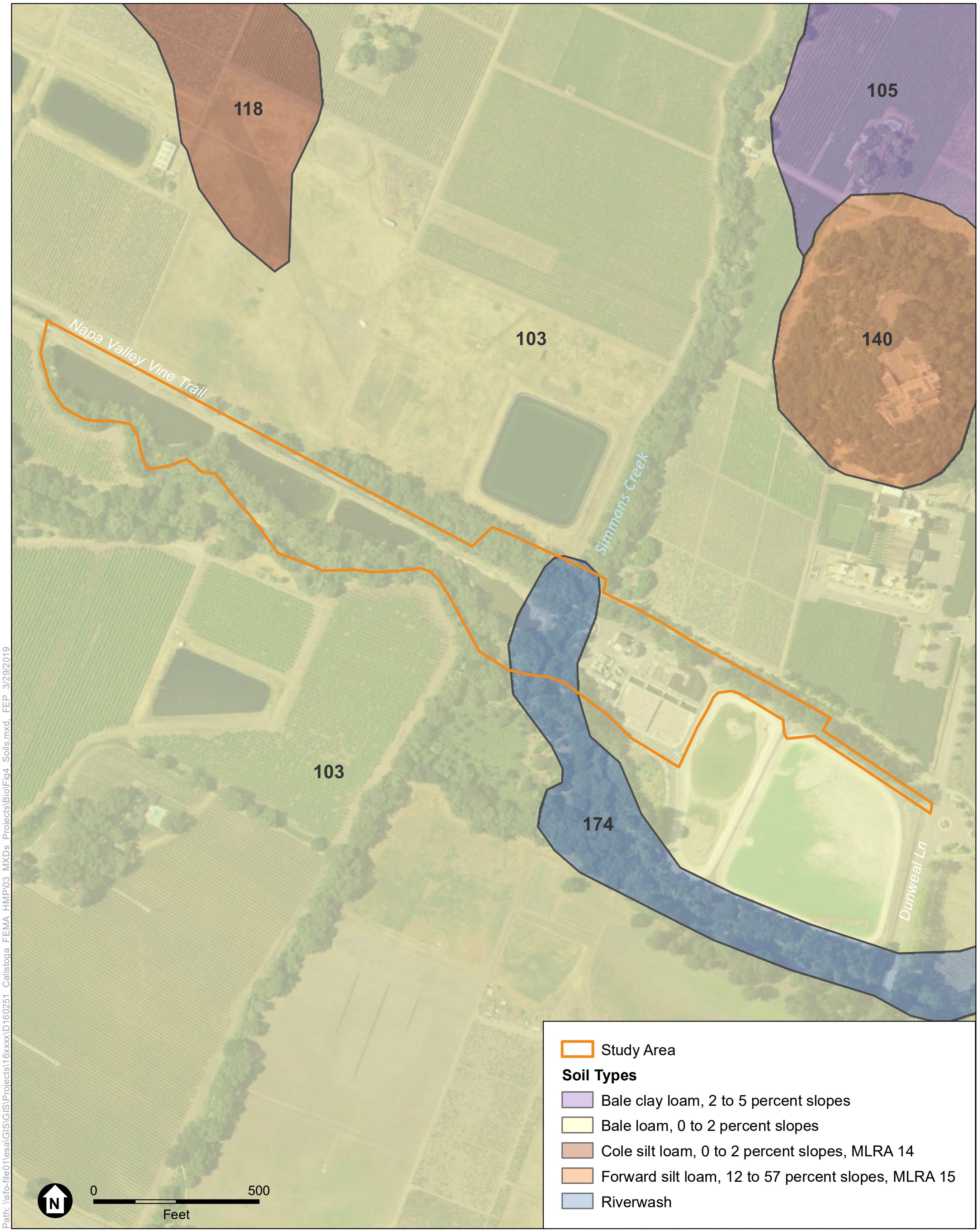
The soil map (**Figure 4**) shows two soil units occurring within the study area based on the online soils mapper (USGS, 2019a). A brief description of each soil unit is provided below.

- **Bale Loam 0 to 2 percent slopes (map unit symbol 103).** This soil unit occurs on alluvial fans and floodplains with parent material comprised of alluvium derived from rhyolite and/or alluvium derived from igneous rock. This is a somewhat poorly drained soil with a moderate available water storage of about 7.2 inches. The typical profile consists of loam from 0 to 24 inches and stratified gravelly sandy loam to loam from 24 to 60 inches. The hydric soils list for Napa County identifies minor components associated with Clear Lake in alluvial fans of this soil type as hydric (NRCS, 2019b).

- **Riverwash (map unit symbol 174).** This soil unit occurs on floodplains and channels with parent material comprised of sandy and gravelly alluvium. This is an excessively drained drained soil. The hydric soils list for Napa County identifies floodplains associated with this soil type as hydric (NRCS, 2019b).

4.3 Hydrology

Drainage of the study area occurs through a manmade drainage ditch, surface sheet flow, and percolation. Water from the manmade drainage ditch drains to Simmons Creek. Simmons Creek is tributary to the Napa River. The Napa River watershed covers an area of approximately 426 square miles, and is bordered by mountains to the north, west, and east. The watershed is typical of the California coastal range, with northwest-southeast trending topography. The Napa River runs through the center of the watershed on the valley floor for 55 miles to the San Pablo Bay. The regional drainage in the vicinity of the study area is shown in **Figure 5**.

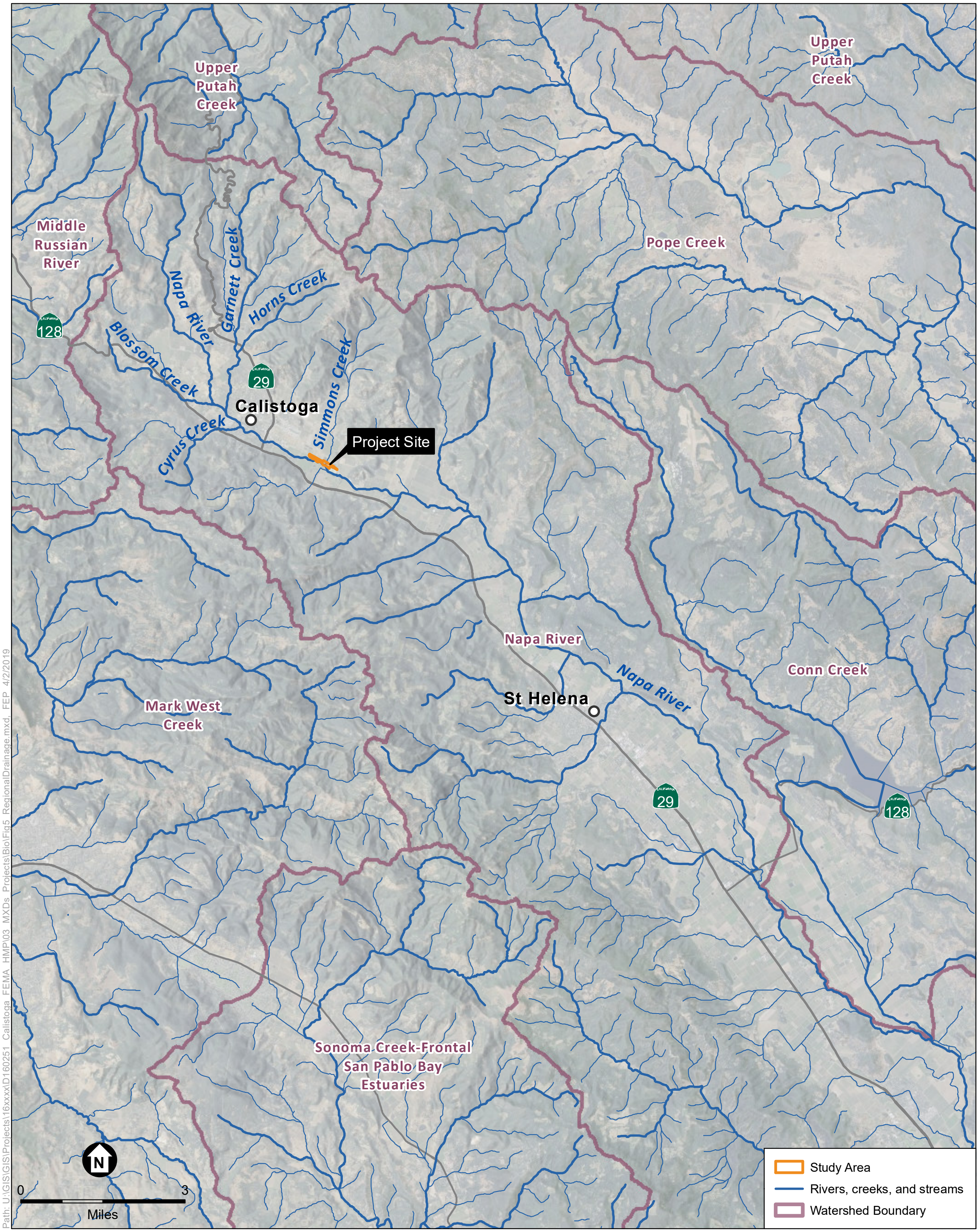


SOURCE: USDA, 2016; NRCS, 2018; ESA, 2019

Calistoga Riverside Ponds

Figure 4
Soils

ESA



SOURCE: USDA, 2016; NHD, 2018; ESA, 2019

Calistoga Riverside Ponds

Figure 5
Regional Drainage

ESA

4.4 Vegetation/Habitat Types

Vegetation communities are assemblages of plant species that occur together in the same area and are defined by species composition and relative abundance. The following upland habitat types occur within the study area: oak woodland, riparian woodland, ruderal/disturbed, and developed. Aquatic resources include manmade storage pond, and perennial, intermittent, and ephemeral drainages and are discussed in detail in Chapter 5. Representative photographs of the habitat types are provided in **Appendix B**.

Oak Woodland

Oak woodland lines the northern portion of the study area (**Photographs 1**, **8**, and **12** in **Appendix B**). Dominant overstory vegetation includes valley oak (*Quercus lobata*) and coast live oak (*Quercus agrifolia*), with a row of ornamental fan palms (*Washingtonia filifera*). Dominant understory vegetation includes ripgut grass (*Bromus diandrus*), tall sock-destroyer (*Torilis arvensis*), and radish (*Raphanus* sp.).

Riparian Woodland

Riparian woodland borders the Napa River along the southern portion of the study area and borders Simmons Creek through the central portion of the study area (**Photographs 4**, **6**, **9**, **10**, **11**, and **16** in **Appendix B**). Dominant overstory vegetation includes valley oak, coast live oak, western sycamore (*Platanus racemosa*), and willow (*Salix* sp.) with blue elderberry (*Sambucus nigra* ssp. *caerulea*), citrus (*Prunus* sp.), and birch (*Betula* sp.) interspersed throughout. Dominant understory vegetation includes Himalayan blackberry (*Rubus armeniacus*), snowberry (*Symphoricarpos* sp.), rose (*Rosa* sp.), western poison oak (*Toxicodendron diversilobum*), poison hemlock (*Conium maculatum*), California buckeye (*Aesculus californica*), tall sock-destroyer, ripgut grass, and greater periwinkle (*Vinca major*). Riparian woodland is not considered an aquatic habitat type because it lacks wetland soils and hydrology.

Ruderal/Disturbed

Ruderal/disturbed areas include graded access roads and road shoulders around the storage ponds (**Photographs 11** and **16** in **Appendix B**). The vegetation along the northern access road and road shoulders was unidentifiable as a result of a recent fire prior to the March 21 and 29, 2019 surveys. Vegetation within the remainder of the ruderal/disturbed areas is largely lacking aside from isolated patches of ripgut grass, tall sock-destroyer, and common groundsel (*Senecio vulgaris*).

Developed

Developed areas occur along the northern portion of the study area and includes paved roads and road shoulders (**Photographs 1**, **2**, **3**, and **5** in **Appendix B**). Minimal vegetation occurs along these areas.

CHAPTER 5
Results

5.1 Aquatic Resources

The aquatic resources delineation identified approximately 4.6 acres of aquatic resources within the 14.26-acre study area. These include:

- 3.72 acres of storage pond;
- 0.50 acre of perennial drainage;
- 0.32 acre of intermittent drainage; and
- 0.04 acre of ephemeral drainage ditch.

Aquatic communities and habitats were classified using the *Classification of Wetlands and Deepwater Habitats of the United States* ("Cowardin Classification") (FGDC, 2013). Details of the aquatic resources within the study area are presented in **Table 1**. **Figure 6** shows the location and extent of the aquatic features within the study area. Representative photographs of the aquatic features are provided in **Appendix B**. The Aquatic Resources Spreadsheet is provided in **Appendix C**.

TABLE 1
AQUATIC RESOURCES WITHIN THE STUDY AREA

Map ID	Water Type – Cowardin Classification	Acres[1]	Linear Feet
Wetland Storage Pond			
P-1	Storage Pond – Palustrine Unconsolidated Bottom - Excavated	0.70	390
P-2	Storage Pond – Palustrine Unconsolidated Bottom - Excavated	0.61	348
P-3	Storage Pond – Palustrine Unconsolidated Bottom - Excavated	1.05	389
P-4	Storage Pond – Palustrine Unconsolidated Bottom - Excavated	1.36	563
	Wetland Storage Pond Subtotal:	**3.72**	**1,690**
Waterways			
PD-1	Riverine Upper Perennial	0.50	1,090
ID-1	Riverine Intermittent	0.08	344
ID-2	Riverine Intermittent	0.24	986
ED-1	Ephemeral Drainage – Riverine Intermittent	0.04	370
	Waterways Subtotal:	**0.086**	**2,790**
	Total:	**0.092**	**882**

TABLE 1
AQUATIC RESOURCES WITHIN THE STUDY AREA

Map ID	Water Type – Cowardin Classification	Acres[1]	Linear Feet

NOTES:
[1]Acreages were calculated to the nearest hundredth.

SOURCE: ESA, 2019

Manmade Storage Pond

Four manmade storage ponds occur within the study area (**Photographs 8**, **12**, and **15** in **Appendix B**). The storage ponds were built in 1974. They were originally designed as percolation ponds with an outfall to the Napa River and subsequently have been used to temporarily hold tertiary-treated effluent from the wastewater treatment plant prior to discharge to the Napa River. The ponds currently operate in series to provide treatment to reduce Trihalomethanes (THMs) in effluent prior to discharging to the Napa River and are part of overall operational storage for adhering to waste discharge requirements. The infrastructure relies on storage in the ponds to store tertiary effluent until Napa River flows increase and dilution ratio requirements can be attained. The storage ponds are used to store and release treated effluent to the Napa River via direct discharge and spreading fields. The storage ponds contained ponded water at the time of the March 2019 surveys. While the majority of the storage ponds lack vegetation within or along the banks, emergent vegetation consisting of cattail (*Typha* sp.), water starwort (*Callitriche heterophylla*), and watercress (*Nasturtium officinale*) occur in some areas of the storage ponds. Manmade storage ponds are classified as "palustrine unconsolidated bottom, excavated" using the *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC, 2013).

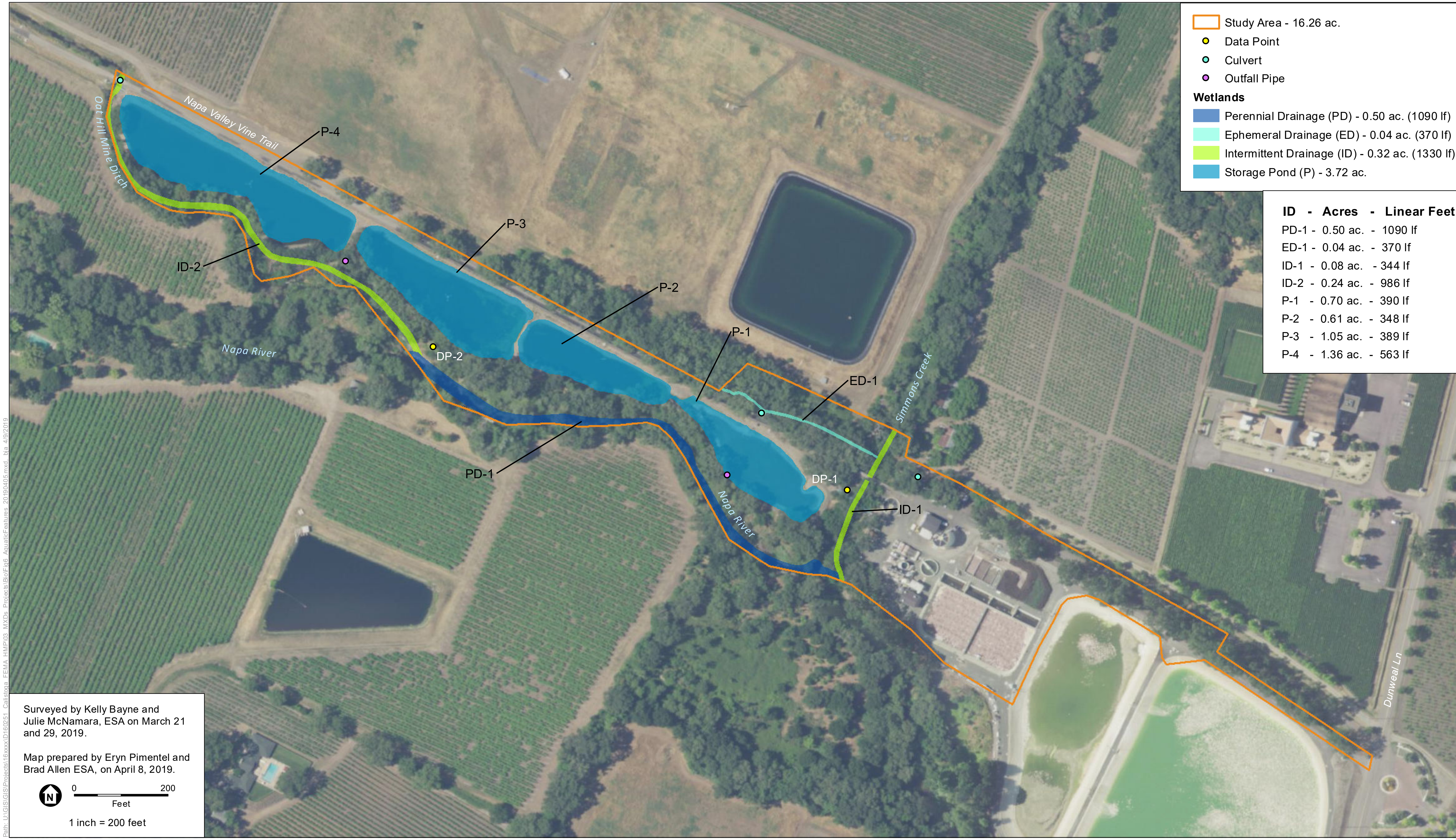
Waste treatment facilities including basins and percolation ponds are excluded by rule from being considered a waters of the U.S. under the 2015 Clean Water Rule paragraph (b)(3)(i).

Perennial Drainage

The Napa River is a perennial drainage that flows northwest to southeast through the southern portion of the study area (**Photographs 9**, **10**, and **11** in **Appendix B**). The boundaries of the Napa River were determined by the OHWM based on the lines along the banks. The portion of the Napa River that occurs within the study area consists of a 15 to 30-foot wide channel with a cobbled bed. This portion of the Napa River has experienced severe bank scour and undercutting from erosion. Water was flowing during the March 2019 surveys. Dominant vegetation consists of those identified under the riparian woodland habitat. Perennial drainages are classified as "riverine upper perennial" using the *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC, 2013).

Intermittent Drainage

Two intermittent drainages occur within the study area. Intermittent drainages are classified as "riverine intermittent" using the *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC, 2013).



SOURCE: USDA, 2016; ESA, 2019

Calistoga Riverside Ponds

Figure 6
Delineation of Aquatic Resources

ESA

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Simmons Creek is an intermittent drainage that flows north to south through the study area and drains to the Napa River (**Photographs 4** and **6** in **Appendix B**). The boundaries of the intermittent drainage were determined by the OHWM based on the lines along the banks. The banks are approximately 10 feet wide. Water was flowing during the March 2019 surveys. Dominant vegetation consists of those identified under the riparian woodland habitat.

The Oat Hill Mine Ditch is an intermittent drainage that flows northwest to southeast within the southwestern half of the study area (**Photographs 14** and **16** in **Appendix B**). The boundaries of the intermittent drainage were determined by the OHWM based on the lines along the banks. The banks range between 8 and 15 feet wide. The Oat Hill Mine Ditch transfers agricultural water from surrounding fields to the Napa River. Water was flowing during the March 2019 surveys. Dominant vegetation consists of those identified under the riparian woodland habitat.

Ephemeral Drainage Ditch

A manmade drainage ditch extends east to west through the northern portion of the study area (**Photographs 17** and **18** in **Appendix B**). The ditch drains to Simmons Creek. The boundaries of the manmade drainage ditch were determined by the OHWM. The banks of the manmade drainage ditch exhibit evidence of an OHWM based on the lines along the banks. From Simmons Creek westward for approximately 6 feet, the banks are approximately 15 feet wide with a bed comprised of cobble. The remainder of the manmade drainage ditch is approximately 2 feet wide and is comprised of dirt bed and banks. No water was observed within the eastern portion, but ponded water was observed within the western portion of the ditch that occurs within the study area. Dominant overstory vegetation includes valley oak adjacent to the banks. Dominant understory vegetation within and along the banks consists of upland species including tall sock-destroyer, winter vetch, and greater periwinkle. Drainage ditches are classified as “riverine lower perennial” using the *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC, 2013).

Although the ephemeral drainage ditch is a manmade feature excavated in uplands, it drains to the Napa River, thence to San Pablo Bay, a territorial sea. Therefore, the ditch contributes flow, through another water, into a TNW. Consequently, the ditch is likely considered jurisdictional.

5.2 Conclusions

A total of approximately 4.6 acres of aquatic resources occur within the 14.26-acre study area. Of the 4.6 acres, 3.72 acres of storage ponds may be excluded by rule from being considered jurisdictional based on the 2015 Clean Water Rule paragraphs (b)(3)(i) and (b)(3)(ii).

This report documents the aquatic resources boundary delineation and the best professional judgment of ESA investigators. All conclusions presented should be considered preliminary and subject to change pending official review and preliminary jurisdictional determination in writing by the USACE.

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CHAPTER 6
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Appendix A

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Calistoga Riverside Pond Relocation Project City/County: City of Calistoga Sampling Date: 03/21/2019

Applicant/Owner: ______ State: CA Sampling Point: 1

Investigator(s): Kelly Bayne, Julie McNamara Section, Township, Range: ______

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): C Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: ______ NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No ✓
Hydric Soil Present?	Yes ___	No ✓
Wetland Hydrology Present?	Yes ___	No ✓

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:
erosional swale along bank that formed beneath the pipeline that crosses Simmons Creek. No defined bed and bank.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ______)			
1. Rubus armeniacus	30	Yes	FAC
2. Vicia sativa	20	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
	50 = Total Cover		

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 = 0
FACW species		x 2 = 0
FAC species	30	x 3 = 90
FACU species	20	x 4 = 80
UPL species		x 5 = 0
Column Totals:	50 (A)	170 (B)

Prevalence Index = B/A = 3.4

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:
remaining 50 percent of ground is covered by downed debris, likely to prevent erosion.

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10 YR 3/3	100					loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: cement-concrete blocks

Depth (inches): 8

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No ✓	Depth (inches): ___
Water Table Present?	Yes ___	No ✓	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No ✓	Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Calistoga Riverside Pond Relocation Project City/County: City of Calistoga Sampling Date: 03/21/2019

Applicant/Owner: ______ State: CA Sampling Point: 2

Investigator(s): Kelly Bayne, Julie McNamara Section, Township, Range: ______

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): C Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: ______ NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

erosional swale that lacks an ordinary high water mark and a defined bed and bank along a hillslope.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ______)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus lobata	30	Yes	FACU
2. Umbellularia californica	5		
3.			
4.			
	35 = Total Cover		
Sapling/Shrub Stratum (Plot size: ______)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ______)			
1. Vinca major	40	Yes	UPL
2. Torilis arvensis	40	Yes	UPL
3.			
4.			
5.			
6.			
7.			
8.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust ______

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ______	x 1 = ______
FACW species ______	x 2 = ______
FAC species ______	x 3 = ______
FACU species ______	x 4 = ______
UPL species ______	x 5 = ______
Column Totals: ______ (A)	______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/3	100					loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
✓ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______
Water Table Present? Yes ______ No ✓ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix B
Study Area Photographs

Photograph 1
View northwest of developed areas and oak woodland from the eastern portion of the study area.

Photograph 2
View west of the developed areas within the eastern portion of the study area.

Photograph 3
View northwest of the developed areas within the eastern portion of the study area.

Photograph 4
View southwest of existing pipeline crossing over Simmons Creek and surrounding riparian woodland.

Photograph 5
View northwest of developed areas associated with the existing bridge that crosses Simmons Creek.

Photograph 6
View south of Simmons Creek and surrounding riparian woodland from the central portion of the study area.

Photograph 7
View of erosional area along bank of Simmons Creek beneath the existing pipeline. Datapoint 1 was taken here.

Photograph 8
View northwest of manmade storage pond and oak woodland from the central portion of the study area.

Photograph 9
View northwest of riparian woodland along the Napa River from the southern boundary of the study area.

Photograph 10
View southeast of riparian woodland and the Napa River from the southern boundary of the study area.

Photograph 11
View northwest of the riparian woodland and ruderal/disturbed areas within the southern portion of the study area and the Napa River outside the southern portion of the study area.

Photograph 12
View northwest of storage pond 3 and surrounding oak woodland from the western portion of the study area.

Photograph 13
View southeast of low upland swale area where datapoint 2 was taken.

Photograph 14
View northwest of Oat Hill Mine Ditch outside the western boundary of the study area.

Photograph 15
View northwest of storage pond 4 from the western portion of the study area.

Photograph 16
View northeast of ruderal/disturbed area and riparian woodland within the study area and the Oat Hill Mine Ditch outside the western boundary of the study area.

Photograph 17
View northwest of the manmade drainage ditch from the north-central portion of the study area.

Photograph 18
View southeast of manmade drainage ditch from the north-central portion of the study area.

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Appendix C
Aquatic Resources

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude
Pond 1	California	PUB	DEPRESS	Area	0.7	ACRE	EXCLDB1	38.57194600	-122.55944100
Pond 2	California	PUB	DEPRESS	Area	0.61	ACRE	EXCLDB1	38.57244800	-122.56068900
Pond 3	California	PUB	DEPRESS	Area	1.05	ACRE	EXCLDB2	38.57282700	-122.56176500
Pond 4	California	PUB	DEPRESS	Area	1.36	ACRE	EXCLDB1	38.57348600	-122.56320500
Riverine Upper Perennial	California	R3RB	RIVERINE	Area	0.5	ACRE	A5	38.57228400	-122.56171600
Riverine Intermittent 1	California	R2	RIVERINE	Area	0.08	ACRE	A5	38.57405700	-122.56419100
Riverine Intermitent 2	California	R2	RIVERINE	Area	0.24	ACRE	A5	38.57168200	-122.55878600
Ephemeral Drainage	California	R2	RIVERINE	Area	0.04	ACRE	A5	38.57211300	-122.55891800

APPENDIX D

Native American Correspondence

Native American Correspondence Log

No.	Date	From	To	Type	Subject
1	March 19, 2019	Robin Hoffman (Environmental Science Associates [ESA])	California Native American Heritage Commission (NAHC), Gayle Totton (NAHC)	email with formal request and map	Sacred Lands File (SLF) search request and Native American contacts list request.
2	April 17, 2019	Katy Sanchez (NAHC)	Robin Hoffman	email with attachment	SLF search results (negative) and Native American contact list (6).
3	April 28, 2019	Derek Rayner (City of Calistoga)	Gene Buvelot (Federated Indians of Graton Rancheria [FIGR])	letter with map, via USPS certified mail	Project information and request for information on or concerns about cultural resources that may be impacted.
4	April 28, 2019	Derek Rayner	Scott Gabaldon (Mishewal-Wappo Tribe of Alexander Valley)	letter with map, via USPS certified mail	Project information and request for information on or concerns about cultural resources that may be impacted.
5	April 28, 2019	Derek Rayner	Anthony Roberts (Yocha Dehe Wintun Nation [YDWN])	letter with map, via USPS certified mail	Project information and request for information on or concerns about cultural resources that may be impacted.
6	April 28, 2019	Derek Rayner	Greg Sarris (FIGR)	letter with map, via USPS certified mail	Project information and request for information on or concerns about cultural resources that may be impacted.
7	April 28, 2019	Derek Rayner	Jose Simon III (Middletown Rancheria)	letter with map, via USPS certified mail	Project information and request for information on or concerns about cultural resources that may be impacted.
8	April 28, 2019	Derek Rayner	Charlie Wright (Cortina Indian Rancheria of Wintun Indians)	letter with map, via USPS certified mail	Project information and request for information on or concerns about cultural resources that may be impacted.
9	May 13, 2019	Isaac Bojorquez (YDWN)	Derek Rayner	letter	Project is outside of tribe's aboriginal territory and does not have any comment on the Project. Tribe defers all correspondence to the Mishewal Wappo Tribe of the Alexander Valley.
10	May 22, 2019	Buffy McQuillen (FIGR)	Derek Rayner	email	Project is outside of tribe's aboriginal territory and does not have any comment on the Project.
11	May 23, 2019	Derek Rayner	Buffer McQuillen	email	Thanking for the previous email.

Robin Hoffman

From:	Robin Hoffman
Sent:	Tuesday, March 19, 2019 11:48 AM
To:	NAHC (nahc@nahc.ca.gov); Gayle Totton (Gayle.Totton@nahc.ca.gov)
Subject:	SLF Search and Native American Contacts: Calistoga Riverside Ponds and Headworks Phase I Project
Attachments:	D160251.01_NAHC_request.pdf

I would like to request a Sacred Lands File search and list of Native American contacts for the Calistoga Riverside Ponds and Headworks Phase I Project, in Napa County. This request is to support cultural resources mitigation measures required the California Environmental Quality Act and Section 106 of the National Historic Preservation Act. The formal request form and project location map are attached. Please let me know if you have any questions.
Thank you,

Robin Hoffman, MA, RPA
Senior Archaeologist

ESA | Environmental Science Associates
Celebrating 50 Years of Work that Matters!

1425 N. McDowell Ave., Suite 200
Petaluma, CA, 94954
707.795.0900 main
707.796.7006 direct
707.494.3349 mobile
rhoffman@esassoc.com | esassoc.com

Follow us on LinkedIn | Facebook | Twitter | Instagram | Vimeo

Sacred Lands File & Native American Contacts List Request

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
916-373-3710
916-373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Request Date: March 19, 2019

Project: Calistoga Riverside Ponds and Headworks Phase I Project

County: Napa

USGS Quadrangle Name: Calistoga, CA

Township: (Unsectioned) Rancho Carne Humana **Range:** **Section(s):**

Company/Firm/Agency: Environmental Science Associates

Street Address: 1425 N. McDowell Blvd., Ste. 200, Petaluma, CA 94954

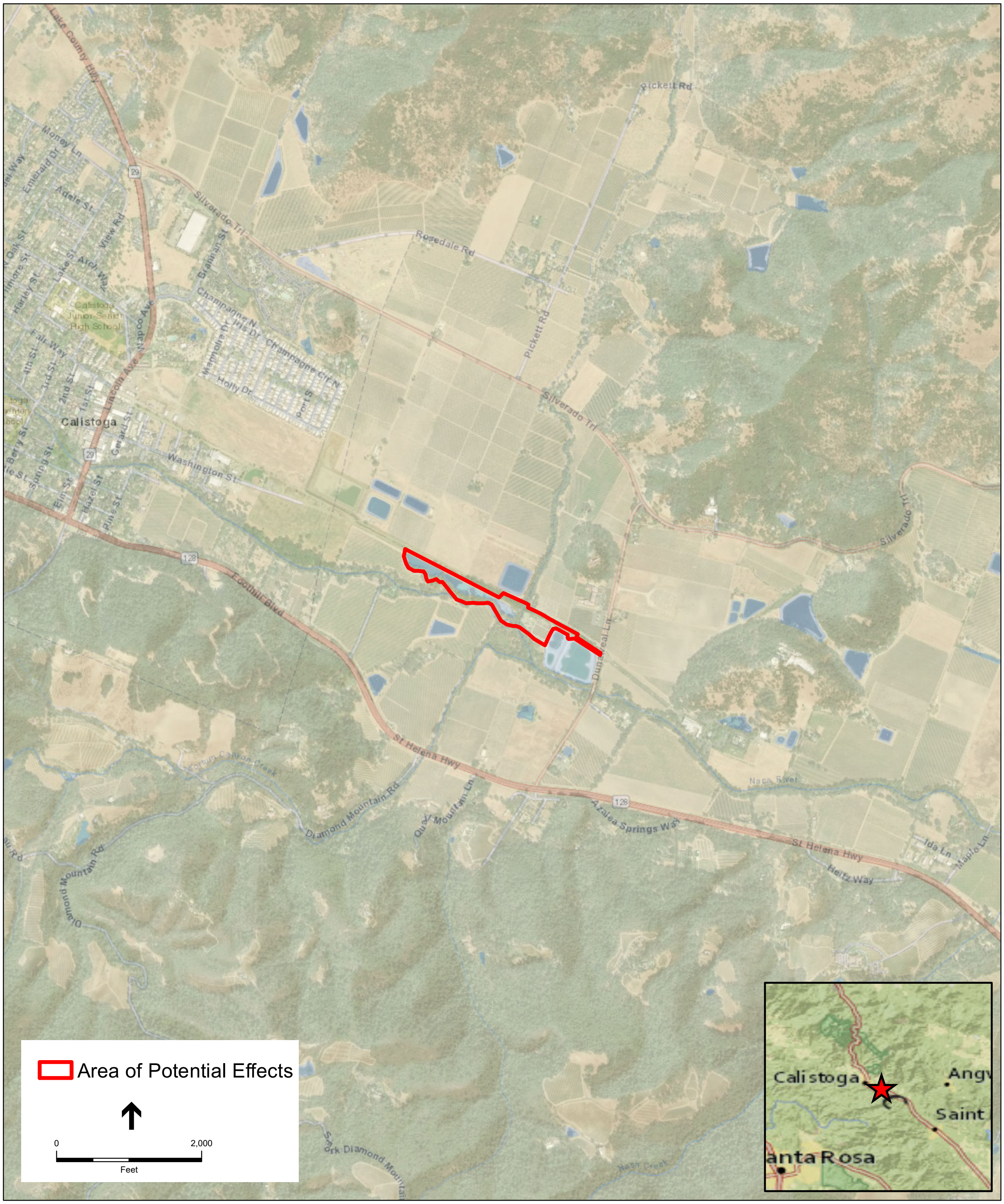
Phone: 707-796-7006

Fax: 707-795-0902

Email: rhoffman@esassoc.com

Project Description:

The City of Calistoga (City) proposes the project, which would improve channel banks, raise berms, construct a drainage ditch, and install grade control structures at the City wastewater treatment plant, in Calistoga, CA. The project is subject to compliance with the California Environmental Quality Act (CEQA) and Section 106 of the National Historic Preservation Act (Section 106), with the City and Federal Emergency Management Agency acting as lead reviewing agency for CEQA and Section 106, respectively. Please include in your results a list of Native American representatives that should be contacted about potential resources of importance to Native Americans to support compliance with CEQA and Section 106.



SOURCE: ESRI, 2019; ESA, 2019

Calistoga Riverside Ponds and Headworks Phase I Project. 160251.01

Figure 1
NAHC Correspondence

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
Twitter: @CA_NAHC

April 12, 2019

Robin Hoffman
Environmental Science Associates

VIA Email to: rhoffman@esassoc.com

RE: Calistoga Riverside Ponds and Headworks Phase I Project, Napa County.

Dear Ms. Hoffman:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our lists contain current information. If you have any questions or need additional information, please contact me at my email address: Katy.sanchez@nahc.ca.gov.

Sincerely,

Katy Sanchez

KATY SANCHEZ
Associate Environmental Planner

Attachment

Native American Heritage Commission
Native American Contacts List
4/11/2019

Cortina Rancheria - Kletsel Dehe Band of Wintun Indians
Charlie Wright, Chairperson
P.O. Box 1630 — Wintun / Patwin
Williams ,CA 95987
(530) 473-3274 Office
(530) 473-3301 Fax

Yocha Dehe Wintun Nation
Anthony Roberts, Chairperson
P.O. Box 18 — Wintun (Patwin)
Brooks ,CA 95606
aroberts@yochadehe-nsn.gov
(530) 796-3400
(530) 796-2143 Fax

Federated Indians of Graton Rancheria
Gene Buvelot
6400 Redwood Drive, Ste 300 — Coast Miwok
Rohnert Park ,CA 94928 — Southern Pomo
gbuvelot@gratonrancheria.com
(415) 279-4844 Cell
(707) 566-2288 ext 103

Federated Indians of Graton Rancheria
Greg Sarris, Chairperson
6400 Redwood Drive, Ste 300 — Coast Miwok
Rohnert Park ,CA 94928 — Southern Pomo
gbuvelot@gratonrancheria.com
(707) 566-2288 Office
(707) 566-2291 Fax

Middletown Rancheria
Jose Simon III, Chairperson
P.O. Box 1035 — Pomo
Middletown ,CA 95461 — Lake Miwok
sshope@middletownrancheria.com
(707) 987-3670 Office
(707) 987-9091 Fax

Mishewal-Wappo Tribe of Alexander Valley
Scott Gabaldon, Chairperson
2275 Silk Road — Wappo
Windsor ,CA 95492
scottg@mishewalwappotribe.com
(707) 494-9159

This list is current as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code,Section 5097.94 of the Public Resources Code, or Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native American Tribes for the proposed: Calistoga Riverside Ponds and Headworks Phase I Project, Napa County

CITY OF CALISTOGA

1232 Washington Street • Calistoga, CA 94515
Telephone 707-942-2828 – Public Works Dept.
Fax 707-942-9472
www.ci.calistoga.ca.us

April 28, 2019

Gene Buvelot
Federated Indians of Graton Rancheria
6400 Redwood Drive, Ste. 300
Rohnert Park, CA 94928

COPY

RE: Calistoga Riverside Ponds and Headworks Phase I Project

Dr. Mr. Buvelot:

The City of Calistoga (City) has proposed the Calistoga Riverside Ponds and Headworks Phase I Project (Project), which would improve channel banks, raise berms, construct a drainage ditch, and install grade control structures at the City wastewater treatment plant, in Calistoga, California. The Project is depicted on the Calistoga, California U.S. Geological Survey 7.5-minute quadrangle map, in a portion of the unsectioned Rancho Carne Humana, in Napa County (see attached map).

Because the Project is receiving funds from the Federal Emergency Management Agency (FEMA), it is subject to federal environmental regulations, including Section 106 of the National Historic Preservation Act of 1966 (NHPA), with FEMA acting as the lead federal agency for NHPA purposes. The Project is also subject to review under the California Environmental Quality Act (CEQA), with the City acting as lead CEQA agency.

The California Native American Heritage Commission (NAHC) Sacred Lands File (SLF) search results for the Project stated that no known sacred sites are located in the Project Area. The NAHC also provided your name and contact information as a Native American representative who may have knowledge of cultural resources in the Project vicinity.

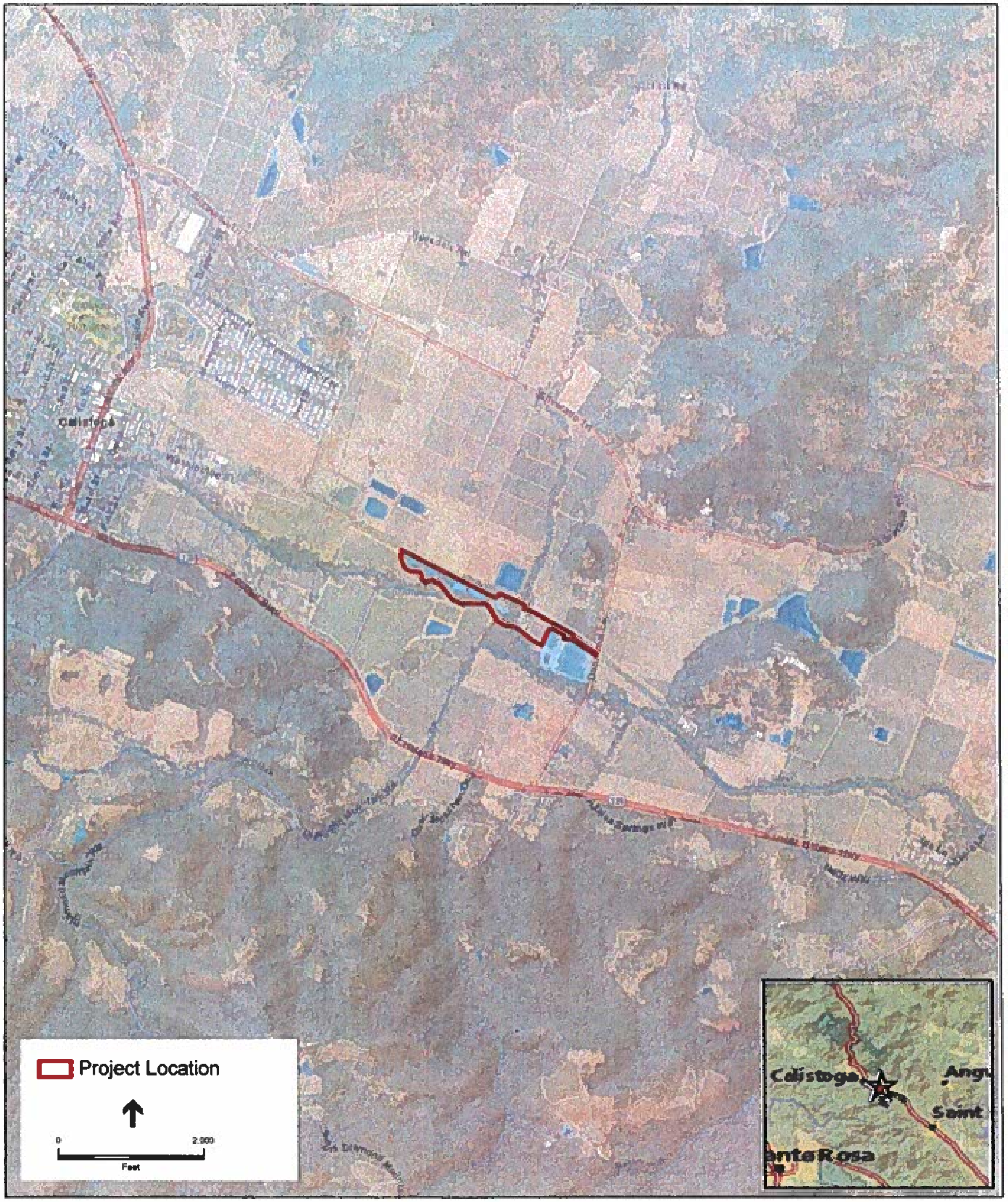
The City invites you to share information you may have regarding cultural resources in Project vicinity. Any information you provide regarding locations of cultural resources will be kept confidential in accordance with federal and state regulations. Your assistance in identifying resources so they may be avoided and protected whenever feasible is greatly appreciated.

If you have concerns or questions regarding the Project, please notify me by email at drayner@ci.calistoga.ca.us, by phone at 707-942-2828, or by mail at the address above. Thank you for your time and cooperation.

Sincerely,

Derek Rayner, PE, QSD/P, LEED GA
Deputy Public Works Director

Attachment: Project Location Map



SOURCE: ESRI, 2019; ESA, 2019

Calistoga Riverside Ponds and Headworks Phase I Project. 160251.01

Figure 1
Project Location

PLACE STICKER AT TOP OF ENVELOPE TO THE RIGHT OF THE RETURN ADDRESS, FOLD AT DOTTED LINE

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1\. Article Addressed to:

Gene Buvelot
Federated Indians of Graton Rancheria
6400 Redwood Dr., Suite 300
Rohnert Park, CA 94928

9590 9402 3020 7124 9259 91

2\. Article Number (Transfer from service label)

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CITY OF CALISTOGA

1232 Washington Street • Calistoga, CA 94515
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Fax 707-942-9472
www.ci.calistoga.ca.us

April 28, 2019

Scott Gabaldon, Chairperson
Mishewal-Wappo Tribe of Alexander Valley
2275 Silk Road
Windsor, CA 95492

COPY

RE: **Calistoga Riverside Ponds and Headworks Phase I Project**

Honorable Chairperson Gabaldon:

The City of Calistoga (City) has proposed the Calistoga Riverside Ponds and Headworks Phase I Project (Project), which would improve channel banks, raise berms, construct a drainage ditch, and install grade control structures at the City wastewater treatment plant, in Calistoga, California. The Project is depicted on the Calistoga, California U.S. Geological Survey 7.5-minute quadrangle map, in a portion of the unsectioned Rancho Carne Humana, in Napa County (see attached map).

Because the Project is receiving funds from the Federal Emergency Management Agency (FEMA), it is subject to federal environmental regulations, including Section 106 of the National Historic Preservation Act of 1966 (NHPA), with FEMA acting as the lead federal agency for NHPA purposes. The Project is also subject to review under the California Environmental Quality Act (CEQA), with the City acting as lead CEQA agency.

The California Native American Heritage Commission (NAHC) Sacred Lands File (SLF) search results for the Project stated that no known sacred sites are located in the Project Area. The NAHC also provided your name and contact information as a Native American representative who may have knowledge of cultural resources in the Project vicinity.

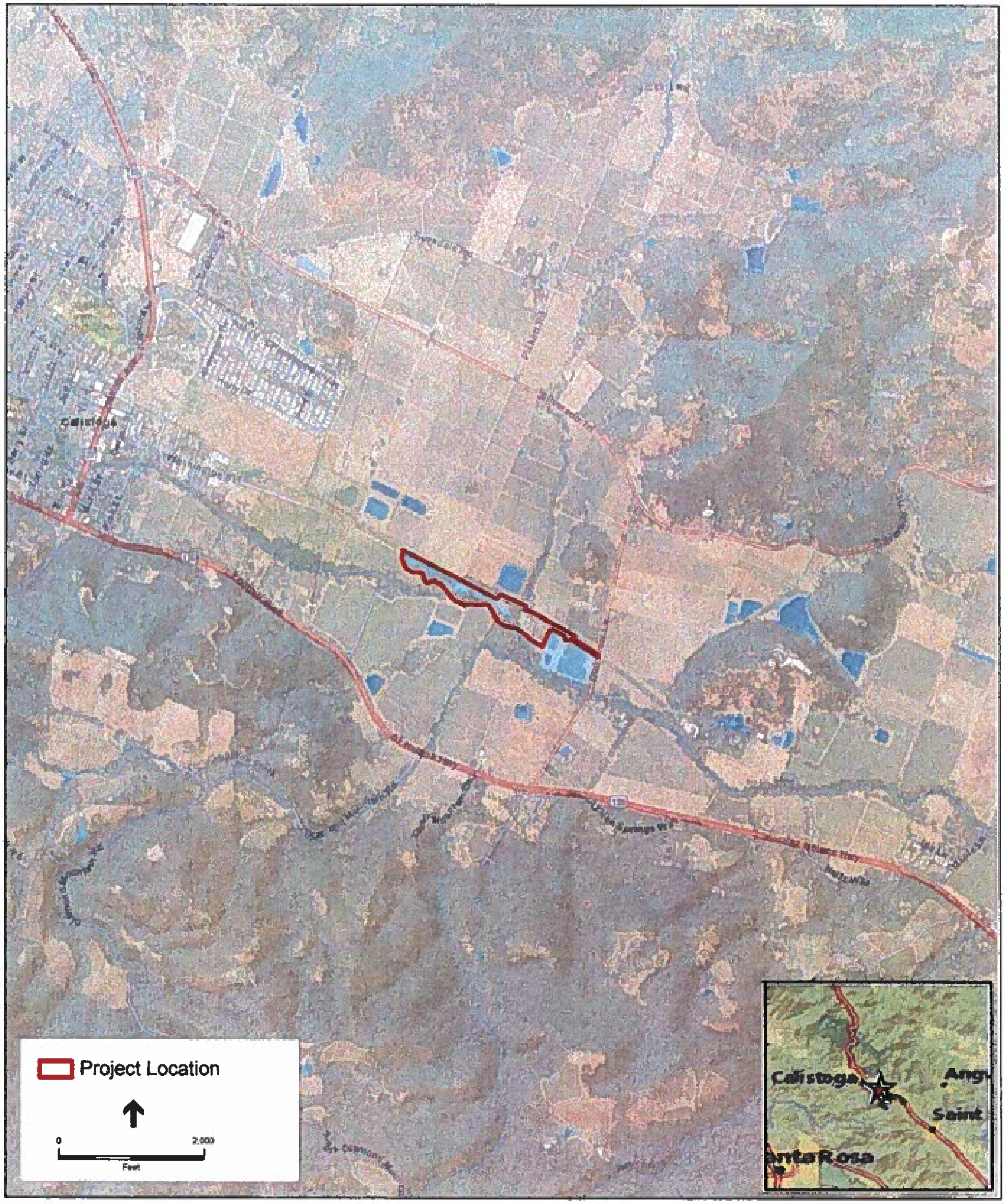
The City invites you to share information you may have regarding cultural resources in Project vicinity. Any information you provide regarding locations of cultural resources will be kept confidential in accordance with federal and state regulations. Your assistance in identifying resources so they may be avoided and protected whenever feasible is greatly appreciated.

If you have concerns or questions regarding the Project, please notify me by email at drayner@ci.calistoga.ca.us, by phone at 707-942-2828, or by mail at the address above. Thank you for your time and cooperation.

Sincerely,

Derek Rayner, PE, QSD/P, LEED GA
Deputy Public Works Director

Attachment: Project Location Map



SOURCE: ESRI, 2019; ESA, 2019

Calistoga Riverside Ponds and Headworks Phase I Project. 160251.01

Figure 1
Project Location

SENDER: COMPLETE THIS SECTION

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Scott Gabaldon, Chairperson
Mishewal-Wappo Tribe of
Alexander Valley
2275 Silk Road
Windsor, CA 95492

9590 9402 3020 7124 9259 84

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Street: 2275 Silk Road
City: Windsor, CA 95492

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www.ci.calistoga.ca.us

April 28, 2019

Anthony Roberts, Chairperson
Yocha Dehe Wintun Nation
P.O. Box 18
Brooks, CA 95606

COPY

RE: Calistoga Riverside Ponds and Headworks Phase I Project

Honorable Chairperson Roberts:

The City of Calistoga (City) has proposed the Calistoga Riverside Ponds and Headworks Phase I Project (Project), which would improve channel banks, raise berms, construct a drainage ditch, and install grade control structures at the City wastewater treatment plant, in Calistoga, California. The Project is depicted on the Calistoga, California U.S. Geological Survey 7.5-minute quadrangle map, in a portion of the unsectioned Rancho Carne Humana, in Napa County (see attached map).

Because the Project is receiving funds from the Federal Emergency Management Agency (FEMA), it is subject to federal environmental regulations, including Section 106 of the National Historic Preservation Act of 1966 (NHPA), with FEMA acting as the lead federal agency for NHPA purposes. The Project is also subject to review under the California Environmental Quality Act (CEQA), with the City acting as lead CEQA agency.

The California Native American Heritage Commission (NAHC) Sacred Lands File (SLF) search results for the Project stated that no known sacred sites are located in the Project Area. The NAHC also provided your name and contact information as a Native American representative who may have knowledge of cultural resources in the Project vicinity.

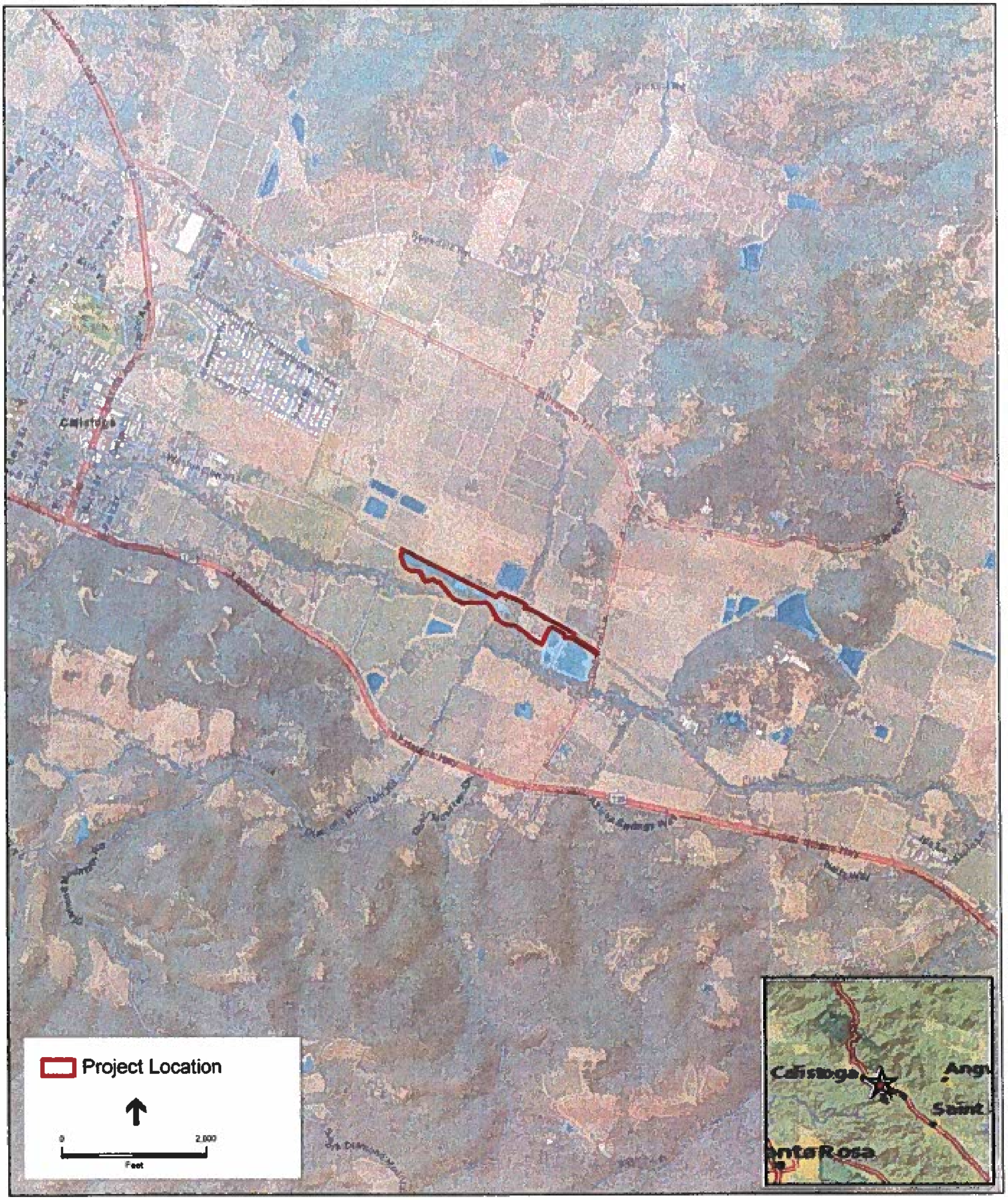
The City invites you to share information you may have regarding cultural resources in Project vicinity. Any information you provide regarding locations of cultural resources will be kept confidential in accordance with federal and state regulations. Your assistance in identifying resources so they may be avoided and protected whenever feasible is greatly appreciated.

If you have concerns or questions regarding the Project, please notify me by email at drayner@ci.calistoga.ca.us, by phone at 707-942-2828, or by mail at the address above. Thank you for your time and cooperation.

Sincerely,

Derek Rayner, PE, QSD/P, LEED GA
Deputy Director

Attachment: Project Location Map



SOURCE: ESRI, 2019; ESA, 2019

Calistoga Riverside Ponds and Headworks Phase I Project. 160251.01

Figure 1
Project Location

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1. Article Addressed to:

Anthony Roberts, Chairperson
Yocha Dehe Wintun Nation
P.O. Box 18
Brooks, CA 95606

9590 9402 3020 7124 9259 77

2. Article Number (Transfer from service label)
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CITY OF CALISTOGA

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Fax 707-942-9472
www.ci.calistoga.ca.us

April 28, 2019

COPY

Greg Sarris, Chairperson
Federated Indians of Graton Rancheria
6400 Redwood Drive, Ste. 300
Rohnert Park, CA 94928

RE: Calistoga Riverside Ponds and Headworks Phase I Project

Honorable Chairperson Sarris:

The City of Calistoga (City) has proposed the Calistoga Riverside Ponds and Headworks Phase I Project (Project), which would improve channel banks, raise berms, construct a drainage ditch, and install grade control structures at the City wastewater treatment plant, in Calistoga, California. The Project is depicted on the Calistoga, California U.S. Geological Survey 7.5-minute quadrangle map, in a portion of the unsectioned Rancho Carne Humana, in Napa County (see attached map).

Because the Project is receiving funds from the Federal Emergency Management Agency (FEMA), it is subject to federal environmental regulations, including Section 106 of the National Historic Preservation Act of 1966 (NHPA), with FEMA acting as the lead federal agency for NHPA purposes. The Project is also subject to review under the California Environmental Quality Act (CEQA), with the City acting as lead CEQA agency.

The California Native American Heritage Commission (NAHC) Sacred Lands File (SLF) search results for the Project stated that no known sacred sites are located in the Project Area. The NAHC also provided your name and contact information as a Native American representative who may have knowledge of cultural resources in the Project vicinity.

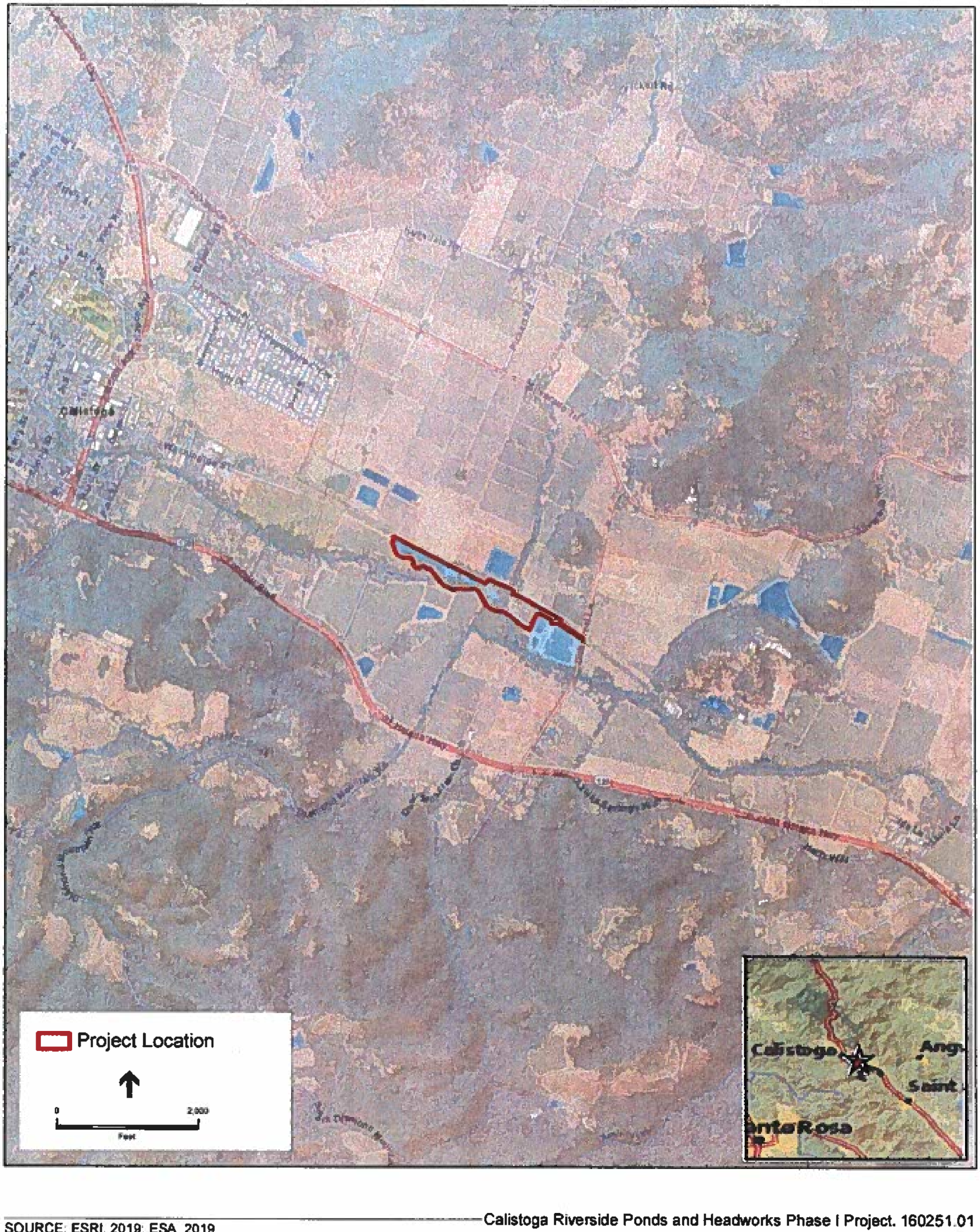
The City invites you to share information you may have regarding cultural resources in Project vicinity. Any information you provide regarding locations of cultural resources will be kept confidential in accordance with federal and state regulations. Your assistance in identifying resources so they may be avoided and protected whenever feasible is greatly appreciated.

If you have concerns or questions regarding the Project, please notify me by email at drayner@ci.calistoga.ca.us, by phone at 707-942-2828, or by mail at the address above. Thank you for your time and cooperation.

Sincerely,

Derek Rayner, PE, QSD/P, LEED GA
Deputy Public Works Director

Attachment: Project Location Map



SOURCE: ESRI, 2019; ESA, 2019

Calistoga Riverside Ponds and Headworks Phase I Project. 160251.01

Figure 1
Project Location

PLACE STICKER AT TOP OF ENVELOPE TO THE RIGHT

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1. Article Addressed to: Greg Sarris, Chairperson Federated Indians of Graton Rancheria 6400 Redwood Dr., Suite 300 Rohnert Park, CA 94928	D. Is delivery address different from item 1? ☐ Yes If YES, enter delivery address below: ☐ No
9590 9402 3020 7124 9259 60	3. Service Type ☒ Adult Signature ☐ Adult Signature Restricted Delivery ☒ Certified Mail® ☐ Certified Mail Restricted Delivery ☐ Collect on Delivery ☐ Collect on Delivery Restricted Delivery ☐ Insured Mail ☐ Insured Mail Restricted Delivery (over $500) ☐ Priority Mail Express® ☐ Registered Mail™ ☐ Registered Mail Restricted Delivery ☐ Return Receipt for Merchandise ☐ Signature Confirmation™ ☐ Signature Confirmation Restricted Delivery
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☐ Certified Mail Restricted Delivery	$
☒ Adult Signature Required	$
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Greg Sarris-Graton Rancheria
6400 Redwood Dr., Suite 300
Rohnert Park, CA 94928

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CITY OF CALISTOGA

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Fax 707-942-9472
www.ci.calistoga.ca.us

April 28, 2019

COPY

Jose Simon III, Chairperson
Middletown Rancheria
P.O. Box 1035
Middletown, CA 95461

RE: Calistoga Riverside Ponds and Headworks Phase I Project

Honorable Chairperson Simon:

The City of Calistoga (City) has proposed the Calistoga Riverside Ponds and Headworks Phase I Project (Project), which would improve channel banks, raise berms, construct a drainage ditch, and install grade control structures at the City wastewater treatment plant, in Calistoga, California. The Project is depicted on the Calistoga, California U.S. Geological Survey 7.5-minute quadrangle map, in a portion of the unsectioned Rancho Carne Humana, in Napa County (see attached map).

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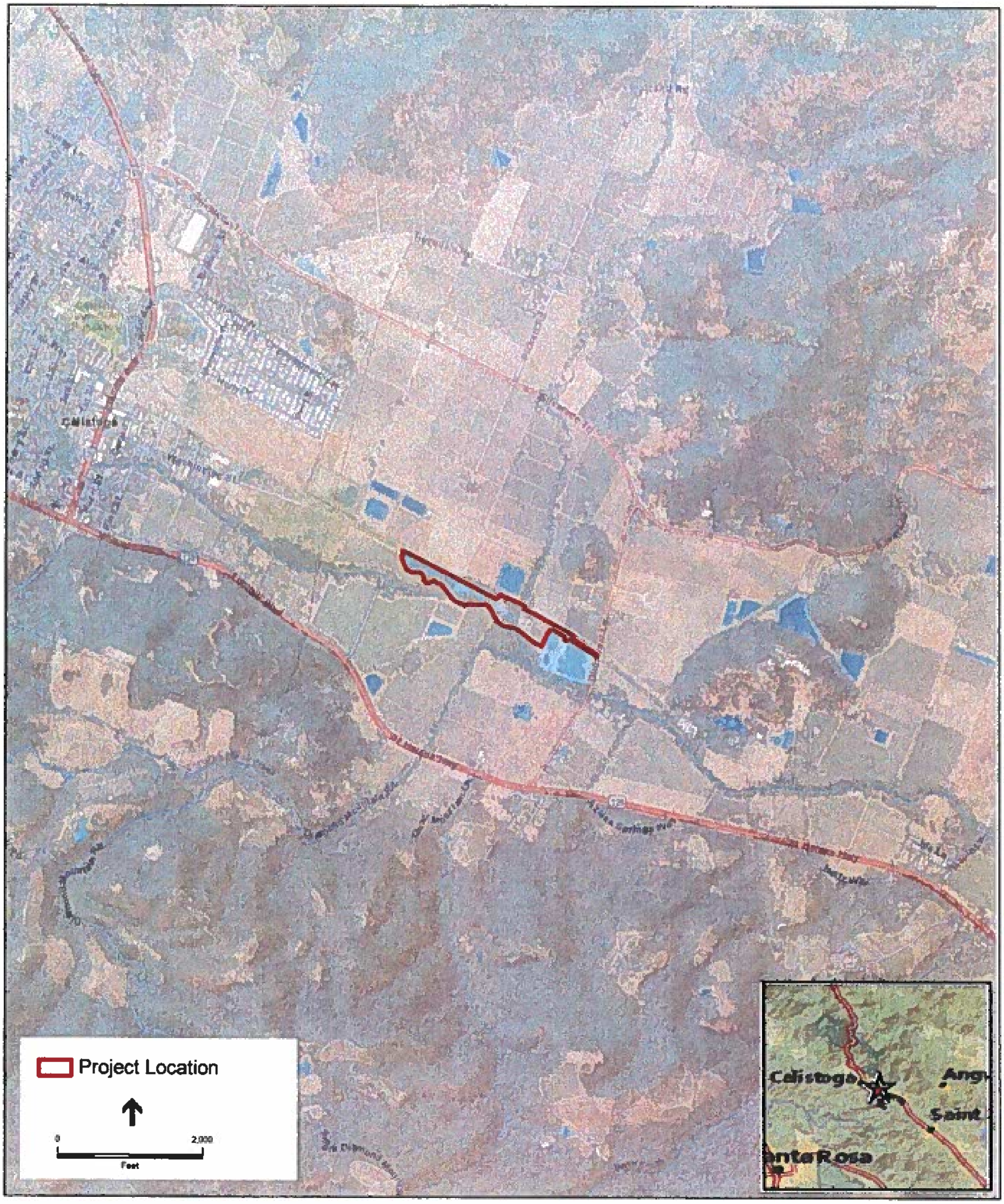
If you have concerns or questions regarding the Project, please notify me by email at drayner@ci.calistoga.ca.us, by phone at 707-942-2828, or by mail at the address above. Thank you for your time and cooperation.

Sincerely,

Derek Rayner, PE, QSD/P, LEED GA
Deputy Public Works Director

Attachment: Project Location Map



SOURCE: ESRI, 2019; ESA, 2019

Calistoga Riverside Ponds and Headworks Phase I Project. 160251.01

Figure 1
Project Location

SENDER: *COMPLETE THIS SECTION*

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- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Jose Simon III, Chairperson
Middletown Rancheria
P. O. Box 1035
Middletown, CA 95461

9590 9402 3020 7124 9260 11

2. Article Number (Transfer from service label)

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☐ Addressee

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APR 29
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Jose Simon – Middletown Rancheria
P. O. Box 1035
Middletown, CA 95461

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CITY OF CALISTOGA

1232 Washington Street • Calistoga, CA 94515
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Fax 707-942-9472
www.ci.calistoga.ca.us

April 26, 2019

Charlie Wright, Chairperson
Cortina Indian Rancheria of Wintun Indians
P.O. Box 1630
Williams, CA 95987

COPY

RE: Calistoga Riverside Ponds and Headworks Phase I Project

Honorable Chairperson Wright:

The City of Calistoga (City) has proposed the Calistoga Riverside Ponds and Headworks Phase I Project (Project), which would improve channel banks, raise berms, construct a drainage ditch, and install grade control structures at the City wastewater treatment plant, in Calistoga, California. The Project is depicted on the Calistoga, California U.S. Geological Survey 7.5-minute quadrangle map, in a portion of the unsectioned Rancho Carne Humana, in Napa County (see attached map).

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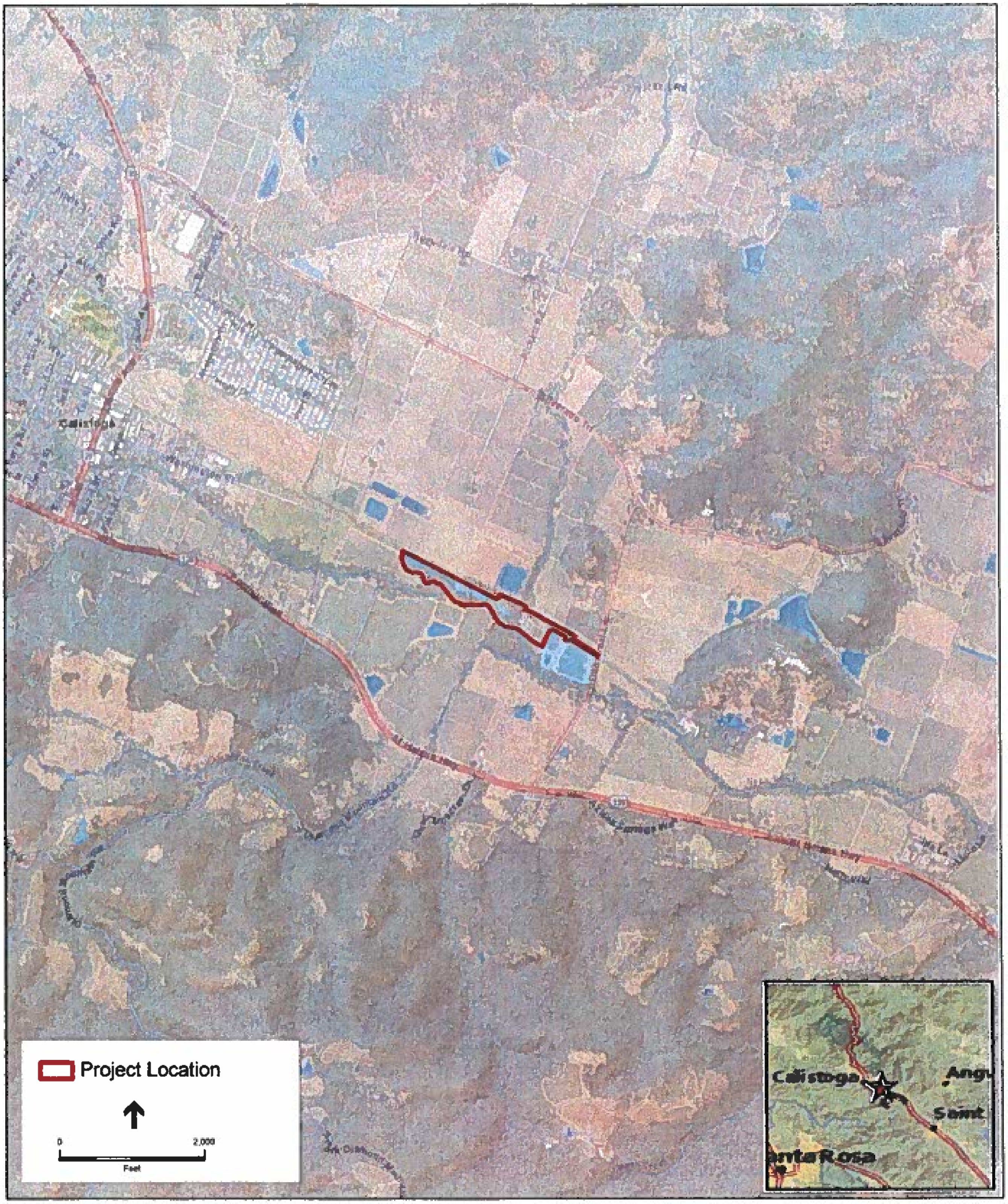
Sincerely,

Derek Rayner, PE, QSD/P, LEED GA
Deputy Public Works Director

Attachment: Project Location Map



SOURCE: ESRI, 2019; ESA, 2019

Calistoga Riverside Ponds and Headworks Phase I Project. 160251.01

Figure 1
Project Location

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Charlie Wright, Chairperson
Cortina Indian Rancheria of
Wintun Indians
P. O. Box 1630
Williams, CA 95987

9590 9402 3020 7124 9260 04

2. Article Number *(Transfer from service label)*

7015 1660 0000 7562 9810

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☐ Agent
☐ Addressee

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3. Service Type

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Charlie Wright-Cortina Rancheria
P. O. Box 1630
Williams, CA 95987

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YOCHA DEHE
CULTURAL RESOURCES

RECEIVED
MAY 1 7 2019
BY: ....

May 13, 2019

City of Calistoga
Attn: Derek Rayner, Deputy Director
1232 Washington Street
Calistoga, CA 94515

RE: Calistoga Riverside Ponds and Headworks Phase I Project

Dear Mr. Rayner:

Thank you for your project notification letter dated, April 28, 2019, regarding cultural information on or near the proposed Calistoga Riverside Ponds and Headworks Phase I Project, Napa County. We appreciate your effort to contact us.

The Cultural Resources Department has reviewed the project and concluded that it is not within the aboriginal territories of the Yocha Dehe Wintun Nation. Therefore, we respectively decline any comment on this project. However based on the information provided, please defer correspondence to the following:

Michewal – Wappo Tribe of Alexander Valley
Attn: Scott Gadaldon
2275 Silk Road
Windsor, CA 95492

Please refer to identification number YD – 05032019-02 in any future correspondence with Yocha Dehe Wintun Nation concerning this project.

Thank you for providing us with this notice and the opportunity to comment.

Sincerely,

Isaac Bojorquez
Interim Director of Cultural Resources

Yocha Dehe Wintun Nation
PO Box 18 Brooks, California 95606 p) 530.796.3400 f) 530.796.2143 www.yochadehe.org

Robin Hoffman

From:	Derek Rayner <drayner@ci.calistoga.ca.us>
Sent:	Wednesday, May 22, 2019 10:10 AM
To:	THPO@gratonrancheria.com
Cc:	Robin Hoffman; Scott Stoller
Subject:	RE: City of Calistoga, Calistoga Riverside Ponds and Headworks Phase 1
Follow Up Flag:	FollowUp
Flag Status:	Flagged
Categories:	CC'd

Thank you for your response Buffy.

Derek Rayner, PE, QSD/P, LEED GA
City of Calistoga | Public Works Department
Deputy Director| Phone: 707.942.2828
www.ci.calistoga.ca.us

From: THPO@gratonrancheria.com [mailto:THPO@gratonrancheria.com]
Sent: Wednesday, May 22, 2019 9:45 AM
To: Derek Rayner
Subject: City of Calistoga, Calistoga Riverside Ponds and Headworks Phase 1

Dear Derik Rayner,

The Federated Indians of Graton Rancheria, a federally recognized Tribe and sovereign government has received your correspondence requesting information on a project located at City of Calistoga, Calistoga Riverside Ponds and Headworks Phase 1. The Tribe has reviewed the location of the project and we have determined it is not in our traditional ancestral territory, therefore have no comments on this project, at this time. We appreciate the opportunity to review the project proposal. If you have any additional questions regarding this letter please feel free to email my office at thpo@gratonrancheria.com or call the office at (707) 566-2288.

Sincerely,
Buffy McQuillen
Tribal Heritage Preservation Officer (THPO)
Native American Graves Protection and Repatriation Act (NAGPRA)
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APPENDIX E

GHG Calculations

CalEEMod Outputs

Construction Emissions

Calistoga Riverside Pond Relocation Project

San Francisco Bay Area Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Recreational	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	4			**Operational Year**	2020
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

Project Characteristics -

Land Use - Land use type is not needed; construction emissions only.

Construction Phase - Based on Project Description

Off-road Equipment - Based on project description Tables 1 and 2.

Off-road Equipment - Based on project description Tables 1 and 2.

Off-road Equipment - Based on project description Tables 1 and 2.

Off-road Equipment - Equipment use assumptions based on project description Tables 1 and 2.

Trips and VMT - Cut and fill would be balanced onsite. Haul trips for the other phases would be two 1-way trips per day. Earthwork trips are only for the Rock import. Stockpile modeled separately.

Calistoga Riverside Pond Relocation Project - San Francisco Bay Area Air Basin, Annual

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Parking	250	0
tblConstructionPhase	NumDays	0.00	10.00
tblConstructionPhase	NumDays	0.00	30.00
tblConstructionPhase	NumDays	0.00	10.00
tblConstructionPhase	NumDays	0.00	30.00
tblFleetMix	HHD	0.02	0.00
tblFleetMix	LDA	0.57	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.19	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.3710e-003	0.00
tblFleetMix	MCY	5.9420e-003	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MH	8.1200e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	2.5450e-003	0.00
tblFleetMix	SBUS	8.7700e-004	0.00
tblFleetMix	UBUS	2.4420e-003	0.00
tblOffRoadEquipment	HorsePower	130.00	125.00
tblOffRoadEquipment	UsageHours	7.00	3.00
tblOffRoadEquipment	UsageHours	7.00	3.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblTripsAndVMT	HaulingTripLength	20.00	42.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	180.00

tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripLength	10.80	20.00
tblTripsAndVMT	WorkerTripLength	10.80	20.00
tblTripsAndVMT	WorkerTripLength	10.80	20.00
tblTripsAndVMT	WorkerTripLength	10.80	20.00
tblTripsAndVMT	WorkerTripNumber	13.00	10.00
tblTripsAndVMT	WorkerTripNumber	5.00	10.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00

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					
2019	0.0504	0.5426	0.3148	8.7000e-004	0.1004	0.0223	0.1227	0.0524	0.0206	0.0729	0.0000	79.1906	79.1906	0.0182	0.0000	79.6444
Maximum	**0.0504**	**0.5426**	**0.3148**	**8.7000e-004**	**0.1004**	**0.0223**	**0.1227**	**0.0524**	**0.0206**	**0.0729**	**0.0000**	**79.1906**	**79.1906**	**0.0182**	**0.0000**	**79.6444**

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					
2019	0.0504	0.5426	0.3148	8.7000e-004	0.1004	0.0223	0.1227	0.0524	0.0206	0.0729	0.0000	79.1905	79.1905	0.0182	0.0000	79.6443
Maximum	**0.0504**	**0.5426**	**0.3148**	**8.7000e-004**	**0.1004**	**0.0223**	**0.1227**	**0.0524**	**0.0206**	**0.0729**	**0.0000**	**79.1905**	**79.1905**	**0.0182**	**0.0000**	**79.6443**

	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**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	8-5-2019	9-30-2019	0.3412	0.3412
		Highest	0.3412	0.3412

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	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
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
Mobile	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
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						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**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

2.2 Overall Operational

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	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
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
Mobile	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
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						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**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

	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	Site Preparation	Site Preparation	8/5/2019	8/16/2019	5	10	
2	Napa Valley Vine Trail Realignment	Grading	8/19/2019	8/30/2019	5	10	
3	Earthwork	Site Preparation	9/2/2019	10/11/2019	5	30	
4	Restoration and Revegetation	Paving	10/14/2019	11/22/2019	5	30	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Concrete/Industrial Saws	1	6.00	81	0.73
Site Preparation	Pavers	1	6.00	130	0.42
Site Preparation	Rollers	1	6.00	80	0.38
Site Preparation	Rubber Tired Dozers	1	6.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Napa Valley Vine Trail Realignment	Pavers	1	8.00	130	0.42
Napa Valley Vine Trail Realignment	Rollers	1	8.00	80	0.38
Earthwork	Excavators	1	6.00	158	0.38
Earthwork	Off-Highway Trucks	1	6.00	402	0.38
Earthwork	Rubber Tired Dozers	1	6.00	247	0.40
Restoration and Revegetation	Off-Highway Trucks	1	3.00	402	0.38
Restoration and Revegetation	Off-Highway Trucks	1	3.00	402	0.38
Restoration and Revegetation	Pavers	1	3.00	125	0.42
Restoration and Revegetation	Rollers	1	3.00	80	0.38

<u>Trips and VMT</u>

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
Site Preparation	5	10.00	2.00	20.00	20.00	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Napa Valley Vine Trail Realignment	2	10.00	2.00	20.00	20.00	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Earthwork	3	10.00	2.00	180.00	20.00	7.30	42.00	LD_Mix	HDT_Mix	HHDT
Restoration and Revegetation	4	10.00	2.00	20.00	20.00	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2019

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					0.0226	0.0000	0.0226	0.0124	0.0000	0.0124	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.7900e-003	0.0876	0.0566	9.0000e-005		4.7800e-003	4.7800e-003		4.4700e-003	4.4700e-003	0.0000	8.4056	8.4056	2.1600e-003	0.0000	8.4597
Total	**8.7900e-003**	**0.0876**	**0.0566**	**9.0000e-005**	**0.0226**	**4.7800e-003**	**0.0274**	**0.0124**	**4.4700e-003**	**0.0169**	**0.0000**	**8.4056**	**8.4056**	**2.1600e-003**	**0.0000**	**8.4597**

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	9.0000e-005	3.1300e-003	6.1000e-004	1.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.7745	0.7745	4.0000e-005	0.0000	0.7756
Vendor	5.0000e-005	1.2700e-003	3.2000e-004	0.0000	7.0000e-005	1.0000e-005	7.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.2635	0.2635	1.0000e-005	0.0000	0.2639
Worker	2.9000e-004	2.3000e-004	2.3000e-003	1.0000e-005	7.3000e-004	0.0000	7.4000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6529	0.6529	2.0000e-005	0.0000	0.6533
Total	**4.3000e-004**	**4.6300e-003**	**3.2300e-003**	**2.0000e-005**	**9.7000e-004**	**2.0000e-005**	**9.9000e-004**	**2.6000e-004**	**2.0000e-005**	**2.9000e-004**	**0.0000**	**1.6910**	**1.6910**	**7.0000e-005**	**0.0000**	**1.6928**

3.2 Site Preparation - 2019

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					0.0226	0.0000	0.0226	0.0124	0.0000	0.0124	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.7900e-003	0.0876	0.0566	9.0000e-005		4.7800e-003	4.7800e-003		4.4700e-003	4.4700e-003	0.0000	8.4056	8.4056	2.1600e-003	0.0000	8.4597
Total	**8.7900e-003**	**0.0876**	**0.0566**	**9.0000e-005**	**0.0226**	**4.7800e-003**	**0.0274**	**0.0124**	**4.4700e-003**	**0.0169**	**0.0000**	**8.4056**	**8.4056**	**2.1600e-003**	**0.0000**	**8.4597**

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	9.0000e-005	3.1300e-003	6.1000e-004	1.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.7745	0.7745	4.0000e-005	0.0000	0.7756
Vendor	5.0000e-005	1.2700e-003	3.2000e-004	0.0000	7.0000e-005	1.0000e-005	7.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.2635	0.2635	1.0000e-005	0.0000	0.2639
Worker	2.9000e-004	2.3000e-004	2.3000e-003	1.0000e-005	7.3000e-004	0.0000	7.4000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6529	0.6529	2.0000e-005	0.0000	0.6533
Total	**4.3000e-004**	**4.6300e-003**	**3.2300e-003**	**2.0000e-005**	**9.7000e-004**	**2.0000e-005**	**9.9000e-004**	**2.6000e-004**	**2.0000e-005**	**2.9000e-004**	**0.0000**	**1.6910**	**1.6910**	**7.0000e-005**	**0.0000**	**1.6928**

3.3 Napa Valley Vine Trail Realignment - 2019

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5700e-003	0.0268	0.0240	4.0000e-005		1.5000e-003	1.5000e-003		1.3800e-003	1.3800e-003	0.0000	3.2894	3.2894	1.0400e-003	0.0000	3.3154
Total	**2.5700e-003**	**0.0268**	**0.0240**	**4.0000e-005**	**0.0000**	**1.5000e-003**	**1.5000e-003**	**0.0000**	**1.3800e-003**	**1.3800e-003**	**0.0000**	**3.2894**	**3.2894**	**1.0400e-003**	**0.0000**	**3.3154**

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	9.0000e-005	3.1300e-003	6.1000e-004	1.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.7745	0.7745	4.0000e-005	0.0000	0.7756
Vendor	5.0000e-005	1.2700e-003	3.2000e-004	0.0000	7.0000e-005	1.0000e-005	7.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.2635	0.2635	1.0000e-005	0.0000	0.2639
Worker	2.9000e-004	2.3000e-004	2.3000e-003	1.0000e-005	7.3000e-004	0.0000	7.4000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6529	0.6529	2.0000e-005	0.0000	0.6533
Total	**4.3000e-004**	**4.6300e-003**	**3.2300e-003**	**2.0000e-005**	**9.7000e-004**	**2.0000e-005**	**9.9000e-004**	**2.6000e-004**	**2.0000e-005**	**2.9000e-004**	**0.0000**	**1.6910**	**1.6910**	**7.0000e-005**	**0.0000**	**1.6928**

3.3 Napa Valley Vine Trail Realignment - 2019

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5700e-003	0.0268	0.0240	4.0000e-005		1.5000e-003	1.5000e-003		1.3800e-003	1.3800e-003	0.0000	3.2894	3.2894	1.0400e-003	0.0000	3.3154
Total	**2.5700e-003**	**0.0268**	**0.0240**	**4.0000e-005**	**0.0000**	**1.5000e-003**	**1.5000e-003**	**0.0000**	**1.3800e-003**	**1.3800e-003**	**0.0000**	**3.2894**	**3.2894**	**1.0400e-003**	**0.0000**	**3.3154**

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	9.0000e-005	3.1300e-003	6.1000e-004	1.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.7745	0.7745	4.0000e-005	0.0000	0.7756
Vendor	5.0000e-005	1.2700e-003	3.2000e-004	0.0000	7.0000e-005	1.0000e-005	7.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.2635	0.2635	1.0000e-005	0.0000	0.2639
Worker	2.9000e-004	2.3000e-004	2.3000e-003	1.0000e-005	7.3000e-004	0.0000	7.4000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6529	0.6529	2.0000e-005	0.0000	0.6533
Total	**4.3000e-004**	**4.6300e-003**	**3.2300e-003**	**2.0000e-005**	**9.7000e-004**	**2.0000e-005**	**9.9000e-004**	**2.6000e-004**	**2.0000e-005**	**2.9000e-004**	**0.0000**	**1.6910**	**1.6910**	**7.0000e-005**	**0.0000**	**1.6928**

3.4 Earthwork - 2019

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					0.0678	0.0000	0.0678	0.0372	0.0000	0.0372	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0237	0.2469	0.1299	3.0000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	27.1912	27.1912	8.6000e-003	0.0000	27.4063
Total	**0.0237**	**0.2469**	**0.1299**	**3.0000e-004**	**0.0678**	**0.0110**	**0.0788**	**0.0372**	**0.0101**	**0.0474**	**0.0000**	**27.1912**	**27.1912**	**8.6000e-003**	**0.0000**	**27.4063**

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	1.5200e-003	0.0495	0.0101	1.4000e-004	3.1900e-003	2.2000e-004	3.4100e-003	8.8000e-004	2.1000e-004	1.0800e-003	0.0000	13.6935	13.6935	6.1000e-004	0.0000	13.7088
Vendor	1.4000e-004	3.8000e-003	9.7000e-004	1.0000e-005	2.0000e-004	3.0000e-005	2.2000e-004	6.0000e-005	2.0000e-005	8.0000e-005	0.0000	0.7906	0.7906	4.0000e-005	0.0000	0.7917
Worker	8.8000e-004	7.0000e-004	6.9100e-003	2.0000e-005	2.1900e-003	1.0000e-005	2.2100e-003	5.8000e-004	1.0000e-005	6.0000e-004	0.0000	1.9588	1.9588	5.0000e-005	0.0000	1.9600
Total	**2.5400e-003**	**0.0540**	**0.0180**	**1.7000e-004**	**5.5800e-003**	**2.6000e-004**	**5.8400e-003**	**1.5200e-003**	**2.4000e-004**	**1.7600e-003**	**0.0000**	**16.4429**	**16.4429**	**7.0000e-004**	**0.0000**	**16.4604**

3.4 Earthwork - 2019

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					0.0678	0.0000	0.0678	0.0372	0.0000	0.0372	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0237	0.2469	0.1299	3.0000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	27.1912	27.1912	8.6000e-003	0.0000	27.4063
Total	**0.0237**	**0.2469**	**0.1299**	**3.0000e-004**	**0.0678**	**0.0110**	**0.0788**	**0.0372**	**0.0101**	**0.0474**	**0.0000**	**27.1912**	**27.1912**	**8.6000e-003**	**0.0000**	**27.4063**

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	1.5200e-003	0.0495	0.0101	1.4000e-004	3.1900e-003	2.2000e-004	3.4100e-003	8.8000e-004	2.1000e-004	1.0800e-003	0.0000	13.6935	13.6935	6.1000e-004	0.0000	13.7088
Vendor	1.4000e-004	3.8000e-003	9.7000e-004	1.0000e-005	2.0000e-004	3.0000e-005	2.2000e-004	6.0000e-005	2.0000e-005	8.0000e-005	0.0000	0.7906	0.7906	4.0000e-005	0.0000	0.7917
Worker	8.8000e-004	7.0000e-004	6.9100e-003	2.0000e-005	2.1900e-003	1.0000e-005	2.2100e-003	5.8000e-004	1.0000e-005	6.0000e-004	0.0000	1.9588	1.9588	5.0000e-005	0.0000	1.9600
Total	**2.5400e-003**	**0.0540**	**0.0180**	**1.7000e-004**	**5.5800e-003**	**2.6000e-004**	**5.8400e-003**	**1.5200e-003**	**2.4000e-004**	**1.7600e-003**	**0.0000**	**16.4429**	**16.4429**	**7.0000e-004**	**0.0000**	**16.4604**

3.5 Restoration and Revegetation - 2019

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	0.0108	0.1104	0.0714	1.9000e-004		4.6000e-003	4.6000e-003		4.2300e-003	4.2300e-003	0.0000	16.9557	16.9557	5.3600e-003	0.0000	17.0898
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0108**	**0.1104**	**0.0714**	**1.9000e-004**		**4.6000e-003**	**4.6000e-003**		**4.2300e-003**	**4.2300e-003**	**0.0000**	**16.9557**	**16.9557**	**5.3600e-003**	**0.0000**	**17.0898**

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	9.0000e-005	3.1300e-003	6.1000e-004	1.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.7745	0.7745	4.0000e-005	0.0000	0.7756
Vendor	1.4000e-004	3.8000e-003	9.7000e-004	1.0000e-005	2.0000e-004	3.0000e-005	2.2000e-004	6.0000e-005	2.0000e-005	8.0000e-005	0.0000	0.7906	0.7906	4.0000e-005	0.0000	0.7917
Worker	8.8000e-004	7.0000e-004	6.9100e-003	2.0000e-005	2.1900e-003	1.0000e-005	2.2100e-003	5.8000e-004	1.0000e-005	6.0000e-004	0.0000	1.9588	1.9588	5.0000e-005	0.0000	1.9600
Total	**1.1100e-003**	**7.6300e-003**	**8.4900e-003**	**4.0000e-005**	**2.5600e-003**	**5.0000e-005**	**2.6100e-003**	**6.9000e-004**	**4.0000e-005**	**7.4000e-004**	**0.0000**	**3.5239**	**3.5239**	**1.3000e-004**	**0.0000**	**3.5272**

3.5 Restoration and Revegetation - 2019

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	0.0108	0.1104	0.0714	1.9000e-004		4.6000e-003	4.6000e-003		4.2300e-003	4.2300e-003	0.0000	16.9556	16.9556	5.3600e-003	0.0000	17.0898
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0108**	**0.1104**	**0.0714**	**1.9000e-004**		**4.6000e-003**	**4.6000e-003**		**4.2300e-003**	**4.2300e-003**	**0.0000**	**16.9556**	**16.9556**	**5.3600e-003**	**0.0000**	**17.0898**

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	9.0000e-005	3.1300e-003	6.1000e-004	1.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.7745	0.7745	4.0000e-005	0.0000	0.7756
Vendor	1.4000e-004	3.8000e-003	9.7000e-004	1.0000e-005	2.0000e-004	3.0000e-005	2.2000e-004	6.0000e-005	2.0000e-005	8.0000e-005	0.0000	0.7906	0.7906	4.0000e-005	0.0000	0.7917
Worker	8.8000e-004	7.0000e-004	6.9100e-003	2.0000e-005	2.1900e-003	1.0000e-005	2.2100e-003	5.8000e-004	1.0000e-005	6.0000e-004	0.0000	1.9588	1.9588	5.0000e-005	0.0000	1.9600
Total	**1.1100e-003**	**7.6300e-003**	**8.4900e-003**	**4.0000e-005**	**2.5600e-003**	**5.0000e-005**	**2.6100e-003**	**6.9000e-004**	**4.0000e-005**	**7.4000e-004**	**0.0000**	**3.5239**	**3.5239**	**1.3000e-004**	**0.0000**	**3.5272**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	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	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
User Defined Recreational	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Recreational	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

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					
User Defined Recreational	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					
User Defined Recreational	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			
User Defined Recreational	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			
User Defined Recreational	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	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

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	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

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	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

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

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

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			
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Recreational	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

Calistoga Riverside Pond Relocation Project

San Francisco Bay Area Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Recreational	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	4			**Operational Year**	2020
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

Project Characteristics - Haul Route from Stockpile only

Land Use - Land use type is not needed; construction emissions only.

Construction Phase - Based on Project Description

Off-road Equipment - Based on project description Tables 1 and 2.

Off-road Equipment - Based on project description Tables 1 and 2.

Off-road Equipment - Based on project description Tables 1 and 2.

Off-road Equipment - Equipment use assumptions based on project description Tables 1 and 2.

Trips and VMT - 1360 one way trips from stock pile. other trips in separate model

Calistoga Riverside Pond Relocation Project - San Francisco Bay Area Air Basin, Annual

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Parking	250	0
tblConstructionPhase	NumDays	0.00	10.00
tblConstructionPhase	NumDays	0.00	30.00
tblConstructionPhase	NumDays	0.00	10.00
tblConstructionPhase	NumDays	0.00	30.00
tblFleetMix	HHD	0.02	0.00
tblFleetMix	LDA	0.57	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.19	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.3710e-003	0.00
tblFleetMix	MCY	5.9420e-003	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MH	8.1200e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	2.5450e-003	0.00
tblFleetMix	SBUS	8.7700e-004	0.00
tblFleetMix	UBUS	2.4420e-003	0.00
tblOffRoadEquipment	HorsePower	130.00	125.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Earthwork
tblOffRoadEquipment	PhaseName		Earthwork
tblOffRoadEquipment	PhaseName		Restoration and Revegetation

tblOffRoadEquipment	PhaseName		Restoration and Revegetation
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Napa Valley Vine Trail Realignment
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Napa Valley Vine Trail Realignment
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Earthwork
tblOffRoadEquipment	UsageHours	7.00	3.00
tblOffRoadEquipment	UsageHours	7.00	3.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblTripsAndVMT	HaulingTripLength	20.00	2.77
tblTripsAndVMT	HaulingTripNumber	0.00	1,360.00
tblTripsAndVMT	WorkerTripLength	10.80	0.00
tblTripsAndVMT	WorkerTripLength	10.80	0.00
tblTripsAndVMT	WorkerTripLength	10.80	0.00
tblTripsAndVMT	WorkerTripLength	10.80	0.00
tblTripsAndVMT	WorkerTripNumber	13.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	8.00	0.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00

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					
2019	2.0600e-003	0.0867	0.0146	1.3000e-004	0.0919	1.6000e-004	0.0921	0.0501	1.5000e-004	0.0503	0.0000	12.8880	12.8880	1.3500e-003	0.0000	12.9216
Maximum	**2.0600e-003**	**0.0867**	**0.0146**	**1.3000e-004**	**0.0919**	**1.6000e-004**	**0.0921**	**0.0501**	**1.5000e-004**	**0.0503**	**0.0000**	**12.8880**	**12.8880**	**1.3500e-003**	**0.0000**	**12.9216**

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					
2019	2.0600e-003	0.0867	0.0146	1.3000e-004	0.0919	1.6000e-004	0.0921	0.0501	1.5000e-004	0.0503	0.0000	12.8880	12.8880	1.3500e-003	0.0000	12.9216
Maximum	**2.0600e-003**	**0.0867**	**0.0146**	**1.3000e-004**	**0.0919**	**1.6000e-004**	**0.0921**	**0.0501**	**1.5000e-004**	**0.0503**	**0.0000**	**12.8880**	**12.8880**	**1.3500e-003**	**0.0000**	**12.9216**

	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**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**8-5-2019**	**9-30-2019**	0.0614	0.0614
		Highest	0.0614	0.0614

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	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
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
Mobile	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
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						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**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

2.2 Overall Operational

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	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
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
Mobile	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
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						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**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

	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	Site Preparation	Site Preparation	8/5/2019	8/16/2019	5	10	
2	Napa Valley Vine Trail Realignment	Grading	8/19/2019	8/30/2019	5	10	
3	Earthwork	Site Preparation	9/2/2019	10/11/2019	5	30	
4	Restoration and Revegetation	Paving	10/14/2019	11/22/2019	5	30	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Concrete/Industrial Saws	0	6.00	81	0.73
Site Preparation	Pavers	0	6.00	130	0.42
Site Preparation	Rollers	0	6.00	80	0.38
Site Preparation	Rubber Tired Dozers	0	6.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Napa Valley Vine Trail Realignment	Pavers	0	8.00	130	0.42
Napa Valley Vine Trail Realignment	Rollers	0	8.00	80	0.38
Earthwork	Excavators	0	6.00	158	0.38
Earthwork	Off-Highway Trucks	0	6.00	402	0.38
Earthwork	Rubber Tired Dozers	0	6.00	247	0.40
Restoration and Revegetation	Off-Highway Trucks	0	3.00	402	0.38
Restoration and Revegetation	Off-Highway Trucks	0	3.00	402	0.38
Restoration and Revegetation	Pavers	0	3.00	125	0.42
Restoration and Revegetation	Rollers	0	3.00	80	0.38

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
Site Preparation	5	0.00	0.00	0.00	0.00	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Napa Valley Vine Trail Realignment	2	0.00	0.00	0.00	0.00	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Earthwork	3	0.00	0.00	1,360.00	0.00	7.30	2.77	LD_Mix	HDT_Mix	HHDT
Restoration and Revegetation	4	0.00	0.00	0.00	0.00	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2019

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					0.0226	0.0000	0.0226	0.0124	0.0000	0.0124	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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**	**0.0226**	**0.0000**	**0.0226**	**0.0124**	**0.0000**	**0.0124**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	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
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**	**0.0000**	**0.0000**

3.2 Site Preparation - 2019

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					0.0226	0.0000	0.0226	0.0124	0.0000	0.0124	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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**	**0.0226**	**0.0000**	**0.0226**	**0.0124**	**0.0000**	**0.0124**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	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
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**	**0.0000**	**0.0000**

3.3 Napa Valley Vine Trail Realignment - 2019

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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**	**0.0000**	**0.0000**

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	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
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**	**0.0000**	**0.0000**

3.3 Napa Valley Vine Trail Realignment - 2019

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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**	**0.0000**	**0.0000**

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	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
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**	**0.0000**	**0.0000**

3.4 Earthwork - 2019

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					0.0678	0.0000	0.0678	0.0372	0.0000	0.0372	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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**	**0.0678**	**0.0000**	**0.0678**	**0.0372**	**0.0000**	**0.0372**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	2.0600e-003	0.0867	0.0146	1.3000e-004	1.6000e-003	1.6000e-004	1.7600e-003	4.4000e-004	1.5000e-004	6.0000e-004	0.0000	12.8880	12.8880	1.3500e-003	0.0000	12.9216
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	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
Total	**2.0600e-003**	**0.0867**	**0.0146**	**1.3000e-004**	**1.6000e-003**	**1.6000e-004**	**1.7600e-003**	**4.4000e-004**	**1.5000e-004**	**6.0000e-004**	**0.0000**	**12.8880**	**12.8880**	**1.3500e-003**	**0.0000**	**12.9216**

3.4 Earthwork - 2019

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					0.0678	0.0000	0.0678	0.0372	0.0000	0.0372	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	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**	**0.0678**	**0.0000**	**0.0678**	**0.0372**	**0.0000**	**0.0372**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	2.0600e-003	0.0867	0.0146	1.3000e-004	1.6000e-003	1.6000e-004	1.7600e-003	4.4000e-004	1.5000e-004	6.0000e-004	0.0000	12.8880	12.8880	1.3500e-003	0.0000	12.9216
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	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
Total	**2.0600e-003**	**0.0867**	**0.0146**	**1.3000e-004**	**1.6000e-003**	**1.6000e-004**	**1.7600e-003**	**4.4000e-004**	**1.5000e-004**	**6.0000e-004**	**0.0000**	**12.8880**	**12.8880**	**1.3500e-003**	**0.0000**	**12.9216**

3.5 Restoration and Revegetation - 2019

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	0.0000	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
Paving	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**

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	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
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**	**0.0000**	**0.0000**

3.5 Restoration and Revegetation - 2019

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	0.0000	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
Paving	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 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	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
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**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	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	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
User Defined Recreational	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Recreational	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

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					
User Defined Recreational	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					
User Defined Recreational	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			
User Defined Recreational	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			
User Defined Recreational	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	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

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	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

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	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

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

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

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			
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Recreational	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

Construction Health Risk Assessment

Air Quality Technical Memo

ESA 50 YEARS 1969-2019

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Construction Health Risk Assessment

date	July 26, 2019
to	City of Calistoga (City)
from	Sarah Patterson, ESA, Matt Fagundes, ESA
subject	Calistoga Riverside Ponds – Construction Period Health Risk Assessment (HRA)

Executive Summary

The City of Calistoga (City) Riverside Ponds Relocation Project (Project) site is located within the Dunaweal Wastewater Treatment Plant (WWTP) and Sewer Treatment Ponds site, which extends from the WWTP entrance on Dunaweal Lane 0.6 miles westward between the Napa Valley Vine Trail (Vine Trail) berm to the north, and the Oat Hill Mine Ditch[1] and Napa River to the south. The WWTP facility is located between Dunaweal Lane and Simmons Creek, a tributary to the Napa River. The four existing Riverside Ponds are located west across the narrow (8 feet wide) bridge, between Simmons Creek and the Oat Hill Mine Ditch.

The proposed Project would protect the Riverside Ponds from flooding, line them to prevent percolation, protect WWTP Headworks structure from failing into Simmons Creek, provide a new pipe for higher conveyance to the new pond and installing valve controls to better automate Napa River discharges. The Project would protect the Riverside Ponds, WWTP Headworks structure, and associated critical infrastructure from flooding, erosion, and catastrophic bank failure that threatens the continuous uninterrupted operation of the City's WWTP by relocating the Riverside ponds and associated water conveyance and treatment utilities; realigning river channels away from infrastructure, restoring a vegetated riparian buffer of sufficient width, and stabilizing channel banks between the Riverside ponds and Headworks structure and the adjacent active river channels to protect the facilities from subsequent erosion. A Stormwater Pollution Prevention Plan (SWPPP) would be implemented for all construction activities. Flooding risk would be reduced by elevating Riverside Pond berms and Headworks protection infrastructure above the 100-year flood elevation.

Construction of the Project would generate diesel particulate matter (DPM) emissions, which is identified as a Toxic Air Contaminant (TAC) by the California Air Resources Board (CARB), from operation of off-road equipment and heavy duty trucks. DPM is a carcinogen as classified by the Office of Environmental Health Hazard Assessment (OEHHA). In March 2015, OEHHA revised its health risk assessment guidelines to consider short-term emissions such as construction activities, while clarifying that, "[t]here is considerable uncertainty in trying to evaluate the cancer risk from projects that will only last a small fraction of a lifetime" (OEHHA, 2015).

[1] The Oat Hill Mine Ditch is a channelized waterway that joins the Napa River from the north. The name "Ditch" does not mean that it is a water diversion canal.

The Bay Area Air Quality Management District (BAAQMD) health risk assessment (HRA) Guidelines generally conform to the Health Risk Assessment Guidelines adopted by OEHHA in evaluating construction impacts in environmental documents prepared pursuant to the California Environmental Quality Act (CEQA) (BAAQMD, 2017). Consequently, a screening-level construction period HRA was prepared for the Project based on the revised OEHHA guidelines.

Table ES-1, Maximum Increase in Health Risk from Construction Emissions for Off-Site Residential Sensitive Receptors, summarizes the incremental increase in lifetime cancer risk, non-cancer chronic hazards, and annual average fine particulate matter ($PM_{2.5}$) concentrations for the maximally exposed residential and school receptor that would be caused by construction of the Project as proposed. As shown in the table, the Project would result in a cancer risk for residential land uses below the BAAQMD-recommended significance threshold of 10 in one million (BAAQMD, 2017). Additionally, the resulting chronic hazard index and average annual $PM_{2.5}$ concentration from the Project construction activities would be below their respective BAAQMD recommended significance thresholds.

TABLE ES-1
MAXIMUM INCREASE IN HEALTH RISK FROM CONSTRUCTION EMISSIONS FOR OFF-SITE RESIDENTIAL SENSITIVE RECEPTORS

Scenario	Maximum Cancer Risk (# in one million)	Maximum Non-Cancer Risk (Chronic Hazard Index)	Maximum Annual Average $PM_{2.5}$ Concentration (μ/m^3)
Unmitigated Project	1.1	0.005	0.007
BAAQMD Threshold	10	1	0.3
Exceeds Threshold?	No	No	No

Introduction

The proposed Project, a refined version of Alternative No. 2 in the Engineers Report (Kennedy/Jenks, 2016), would protect the Riverside Ponds from flooding, line them to prevent percolation, protect the WWTP Headworks structure from failing into Simmons Creek, provide a new pipe for higher conveyance to the new pond, and provide valve controls to better automate Napa River discharges. The Project would protect the Riverside Ponds, WWTP Headworks structure, and associated critical infrastructure from flooding, erosion, and catastrophic bank failure that threatens the continuous uninterrupted operation of the City's WWTP by relocating the Riverside ponds and associated water conveyance and treatment utilities; realigning river channels away from infrastructure, restoring a vegetated riparian buffer of sufficient width, and stabilizing channel banks between the Riverside ponds and Headworks structure and the adjacent active river channels to protect the facilities from subsequent erosion. A SWPPP would be implemented for all construction activities. Flooding risk would be reduced by elevating Riverside Pond berms and Headworks protection infrastructure above the 100-year flood elevation.

The primary objectives of the Calistoga Riverside Relocation Ponds Project are to:

- Line the Ponds to prevent percolation and meet Cease and Desist Order requirements from the San Francisco Bay Regional Water Quality Control Board;

- Reduce the risk of failure of Headworks and Riverside Pond due to flooding and associated bank erosion; and

- Raise the berms along the East and West Riverside Ponds to move the ponds out of the 100-year floodway and floodplain.

Construction health risks were calculated for sensitive receptor locations within 1,000 feet of construction activities, per BAAQMD CEQA guidelines, *California Environmental Quality Act: Air Quality Guidelines* (BAAQMD, 2017).

In March 2015, the OEHHA adopted a revised guidance manual for use in the Air Toxics Hot Spots Program or for the permitting of existing, new, or modified stationary sources, the *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments*. Unlike previous iterations of this manual, the revised manual provides considerations for short-term temporary exposure for durations as short as two months, such as during construction activities, while noting that there is "considerable uncertainty in trying to evaluate the cancer risk from projects that will only last a small fraction of a lifetime." The revised OEHHA's guidance also considers more conservative assumptions and updated scientific research. Health risk impacts calculated in accordance with the OEHHA's revised manual are approximately two to ten times higher than those calculated in accordance with the previous methodology. In accordance with Regulation 2-5-402, the BAAQMD HRA Guidelines generally conform to the Health Risk Assessment Guidelines adopted by OEHHA for use in the Air Toxics Hot Spots Program (BAAQMD, 2016).

A HRA was conducted to estimate the health risk impact associated with construction of the Project. The methodology used to evaluate the health risks from on-site construction activities is summarized below, along with the results of the HRA. The HRA addresses the Project's short-term construction activities; any operational changes associated with the Project would not impact the air quality or associated health risk as there would negligible new air emissions.

Methods

The methods and assumptions used in this HRA are consistent with the guidance recommended by OEHHA's *Air Toxic Hot Spots Program Risk Assessment Guidelines* (2015), the BAAQMD's *Recommended Methods for Screening and Modeling Local Risks and Hazards* (2012), and the BAAQMD's *Air Toxics NSR Program Health Risk Assessment Guidelines* (2016). The OEHHA methodology used in this assessment uses a dose-response assessment to characterize risk from cancer due to inhaled TACs. Refer to Attachment-HRA for the calculation and modeling files used in the HRA.

Based on the OEHHA guidance, the evaluation of potential health risks uses the following standard four-step risk assessment process:

1. hazard identification;
2. exposure assessment;
3. dose-response assessment; and
4. risk characterization.

Each step is described in detail below.

Hazard Identification

The hazard identification process is undertaken to determine what TACs would potentially be present in the assessment area and identifies pollutants of concern that have the potential to impact human health. In this HRA, the primary hazard is DPM emissions from operation of off-road construction equipment. DPM from heavy duty trucks was considered along the truck haul routes contained within the 1,000-foot Project radius. Truck haul routes outside of the Project radius were not considered, since contributions from haul trucks within the Project radius would represent the worst case DPM emissions of the sensitive receptors surrounding the Project site. In addition, total on-road truck emissions for all travel locations would be minor compared to off-road construction equipment emissions (on-road truck emissions are just 6 percent of total DPM emissions from construction).

DPM historically has been used as a surrogate measure of exposure for whole diesel exhaust emissions. Diesel exhaust is a complex mixture of thousands of gases and fine particles (commonly known as soot). Diesel exhaust particles and gases are suspended in the air due to thermal buoyancy and the small size of the particles. The composition of diesel exhaust varies depending on engine type, operating conditions, fuel composition, lubricating oil, and presence of an emission control system. One of the main characteristics of diesel exhaust is the release of particles at a relative rate approximately 20 times greater than from gasoline exhaust, on an equivalent fuel basis. Diesel particulates are mainly aggregates of spherical carbon particles coated with inorganic and organic substances. The inorganic fraction primarily consists of small carbon (elemental carbon) particles ranging from 0.01 to 0.08 micron in diameter. The organic fraction consists of soluble organic compounds (CARB, 1998).

Exposure Assessment

The degree of the residents' exposure to DPM are evaluated under the exposure assessment within the HRA. This assessment involves the quantification of DPM emissions and dispersion modeling. The amount of DPM emissions generated by construction activities was determined using particulate matter with an aerodynamic diameter equal to or less than 10 microns (PM_{10}) from diesel exhaust as a surrogate. OEHHA guidance indicates that the cancer potency factor to be used to evaluate cancer risks were developed based on whole (gas and particulate matter) diesel exhaust, and that the surrogate for whole diesel exhaust is DPM, with the PM_{10} fraction serving as the basis for the potential risk calculations (OEHHA, 2003). In addition to evaluating the effects of TAC concentrations, this screening HRA also evaluated annual average exhaust $PM_{2.5}$ concentrations. This is consistent with BAAQMD's CEQA Guidelines, which indicate that $PM_{2.5}$ be evaluated in community-scale impacts of air pollution based on scientific studies and recommendations by the Bay Area Health Directors to the BAAQMD's Advisory Council (BAAQMD, 2017).

The greatest potential for TAC emissions would be related to DPM emissions associated with off-road heavy equipment operations during demolition, grading and excavation, and construction activities. The potential exposure through other pathways (e.g., ingestion) requires substance and site-specific data, and the specific parameters for DPM are not known for these pathways (CARB, 1998). OEHHA developed necessary data to evaluate carcinogenicity of DPM through the inhalation pathway only. Once determined, the dose is multiplied by the compound-specific inhalation cancer potency factor to derive the cancer risk estimate. The dose takes into account the concentration at a sensitive receptor. The cancer potency factor is compound-specific.

Emissions Inventory

Emissions analyzed in the HRA were based on the air quality emissions estimates for the Project prepared for the Draft Initial Study/Mitigated Negative Declaration (IS/MND). The construction emissions were estimated using the BAAQMD-approved California Emissions Estimator Model (CalEEMod) model (version 2016.3.2). The air quality analysis prepared for the IS/MND estimated average daily emissions for each construction phase. The construction emissions used in this HRA assumed the same construction schedule and equipment types as the analysis prepared for the IS/MND.

The emissions estimates represent the average daily emissions from each phase that would be expected from construction of the Project using annual average daily heavy-duty construction equipment activity levels. For the purposes of this quantitative construction HRA, the use of average daily emissions to estimate health risks results in a reasonable approximation of impacts because construction-related health risks are calculated based on long-term emissions and not short-term maximum daily emissions.

For the Project, total unmitigated off-road construction (average fleet mix) DPM and $PM_{2.5}$ exhaust emissions are 43.8 pounds and 40.4 pounds, respectively. Total on-road construction (haul truck trips and vendor trips) DPM and $PM_{2.5}$ exhaust emissions are 0.98 pounds and 0.90 pounds, respectively.

Emission Rates

Because each emission source was modeled separately within AERMOD (see section below), a unitized emission rate concept was used for each source, where each source is modeled with a unitized emission rate of 1 gram/second (g/s). The modeled concentration at each receptor ([μ/m^3]/[g/s]) represents a “dispersion factor,” which was then multiplied by the actual emission rate of each source to determine actual concentrations, and the final result from all the sources was superimposed and aggregated. This approach is called the “Summation Concept,” where the concentration and deposition fluxes at each receptor are the linear addition of the resulting values from each source.

Actual emission rates from construction activities were based on the anticipated hours of activity for each source and other information as described in the *Emissions Inventory* section above. A total emission rate in terms of grams per second was calculated for each emission source to multiply with the AERMOD dispersion factors to estimate actual concentrations for each source. For simplicity, the model assumed a constant emission rate during an entire year, consistent with AERMOD dispersion parameters.

Dispersion Modeling

Dispersion modeling predicts the air pollutant concentrations due to emissions from a source at defined receptor point locations. The most current version (18081) of the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was used in the modeling analysis for this Project. The AERMOD model is a USEPA-approved model that was introduced to incorporate air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources and both simple and complex terrain. The AERMOD model requires numerous inputs, such as meteorological data, source parameters, topographical data, and receptor characteristics. Where Project-specific information is not available, default parameter sets were used that are designed to produce conservative (i.e., overestimates of) air concentrations (USEPA, 2018). **Table 1**, **Overall AERMOD Modeling Parameters**, summarizes the overall modeling parameters used in AERMOD. Refer to Attachment-HRA for the AERMOD modeling outputs used for the screening HRA.

TABLE 1
OVERALL AERMOD MODELING PARAMETERS

Pathway	Description	Parameter
Control	Rural/Urban	Rural [a]
	Terrain	Elevated
	Model Version	AERMOD v 18081
Receptor	Receptor Height	1.5 m [b]
Meteorology [c]	Surface Station	SONOMA COUNTY AIRPORT (23213)
	Upper Air Station	OAKLAND/WSO AP (23230)
	MET Years	2009-2014
	Base Elevation (MSL)	34.8 m

NOTES:
[a] From BAAQMD (2012). Urban R2 defined as: Dense single/multi-family with less than 30% vegetation.
[b] From BAAQMD (2012).
[c] From CARB (2015).

ABBREVIATIONS: m = meters

SOURCES:
1. Bay Area Air Quality Management District. 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazards*. Available at http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/risk-modeling-approach-may-2012.pdf. Accessed July 2019.
2. California Air Resources Board. 2015. Meteorological Data from Air Districts (Met Station: Norman Y. Mineta San Jose International Airport). Available online at https://www.arb.ca.gov/toxics/harp/metfiles2.htm. Accessed July 2019

Source Parameters

Source parameters are required to model the dispersion of emissions. Off-road construction equipment was modeled as an area source within AERMOD using the same release parameters used in the San Francisco Citywide HRA (BAAQMD default standard guidance), which evaluates the cumulative lifetime cancer risks and annual average exhaust $PM_{2.5}$ concentrations from existing known sources of air pollution as part of the development of a Community Risk Reduction Plan (CRRP) (referred to as the CRRP-HRA). Parameters from the CRRP-HRA include a release height of 5 meters and an initial vertical dimension of 1.4 meters for off-road sources and an initial vertical dimension of 2.37 meters for on-road sources (BAAQMD, SF DPH & SF Planning, 2012). The release height for on-road sources was considered as half of the plume height, which is 1.7 times the height of a truck or 3 meters as recommended by the BAAQMD; the resulting release height for this area source is 2.55 meters (BAAQMD, 2012). Construction activities at the site were modeled as a single area source occupying 10.6 acres. The truck haul route associated to the materials to be acquired from the quarries was modeled as line source along the major roadways the haul trucks could potentially take within the 1,000 feet parameter modeling domain. As a conservative measure the haul route from the stockpile to the project was modeled even though portions fall outside the 1,000 foot domain. **Table 2**, **Source Modeling Parameters for Off-Road and On-Road Construction Equipment**, summarizes the source modeling parameters used in AERMOD.

TABLE 2
SOURCE MODELING PARAMETERS FOR OFF-ROAD AND ON-ROAD CONSTRUCTION EQUIPMENT

Source	Project Component	Source Type	Source Dimension	Number of Sources	Release Height [m][a]	Initial Vertical Dimension [m][b]
Off-Road Construction Equipment	Riverside Ponds Relocation Project	Area Poly	10.6 acre	1	5.0	1.4
On-Road Construction Equipment (Haul Trucks)	Haul Route from Stockpile	Line Area	2.75 miles long x 42.65 ft. wide	1	2.55	2.37
	Haul Route from Quarries	Line Area	0.39 mile long X 42.65 ft. wide	1	2.55	2.37

NOTES:

[a] Release height for off-road construction equipment and on-road operational mobile sources from the CRRP-HRA (BAAQMD, SF DPH & SF Planning, 2012). For on-road construction trucks and operational delivery truck idling at street-level, the release height is equal to 0.5 * top of plume height, which is equal to 1.7 * the vehicle height, which is equal to 3 meters; equation = 0.5 * 1.7 * 3 = 2.55 (USEPA 2012).

[b] Initial vertical dimension for off-road construction equipment and on-road operational mobile sources from the CRRP-HRA (BAAQMD, SF DPH & SF Planning, 2012). Initial vertical dimension for on-road construction trucks and truck idling is equal to the top of the plume height ÷ 2.15 = 1.7 * 3 / 2.15 = 2.37.

SOURCES:
1. United States Environmental Protection Agency. 2012. Haul Road Workgroup Final Report Submission to EPA-OAQPS. March. Available at: https://www3.epa.gov/scram001/reports/Haul_Road_Workgroup-Final_Report_Package-20120302.pdf. Accessed July 2019.
2. Bay Area Air Quality Management District, San Francisco Department of Public Health, and San Francisco Planning Department. 2012. *The San Francisco Community Risk Reduction Plan: Technical Support Documentation*. December. Available at http://www.gsweventcenter.com/Appeal_Response_References/2012_1201_BAAQMD.pdf. Accessed July 2019.

ABBREVIATIONS:
m = meters
ft = feet

Offsite Staging Area

An off-site staging area owned by the City is available for use if necessary to stage construction equipment, materials, construction trailers, and other items needed for construction activities. The staging area is located at the City of Calistoga Bone Yard. The Bone Yard is located 0.4 mile west of the Project on the east side of the baseball diamond at the end of Washington Street where the Vine Trail begins. The fenced-in yard has been used historically to store surplus materials and park construction- and maintenance-related equipment. If needed, possible activities at the corporation yard staging area would be: overnight parking and temporary storage of construction equipment applicable for the Project; fueling and maintenance of construction equipment; and temporary storage of construction materials including rebar, wood, masonry materials, greases, oils, trash receptacles, and other miscellaneous raw construction materials. The off-site staging area was not included in the model as emissions associated with Project construction activities are not anticipated to occur at this location.

Sensitive Receptors

Sensitive receptors were formed in 20 meter by 20 meter grids within the residential areas existing in the 1,000-foot project parameter as determined by BAAQMD modeling guidance (BAAQMD, 2012). There are no schools or daycares within 1,000 feet of the main construction site; however, the main route the haul trucks would utilize to and from the stockpile is nearby to two schools. The Calistoga Junior-Senior High School is located 4,500 feet northwest of the site; although this is beyond 1,000 feet, this school receptor was modeled as the stockpile haul route is approximately 250 feet east of the school. Calistoga Elementary School was also modeled because the stockpile haul route is approximately 1,000 feet east of the school property line. Receptor heights were set at 1.5

meters to represent flagpole receptor concentrations, consistent with BAAQMD modeling guidance (BAAQMD, 2012). The Project would not include any residential uses and would not include any sensitive receptors on site. Consequently, no on-site receptors were modeled.

Dose-Response Assessment

The dose-response assessment is the process of characterizing the relationship between exposure to diesel exhaust and the incidence of an adverse health effect in exposed populations.

The estimation of potential inhalation cancer risk posed by exposure to DPM requires a cancer potency factor. Cancer potency factors are expressed as the upper bound probability of developing cancer assuming continuous lifetime exposure to diesel exhaust at a dose of one milligram per kilogram of body weight, and are expressed in units of inverse dose as a potency slope (i.e., $[mg/kg/day]^{-1}$). A cancer potency factor, when multiplied by the dose of a carcinogen, gives the associated lifetime cancer risk. OEHHA's recommended cancer potency factor for DPM is 1.1 $(mg/kg/day)^{-1}$. The estimation of potential inhalation chronic non-cancer effects posed by exposure to DPM requires a chronic reference exposure level (REL). A chronic REL is a concentration level (that is expressed in units of $\mu g/m^3$ for inhalation exposures), at or below, which no adverse health effects are anticipated following long-term exposure. OEHHA's recommended chronic REL for DPM is 5 $\mu g/m^3$ (CARB & OEHHA, 2017). The chronic hazard index target organ for DPM is the respiratory system.

Risk Characterization

Risk characterization combines the maximum annual average ground-level DPM concentration from the exposure assessment, the cancer potency factor and chronic REL from the dose-response analysis to estimate the potential inhalation cancer risk from exposure to DPM emissions.

In performing health risk calculations, carcinogenic compounds are not considered to have threshold levels (i.e., dose levels below which there are no risks). Any exposure level will have some associated risk. Incremental health risks associated with exposure to carcinogenic compounds are defined in terms of the probability of developing cancer as a result of exposure to a chemical at a given concentration. Under a deterministic approach (i.e., point estimate methodology), the cancer risk probability is determined by multiplying the chemical's annual concentration by its unit risk factor (URF). The URF for DPM recommended by the Scientific Review Panel[2] is 3.0×10^{-4} $\mu g/m^3$ (CARB, 1998). This value corresponds to a Cancer Potency Factor (CPF) of 1.1 per milligram/kilogram (body weight) per day (mg/kg(bw)-day) (CARB & OEHHA, 2017). The URF for DPM means that for receptors with an annual average concentration of 1 $\mu g/m^3$ in the ambient air, the probability of contracting cancer over a 70-year lifetime of exposure is 300 in 1 million. The URF also assumes that a person is exposed continuously for a 70-year lifetime. This approach for calculating cancer risk is intended to result in conservative (i.e., health protective) estimates of health impacts and is used for assessing risks to sensitive receptors. The estimation of cancer risk generally uses the following algorithms (OEHHA, 2015):

$$\textbf{Cancer Risk = Dose inhalation} \times \textbf{Inhalation CPF} \times \textbf{ASF} \times \textbf{ED/AT} \times \textbf{FAH} \qquad \textbf{(Equation 1)}$$

[2] The Scientific Review Panel is charged with evaluating the risk assessments of substances proposed for identification as toxic air contaminants by CARB, OEHHA, and the Department of Pesticide Regulation (DPR), and the review of guidelines prepared by OEHHA.

Where:

Cancer Risk = residential inhalation cancer risk

Dose inhalation (mg/kg-day) = $C_{AIR} \times DBR \times A \times EF \times 10^{-6}$ **(Equation 2)**

Inhalation CPF = inhalation cancer potency factor ($[mg/kg/day]^{-1}$)

ASF = age sensitivity factor for a specified age group (unitless)

ED = exposure duration for a specified age group (years)

AT = averaging time period over which exposure is averaged in days (years)

FAH = fraction of time at home (unitless)

Where:

C_{AIR} = concentration of compound in air in micrograms per cubic meter ($\mu g/m^3$)

DBR = daily breathing rate in liter per kilogram of body weight per day (L/kg-body weight/day)

A = inhalation absorption factor (1 for DPM, unitless)

EF = exposure frequency in days per year (unitless, days/365 days)

10^{-6} = micrograms to milligrams conversion, liters to cubic meters conversion

The OEHHA-recommended values for the parameters listed above were used in the HRA analysis. The DBR used in the analysis was based on OEHHA recommendations, which vary depending on age, as shown in **Table 3, Daily Breathing Rates, Fraction of Time at Home, and Age Sensitivity Factors**. The recommended residential exposure frequency (EF) is 350 days per year, which is equivalent to 0.96 (350 days / 365 days a year). The recommended school exposure frequency (EF) is 180 days per year, which is equivalent to 0.49 (180 days / 365 days a year). The inhalation absorption factor (A) is assumed to be 1 for inhalation based risk assessment. As indicated in Equation 1 above, each age group has different exposure parameters that require cancer risk to be calculated separately for each age group. Values for fraction of time at home (FAH) also vary depending on age, as shown in Table 3. Once dose is calculated, cancer risk is calculated by accounting for cancer potency of the specific pollutant, and the age sensitivity factor (ASF), which also varies by age as shown in Table 3.

TABLE 3
DAILY BREATHING RATES, FRACTION OF TIME AT HOME, AND AGE SENSITIVITY FACTORS

Parameter	3rd Trimester	Age 0 < 2	Age 2 < 16
Daily Breathing Rate (DBR) (L/kg-body weight/day)			
Residential Child Receptor [a]	361	1,090	n/a
School Receptor [b]	n/a	n/a	520
Exposure Frequency (EF)			

Residential Child Receptor [c]	0.96	0.96	n/a
School Receptor [d]	n/a	n/a	0.49
Fraction of Time at Home (FAH)			
Residential Child Receptor [e]	0.85	0.85	n/a
School Receptor	n/a	n/a	0.33
Age Sensitivity Factor (ASF) [f]	10	10	3

NOTES:

a Daily breathing rate for residential receptor is based on the OEHHA 95th percentile values (Table 5.6). Since total exposure less than 183 days, the 2<9 age group is not applicable.

b Daily breathing rate for school receptor is based on the OEHHA 95th percentile 8-hour moderate intensity breathing rates (Table 5.8). School receptor assumed to start exposure as early as age 2. Recommendation of BAAQMD (2016)

c The recommended residential exposure frequency (EF) is 350 days per year, which is equivalent to 0.96 (350 days / 365 days a year).

d The recommended school exposure frequency (EF) is 180 days per year, which is equivalent to 0.49 (180 days / 365 days a year).

e Fraction of time at home is set to 0.85 for residential since the nearest school has an unmitigated cancer risk of <1 per million (see Table 4 below), per OEHHA Table 8.4. FAH is not applicable to school receptors.

The estimation of non-cancer inhalation chronic risk uses the following algorithm (OEHHA, 2015):

Hazard Quotient = C_{air} / REL (Equation 3)

Where:

Hazard Quotient = chronic non-cancer hazard

C_{AIR} = concentration of compound in air in micrograms per cubic meter ($\mu g/m^3$)

REL = Chronic non-cancer Reference Exposure Level for substance ($\mu g/m^3$)

As noted above, the REL for DPM is 5 $\mu g/m^3$ (CARB & OEHHA, 2017). The chronic hazard index target organ for DPM is the respiratory system.

Health Risk Calculation Results

The resulting health risk calculations were performed using the OEHHA guidance based on the results of the site-specific AERMOD dispersion model. **Table 4, Maximum Increase in Health Risk from Construction Emissions for Off-Site Sensitive Receptors** summarizes the carcinogenic risk for the maximum impacted sensitive receptors for the unmitigated scenario.

For carcinogenic exposures, the cancer risk from DPM emissions for the unmitigated construction scenario is estimated to result in a maximum carcinogenic risk of approximately 1.1 per one million for the Project. The maximum impact for the Project would occur at the residential land uses northwest of the site. As discussed previously, the lifetime exposure under the updated OEHHA guidelines takes into account early life (infant and children) exposure. It should be noted that the calculated cancer risk conservatively assumes sensitive receptors (residential uses) would not have any emission controls such as mechanical filtration and exposure would occur with windows open. This HRA focuses on residential and school impacts and does not include impacts for on-site or off-site workers. Although off-site workers may be in close proximity to the Project site, their intermittent exposure duration would be less than that of a residence (8 hours compared to 24 hours) and adult breathing rates compared to children are also lower (e.g. 261 for age 16 < 30 versus 1,090 for age 0 < 2 years). Therefore, worker impacts would be less than that of a resident.

TABLE 4
MAXIMUM INCREASE IN HEALTH RISK FROM CONSTRUCTION EMISSIONS FOR OFF-SITE SENSITIVE RECEPTORS

Project Component / Sensitive Receptor Type	Maximum Cancer Risk (# in one million)	Maximum Non-Cancer Risk (Chronic Hazard Index)	Maximum Annual Average $PM_{2.5}$ Concentration (μ/m^3)
Residential Receptor	1.1	0.005	0.007
School Receptor [a]	0.02	<0.001	<0.001
BAAQMD Threshold	**10**	**1**	**0.3**
Exceeds Threshold at Residential Receptors?	**No**	**No**	**No**
Exceeds Threshold at School Receptor?	**No**	**No**	**No**

NOTES:
[a] School Receptor results represent the worst case impact of the modeled Calistoga Junior-Senior High School and the Calistoga Elementary School.

As presented in Table 4 above the results of the risk assessment indicate that risk levels form construction activities are far below the threshold of significance set by the BAAQMD. It should be noted that the process of assessing health risks and impacts includes a degree of uncertainty. The level of uncertainty is dependent on the availability of data and the extent to which assumptions are relied upon in cases where the data are incomplete or unknown. Where assumptions are used to substitute for incomplete or unknown data, it is standard practice in performing HRAs to err on the side of health protection in order to avoid underestimating or underreporting the risk to the public by assessing risk on the most sensitive populations, such as children and the elderly. The results of this analysis indicate that even with conservative assumptions impacts form DPM emissions on receptors are safely below thresholds.

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Bay Area Air Quality Management District. 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazards*. Available at http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Risk%20Modeling%20Approach%20May%202012.ashx?la=en. Accessed: July 2019.

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Construction Health Risk Assessment

Attachment-HRA: AERMOD Files

```
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** AERMOD Input Produced by:
** AERMOD View Ver. 9.6.5
** Lakes Environmental Software Inc.
** Date: 7/26/2019
** File: C:\Model\Calistoga\Calistoga_AERMOD_PM10_v3\Calistoga_AERMOD_PM10_v3.ADI
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**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
**
**
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   AVERTIME 1 PERIOD
   POLLUTID PM_10
   FLAGPOLE 1.50
   RUNORNOT RUN
   ERRORFIL Calistoga_AERMOD_PM10_v3.err
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
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SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
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** DESCRSRC Main Construction Area
   LOCATION PAREA2       AREAPOLY   537554.557  4269828.285      100.460
** DESCRSRC staging area
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** LINE AREA Source ID = ARLN2
** DESCRSRC Rock haul path
** PREFIX
** Length of Side = 13.00
** Ratio = 10
** Vertical Dimension = 2.37
** Emission Rate = 0.0001217425
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** 538743.276, 4269003.737, 92.65, 2.55
** 538709.412, 4268941.527, 93.58, 2.55
** 538504.515, 4268613.820, 97.50, 2.55
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   LOCATION A0000003     AREA     538737.567 4269006.845 92.69
   LOCATION A0000004     AREA     538703.900 4268944.973 93.60
   LOCATION A0000005     AREA     538635.602 4268835.737 95.17
   LOCATION A0000006     AREA     538567.303 4268726.501 96.59
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** ------------------------------------------------------------------------
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** LINE AREA Source ID = ARLN3
** DESCRSRC Stockpile haul route
** PREFIX
** Length of Side = 13.00
** Ratio = 10
** Vertical Dimension = 2.37
** Emission Rate = 0.0000173744
** Nodes = 18
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** 537853.273, 4270599.391, 105.81, 2.55
** 537463.315, 4270795.104, 110.01, 2.55
** 537297.246, 4270919.078, 110.51, 2.55
** 537110.097, 4271070.950, 114.26, 2.55
** 537004.064, 4271165.854, 116.15, 2.55
** 536793.328, 4271260.345, 116.44, 2.55
** 536831.583, 4271149.937, 115.57, 2.55
** 536876.836, 4270801.564, 110.26, 2.55
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** 536901.151, 4270543.736, 110.30, 2.55
** 536865.906, 4270467.956, 109.81, 2.55
** 536734.912, 4270287.901, 107.02, 2.55
** 536664.304, 4270104.656, 105.66, 2.55
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** 537889.176, 4269636.931, 98.27, 2.55
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   LOCATION A0000010     AREA     537737.215 4270309.491 104.47
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   AREAVERT PAREA1       538354.821 4269426.805 538442.365 4269385.054
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2.370
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   SRCPARAM A0000004     0.0001217425     2.550   128.830    13.000   122.015
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   SRCPARAM A0000005     0.0001217425     2.550   128.830    13.000   122.015
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2.370
   SRCPARAM A0000016     0.0000173744     2.550   109.079    13.000  -153.349
2.370
   SRCPARAM A0000017     0.0000173744     2.550   103.620    13.000  -143.258
2.370
   SRCPARAM A0000018     0.0000173744     2.550   103.620    13.000  -143.258
```

```
2.370
   SRCPARAM A0000019     0.0000173744     2.550   120.509    13.000  -140.941
2.370
   SRCPARAM A0000020     0.0000173744     2.550   120.509    13.000  -140.941
2.370
   SRCPARAM A0000021     0.0000173744     2.550    71.151    13.000  -138.170
2.370
   SRCPARAM A0000022     0.0000173744     2.550    71.151    13.000  -138.170
2.370
   SRCPARAM A0000023     0.0000173744     2.550   115.475    13.000  -155.849
2.370
   SRCPARAM A0000024     0.0000173744     2.550   115.475    13.000  -155.849
2.370
   SRCPARAM A0000025     0.0000173744     2.550   116.848    13.000    70.889
2.370
   SRCPARAM A0000026     0.0000173744     2.550   117.100    13.000    82.599
2.370
   SRCPARAM A0000027     0.0000173744     2.550   117.100    13.000    82.599
2.370
   SRCPARAM A0000028     0.0000173744     2.550   117.100    13.000    82.599
2.370
   SRCPARAM A0000029     0.0000173744     2.550    79.288    13.000    83.830
2.370
   SRCPARAM A0000030     0.0000173744     2.550    79.288    13.000    83.830
2.370
   SRCPARAM A0000031     0.0000173744     2.550   100.434    13.000    85.847
2.370
   SRCPARAM A0000032     0.0000173744     2.550    83.576    13.000   114.943
2.370
   SRCPARAM A0000033     0.0000173744     2.550   111.332    13.000   126.037
2.370
   SRCPARAM A0000034     0.0000173744     2.550   111.332    13.000   126.037
2.370
   SRCPARAM A0000035     0.0000173744     2.550    98.189    13.000   111.073
2.370
   SRCPARAM A0000036     0.0000173744     2.550    98.189    13.000   111.073
2.370
   SRCPARAM A0000037     0.0000173744     2.550   125.307    13.000    19.543
2.370
   SRCPARAM A0000038     0.0000173744     2.550   125.307    13.000    19.543
2.370
   SRCPARAM A0000039     0.0000173744     2.550   125.307    13.000    19.543
2.370
   SRCPARAM A0000040     0.0000173744     2.550   125.307    13.000    19.543
2.370
   SRCPARAM A0000041     0.0000173744     2.550   125.307    13.000    19.543
2.370
   SRCPARAM A0000042     0.0000173744     2.550   125.307    13.000    19.543
```

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2.370
   SRCPARAM A0000043     0.0000173744     2.550   125.307    13.000    19.543
2.370
   SRCPARAM A0000044     0.0000173744     2.550   125.307    13.000    19.543
2.370
   SRCPARAM A0000045     0.0000173744     2.550   129.587    13.000    23.801
2.370
   SRCPARAM A0000046     0.0000173744     2.550    90.179    13.000    26.365
2.370
   SRCPARAM A0000047     0.0000173744     2.550    90.179    13.000    26.365
2.370
** ----------------------------------------------------------------------
   SRCGROUP ARLN2    A0000001 A0000002 A0000003 A0000004 A0000005 A0000006
   SRCGROUP ARLN3    A0000007 A0000008 A0000009 A0000010 A0000011 A0000012
   SRCGROUP ARLN3    A0000013 A0000014 A0000015 A0000016 A0000017 A0000018
   SRCGROUP ARLN3    A0000019 A0000020 A0000021 A0000022 A0000023 A0000024
   SRCGROUP ARLN3    A0000025 A0000026 A0000027 A0000028 A0000029 A0000030
   SRCGROUP ARLN3    A0000031 A0000032 A0000033 A0000034 A0000035 A0000036
   SRCGROUP ARLN3    A0000037 A0000038 A0000039 A0000040 A0000041 A0000042
   SRCGROUP ARLN3    A0000043 A0000044 A0000045 A0000046 A0000047
   SRCGROUP PAREA1   PAREA1
   SRCGROUP PAREA2   PAREA2
   SRCGROUP ALL
SO FINISHED
**
****************************************
** AERMOD Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED Calistoga_AERMOD_PM10_v3.rou
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE ..\724957.SFC
   PROFFILE ..\724957.PFL
   SURFDATA 23213 2009
   UAIRDATA 23230 2009 OAKLAND/WSO_AP
   PROFBASE 34.8 METERS
ME FINISHED
**
****************************************
```

```
** AERMOD Output Pathway
***************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST CALISTOGA_AERMOD_PM10_V3.AD\01H1GALL.PLT 31
   PLOTFILE 1 ARLN2 1ST CALISTOGA_AERMOD_PM10_V3.AD\01H1G001.PLT 32
   PLOTFILE 1 ARLN3 1ST CALISTOGA_AERMOD_PM10_V3.AD\01H1G002.PLT 33
   PLOTFILE 1 PAREA1 1ST CALISTOGA_AERMOD_PM10_V3.AD\01H1G003.PLT 34
   PLOTFILE 1 PAREA2 1ST CALISTOGA_AERMOD_PM10_V3.AD\01H1G004.PLT 35
   PLOTFILE PERIOD ALL CALISTOGA_AERMOD_PM10_V3.AD\PE00GALL.PLT 36
   PLOTFILE PERIOD ARLN2 CALISTOGA_AERMOD_PM10_V3.AD\PE00G001.PLT 37
   PLOTFILE PERIOD ARLN3 CALISTOGA_AERMOD_PM10_V3.AD\PE00G002.PLT 38
   PLOTFILE PERIOD PAREA1 CALISTOGA_AERMOD_PM10_V3.AD\PE00G003.PLT 39
   PLOTFILE PERIOD PAREA2 CALISTOGA_AERMOD_PM10_V3.AD\PE00G004.PLT 40
   SUMMFILE Calistoga_AERMOD_PM10_v3.sum
OU FINISHED
**
***************************************
** Project Parameters
***************************************
** PROJCTN  CoordinateSystemUTM
** DESCPTN  UTM: Universal Transverse Mercator
** DATUM    World Geodetic System 1984
** DTMRGN   Global Definition
** UNITS    m
** ZONE     10
** ZONEINX  0
**
```

```
↑ *** AERMOD - VERSION  18081 ***   ***
C:\MODEL\CALISTOGA\CALISTOGA_AERMOD_PM10_V3\CALISTOGA_AERMOD_PM10_V3 ***
07/26/19
 *** AERMET - VERSION  14134 ***   ***
                       ***       09:03:40

                                    PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

                                                    ***     MODEL SETUP OPTIONS SUMMARY
 ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses RURAL Dispersion Only.

 **Model Uses Regulatory DEFAULT Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.

 **Other Options Specified:
         CCVR_Sub - Meteorological data includes CCVR substitutions
         TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Accepts FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  PM_10

 **Model Calculates  1 Short Term Average(s) of:   1-HR
     and Calculates PERIOD Averages

 **This Run Includes:     49 Source(s);       5 Source Group(s); and     655
Receptor(s)

                with:      0 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:      0 VOLUME source(s)
```

```
                  and:     49 AREA type source(s)
                  and:      0 LINE source(s)
                  and:      0 OPENPIT source(s)
                  and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  14134

 **Output Options Selected:
          Model Outputs Tables of PERIOD Averages by Receptor
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and
Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    34.80 ;  Decay
Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                                ;
Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      3.8 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out


 **Detailed Error/Message File:   CALISTOGA_AERMOD_PM10_V3.ERR

 **File for Summary of Results:   CALISTOGA_AERMOD_PM10_V3.SUM
```

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54,   3.09,   5.14,   8.23,
10.80,
↑ *** AERMOD - VERSION 18081 ***   ***
C:\MODEL\CALISTOGA\CALISTOGA_AERMOD_PM10_V3\CALISTOGA_AERMOD_PM10_V3 ***
07/26/19
*** AERMET - VERSION 14134 ***   ***
***   09:03:40

PAGE   3
*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\724957.SFC
Met Version: 14134
Profile file: ..\724957.PFL

Surface format: FREE

Profile format: FREE

Surface station no.: 23213 Upper air station no.: 23230
Name: UNKNOWN Name: OAKLAND/WSO_AP
Year: 2009 Year: 2009

First 24 hours of scalar data

```
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN
ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - -
 09 01 01   1 01 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.74
1.00    0.00    0.   10.0  279.9    2.0
 09 01 01   1 02 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.74
1.00    0.00    0.   10.0  279.2    2.0
 09 01 01   1 03 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.74
1.00    0.00    0.   10.0  279.9    2.0
 09 01 01   1 04 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.74
1.00    0.00    0.   10.0  280.4    2.0
 09 01 01   1 05 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.74
1.00    0.00    0.   10.0  280.4    2.0
 09 01 01   1 06 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.74
1.00    0.00    0.   10.0  280.4    2.0
 09 01 01   1 07 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.74
1.00    0.00    0.   10.0  280.4    2.0
 09 01 01   1 08 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.74
1.00    0.00    0.   10.0  280.4    2.0
 09 01 01   1 09 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.74
0.42    0.00    0.   10.0  280.9    2.0
 09 01 01   1 10   17.5 -9.000 -9.000 -9.000  157. -999. -99999.0  0.03   0.74
0.29    0.00    0.   10.0  282.0    2.0
 09 01 01   1 11   32.5 -9.000 -9.000 -9.000  263. -999. -99999.0  0.03   0.74
0.24    0.00    0.   10.0  283.1    2.0
 09 01 01   1 12   82.0 -9.000 -9.000 -9.000  426. -999. -99999.0  0.03   0.74
0.22    0.00    0.   10.0  284.9    2.0
 09 01 01   1 13   87.8  0.208  1.039  0.016  462.  228.     -9.3  0.03   0.74
0.22    2.36  999.   10.0  285.9    2.0
 09 01 01   1 14   74.7  0.288  1.001  0.015  485.  371.    -28.9  0.05   0.74
0.23    3.36  159.   10.0  285.4    2.0
 09 01 01   1 15   49.4  0.351  0.880  0.015  499.  499.    -79.2  0.05   0.74
0.26    4.36  162.   10.0  283.8    2.0
 09 01 01   1 16   12.7  0.265  0.561  0.015  502.  331.   -132.2  0.05   0.74
0.34    3.36  164.   10.0  282.5    2.0
 09 01 01   1 17   -7.2  0.089 -9.000 -9.000 -999.  102.      8.8  0.05   0.74
```

```
0.57    2.36  171.   10.0  281.4    2.0
 09 01 01   1 18   -8.3  0.089 -9.000 -9.000 -999.   64.      7.7  0.05   0.74
1.00    2.36  177.   10.0  279.9    2.0
 09 01 01   1 19   -4.3  0.066 -9.000 -9.000 -999.   41.      6.1  0.05   0.74
1.00    1.76  164.   10.0  278.8    2.0
 09 01 01   1 20  -10.5  0.183 -9.000 -9.000 -999.  188.     52.9  0.05   0.74
1.00    2.86  127.   10.0  278.8    2.0
 09 01 01   1 21   -7.6  0.133 -9.000 -9.000 -999.  117.     27.9  0.05   0.74
1.00    2.36  120.   10.0  278.8    2.0
 09 01 01   1 22 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.74
1.00    0.00    0.   10.0  278.8    2.0
 09 01 01   1 23 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.74
1.00    0.00    0.   10.0  279.2    2.0
 09 01 01   1 24 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.74
1.00    0.00    0.   10.0  279.2    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 09 01 01 01   10.0 1 -999.  -99.00   279.9   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
↑ *** AERMOD - VERSION  18081 ***   ***
C:\MODEL\CALISTOGA\CALISTOGA_AERMOD_PM10_V3\CALISTOGA_AERMOD_PM10_V3 ***
07/26/19
 *** AERMET - VERSION  14134 ***   ***
                       ***       09:03:40

                                  PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

                                        *** THE SUMMARY OF MAXIMUM PERIOD ( 43872
HRS) RESULTS ***


                                    ** CONC OF PM_10    IN MICROGRAMS/M**3
               **


                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - -

ARLN2     1ST HIGHEST VALUE IS      94.06045 AT (  538756.16,  4268970.98,    92.77,
   92.77,    1.50)  DC
          2ND HIGHEST VALUE IS      82.76822 AT (  538756.16,  4268950.98,    93.01,
```

```
   93.01,    1.50)  DC
         3RD HIGHEST VALUE IS      71.77557 AT (  538776.16,  4268970.98,    92.47,
   92.47,    1.50)  DC
         4TH HIGHEST VALUE IS      67.17223 AT (  538776.16,  4268950.98,    92.86,
   92.86,    1.50)  DC
         5TH HIGHEST VALUE IS      62.37605 AT (  538776.16,  4268930.98,    93.11,
   93.11,    1.50)  DC
         6TH HIGHEST VALUE IS      57.34020 AT (  538796.16,  4268970.98,    92.34,
   92.34,    1.50)  DC
         7TH HIGHEST VALUE IS      55.47983 AT (  538796.16,  4268950.98,    92.74,
   92.74,    1.50)  DC
         8TH HIGHEST VALUE IS      53.04437 AT (  538796.16,  4268930.98,    93.02,
   93.02,    1.50)  DC
         9TH HIGHEST VALUE IS      50.42133 AT (  538796.16,  4268910.98,    93.24,
   93.24,    1.50)  DC
        10TH HIGHEST VALUE IS      46.58913 AT (  538816.16,  4268950.98,    92.65,
   92.65,    1.50)  DC

ARLN3    1ST HIGHEST VALUE IS      30.83961 AT (  537004.70,  4269998.01,   104.89,
  285.90,    1.50)  DC
         2ND HIGHEST VALUE IS      30.09678 AT (  537064.70,  4269978.01,   104.79,
  285.90,    1.50)  DC
         3RD HIGHEST VALUE IS      29.01402 AT (  537704.42,  4270278.13,   105.38,
  265.23,    1.50)  DC
         4TH HIGHEST VALUE IS      28.22924 AT (  536964.70,  4270018.01,   105.00,
  285.90,    1.50)  DC
         5TH HIGHEST VALUE IS      27.64900 AT (  537024.70,  4269998.01,   104.89,
  285.90,    1.50)  DC
         6TH HIGHEST VALUE IS      27.56226 AT (  537644.42,  4270138.13,   103.41,
  265.23,    1.50)  DC
         7TH HIGHEST VALUE IS      27.17024 AT (  537684.42,  4270238.13,   104.72,
  265.23,    1.50)  DC
         8TH HIGHEST VALUE IS      27.15804 AT (  537084.70,  4269978.01,   104.69,
  285.90,    1.50)  DC
         9TH HIGHEST VALUE IS      25.72202 AT (  536984.70,  4270018.01,   104.99,
  285.90,    1.50)  DC
        10TH HIGHEST VALUE IS      25.31297 AT (  537664.42,  4270198.13,   104.20,
  265.23,    1.50)  DC

PAREA1   1ST HIGHEST VALUE IS      11.39281 AT (  537851.17,  4269996.58,   101.29,
  265.23,    1.50)  DC
         2ND HIGHEST VALUE IS      11.34884 AT (  537831.17,  4269976.58,   101.21,
  265.23,    1.50)  DC
         3RD HIGHEST VALUE IS      10.97506 AT (  537851.17,  4270016.58,   101.49,
  265.23,    1.50)  DC
         4TH HIGHEST VALUE IS      10.96585 AT (  537831.17,  4269996.58,   101.41,
  265.23,    1.50)  DC
         5TH HIGHEST VALUE IS      10.83324 AT (  537811.17,  4269976.58,   101.35,
```

```
  265.23,    1.50)  DC
         6TH HIGHEST VALUE IS      10.60055 AT (  537831.17,  4270016.58,   101.55,
  265.23,    1.50)  DC
         7TH HIGHEST VALUE IS      10.57257 AT (  537851.17,  4270036.58,   101.72,
  265.23,    1.50)  DC
         8TH HIGHEST VALUE IS      10.50189 AT (  537811.17,  4269996.58,   101.59,
  265.23,    1.50)  DC
         9TH HIGHEST VALUE IS      10.23979 AT (  537831.17,  4270036.58,   101.77,
  265.23,    1.50)  DC
        10TH HIGHEST VALUE IS      10.17625 AT (  537811.17,  4270016.58,   101.82,
  265.23,    1.50)  DC

PAREA2    1ST HIGHEST VALUE IS      35.04983 AT (  537444.42,  4270158.13,   103.29,
  285.90,    1.50)  DC
         2ND HIGHEST VALUE IS      34.42712 AT (  537404.42,  4270178.13,   103.56,
  285.90,    1.50)  DC
         3RD HIGHEST VALUE IS      33.54310 AT (  537424.42,  4270178.13,   103.56,
  285.90,    1.50)  DC
         4TH HIGHEST VALUE IS      32.55423 AT (  537464.42,  4270158.13,   103.30,
  285.90,    1.50)  DC
         5TH HIGHEST VALUE IS      32.11348 AT (  537484.42,  4270138.13,   103.17,
  285.90,    1.50)  DC
         6TH HIGHEST VALUE IS      32.10238 AT (  537444.42,  4270178.13,   103.43,
  285.90,    1.50)  DC
         7TH HIGHEST VALUE IS      31.72616 AT (  537364.42,  4270198.13,   103.89,
  285.90,    1.50)  DC
         8TH HIGHEST VALUE IS      31.62199 AT (  537384.42,  4270198.13,   103.82,
  285.90,    1.50)  DC
         9TH HIGHEST VALUE IS      31.37125 AT (  537404.42,  4270198.13,   103.71,
  285.90,    1.50)  DC
        10TH HIGHEST VALUE IS      30.98903 AT (  537504.42,  4270118.13,   103.01,
  285.90,    1.50)  DC
↑ *** AERMOD - VERSION  18081 ***   ***
C:\MODEL\CALISTOGA\CALISTOGA_AERMOD_PM10_V3\CALISTOGA_AERMOD_PM10_V3 ***
07/26/19
 *** AERMET - VERSION  14134 ***   ***
                       ***        09:03:40

                                  PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL


                                        *** THE SUMMARY OF MAXIMUM PERIOD ( 43872
HRS) RESULTS ***


                                    ** CONC OF PM_10    IN MICROGRAMS/M**3
               **
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                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS     104.80371 AT (  538756.16,  4268970.98,    92.77,
   92.77,    1.50)  DC
          2ND HIGHEST VALUE IS      93.23921 AT (  538756.16,  4268950.98,    93.01,
   93.01,    1.50)  DC
          3RD HIGHEST VALUE IS      82.26028 AT (  538776.16,  4268970.98,    92.47,
   92.47,    1.50)  DC
          4TH HIGHEST VALUE IS      77.42314 AT (  538776.16,  4268950.98,    92.86,
   92.86,    1.50)  DC
          5TH HIGHEST VALUE IS      72.39089 AT (  538776.16,  4268930.98,    93.11,
   93.11,    1.50)  DC
          6TH HIGHEST VALUE IS      67.57450 AT (  538796.16,  4268970.98,    92.34,
   92.34,    1.50)  DC
          7TH HIGHEST VALUE IS      65.48846 AT (  538796.16,  4268950.98,    92.74,
   92.74,    1.50)  DC
          8TH HIGHEST VALUE IS      62.83431 AT (  538796.16,  4268930.98,    93.02,
   93.02,    1.50)  DC
          9TH HIGHEST VALUE IS      60.00153 AT (  538796.16,  4268910.98,    93.24,
   93.24,    1.50)  DC
         10TH HIGHEST VALUE IS      56.33557 AT (  538816.16,  4268950.98,    92.65,
   92.65,    1.50)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION  18081 ***   ***
C:\MODEL\CALISTOGA\CALISTOGA_AERMOD_PM10_V3\CALISTOGA_AERMOD_PM10_V3 ***
07/26/19
 *** AERMET - VERSION  14134 ***   ***
                       ***        09:03:40

                                  PAGE   6
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

                                                *** THE SUMMARY OF HIGHEST  1-HR
RESULTS ***


                                    ** CONC OF PM_10    IN MICROGRAMS/M**3
               **
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                                                          DATE
                                             NETWORK
GROUP ID                          AVERAGE CONC      (YYMMDDHH)             RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

ARLN2    HIGH   1ST HIGH VALUE IS    1645.89061  ON 11121524: AT (  538756.16,
4268970.98,    92.77,    92.77,    1.50)  DC

ARLN3    HIGH   1ST HIGH VALUE IS     407.95587  ON 13022205: AT (  537110.19,
4269935.54,   103.96,   285.90,    1.50)  DC

PAREA1   HIGH   1ST HIGH VALUE IS     463.88771  ON 10022622: AT (  537888.73,
4269481.02,    97.07,   248.73,    1.50)  DC

PAREA2   HIGH   1ST HIGH VALUE IS    1004.89635  ON 11011420: AT (  537110.19,
4269935.54,   103.96,   285.90,    1.50)  DC

ALL      HIGH   1ST HIGH VALUE IS    1645.89061  ON 11121524: AT (  538756.16,
4268970.98,    92.77,    92.77,    1.50)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION  18081 ***   ***
C:\MODEL\CALISTOGA\CALISTOGA_AERMOD_PM10_V3\CALISTOGA_AERMOD_PM10_V3 ***
07/26/19
 *** AERMET - VERSION  14134 ***   ***
                       ***         09:03:40

                                  PAGE   7
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of        18866 Informational Message(s)

 A Total of        43872 Hours Were Processed

 A Total of        16971 Calm Hours Identified
```

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A Total of         1895 Missing Hours Identified (  4.32 Percent)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
              ***  NONE  ***
```

Construction Health Risk Assessment

Attachment-HRA: Health Risk Calculations

HRA Calculations

AERMOD set up no emissions to contribute to the staging area

Haul Route Information

CalEEMod Distance		
Haul Route H	2.75	miles
Haul Route H	42	miles
AERMOD Distance		
Modeled R1	2.75	miles
Modeled R2	0.39	miles
Emission Fraction		
Haul Route H	100.0%	
Haul Route H	6.5%	

Onsite DPM Emissions per phase

Start Date	End Date	Calendar Days	Work Days	Onsite Unmitigated (tpy)	Haul Route H1 (tpy)	Haul Route H2 (tpy)	Onsite Unmitigated (g/s)	Haul Route H1 (g/s)	Haul Route H2 (g/s)
8/5/2019	2/3/2020	183	131	0.03583	0.00016	0.00033	2.06E-03	9.21E-06	1.90E-05
Per OEHHA guidance, projects <6 mo should be evaluated for 6mo						**Modeled amount**	2.06E-03	9.21E-06	1.24E-06

Haul route emissions based on number of trips

Onsite PM2.5 (exhaust) Emissions per Year

Year	Start Date	End Date	Calendar Days	Work Days	Onsite Unmitigated (tpy)	Haul Route H1 (tpy)	Haul Route H2 (tpy)	Onsite Unmitigated (g/s)	Haul Route H1 (g/s)	Haul Route H2 (g/s)
2019	8/5/2019	11/22/2019	109	80	0.02018	0.00015	0.00032	5.81E-04	4.31E-06	9.21E-06
							Modeled amount	5.81E-04	4.31E-06	6.03E-07

AERMOD Out (emission rate = 1 g/s)

UTM Easting (m)	UTM Northing (m)	Output - [ug/m³]/[g/s]			Unmitigated		Receptor Type
		Main Construction Area	Haul Route H1	Haul Route H2	DPM ug/m³	PM2.5 ug/m³	
538856.16	4268870.98	6.06716	1.05603	32.65553	1.26E-02	3.55E-03	Resident
538876.16	4268870.98	5.8436	1.04216	29.28065	1.21E-02	3.41E-03	Resident
538896.16	4268870.98	5.6238	1.02945	26.33577	1.16E-02	3.28E-03	Resident
538816.16	4268890.98	6.61998	1.09311	42.3734	1.37E-02	3.87E-03	Resident
538836.16	4268890.98	6.40776	1.07867	37.51377	1.33E-02	3.75E-03	Resident
538856.16	4268890.98	6.18605	1.06508	33.30138	1.28E-02	3.62E-03	Resident
538876.16	4268890.98	5.95407	1.05176	29.65525	1.23E-02	3.48E-03	Resident
538896.16	4268890.98	5.72194	1.03927	26.51996	1.18E-02	3.34E-03	Resident
538796.16	4268910.98	6.97772	1.11691	50.42133	1.45E-02	4.09E-03	Resident
538816.16	4268910.98	6.78076	1.10293	43.96695	1.40E-02	3.97E-03	Resident
538836.16	4268910.98	6.55842	1.089	38.46304	1.36E-02	3.84E-03	Resident
538856.16	4268910.98	6.31848	1.0752	33.79533	1.31E-02	3.69E-03	Resident
538876.16	4268910.98	6.06948	1.0618	29.85031	1.26E-02	3.55E-03	Resident
538896.16	4268910.98	5.82294	1.04954	26.5266	1.20E-02	3.40E-03	Resident
538776.16	4268930.98	7.35337	1.1419	62.37605	1.52E-02	4.31E-03	Resident
538796.16	4268930.98	7.16937	1.12757	53.04437	1.49E-02	4.20E-03	Resident
538816.16	4268930.98	6.95357	1.11329	45.41706	1.44E-02	4.07E-03	Resident
538836.16	4268930.98	6.71935	1.09982	39.20699	1.39E-02	3.93E-03	Resident
538856.16	4268930.98	6.46733	1.08661	34.11055	1.34E-02	3.78E-03	Resident
538876.16	4268930.98	6.19559	1.07283	29.84112	1.28E-02	3.62E-03	Resident
538896.16	4268930.98	5.91465	1.05879	26.24377	1.22E-02	3.45E-03	Resident
538756.16	4268950.98	7.74625	1.16853	82.76822	1.61E-02	4.55E-03	Resident
538776.16	4268950.98	7.57068	1.15277	67.17223	1.57E-02	4.44E-03	Resident
538796.16	4268950.98	7.36868	1.13797	55.47983	1.53E-02	4.32E-03	Resident
538816.16	4268950.98	7.14218	1.12421	46.58913	1.48E-02	4.18E-03	Resident
538836.16	4268950.98	6.90493	1.11237	39.73713	1.43E-02	4.04E-03	Resident
538756.16	4268970.98	7.99683	1.18033	94.06045	1.66E-02	4.70E-03	Resident
538776.16	4268970.98	7.78768	1.16199	71.77557	1.62E-02	4.57E-03	Resident
538796.16	4268970.98	7.5747	1.14727	57.3402	1.57E-02	4.44E-03	Resident
537967.09	4269093.96	2.60204	2.52824	2.1144	5.39E-03	1.52E-03	Resident
537987.09	4269093.96	2.90337	2.51219	2.2954	6.01E-03	1.70E-03	Resident
538007.09	4269093.96	3.23758	2.49357	2.49469	6.70E-03	1.89E-03	Resident
537967.09	4269113.96	2.69448	2.59718	2.22866	5.58E-03	1.58E-03	Resident
537987.09	4269113.96	3.01726	2.57615	2.4186	6.25E-03	1.76E-03	Resident
538007.09	4269113.96	3.37649	2.55448	2.6259	6.99E-03	1.97E-03	Resident
538027.09	4269113.96	3.77141	2.52977	2.85473	7.80E-03	2.20E-03	Resident
537967.09	4269133.96	2.79374	2.66656	2.34299	5.79E-03	1.63E-03	Resident
537987.09	4269133.96	3.13948	2.64663	2.5372	6.50E-03	1.84E-03	Resident
538007.09	4269133.96	3.52593	2.62313	2.75046	7.30E-03	2.06E-03	Resident
538027.09	4269133.96	3.95254	2.59088	2.99	8.18E-03	2.31E-03	Resident
538047.09	4269133.96	4.41473	2.55951	3.25048	9.13E-03	2.58E-03	Resident
538067.09	4269133.96	4.90389	2.52081	3.54299	1.01E-02	2.86E-03	Resident
537967.09	4269153.96	2.90095	2.74269	2.45368	6.01E-03	1.70E-03	Resident
537987.09	4269153.96	3.27194	2.72045	2.65366	6.77E-03	1.91E-03	Resident
538007.09	4269153.96	3.68809	2.69263	2.87389	7.63E-03	2.15E-03	Resident
538027.09	4269153.96	4.14895	2.65875	3.11766	8.58E-03	2.42E-03	Resident
538047.09	4269153.96	4.64984	2.62005	3.38735	9.61E-03	2.71E-03	Resident
538067.09	4269153.96	5.17375	2.58025	3.68279	1.07E-02	3.02E-03	Resident
538087.09	4269153.96	5.67983	2.5311	4.01786	1.17E-02	3.31E-03	Resident
537987.09	4269173.96	3.41702	2.79932	2.76674	7.07E-03	2.00E-03	Resident
538007.09	4269173.96	3.86565	2.76419	2.99477	8.00E-03	2.26E-03	Resident
538027.09	4269173.96	4.36367	2.72762	3.24259	9.02E-03	2.55E-03	Resident
538047.09	4269173.96	4.89499	2.68453	3.51748	1.01E-02	2.86E-03	Resident
538067.09	4269173.96	5.44881	2.63855	3.82055	1.13E-02	3.18E-03	Resident
537811.17	4269976.58	10.83324	8.73272	2.94937	2.24E-02	6.33E-03	Resident
537831.17	4269976.58	11.34884	8.27783	3.06076	2.35E-02	6.63E-03	Resident
537811.17	4269996.58	10.50189	8.7997	2.92814	2.17E-02	6.14E-03	Resident
537831.17	4269996.58	10.96585	8.3391	3.031	2.27E-02	6.40E-03	Resident
537851.17	4269996.58	11.39281	7.91094	3.13919	2.36E-02	6.65E-03	Resident
537811.17	4270016.58	10.17625	8.90036	2.90601	2.11E-02	5.95E-03	Resident
537831.17	4270016.58	10.60055	8.42946	3.01134	2.19E-02	6.19E-03	Resident
537851.17	4270016.58	10.97506	8.00136	3.10478	2.27E-02	6.41E-03	Resident
537831.17	4270036.58	10.23979	8.55089	2.98535	2.12E-02	5.98E-03	Resident
537851.17	4270036.58	10.57257	8.11747	3.07448	2.19E-02	6.17E-03	Resident
537090.19	4269875.54	0.73261	8.13582	0.7754	1.59E-03	4.61E-04	Resident
537110.19	4269875.54	0.76756	8.63727	0.7991	1.66E-03	4.83E-04	Resident
537050.19	4269895.54	0.69661	8.65745	0.73304	1.52E-03	4.42E-04	Resident
537070.19	4269895.54	0.7287	9.23233	0.75505	1.59E-03	4.63E-04	Resident
537090.19	4269895.54	0.70119	9.93343	0.77639	1.54E-03	4.50E-04	Resident
537110.19	4269895.54	0.73328	10.59837	0.80151	1.61E-03	4.72E-04	Resident
537030.19	4269915.54	0.63666	9.87617	0.71504	1.40E-03	4.13E-04	Resident
537050.19	4269915.54	0.65943	10.75223	0.73376	1.46E-03	4.30E-04	Resident
537070.19	4269915.54	0.68444	11.65597	0.75345	1.52E-03	4.48E-04	Resident
537090.19	4269915.54	0.71343	12.57355	0.77538	1.59E-03	4.69E-04	Resident
537110.19	4269915.54	0.74911	13.64617	0.80159	1.67E-03	4.94E-04	Resident
537030.19	4269935.54	0.64752	12.36247	0.71621	1.45E-03	4.30E-04	Resident
537050.19	4269935.54	0.67035	13.42801	0.73346	1.51E-03	4.48E-04	Resident
537070.19	4269935.54	0.69757	14.70578	0.75323	1.57E-03	4.69E-04	Resident

537090.19	4269935.54	0.72991	16.38284	0.77579	1.66E-03	4.95E-04	Resident
537110.19	4269935.54	0.77312	19.0413	0.8055	1.77E-03	5.31E-04	Resident
537030.19	4269955.54	0.65918	16.02617	0.71611	1.51E-03	4.52E-04	Resident
537050.19	4269955.54	0.68783	18.37355	0.73617	1.59E-03	4.79E-04	Resident
537064.7	4269978.01	0.74786	30.09678	0.7622	1.82E-03	5.64E-04	Resident
537084.7	4269978.01	0.79099	27.15804	0.78834	1.88E-03	5.77E-04	Resident
537104.7	4269978.01	0.83708	24.79529	0.81525	1.95E-03	5.93E-04	Resident
537004.7	4269998.01	0.67525	30.83961	0.70649	1.68E-03	5.25E-04	Resident
537024.7	4269998.01	0.7097	27.649	0.72785	1.72E-03	5.32E-04	Resident
537044.7	4269998.01	0.74545	25.19206	0.74886	1.77E-03	5.42E-04	Resident
537064.7	4269998.01	0.78772	23.25833	0.77368	1.84E-03	5.58E-04	Resident
537084.7	4269998.01	0.83431	21.65105	0.80075	1.92E-03	5.78E-04	Resident
537104.7	4269998.01	0.88322	20.25317	0.82846	2.01E-03	6.01E-04	Resident
537124.7	4269998.01	0.93454	19.02512	0.85703	2.10E-03	6.25E-04	Resident
536964.7	4270018.01	0.64243	28.22924	0.67592	1.58E-03	4.95E-04	Resident
536984.7	4270018.01	0.67458	25.72202	0.69598	1.63E-03	5.03E-04	Resident
537004.7	4270018.01	0.70836	23.66831	0.7161	1.68E-03	5.14E-04	Resident
537024.7	4270018.01	0.74344	21.93415	0.73593	1.74E-03	5.27E-04	Resident
537044.7	4270018.01	0.78445	20.53988	0.75952	1.81E-03	5.44E-04	Resident
537064.7	4270018.01	0.83466	19.43454	0.7895	1.90E-03	5.69E-04	Resident
537084.7	4270018.01	0.88422	18.40452	0.8181	1.99E-03	5.93E-04	Resident
537104.7	4270018.01	0.93335	17.45175	0.84538	2.09E-03	6.18E-04	Resident
537124.7	4270018.01	0.98338	16.5821	0.87266	2.18E-03	6.43E-04	Resident
536964.7	4270038.01	0.67175	22.29553	0.68364	1.59E-03	4.87E-04	Resident
536984.7	4270038.01	0.70597	20.85152	0.70354	1.65E-03	5.00E-04	Resident
537004.7	4270038.01	0.74238	19.61293	0.72425	1.71E-03	5.16E-04	Resident
537024.7	4270038.01	0.78124	18.53749	0.74602	1.78E-03	5.34E-04	Resident
537044.7	4270038.01	0.82786	17.69348	0.77343	1.87E-03	5.57E-04	Resident
537064.7	4270038.01	0.88099	16.94315	0.8055	1.97E-03	5.85E-04	Resident
537084.7	4270038.01	0.92897	16.18691	0.83262	2.06E-03	6.10E-04	Resident
537104.7	4270038.01	0.97779	15.48715	0.85974	2.16E-03	6.35E-04	Resident
537124.7	4270038.01	1.03384	14.89853	0.89146	2.27E-03	6.65E-04	Resident
536964.7	4270058.01	0.70293	18.80842	0.69084	1.62E-03	4.90E-04	Resident
536984.7	4270058.01	0.73848	17.86217	0.71077	1.69E-03	5.06E-04	Resident
537004.7	4270058.01	0.77683	17.03497	0.73238	1.76E-03	5.25E-04	Resident
537024.7	4270058.01	0.82071	16.35917	0.7581	1.84E-03	5.47E-04	Resident
537044.7	4270058.01	0.871	15.75205	0.7886	1.94E-03	5.74E-04	Resident
537064.7	4270058.01	0.91959	15.14871	0.81715	2.04E-03	6.00E-04	Resident
537084.7	4270058.01	0.9689	14.57966	0.84553	2.13E-03	6.26E-04	Resident
537104.7	4270058.01	1.02066	14.06992	0.87479	2.23E-03	6.54E-04	Resident
537084.42	4270058.13	0.96847	14.57932	0.84524	2.13E-03	6.26E-04	Resident
537104.42	4270058.13	1.0202	14.0697	0.87448	2.23E-03	6.53E-04	Resident
537064.42	4270078.13	0.95366	13.81757	0.82754	2.09E-03	6.14E-04	Resident
537084.42	4270078.13	1.0033	13.36015	0.85605	2.19E-03	6.41E-04	Resident
537104.42	4270078.13	1.05825	12.93696	0.887	2.30E-03	6.71E-04	Resident
537604.42	4270078.13	5.09808	17.69879	2.04578	1.07E-02	3.04E-03	Resident
537064.42	4270098.13	0.98524	12.79722	0.83771	2.15E-03	6.28E-04	Resident
537084.42	4270098.13	1.03655	12.41373	0.8666	2.25E-03	6.56E-04	Resident
537544.42	4270098.13	4.23151	9.03743	1.84567	8.81E-03	2.50E-03	Resident
537564.42	4270098.13	4.49846	10.28687	1.91036	9.37E-03	2.66E-03	Resident
537584.42	4270098.13	4.79747	12.67782	1.97954	1.00E-02	2.84E-03	Resident
537604.42	4270098.13	5.09688	16.72391	2.04323	1.07E-02	3.03E-03	Resident
537624.42	4270098.13	5.428	24.50281	2.11254	1.14E-02	3.26E-03	Resident
537504.42	4270118.13	3.78878	8.20912	1.72942	7.89E-03	2.24E-03	Resident
537544.42	4270118.13	4.25421	9.2762	1.85022	8.86E-03	2.51E-03	Resident
537564.42	4270118.13	4.50414	10.53537	1.9093	9.38E-03	2.66E-03	Resident
537584.42	4270118.13	4.79073	12.58719	1.97513	9.99E-03	2.84E-03	Resident
537604.42	4270118.13	5.1017	15.82269	2.04424	1.07E-02	3.03E-03	Resident
537484.42	4270138.13	3.60156	7.99739	1.67558	7.50E-03	2.13E-03	Resident
537504.42	4270138.13	3.80059	8.22889	1.7302	7.91E-03	2.24E-03	Resident
537524.42	4270138.13	4.02809	8.67809	1.79158	8.39E-03	2.38E-03	Resident
537544.42	4270138.13	4.2637	9.44154	1.85108	8.88E-03	2.52E-03	Resident
537564.42	4270138.13	4.51789	10.63368	1.91189	9.41E-03	2.67E-03	Resident
537584.42	4270138.13	4.78686	12.37715	1.97306	9.98E-03	2.83E-03	Resident
537604.42	4270138.13	5.07264	14.97321	2.03652	1.06E-02	3.01E-03	Resident
537624.42	4270138.13	5.36487	19.25407	2.10076	1.12E-02	3.20E-03	Resident
537644.42	4270138.13	5.64909	27.56226	2.16314	1.19E-02	3.40E-03	Resident
537444.42	4270158.13	3.25753	7.75167	1.57475	6.79E-03	1.93E-03	Resident
537464.42	4270158.13	3.43194	7.81886	1.62525	7.15E-03	2.03E-03	Resident
537484.42	4270158.13	3.61843	7.97708	1.67873	7.53E-03	2.14E-03	Resident
537504.42	4270158.13	3.82244	8.27308	1.73587	7.96E-03	2.26E-03	Resident
537524.42	4270158.13	4.03488	8.76403	1.79205	8.40E-03	2.38E-03	Resident
537544.42	4270158.13	4.26304	9.51761	1.84911	8.88E-03	2.52E-03	Resident
537564.42	4270158.13	4.52251	10.61454	1.91236	9.42E-03	2.67E-03	Resident
537584.42	4270158.13	4.78421	12.12747	1.97289	9.98E-03	2.83E-03	Resident
537604.42	4270158.13	5.03746	14.22742	2.02892	1.05E-02	2.99E-03	Resident
537624.42	4270158.13	5.30955	17.6649	2.09098	1.11E-02	3.16E-03	Resident
537644.42	4270158.13	5.57039	23.62835	2.1507	1.17E-02	3.34E-03	Resident
537404.42	4270178.13	2.94889	7.62064	1.47874	6.15E-03	1.75E-03	Resident
537424.42	4270178.13	3.10233	7.60981	1.52424	6.47E-03	1.83E-03	Resident
537444.42	4270178.13	3.27521	7.66768	1.57712	6.82E-03	1.94E-03	Resident
537464.42	4270178.13	3.43999	7.7713	1.62539	7.16E-03	2.03E-03	Resident
537484.42	4270178.13	3.62761	7.9738	1.68027	7.55E-03	2.14E-03	Resident
537504.42	4270178.13	3.83763	8.31495	1.73992	7.99E-03	2.26E-03	Resident
537524.42	4270178.13	4.05598	8.83033	1.79815	8.44E-03	2.39E-03	Resident
537544.42	4270178.13	4.28683	9.55801	1.8564	8.93E-03	2.53E-03	Resident
537564.42	4270178.13	4.51761	10.52913	1.91109	9.41E-03	2.67E-03	Resident
537584.42	4270178.13	4.76303	11.82027	1.96849	9.93E-03	2.82E-03	Resident
537604.42	4270178.13	5.00551	13.64823	2.02433	1.04E-02	2.97E-03	Resident
537624.42	4270178.13	5.2532	16.46189	2.08255	1.10E-02	3.12E-03	Resident
537644.42	4270178.13	5.49361	20.99182	2.1403	1.15E-02	3.28E-03	Resident
537364.42	4270198.13	2.67599	7.57046	1.39045	5.59E-03	1.59E-03	Resident
537384.42	4270198.13	2.81701	7.52234	1.43326	5.88E-03	1.67E-03	Resident
537404.42	4270198.13	2.96798	7.50518	1.48005	6.19E-03	1.76E-03	Resident
537424.42	4270198.13	3.11799	7.52219	1.52603	6.50E-03	1.84E-03	Resident
537444.42	4270198.13	3.28276	7.59263	1.57727	6.84E-03	1.94E-03	Resident
537464.42	4270198.13	3.45238	7.7284	1.62859	7.19E-03	2.04E-03	Resident
537484.42	4270198.13	3.63778	7.95996	1.68309	7.57E-03	2.15E-03	Resident
537504.42	4270198.13	3.84603	8.34512	1.74214	8.01E-03	2.27E-03	Resident
537524.42	4270198.13	4.06375	8.856	1.80026	8.46E-03	2.40E-03	Resident
537544.42	4270198.13	4.29753	9.54489	1.86023	8.95E-03	2.54E-03	Resident
537564.42	4270198.13	4.5286	10.43909	1.91657	9.43E-03	2.68E-03	Resident
537584.42	4270198.13	4.7495	11.57099	1.96837	9.90E-03	2.81E-03	Resident
537604.42	4270198.13	4.96986	13.14608	2.0203	1.04E-02	2.94E-03	Resident
537624.42	4270198.13	5.1922	15.43771	2.07432	1.08E-02	3.08E-03	Resident
537644.42	4270198.13	5.4116	19.00606	2.12953	1.13E-02	3.22E-03	Resident
537664.42	4270198.13	5.62408	25.31297	2.18535	1.18E-02	3.38E-03	Resident
537324.42	4270218.13	2.43735	7.55193	1.3111	5.10E-03	1.45E-03	Resident
537344.42	4270218.13	2.56182	7.47263	1.34894	5.35E-03	1.52E-03	Resident
537364.42	4270218.13	2.6991	7.41888	1.39203	5.63E-03	1.60E-03	Resident
537384.42	4270218.13	2.8381	7.41419	1.43574	5.92E-03	1.68E-03	Resident
537404.42	4270218.13	2.97786	7.41571	1.47966	6.21E-03	1.76E-03	Resident
537424.42	4270218.13	3.1231	7.45622	1.52552	6.51E-03	1.85E-03	Resident

537444.42	4270218.13	3.28608	7.55216	1.57731	6.85E-03	1.94E-03	Resident
537464.42	4270218.13	3.45004	7.71145	1.62715	7.18E-03	2.04E-03	Resident
537484.42	4270218.13	3.6439	7.96995	1.68501	7.59E-03	2.15E-03	Resident
537504.42	4270218.13	3.8556	8.34254	1.74531	8.03E-03	2.28E-03	Resident
537524.42	4270218.13	4.07169	8.83704	1.8033	8.48E-03	2.40E-03	Resident
537544.42	4270218.13	4.29126	9.47256	1.8595	8.94E-03	2.53E-03	Resident
537564.42	4270218.13	4.51377	10.28779	1.91504	9.40E-03	2.67E-03	Resident
537584.42	4270218.13	4.73121	11.33277	1.9685	9.86E-03	2.80E-03	Resident
537604.42	4270218.13	4.94282	12.72755	2.02078	1.03E-02	2.93E-03	Resident
537624.42	4270218.13	5.14008	14.65555	2.06999	1.07E-02	3.05E-03	Resident
537644.42	4270218.13	5.33376	17.5421	2.12047	1.12E-02	3.17E-03	Resident
537664.42	4270218.13	5.51872	22.17597	2.17135	1.16E-02	3.30E-03	Resident
537284.42	4270238.13	2.23008	7.5715	1.24038	4.67E-03	1.33E-03	Resident
537304.42	4270238.13	2.3405	7.47014	1.27431	4.89E-03	1.39E-03	Resident
537324.42	4270238.13	2.45674	7.38645	1.31005	5.13E-03	1.46E-03	Resident
537344.42	4270238.13	2.5836	7.3535	1.35024	5.39E-03	1.53E-03	Resident
537364.42	4270238.13	2.72066	7.31764	1.39496	5.68E-03	1.61E-03	Resident
537384.42	4270238.13	2.84748	7.30329	1.43522	5.94E-03	1.69E-03	Resident
537404.42	4270238.13	2.98186	7.32353	1.47879	6.22E-03	1.76E-03	Resident
537424.42	4270238.13	3.1251	7.38538	1.52527	6.51E-03	1.85E-03	Resident
537444.42	4270238.13	3.27791	7.49823	1.57393	6.83E-03	1.94E-03	Resident
537464.42	4270238.13	3.45186	7.6822	1.62793	7.19E-03	2.04E-03	Resident
537484.42	4270238.13	3.64536	7.97606	1.68565	7.59E-03	2.15E-03	Resident
537504.42	4270238.13	3.85305	8.34303	1.74472	8.02E-03	2.27E-03	Resident
537524.42	4270238.13	4.06792	8.81531	1.80308	8.47E-03	2.40E-03	Resident
537544.42	4270238.13	4.28565	9.41129	1.86021	8.92E-03	2.53E-03	Resident
537564.42	4270238.13	4.4949	10.15577	1.91353	9.36E-03	2.65E-03	Resident
537584.42	4270238.13	4.70045	11.09846	1.96579	9.79E-03	2.78E-03	Resident
537604.42	4270238.13	4.90149	12.30547	2.01769	1.02E-02	2.90E-03	Resident
537624.42	4270238.13	5.08183	13.99816	2.06459	1.06E-02	3.01E-03	Resident
537644.42	4270238.13	5.25908	16.4156	2.11301	1.10E-02	3.13E-03	Resident
537664.42	4270238.13	5.41497	20.04144	2.15772	1.13E-02	3.23E-03	Resident
537684.42	4270238.13	5.56451	27.17024	2.20399	1.17E-02	3.35E-03	Resident
537244.42	4270258.13	2.06043	7.66944	1.18225	4.32E-03	1.23E-03	Resident
537264.42	4270258.13	2.14327	7.54233	1.20569	4.49E-03	1.28E-03	Resident
537284.42	4270258.13	2.24586	7.43487	1.2374	4.70E-03	1.34E-03	Resident
537304.42	4270258.13	2.3627	7.34901	1.27492	4.94E-03	1.40E-03	Resident
537324.42	4270258.13	2.47877	7.27932	1.31175	5.18E-03	1.47E-03	Resident
537344.42	4270258.13	2.61366	7.26136	1.35722	5.46E-03	1.55E-03	Resident
537364.42	4270258.13	2.73428	7.236	1.39644	5.70E-03	1.62E-03	Resident
537384.42	4270258.13	2.85381	7.23741	1.43544	5.95E-03	1.69E-03	Resident
537404.42	4270258.13	2.98114	7.27336	1.47759	6.21E-03	1.76E-03	Resident
537424.42	4270258.13	3.1142	7.34843	1.521	6.49E-03	1.84E-03	Resident
537444.42	4270258.13	3.27375	7.48167	1.5728	6.82E-03	1.93E-03	Resident
537464.42	4270258.13	3.45059	7.67993	1.62794	7.19E-03	2.04E-03	Resident
537484.42	4270258.13	3.65268	7.95871	1.68886	7.60E-03	2.16E-03	Resident
537504.42	4270258.13	3.8586	8.33897	1.7477	8.03E-03	2.28E-03	Resident
537524.42	4270258.13	4.07115	8.78888	1.80635	8.48E-03	2.40E-03	Resident
537544.42	4270258.13	4.27788	9.3442	1.86151	8.91E-03	2.52E-03	Resident
537564.42	4270258.13	4.471	10.02571	1.91158	9.31E-03	2.64E-03	Resident
537584.42	4270258.13	4.66461	10.85004	1.96254	9.72E-03	2.76E-03	Resident
537604.42	4270258.13	4.85273	11.96117	2.01298	1.01E-02	2.87E-03	Resident
537624.42	4270258.13	5.01973	13.44985	2.05826	1.05E-02	2.97E-03	Resident
537644.42	4270258.13	5.17998	15.50738	2.104	1.08E-02	3.08E-03	Resident
537664.42	4270258.13	5.29623	18.43758	2.13862	1.11E-02	3.16E-03	Resident
537684.42	4270258.13	5.39953	23.43764	2.17265	1.13E-02	3.24E-03	Resident
537204.42	4270278.13	1.92267	7.80489	1.13492	4.04E-03	1.15E-03	Resident
537224.42	4270278.13	2.00066	7.66551	1.15845	4.20E-03	1.20E-03	Resident
537244.42	4270278.13	2.07094	7.53594	1.17697	4.34E-03	1.24E-03	Resident
537264.42	4270278.13	2.15773	7.41955	1.20249	4.52E-03	1.29E-03	Resident
537284.42	4270278.13	2.27869	7.32872	1.24337	4.77E-03	1.36E-03	Resident
537304.42	4270278.13	2.39319	7.25325	1.28086	5.00E-03	1.42E-03	Resident
537324.42	4270278.13	2.50498	7.1953	1.3172	5.23E-03	1.49E-03	Resident
537344.42	4270278.13	2.62907	7.18408	1.35963	5.49E-03	1.56E-03	Resident
537364.42	4270278.13	2.74142	7.17204	1.39706	5.72E-03	1.62E-03	Resident
537384.42	4270278.13	2.85744	7.1615	1.43623	5.96E-03	1.69E-03	Resident
537404.42	4270278.13	2.97958	7.20742	1.47737	6.21E-03	1.76E-03	Resident
537424.42	4270278.13	3.11574	7.29558	1.52258	6.49E-03	1.84E-03	Resident
537444.42	4270278.13	3.27566	7.44067	1.57449	6.82E-03	1.93E-03	Resident
537464.42	4270278.13	3.46166	7.68551	1.63301	7.21E-03	2.04E-03	Resident
537484.42	4270278.13	3.67037	7.96602	1.69658	7.64E-03	2.17E-03	Resident
537504.42	4270278.13	3.87032	8.33102	1.75386	8.06E-03	2.28E-03	Resident
537524.42	4270278.13	4.07158	8.7558	1.80978	8.48E-03	2.40E-03	Resident
537544.42	4270278.13	4.25959	9.27085	1.86024	8.87E-03	2.51E-03	Resident
537564.42	4270278.13	4.44353	9.87404	1.90948	9.25E-03	2.62E-03	Resident
537584.42	4270278.13	4.62421	10.65499	1.95859	9.63E-03	2.73E-03	Resident
537604.42	4270278.13	4.7917	11.64922	2.0046	9.99E-03	2.83E-03	Resident
537624.42	4270278.13	4.95299	12.97065	2.05063	1.03E-02	2.93E-03	Resident
537644.42	4270278.13	5.08773	14.75562	2.09047	1.06E-02	3.02E-03	Resident
537664.42	4270278.13	5.16868	17.13932	2.1158	1.08E-02	3.08E-03	Resident
537684.42	4270278.13	5.26034	20.92649	2.14804	1.10E-02	3.15E-03	Resident
537704.42	4270278.13	5.39293	29.01402	2.1965	1.14E-02	3.26E-03	Resident
537164.42	4270298.13	1.79225	7.98617	1.08699	3.77E-03	1.08E-03	Resident
537184.42	4270298.13	1.8674	7.82494	1.11167	3.92E-03	1.12E-03	Resident
537204.42	4270298.13	1.94197	7.67916	1.13463	4.08E-03	1.16E-03	Resident
537224.42	4270298.13	2.00815	7.54773	1.15217	4.21E-03	1.20E-03	Resident
537244.42	4270298.13	2.0788	7.39696	1.17104	4.35E-03	1.24E-03	Resident
537264.42	4270298.13	2.19428	7.32285	1.21065	4.59E-03	1.31E-03	Resident
537284.42	4270298.13	2.31362	7.23916	1.25175	4.84E-03	1.38E-03	Resident
537304.42	4270298.13	2.41901	7.17308	1.28637	5.05E-03	1.44E-03	Resident
537324.42	4270298.13	2.52696	7.12687	1.32272	5.28E-03	1.50E-03	Resident
537344.42	4270298.13	2.63622	7.10223	1.3603	5.50E-03	1.56E-03	Resident
537364.42	4270298.13	2.74289	7.10024	1.39696	5.72E-03	1.62E-03	Resident
537384.42	4270298.13	2.85442	7.12594	1.43555	5.95E-03	1.69E-03	Resident
537404.42	4270298.13	2.97394	7.18401	1.47634	6.20E-03	1.76E-03	Resident
537424.42	4270298.13	3.11773	7.28782	1.52478	6.50E-03	1.84E-03	Resident
537444.42	4270298.13	3.29094	7.44795	1.58171	6.85E-03	1.94E-03	Resident
537464.42	4270298.13	3.47744	7.69207	1.64025	7.24E-03	2.05E-03	Resident
537484.42	4270298.13	3.68214	7.96557	1.70263	7.67E-03	2.17E-03	Resident
537504.42	4270298.13	3.87664	8.31595	1.75887	8.07E-03	2.29E-03	Resident
537524.42	4270298.13	4.06022	8.71575	1.80998	8.45E-03	2.40E-03	Resident
537544.42	4270298.13	4.23694	9.17476	1.85838	8.82E-03	2.50E-03	Resident
537564.42	4270298.13	4.41039	9.76088	1.90623	9.18E-03	2.60E-03	Resident
537584.42	4270298.13	4.57219	10.4727	1.95104	9.52E-03	2.70E-03	Resident
537604.42	4270298.13	4.73175	11.38374	1.99673	9.86E-03	2.80E-03	Resident
537624.42	4270298.13	4.87069	12.55339	2.0376	1.02E-02	2.88E-03	Resident
537644.42	4270298.13	4.93707	13.99901	2.05669	1.03E-02	2.93E-03	Resident
537664.42	4270298.13	5.0349	16.05331	2.08969	1.05E-02	2.99E-03	Resident
537684.42	4270298.13	5.09602	18.85347	2.11344	1.07E-02	3.04E-03	Resident
537704.42	4270298.13	5.23804	24.46006	2.16689	1.10E-02	3.15E-03	Resident
537124.42	4270318.13	1.64107	8.25389	1.02378	3.46E-03	9.89E-04	Resident
537144.42	4270318.13	1.72177	8.0657	1.05415	3.62E-03	1.03E-03	Resident
537164.42	4270318.13	1.80538	7.87714	1.08443	3.80E-03	1.08E-03	Resident

537184.42	4270318.13	1.88133	7.71627	1.10923	3.95E-03	1.13E-03	Resident
537204.42	4270318.13	1.95272	7.5753	1.13037	4.10E-03	1.17E-03	Resident
537224.42	4270318.13	2.01737	7.42609	1.14718	4.23E-03	1.20E-03	Resident
537244.42	4270318.13	2.10774	7.33492	1.17589	4.41E-03	1.26E-03	Resident
537264.42	4270318.13	2.21932	7.23878	1.21457	4.64E-03	1.32E-03	Resident
537284.42	4270318.13	2.33279	7.16252	1.25433	4.88E-03	1.39E-03	Resident
537304.42	4270318.13	2.43573	7.10677	1.28952	5.09E-03	1.45E-03	Resident
537324.42	4270318.13	2.53553	7.07094	1.32405	5.29E-03	1.50E-03	Resident
537344.42	4270318.13	2.63578	7.05635	1.35933	5.50E-03	1.56E-03	Resident
537364.42	4270318.13	2.73626	7.06487	1.39483	5.71E-03	1.62E-03	Resident
537384.42	4270318.13	2.83441	7.0971	1.42868	5.91E-03	1.68E-03	Resident
537404.42	4270318.13	2.96678	7.17065	1.47516	6.18E-03	1.75E-03	Resident
537424.42	4270318.13	3.14224	7.29611	1.53616	6.55E-03	1.86E-03	Resident
537444.42	4270318.13	3.3073	7.45688	1.58949	6.89E-03	1.95E-03	Resident
537464.42	4270318.13	3.49888	7.69903	1.65007	7.29E-03	2.07E-03	Resident
537484.42	4270318.13	3.69335	7.96259	1.70917	7.69E-03	2.18E-03	Resident
537504.42	4270318.13	3.87516	8.29696	1.7619	8.07E-03	2.29E-03	Resident
537524.42	4270318.13	4.04378	8.65495	1.80911	8.42E-03	2.39E-03	Resident
537544.42	4270318.13	4.21014	9.11012	1.85575	8.76E-03	2.48E-03	Resident
537564.42	4270318.13	4.37223	9.65776	1.90162	9.10E-03	2.58E-03	Resident
537584.42	4270318.13	4.52212	10.31712	1.94438	9.42E-03	2.67E-03	Resident
537604.42	4270318.13	4.66514	11.13015	1.98656	9.72E-03	2.76E-03	Resident
537624.42	4270318.13	4.72751	12.10372	2.00309	9.86E-03	2.80E-03	Resident
537644.42	4270318.13	4.76872	13.20168	2.01553	9.95E-03	2.83E-03	Resident
537664.42	4270318.13	4.84891	14.89898	2.04423	1.01E-02	2.88E-03	Resident
537684.42	4270318.13	4.95409	17.4121	2.08444	1.04E-02	2.95E-03	Resident
537704.42	4270318.13	5.12471	21.81219	2.14971	1.08E-02	3.07E-03	Resident
537084.42	4270338.13	1.49105	8.69168	0.95615	3.15E-03	9.04E-04	Resident
537104.42	4270338.13	1.56398	8.41915	0.98548	3.30E-03	9.45E-04	Resident
537124.42	4270338.13	1.63897	8.17646	1.01439	3.45E-03	9.87E-04	Resident
537144.42	4270338.13	1.71731	7.96158	1.04334	3.61E-03	1.03E-03	Resident
537164.42	4270338.13	1.80372	7.77466	1.07465	3.79E-03	1.08E-03	Resident
537184.42	4270338.13	1.88806	7.62842	1.10338	3.96E-03	1.13E-03	Resident
537204.42	4270338.13	1.95537	7.47085	1.12247	4.10E-03	1.17E-03	Resident
537224.42	4270338.13	2.02458	7.34595	1.14187	4.24E-03	1.21E-03	Resident
537244.42	4270338.13	2.10945	7.23606	1.16877	4.42E-03	1.26E-03	Resident
537264.42	4270338.13	2.22478	7.17026	1.21061	4.65E-03	1.32E-03	Resident
537284.42	4270338.13	2.33835	7.1012	1.25224	4.89E-03	1.39E-03	Resident
537304.42	4270338.13	2.43904	7.05431	1.28843	5.09E-03	1.45E-03	Resident
537324.42	4270338.13	2.53194	7.02808	1.32163	5.29E-03	1.50E-03	Resident
537344.42	4270338.13	2.62365	7.02237	1.35474	5.47E-03	1.55E-03	Resident
537364.42	4270338.13	2.71982	7.03963	1.3895	5.67E-03	1.61E-03	Resident
537384.42	4270338.13	2.84259	7.08928	1.43425	5.93E-03	1.68E-03	Resident
537404.42	4270338.13	2.99712	7.17823	1.48955	6.25E-03	1.77E-03	Resident
537424.42	4270338.13	3.15869	7.30317	1.54447	6.58E-03	1.87E-03	Resident
537444.42	4270338.13	3.32875	7.49393	1.59954	6.93E-03	1.97E-03	Resident
537464.42	4270338.13	3.51056	7.70198	1.65659	7.31E-03	2.07E-03	Resident
537484.42	4270338.13	3.69464	7.95642	1.71261	7.69E-03	2.18E-03	Resident
537504.42	4270338.13	3.85794	8.25736	1.75972	8.03E-03	2.28E-03	Resident
537524.42	4270338.13	4.02239	8.6198	1.80715	8.37E-03	2.37E-03	Resident
537544.42	4270338.13	4.17842	9.05157	1.85188	8.70E-03	2.47E-03	Resident
537564.42	4270338.13	4.32355	9.56204	1.89357	9.00E-03	2.55E-03	Resident
537584.42	4270338.13	4.46675	10.16037	1.93596	9.30E-03	2.64E-03	Resident
537604.42	4270338.13	4.54039	10.86529	1.95557	9.46E-03	2.68E-03	Resident
537624.42	4270338.13	4.55413	11.56472	1.95693	9.50E-03	2.69E-03	Resident
537644.42	4270338.13	4.58665	12.57948	1.96734	9.57E-03	2.72E-03	Resident
537664.42	4270338.13	4.63949	13.74252	1.98787	9.69E-03	2.75E-03	Resident
537684.42	4270338.13	4.78006	16.14693	2.04239	1.00E-02	2.85E-03	Resident
537704.42	4270338.13	5.01614	19.95208	2.13343	1.05E-02	3.00E-03	Resident
536747.04	4270421.22	0.73705	15.43905	0.60638	1.66E-03	4.95E-04	Jr-Sr High
536767.04	4270421.22	0.76972	17.32302	0.62084	1.75E-03	5.22E-04	Jr-Sr High
536707.04	4270441.22	0.7005	11.56453	0.58476	1.55E-03	4.57E-04	Jr-Sr High
536727.04	4270441.22	0.73186	12.87596	0.59935	1.63E-03	4.81E-04	Jr-Sr High
536747.04	4270441.22	0.76597	14.30451	0.61471	1.71E-03	5.07E-04	Jr-Sr High
536767.04	4270441.22	0.7993	15.87726	0.6287	1.79E-03	5.33E-04	Jr-Sr High
536687.04	4270461.22	0.69258	9.86193	0.57599	1.52E-03	4.45E-04	Jr-Sr High
536707.04	4270461.22	0.7229	10.90044	0.58969	1.59E-03	4.67E-04	Jr-Sr High
536727.04	4270461.22	0.75755	12.07123	0.60547	1.67E-03	4.92E-04	Jr-Sr High
536747.04	4270461.22	0.79196	13.31672	0.62031	1.76E-03	5.18E-04	Jr-Sr High
536767.04	4270461.22	0.82985	14.7082	0.63698	1.85E-03	5.46E-04	Jr-Sr High
536647.04	4270481.22	0.65349	7.82457	0.55187	1.42E-03	4.13E-04	Jr-Sr High
536667.04	4270481.22	0.68529	8.56557	0.56763	1.49E-03	4.35E-04	Jr-Sr High
536687.04	4270481.22	0.71631	9.39776	0.58177	1.56E-03	4.57E-04	Jr-Sr High
536707.04	4270481.22	0.74693	10.29681	0.5948	1.64E-03	4.78E-04	Jr-Sr High
536727.04	4270481.22	0.78299	11.34597	0.61096	1.72E-03	5.04E-04	Jr-Sr High
536747.04	4270481.22	0.82041	12.47564	0.62763	1.81E-03	5.30E-04	Jr-Sr High
536767.04	4270481.22	0.85807	13.6987	0.64428	1.90E-03	5.58E-04	Jr-Sr High
536607.04	4270501.22	0.61925	6.41593	0.53049	1.34E-03	3.87E-04	Jr-Sr High
536627.04	4270501.22	0.64647	6.94982	0.54386	1.40E-03	4.06E-04	Jr-Sr High
536647.04	4270501.22	0.67612	7.53474	0.55791	1.46E-03	4.25E-04	Jr-Sr High
536667.04	4270501.22	0.70791	8.19937	0.57262	1.54E-03	4.47E-04	Jr-Sr High
536687.04	4270501.22	0.74056	8.95564	0.58716	1.61E-03	4.69E-04	Jr-Sr High
536707.04	4270501.22	0.77361	9.80157	0.60147	1.69E-03	4.92E-04	Jr-Sr High
536727.04	4270501.22	0.80901	10.74356	0.61715	1.77E-03	5.16E-04	Jr-Sr High
536747.04	4270501.22	0.84588	11.76091	0.63377	1.85E-03	5.42E-04	Jr-Sr High
536767.04	4270501.22	0.88292	12.85904	0.65067	1.94E-03	5.68E-04	Jr-Sr High
536567.04	4270521.22	0.58592	5.34164	0.50904	1.26E-03	3.63E-04	Jr-Sr High
536587.04	4270521.22	0.61064	5.78018	0.52148	1.31E-03	3.80E-04	Jr-Sr High
536607.04	4270521.22	0.63771	6.24268	0.53457	1.37E-03	3.97E-04	Jr-Sr High
536627.04	4270521.22	0.66699	6.73406	0.54828	1.44E-03	4.17E-04	Jr-Sr High
536647.04	4270521.22	0.69825	7.27246	0.56265	1.51E-03	4.37E-04	Jr-Sr High
536667.04	4270521.22	0.7312	7.88272	0.57752	1.58E-03	4.59E-04	Jr-Sr High
536687.04	4270521.22	0.7644	8.57427	0.59222	1.66E-03	4.81E-04	Jr-Sr High
536707.04	4270521.22	0.7978	9.34971	0.60694	1.73E-03	5.04E-04	Jr-Sr High
536727.04	4270521.22	0.83384	10.21775	0.62349	1.81E-03	5.29E-04	Jr-Sr High
536747.04	4270521.22	0.87109	11.15723	0.64112	1.90E-03	5.54E-04	Jr-Sr High
536767.04	4270521.22	0.90409	12.13924	0.65631	1.98E-03	5.78E-04	Jr-Sr High
536547.04	4270541.22	0.57774	4.83443	0.50053	1.24E-03	3.57E-04	Jr-Sr High
536567.04	4270541.22	0.60238	5.21897	0.51272	1.29E-03	3.73E-04	Jr-Sr High
536587.04	4270541.22	0.62925	5.62656	0.5255	1.35E-03	3.90E-04	Jr-Sr High
536607.04	4270541.22	0.65816	6.05497	0.53889	1.41E-03	4.09E-04	Jr-Sr High
536627.04	4270541.22	0.68883	6.50941	0.55291	1.48E-03	4.28E-04	Jr-Sr High
536647.04	4270541.22	0.72099	7.00667	0.56743	1.55E-03	4.49E-04	Jr-Sr High
536667.04	4270541.22	0.75316	7.56223	0.58173	1.62E-03	4.70E-04	Jr-Sr High
536687.04	4270541.22	0.78591	8.1953	0.59639	1.70E-03	4.92E-04	Jr-Sr High
536707.04	4270541.22	0.81935	8.91121	0.61176	1.77E-03	5.14E-04	Jr-Sr High
536727.04	4270541.22	0.85319	9.70228	0.62769	1.85E-03	5.38E-04	Jr-Sr High
536747.04	4270541.22	0.8862	10.55065	0.64354	1.92E-03	5.60E-04	Jr-Sr High
536767.04	4270541.22	0.92194	11.49467	0.66162	2.01E-03	5.85E-04	Jr-Sr High
536507.04	4270561.22	0.54755	4.10426	0.48093	1.17E-03	3.36E-04	Jr-Sr High
536527.04	4270561.22	0.56997	4.42085	0.49226	1.22E-03	3.50E-04	Jr-Sr High
536547.04	4270561.22	0.59475	4.75953	0.50432	1.27E-03	3.66E-04	Jr-Sr High
536567.04	4270561.22	0.62182	5.12149	0.51717	1.33E-03	3.83E-04	Jr-Sr High

536587.04	4270561.22	0.64959	5.49819	0.52976	1.39E-03	4.01E-04	Jr-Sr High
536607.04	4270561.22	0.67966	5.89651	0.54343	1.46E-03	4.20E-04	Jr-Sr High
536627.04	4270561.22	0.71097	6.31923	0.55759	1.52E-03	4.40E-04	Jr-Sr High
536647.04	4270561.22	0.74315	6.78176	0.57223	1.60E-03	4.61E-04	Jr-Sr High
536667.04	4270561.22	0.77387	7.29298	0.58594	1.66E-03	4.81E-04	Jr-Sr High
536687.04	4270561.22	0.80563	7.88083	0.60067	1.73E-03	5.02E-04	Jr-Sr High
536707.04	4270561.22	0.8379	8.54725	0.61613	1.81E-03	5.24E-04	Jr-Sr High
536727.04	4270561.22	0.86954	9.28036	0.63168	1.88E-03	5.45E-04	Jr-Sr High
536747.04	4270561.22	0.90007	10.06965	0.64699	1.95E-03	5.66E-04	Jr-Sr High
536767.04	4270561.22	0.93003	10.93188	0.66235	2.02E-03	5.87E-04	Jr-Sr High
536467.04	4270581.22	0.51906	3.51275	0.46198	1.10E-03	3.17E-04	Jr-Sr High
536487.04	4270581.22	0.54014	3.78396	0.4731	1.15E-03	3.30E-04	Jr-Sr High
536507.04	4270581.22	0.56253	4.06564	0.48419	1.20E-03	3.44E-04	Jr-Sr High
536527.04	4270581.22	0.58717	4.36467	0.496	1.25E-03	3.60E-04	Jr-Sr High
536547.04	4270581.22	0.61395	4.68425	0.50854	1.31E-03	3.77E-04	Jr-Sr High
536567.04	4270581.22	0.64174	5.0208	0.52118	1.37E-03	3.95E-04	Jr-Sr High
536587.04	4270581.22	0.67187	5.37896	0.53503	1.44E-03	4.14E-04	Jr-Sr High
536607.04	4270581.22	0.70113	5.74563	0.54797	1.50E-03	4.32E-04	Jr-Sr High
536627.04	4270581.22	0.73221	6.14078	0.56224	1.57E-03	4.52E-04	Jr-Sr High
536647.04	4270581.22	0.76305	6.57087	0.57646	1.63E-03	4.72E-04	Jr-Sr High
536667.04	4270581.22	0.7921	7.0467	0.58984	1.70E-03	4.91E-04	Jr-Sr High
536687.04	4270581.22	0.82282	7.59983	0.60483	1.77E-03	5.11E-04	Jr-Sr High
536707.04	4270581.22	0.85254	8.22056	0.6197	1.83E-03	5.31E-04	Jr-Sr High
536727.04	4270581.22	0.87986	8.89471	0.63351	1.90E-03	5.50E-04	Jr-Sr High
536747.04	4270581.22	0.90646	9.62769	0.64729	1.96E-03	5.68E-04	Jr-Sr High
536767.04	4270581.22	0.93741	10.47099	0.66413	2.03E-03	5.90E-04	Jr-Sr High
536447.04	4270601.22	0.51098	3.24593	0.45386	1.08E-03	3.11E-04	Jr-Sr High
536467.04	4270601.22	0.53305	3.50431	0.46547	1.13E-03	3.25E-04	Jr-Sr High
536487.04	4270601.22	0.55541	3.75752	0.47632	1.18E-03	3.39E-04	Jr-Sr High
536507.04	4270601.22	0.57988	4.02405	0.48787	1.23E-03	3.54E-04	Jr-Sr High
536527.04	4270601.22	0.60699	4.30976	0.50063	1.29E-03	3.71E-04	Jr-Sr High
536547.04	4270601.22	0.63544	4.613	0.51379	1.35E-03	3.89E-04	Jr-Sr High
536567.04	4270601.22	0.66373	4.92864	0.52649	1.41E-03	4.07E-04	Jr-Sr High
536587.04	4270601.22	0.69189	5.25571	0.53895	1.48E-03	4.25E-04	Jr-Sr High
536607.04	4270601.22	0.72143	5.60246	0.55247	1.54E-03	4.43E-04	Jr-Sr High
536627.04	4270601.22	0.75155	5.97386	0.56667	1.60E-03	4.62E-04	Jr-Sr High
536647.04	4270601.22	0.78033	6.37592	0.58035	1.67E-03	4.81E-04	Jr-Sr High
536667.04	4270601.22	0.80766	6.79887	0.59359	1.73E-03	4.99E-04	Jr-Sr High
536687.04	4270601.22	0.83582	7.31672	0.60799	1.79E-03	5.17E-04	Jr-Sr High
536707.04	4270601.22	0.86065	7.88492	0.62073	1.85E-03	5.34E-04	Jr-Sr High
536727.04	4270601.22	0.88719	8.52998	0.635	1.91E-03	5.52E-04	Jr-Sr High
536747.04	4270601.22	0.91328	9.24067	0.64926	1.97E-03	5.70E-04	Jr-Sr High
536767.04	4270601.22	0.93948	10.0388	0.6636	2.03E-03	5.89E-04	Jr-Sr High
536447.04	4270621.22	0.52493	3.24271	0.45699	1.11E-03	3.19E-04	Jr-Sr High
536467.04	4270621.22	0.54859	3.47478	0.46865	1.16E-03	3.34E-04	Jr-Sr High
536487.04	4270621.22	0.57283	3.71212	0.47996	1.22E-03	3.49E-04	Jr-Sr High
536507.04	4270621.22	0.60043	3.9691	0.49306	1.27E-03	3.66E-04	Jr-Sr High
536527.04	4270621.22	0.62744	4.2347	0.50528	1.33E-03	3.83E-04	Jr-Sr High
536547.04	4270621.22	0.65551	4.51881	0.51799	1.39E-03	4.00E-04	Jr-Sr High
536567.04	4270621.22	0.68422	4.82002	0.53113	1.46E-03	4.18E-04	Jr-Sr High
536587.04	4270621.22	0.71323	5.13487	0.54466	1.52E-03	4.37E-04	Jr-Sr High
536607.04	4270621.22	0.73964	5.45123	0.55673	1.58E-03	4.53E-04	Jr-Sr High
536627.04	4270621.22	0.7679	5.79764	0.57054	1.64E-03	4.71E-04	Jr-Sr High
536647.04	4270621.22	0.79327	6.16757	0.58298	1.69E-03	4.87E-04	Jr-Sr High
536667.04	4270621.22	0.82021	6.59949	0.5971	1.75E-03	5.05E-04	Jr-Sr High
536687.04	4270621.22	0.84506	7.08602	0.61037	1.81E-03	5.22E-04	Jr-Sr High
536707.04	4270621.22	0.86832	7.63086	0.623	1.86E-03	5.37E-04	Jr-Sr High
536727.04	4270621.22	0.89167	8.24127	0.63594	1.91E-03	5.54E-04	Jr-Sr High
536747.04	4270621.22	0.91536	8.92415	0.64915	1.97E-03	5.70E-04	Jr-Sr High
536447.04	4270641.22	0.54123	3.23509	0.46057	1.15E-03	3.28E-04	Jr-Sr High
536467.04	4270641.22	0.56584	3.45252	0.47207	1.20E-03	3.44E-04	Jr-Sr High
536487.04	4270641.22	0.5932	3.68438	0.48504	1.26E-03	3.61E-04	Jr-Sr High
536507.04	4270641.22	0.61964	3.92084	0.49697	1.31E-03	3.77E-04	Jr-Sr High
536527.04	4270641.22	0.64693	4.17313	0.50937	1.37E-03	3.94E-04	Jr-Sr High
536547.04	4270641.22	0.6747	4.44267	0.52215	1.43E-03	4.11E-04	Jr-Sr High
536567.04	4270641.22	0.70263	4.72752	0.53531	1.49E-03	4.29E-04	Jr-Sr High
536587.04	4270641.22	0.72988	5.02268	0.54839	1.55E-03	4.46E-04	Jr-Sr High
536607.04	4270641.22	0.75505	5.3239	0.56058	1.61E-03	4.62E-04	Jr-Sr High
536627.04	4270641.22	0.7815	5.65435	0.57424	1.66E-03	4.78E-04	Jr-Sr High
536647.04	4270641.22	0.80652	6.0163	0.58756	1.72E-03	4.95E-04	Jr-Sr High
536667.04	4270641.22	0.82888	6.41828	0.59963	1.77E-03	5.09E-04	Jr-Sr High
536687.04	4270641.22	0.84956	6.87413	0.61107	1.82E-03	5.23E-04	Jr-Sr High
536707.04	4270641.22	0.8721	7.40469	0.62392	1.87E-03	5.39E-04	Jr-Sr High
536467.04	4270661.22	0.58484	3.42989	0.47629	1.24E-03	3.55E-04	Jr-Sr High
536487.04	4270661.22	0.61193	3.64695	0.48886	1.30E-03	3.71E-04	Jr-Sr High
536507.04	4270661.22	0.63844	3.87185	0.50093	1.35E-03	3.88E-04	Jr-Sr High
536527.04	4270661.22	0.66528	4.11225	0.51338	1.41E-03	4.04E-04	Jr-Sr High
536547.04	4270661.22	0.69214	4.3687	0.52616	1.47E-03	4.21E-04	Jr-Sr High
536567.04	4270661.22	0.71868	4.63897	0.5392	1.52E-03	4.38E-04	Jr-Sr High
536587.04	4270661.22	0.74258	4.91255	0.551	1.58E-03	4.53E-04	Jr-Sr High
536607.04	4270661.22	0.76718	5.2053	0.56389	1.63E-03	4.68E-04	Jr-Sr High
536627.04	4270661.22	0.79138	5.52148	0.57713	1.68E-03	4.84E-04	Jr-Sr High
536647.04	4270661.22	0.81465	5.87164	0.59025	1.73E-03	4.99E-04	Jr-Sr High
536667.04	4270661.22	0.83502	6.26012	0.60186	1.78E-03	5.12E-04	Jr-Sr High
536487.04	4270681.22	0.63005	3.60808	0.49269	1.33E-03	3.82E-04	Jr-Sr High
536507.04	4270681.22	0.65594	3.82278	0.5048	1.39E-03	3.98E-04	Jr-Sr High
536527.04	4270681.22	0.68196	4.0535	0.51738	1.44E-03	4.14E-04	Jr-Sr High
536547.04	4270681.22	0.70806	4.30103	0.53053	1.50E-03	4.30E-04	Jr-Sr High
536567.04	4270681.22	0.73254	4.55763	0.54317	1.55E-03	4.45E-04	Jr-Sr High
536587.04	4270681.22	0.75461	4.81942	0.5548	1.60E-03	4.59E-04	Jr-Sr High
536607.04	4270681.22	0.77592	5.09569	0.56654	1.65E-03	4.73E-04	Jr-Sr High
536627.04	4270681.22	0.79789	5.40035	0.57922	1.70E-03	4.87E-04	Jr-Sr High
536647.04	4270681.22	0.819	5.73922	0.5917	1.74E-03	5.01E-04	Jr-Sr High
536487.04	4270701.22	0.64668	3.5581	0.49639	1.37E-03	3.91E-04	Jr-Sr High
536507.04	4270701.22	0.6714	3.76123	0.50846	1.42E-03	4.06E-04	Jr-Sr High
536527.04	4270701.22	0.69655	3.98274	0.52139	1.47E-03	4.22E-04	Jr-Sr High
536547.04	4270701.22	0.72153	4.23839	0.53479	1.53E-03	4.37E-04	Jr-Sr High
536567.04	4270701.22	0.74371	4.4831	0.54691	1.57E-03	4.51E-04	Jr-Sr High
536587.04	4270701.22	0.76311	4.71389	0.55777	1.62E-03	4.64E-04	Jr-Sr High
536607.04	4270701.22	0.78142	4.97839	0.56843	1.66E-03	4.75E-04	Jr-Sr High
536507.04	4270721.22	0.68418	3.71338	0.51176	1.45E-03	4.14E-04	Jr-Sr High
536527.04	4270721.22	0.70698	3.92499	0.5241	1.49E-03	4.28E-04	Jr-Sr High
536547.04	4270721.22	0.72967	4.15341	0.53698	1.54E-03	4.42E-04	Jr-Sr High
536567.04	4270721.22	0.74915	4.38594	0.5483	1.59E-03	4.54E-04	Jr-Sr High
536507.04	4270741.22	0.69404	3.66802	0.51461	1.47E-03	4.19E-04	Jr-Sr High
536527.04	4270741.22	0.7143	3.87086	0.52623	1.51E-03	4.32E-04	Jr-Sr High
536547.04	4270741.22	0.73362	4.08694	0.53781	1.55E-03	4.44E-04	Jr-Sr High
536247.59	4270117.95	0.23836	0.46544	0.25466	4.96E-04	1.41E-04	Elementary
536267.59	4270117.95	0.24527	0.49151	0.26184	5.10E-04	1.45E-04	Elementary
536287.59	4270117.95	0.25256	0.51943	0.26973	5.26E-04	1.49E-04	Elementary
536307.59	4270117.95	0.25966	0.55003	0.27767	5.41E-04	1.53E-04	Elementary
536247.59	4270137.95	0.24562	0.48382	0.26111	5.11E-04	1.45E-04	Elementary
536267.59	4270137.95	0.25231	0.51095	0.26859	5.25E-04	1.49E-04	Elementary

536287.59	4270137.95	0.25902	0.54083	0.27638	5.39E-04	1.53E-04	Elementary
536307.59	4270137.95	0.26647	0.57404	0.28539	5.55E-04	1.57E-04	Elementary
536327.59	4270137.95	0.27369	0.61084	0.29442	5.70E-04	1.62E-04	Elementary
536207.59	4270157.95	0.23953	0.45433	0.25372	4.98E-04	1.41E-04	Elementary
536227.59	4270157.95	0.24523	0.47827	0.26005	5.10E-04	1.45E-04	Elementary
536247.59	4270157.95	0.2515	0.50482	0.26735	5.23E-04	1.48E-04	Elementary
536267.59	4270157.95	0.25755	0.534	0.27464	5.36E-04	1.52E-04	Elementary
536287.59	4270157.95	0.26474	0.5667	0.28365	5.51E-04	1.56E-04	Elementary
536307.59	4270157.95	0.27158	0.60286	0.29253	5.66E-04	1.60E-04	Elementary
536327.59	4270157.95	0.27919	0.64343	0.30261	5.82E-04	1.65E-04	Elementary
536347.59	4270157.95	0.28684	0.68904	0.31292	5.98E-04	1.70E-04	Elementary
536187.59	4270177.95	0.23962	0.45134	0.25352	4.98E-04	1.41E-04	Elementary
536207.59	4270177.95	0.24515	0.47486	0.25996	5.10E-04	1.45E-04	Elementary
536227.59	4270177.95	0.25074	0.50076	0.26672	5.22E-04	1.48E-04	Elementary
536247.59	4270177.95	0.25644	0.5294	0.27391	5.34E-04	1.51E-04	Elementary
536267.59	4270177.95	0.26305	0.56143	0.28251	5.48E-04	1.55E-04	Elementary
536287.59	4270177.95	0.26963	0.59699	0.29131	5.62E-04	1.59E-04	Elementary
536307.59	4270177.95	0.27657	0.63675	0.30079	5.76E-04	1.63E-04	Elementary
536327.59	4270177.95	0.28381	0.68146	0.31076	5.92E-04	1.68E-04	Elementary
536347.59	4270177.95	0.292	0.73244	0.32193	6.09E-04	1.73E-04	Elementary
536367.59	4270177.95	0.30091	0.79016	0.33394	6.28E-04	1.78E-04	Elementary
536187.59	4270197.95	0.24441	0.47258	0.25955	5.08E-04	1.44E-04	Elementary
536207.59	4270197.95	0.24979	0.49798	0.26637	5.20E-04	1.47E-04	Elementary
536227.59	4270197.95	0.25531	0.52614	0.2736	5.31E-04	1.51E-04	Elementary
536247.59	4270197.95	0.26128	0.55738	0.28163	5.44E-04	1.54E-04	Elementary
536267.59	4270197.95	0.26709	0.59203	0.28971	5.56E-04	1.58E-04	Elementary
536287.59	4270197.95	0.27384	0.631	0.29908	5.71E-04	1.62E-04	Elementary
536307.59	4270197.95	0.2809	0.67483	0.30895	5.86E-04	1.66E-04	Elementary
536327.59	4270197.95	0.28905	0.72448	0.32007	6.03E-04	1.71E-04	Elementary
536347.59	4270197.95	0.298	0.78116	0.33198	6.22E-04	1.77E-04	Elementary
536367.59	4270197.95	0.30696	0.84689	0.34373	6.41E-04	1.82E-04	Elementary
536187.59	4270217.95	0.24862	0.49602	0.26612	5.17E-04	1.47E-04	Elementary
536207.59	4270217.95	0.25399	0.52345	0.2734	5.29E-04	1.50E-04	Elementary
536227.59	4270217.95	0.25956	0.55389	0.28111	5.40E-04	1.53E-04	Elementary
536247.59	4270217.95	0.2656	0.58786	0.28955	5.53E-04	1.57E-04	Elementary
536267.59	4270217.95	0.27159	0.62574	0.2981	5.66E-04	1.61E-04	Elementary
536287.59	4270217.95	0.27864	0.66844	0.30794	5.81E-04	1.65E-04	Elementary
536307.59	4270217.95	0.28615	0.71684	0.31824	5.97E-04	1.69E-04	Elementary
536327.59	4270217.95	0.29528	0.77237	0.33015	6.16E-04	1.75E-04	Elementary
536207.59	4270237.95	0.25817	0.55077	0.2811	5.38E-04	1.52E-04	Elementary
536227.59	4270237.95	0.26375	0.5837	0.28907	5.49E-04	1.56E-04	Elementary
536247.59	4270237.95	0.27009	0.62054	0.29797	5.63E-04	1.60E-04	Elementary
536267.59	4270237.95	0.27664	0.66204	0.30711	5.77E-04	1.64E-04	Elementary
536287.59	4270237.95	0.28499	0.70933	0.31808	5.94E-04	1.69E-04	Elementary
537305.02	4269475.12	0.34547	3.1067	0.52686	7.41E-04	2.14E-04	Resident
537325.02	4269475.12	0.37056	3.2219	0.56895	7.94E-04	2.29E-04	Resident
537345.02	4269475.12	0.39887	3.31501	0.61639	8.53E-04	2.46E-04	Resident
537365.02	4269475.12	0.42856	3.40734	0.66638	9.16E-04	2.64E-04	Resident
537305.02	4269495.12	0.37419	3.30346	0.57415	8.02E-04	2.32E-04	Resident
537325.02	4269495.12	0.40125	3.39474	0.61935	8.59E-04	2.48E-04	Resident
537345.02	4269495.12	0.43262	3.51425	0.67044	9.25E-04	2.67E-04	Resident
537365.02	4269495.12	0.46312	3.59632	0.72094	9.89E-04	2.85E-04	Resident
537385.02	4269495.12	0.49557	3.69547	0.77427	1.06E-03	3.04E-04	Resident
537405.02	4269495.12	0.5295	3.77172	0.82945	1.13E-03	3.24E-04	Resident
537385.02	4269515.12	0.53218	3.84396	0.82746	1.13E-03	3.26E-04	Resident
537405.02	4269515.12	0.62482	3.90445	0.88284	1.32E-03	3.80E-04	Resident
537508.73	4269321.02	0.36686	2.71282	0.57317	7.82E-04	2.25E-04	Resident
537528.73	4269321.02	0.39131	2.78335	0.61724	8.33E-04	2.40E-04	Resident
537548.73	4269321.02	0.41841	2.84507	0.66644	8.89E-04	2.56E-04	Resident
537528.73	4269341.02	0.4241	2.93665	0.67998	9.02E-04	2.59E-04	Resident
537548.73	4269341.02	0.45204	2.99756	0.73209	9.60E-04	2.76E-04	Resident
537568.73	4269341.02	0.48409	3.06444	0.79067	1.03E-03	2.95E-04	Resident
537448.73	4269361.02	0.34879	2.79817	0.54779	7.45E-04	2.15E-04	Resident
537468.73	4269361.02	0.37321	2.87395	0.59117	7.96E-04	2.29E-04	Resident
537528.73	4269361.02	0.45864	3.08729	0.74668	9.75E-04	2.80E-04	Resident
537548.73	4269361.02	0.4886	3.15014	0.80237	1.04E-03	2.98E-04	Resident
537568.73	4269361.02	0.52202	3.22116	0.86298	1.11E-03	3.17E-04	Resident
537408.73	4269381.02	0.33759	2.82452	0.52472	7.23E-04	2.08E-04	Resident
537428.73	4269381.02	0.35655	2.89692	0.5603	7.62E-04	2.20E-04	Resident
537448.73	4269381.02	0.38072	2.96643	0.60427	8.13E-04	2.34E-04	Resident
537468.73	4269381.02	0.40512	3.04027	0.64993	8.64E-04	2.49E-04	Resident
537548.73	4269381.02	0.52527	3.32326	0.87146	1.11E-03	3.20E-04	Resident
537568.73	4269381.02	0.55968	3.38952	0.93333	1.19E-03	3.40E-04	Resident
537408.73	4269401.02	0.36831	2.98887	0.57521	7.87E-04	2.27E-04	Resident
537428.73	4269401.02	0.39185	3.07619	0.61909	8.37E-04	2.41E-04	Resident
537448.73	4269401.02	0.41596	3.14126	0.66507	8.87E-04	2.55E-04	Resident
537468.73	4269401.02	0.44148	3.20381	0.71391	9.40E-04	2.71E-04	Resident
537488.73	4269401.02	0.46936	3.27065	0.7665	9.99E-04	2.87E-04	Resident
537548.73	4269401.02	0.56781	3.5254	0.94585	1.20E-03	3.45E-04	Resident
537568.73	4269401.02	0.59678	3.58206	0.99968	1.26E-03	3.62E-04	Resident
537588.73	4269401.02	0.63484	3.66081	1.0656	1.34E-03	3.85E-04	Resident
537888.73	4269401.02	2.61445	4.56753	2.73666	5.43E-03	1.54E-03	Resident
537908.73	4269401.02	3.15231	4.53259	2.9271	6.54E-03	1.85E-03	Resident
537408.73	4269421.02	0.40137	3.15988	0.62937	8.57E-04	2.47E-04	Resident
537428.73	4269421.02	0.42596	3.23246	0.6759	9.09E-04	2.62E-04	Resident
537448.73	4269421.02	0.45237	3.30421	0.72574	9.64E-04	2.77E-04	Resident
537548.73	4269421.02	0.60822	3.68544	1.01202	1.29E-03	3.70E-04	Resident
537568.73	4269421.02	0.63993	3.75148	1.06918	1.35E-03	3.88E-04	Resident
537588.73	4269421.02	0.67568	3.81877	1.13123	1.43E-03	4.09E-04	Resident
537848.73	4269421.02	1.99899	4.79766	2.44507	4.17E-03	1.18E-03	Resident
537868.73	4269421.02	2.29878	4.8215	2.63304	4.79E-03	1.36E-03	Resident
537888.73	4269421.02	2.71551	4.8177	2.81007	5.65E-03	1.60E-03	Resident
537908.73	4269421.02	3.29587	4.77639	3.00148	6.84E-03	1.94E-03	Resident
537928.73	4269421.02	4.08627	4.68592	3.24623	8.47E-03	2.39E-03	Resident
537408.73	4269441.02	0.43481	3.31774	0.68419	9.28E-04	2.67E-04	Resident
537428.73	4269441.02	0.46285	3.41725	0.73528	9.86E-04	2.84E-04	Resident
537448.73	4269441.02	0.49411	3.5113	0.79143	1.05E-03	3.02E-04	Resident
537848.73	4269441.02	2.10698	5.07523	2.55173	4.39E-03	1.25E-03	Resident
537868.73	4269441.02	2.40914	5.10298	2.71791	5.02E-03	1.42E-03	Resident
537888.73	4269441.02	2.83638	5.09439	2.90652	5.90E-03	1.67E-03	Resident
537908.73	4269441.02	3.45126	4.99545	3.14212	7.16E-03	2.03E-03	Resident
537928.73	4269441.02	4.19064	4.81063	3.38254	8.69E-03	2.46E-03	Resident
537428.73	4269461.02	0.50367	3.60506	0.79845	1.07E-03	3.08E-04	Resident
537448.73	4269461.02	0.53583	3.67832	0.85456	1.14E-03	3.27E-04	Resident
537468.73	4269461.02	0.56885	3.74076	0.91182	1.21E-03	3.47E-04	Resident
537668.73	4269461.02	1.07897	4.4954	1.60187	2.27E-03	6.47E-04	Resident
537688.73	4269461.02	1.14986	4.59621	1.6912	2.41E-03	6.88E-04	Resident
537708.73	4269461.02	1.22821	4.7046	1.78255	2.58E-03	7.34E-04	Resident
537848.73	4269461.02	2.24268	5.38719	2.63826	4.68E-03	1.33E-03	Resident
537868.73	4269461.02	2.552	5.41956	2.80896	5.31E-03	1.51E-03	Resident
537888.73	4269461.02	2.99003	5.37393	3.02022	6.22E-03	1.76E-03	Resident
537448.73	4269481.02	0.63885	3.81673	0.91492	1.35E-03	3.88E-04	Resident
537668.73	4269481.02	1.1511	4.66601	1.68063	2.42E-03	6.89E-04	Resident

537688.73	4269481.02	1.22816	4.77692	1.77194	2.58E-03	7.35E-04	Resident
537708.73	4269481.02	1.31443	4.89449	1.86852	2.76E-03	7.85E-04	Resident
537828.73	4269481.02	2.16718	5.63984	2.59482	4.52E-03	1.28E-03	Resident
537848.73	4269481.02	2.4178	5.71398	2.74615	5.04E-03	1.43E-03	Resident
537868.73	4269481.02	2.74264	5.7022	2.92182	5.71E-03	1.62E-03	Resident
537888.73	4269481.02	3.11275	5.62119	3.12282	6.47E-03	1.83E-03	Resident
537668.73	4269501.02	1.23248	4.75576	1.7548	2.59E-03	7.37E-04	Resident
537688.73	4269501.02	1.31781	4.87953	1.84778	2.76E-03	7.87E-04	Resident
537624.42	4270118.13	5.40089	21.37097	2.10699	1.13E-02	3.23E-03	Resident
537524.42	4270118.13	4.01151	8.56518	1.78844	8.35E-03	2.37E-03	Resident
537564.42	4270078.13	4.49204	9.79693	1.91191	9.35E-03	2.65E-03	Resident
537584.42	4270078.13	4.77834	12.35849	1.97669	9.97E-03	2.83E-03	Resident

MEISR

	UTM X	UTM Y	DPM (ug/m^3)	$PM_{2.5}$ (ug/m^3)
Resident	537851.17	4269996.58	2.36E-02	6.65E-03
Jr-Sr High	536767.04	4270601.22	2.03E-03	5.90E-04
Elementary	536367.59	4270197.95	6.41E-04	1.82E-04

Cancer Risk = Dose inhalation × Inhalation CPF × ASF × ED/AT × FAH **(Equation 8.2.4 A)**

Where:

Cancer Risk = residential inhalation cancer risk

Dose inhalation (mg/kg-day) = C_{AIR} × DBR × A × EF × 10^{-6} **(Equation 5.4.1.1)**

Inhalation CPF = inhalation cancer potency factor ([mg/kg/day]$^{-1}$)

ASF = age sensitivity factor for a specified age group (unitless)

ED = exposure duration for a specified age group (years)

AT = averaging time period over which exposure is averaged in days (years)

FAH = fraction of time at home (unitless)

Where:

C_{AIR} = concentration of compound in air in micrograms per cubic meter (μg/m^3)

DBR = daily breathing rate in liter per kilogram of body weight per day (L/kg-body weight/day)

A = inhalation absorption factor (1 for DPM, unitless)

EF = exposure frequency in days per year (unitless, days/365 days)

10^{-6} = micrograms to milligrams conversion, liters to cubic meters conversion

Hazard Quotient = C_{air} / REL **(Section 8.3.1)**

Where:

Hazard Quotient = chronic non-cancer hazard

C_{AIR} = concentration of compound in air in micrograms per cubic meter (μg/m^3)

REL = Chronic non-cancer Reference Exposure Level for substance (μg/m^3)

Dose Inhalation Inputs

Receptor Type	Exposure Scenario	Receptor Group Age	C_{AIR} (μg/m^3)	DBR (L/kg-day)	A (unitless)	EF (days/year)
Off-Site Child Resident	Construction	3rd Trimester	2.36E-02	361	1	0.96
		Age 0<2	2.36E-02	1090	1	0.96
Off-Site Child School	Construction	Age 2<16	2.03E-03	520	1	0.49

Dose Inhalation Outputs

Receptor Type	Exposure Scenario	Receptor Group Age	Dose inhalation (mg/kg-day)
Off-Site Child Resident	Construction	3rd Trimester	8.16E-06
		Age 0<2	2.47E-05
Off-Site Child School	Construction	Age 2<16	5.17E-07

Risk Inputs

Receptor Type	Exposure Scenario	Receptor Group Age	CPF (mg/kg-day^{-1})	ASF (unitless)	ED (years)	AT (years)	FAH (unitless)	MAF (unitless)
Off-Site Child Resident	Construction	3rd Trimester	1.1	10	0.25	70.00	0.85	1
		Age 0<2	1.1	10	0.25	70.00	0.85	1
Off-Site Child School	Construction	Age 2<16	1.1	3	0.5	70.00	0.33	4.2

Risk Outputs

Receptor Type	Exposure Scenario	Receptor Group Age	Cancer Risk	Total Cancer Risk (per million)	Chronic HI	Annual PM2.5
Off-Site Child Resident	Construction	3rd Trimester	2.72E-07	1.10	0.005	0.007
		Age 0<2	8.23E-07			
Off-Site Child School	Construction	Age 2<16	1.69E-08	0.02	0.000	0.000

SOURCE: Office of Environmental Health Hazard Assessment, 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments* . February.
Daily breathing rate for school receptor is based on the OEHHA 95th percentile 8-hour moderate intensity breathing rates (Table 5.8).
Fraction of time at home is set to 0.85 for residential since the nearest school has an unmitigated cancer risk of <1 per million, per OEHHA Table 8.4.
Inhalation cancer potency factor from Table 7.1

APPENDIX F

Mitigation Monitoring and Reporting Program

APPENDIX F
MITIGATION MONITORING AND REPORTING PROGRAM

Impact	Mitigation Measure	Monitoring / Reporting Action	Responsible Party	Timing
Aesthetics				
	Mitigation Measure AES-1: Revegetation and Site Restoration. *At the conclusion of construction, all Project debris shall be removed from the site, the City shall conduct a visual inspection to ensure that all disturbed areas shall be restored to level consistent with or better than baseline (existing) conditions. Impacted pathways shall be repaved, impacted trees shall be replaced in appropriate mitigation quantities on site, and disturbed soils shall be revegetated with a native seed mix typical of the surrounding area. Plantings shall be monitored by City parks staff and irrigated, as appropriate, to ensure revegetation success.*	Monitoring planting	City of Calistoga (City)/Contractor	Post-construction
Air Quality				
	Mitigation Measure AQ-1: Implement BAAQMD Basic Mitigation Measures. *The City of Calistoga and/or its construction contractors shall implement the following BAAQMD basic control measures:* • *All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times a day.* • *All haul trucks transporting soil, sand, or other loose material off-site shall be covered.* • *All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.* • *Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California Airborne Toxics Control Measure Tile 13, Section 2485 of California of Regulations). Clear signage shall be provided for construction workers at all access points.* • *All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.* • *A publicly-visible sign with the telephone number and person to contact at the City of Calistoga regarding dust complaints shall be posted at the Project site. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.*	N/A	City/Construction Contractors	During Construction

Impact	Mitigation Measure	Monitoring / Reporting Action	Responsible Party	Timing
Biological Resources				
	Mitigation Measure BIO-1: Protection of Rare Plants. • *A qualified biologist shall conduct a pre-construction survey for the five special-status plant species with the potential to occur within the area of disturbance (see Table 5 above). The survey shall follow the procedures outlined in the CDFW (2018) rare plant survey protocol.* • *If special-status plants are found, the City shall coordinate with USFWS and CDFW, as appropriate, to provide preservation and avoidance measures commensurate with the standards provided in applicable USFWS and CDFW protocols for the affected species. The preservation and avoidance measures shall include, at a minimum, appropriate buffer areas clearly marked during project activities (e.g., greater than 20 feet), monitoring by a qualified plant biologist, and development and implementation of a replanting plan, if necessary.*	Pre-construction survey; Coordinate with USFWS and CDFW	Biologist/City	Prior to construction
	Mitigation Measure BIO-2: Protection of Special-status Wildlife. *In-water construction work with the potential to result in short-term impacts to sensitive aquatic species, including California freshwater shrimp and steelhead, such as project activities that are expected to create turbidity or disturb the streambed, shall be conducted only from June 15 through October 15.* • *All construction personnel shall attend an environmental education program delivered by a qualified biologist. The training shall include an explanation as how to best avoid the accidental take of California freshwater shrimp, steelhead, Pacific lamprey, California red-legged frog, foothill yellow-legged frog, California giant salamander, western pond turtle, nesting birds and bats. The training session shall be mandatory for contractors and all construction personnel. The field meeting shall include topics on species identification, descriptions, habitat requirements and required minimization and avoidance measures.* • *The contractor shall provide closed garbage containers for the disposal of all trash items. Work sites shall be cleaned of litter daily. No pets, excluding service animals, shall be allowed in construction areas. Nighttime lighting, if used, shall be minimized and directed downward, and construction hours shall be limited to 6 am to 6 pm Monday through Friday.* • *Prior to commencing work, a qualified biologist shall survey the entire construction footprint for special-status amphibians and reptiles. At the beginning of each workday that includes initial ground disturbance within 150 feet of aquatic habitat, including grading, excavation, and vegetation-removal activities, a qualified biologist shall conduct onsite monitoring for the presence of special-status species in the area where ground disturbance or vegetation removal shall occur.* • *Before ground-disturbing activity occurs in habitat areas, the contractor shall install temporary exclusion/silt barrier fencing around the perimeter of the construction site. Fencing shall be installed to the extent necessary to exclude special-status amphibians and reptiles from the construction area, and to minimize impacts to*	N/A	Contractor	Prior to construction

Impact	Mitigation Measure	Monitoring / Reporting Action	Responsible Party	Timing
	natural habitat. Fencing material shall provide for wildlife exclusion as well as maintenance of water quality. Construction personnel and construction activity shall avoid areas outside the fencing. The need for and exact location of the fencing shall be determined by a qualified biologist, with the goal of protecting sensitive biological habitat and water quality. The fencing shall be checked weekly and maintained until construction is complete at individual work sites. The fence shall contain exit funnels to allow any wildlife within the construction area to leave without human intervention while preventing entry into the construction zone. Exit funnels shall be placed at ground level no more than 100 feet apart along the fence, or as modified by a qualified biologist or as directed by resource agencies with primary jurisdiction over special-status wildlife species. • *All excavated or deep-walled holes or trenches greater than one-foot deep shall be covered at the end of each workday using plywood, steel plates, or similar materials, or escape ramps shall be constructed to allow animals to exit. Before such holes are filled, they shall be thoroughly inspected for trapped animals.* • *If a special-status species is present and identified within the work area during construction, the biologist shall be notified, work shall cease in the vicinity of the animal, and the animal shall be allowed to relocate of its own volition.*			
	Mitigation Measure BIO-3: Nesting Bird Protection. *Nesting birds and their nests shall be protected during construction by use of the following measures:* • *Removal of riparian vegetation and trimming or removal of trees shall occur outside the bird nesting season (February 1 to August 30), to the extent feasible.* • *If construction activities during bird nesting season cannot be fully avoided, a qualified wildlife biologist shall conduct pre-construction nesting surveys within 7 days prior to the start of such activities or after any construction breaks of 14 days or more. Surveys shall be performed for the Project site and suitable habitat within 250 feet of the Project site in order to locate any active passerine (perching bird) nests and within 500 feet of the Project site to locate any active raptor (birds of prey) nests.* • *If active nests are located during the pre-construction bird nesting surveys, the wildlife biologist shall evaluate if the schedule of construction activities could affect the active nests and the following measures shall be implemented based on their determination:* – *If construction is not likely to affect the active nest, it may proceed without restriction; however, a biologist shall regularly monitor the nest to confirm there is no adverse effect and may revise their determination at any time during the nesting season. In this case, the following measure would apply:* – *If construction may affect the active nest, the biologist shall establish a no-disturbance buffer. Typically, these buffer distances are between 100*	If nesting birds are present, confer with the USFWS and/or CDFW	City/Biologist	Prior to and during construction

Impact	Mitigation Measure	Monitoring / Reporting Action	Responsible Party	Timing
	feet and 250 feet for passerines and between 300 feet and 500 feet for raptors. These distances may be adjusted depending on the level of surrounding ambient activity (e.g., if the Project site is adjacent to a road or community development) or if an obstruction, such as a tree or building, obscures line-of-sight between the nest and construction. For bird species that are regulated as federal and/or State sensitive species (i.e., fully protected, endangered, threatened, species of special concern), a City representative, supported by the wildlife biologist, shall confer with the USFWS and/or CDFW regarding modifying nest buffers and allowable construction within the buffer. • *To be evaluated on a case-by-case basis, birds that begin nesting within the Project site and survey buffers amid construction activities shall be assumed to be habituated to construction-related or similar noise and disturbance levels and minimum work exclusion zones of 25 feet shall be established around active nests in these cases.*			
	Mitigation Measure BIO-4: Roosting Special-Status Bat Protection. *A qualified biologist shall conduct a pre-construction survey for special-status bats in advance of tree trimming to characterize potential bat habitat and identify active roost sites. Should potential roosting habitat or active bat roosts be found in trees to be disturbed, the following measures shall be implemented:* • *Trimming or removal of trees and disturbance to bridge structures shall occur when bats are active, approximately between the periods of March 1 to April 15 and August 15 to October 15; outside of bat maternity roosting season (approximately April 15 to August 15) and outside of months of winter torpor (approximately October 15 to February 28), to the extent feasible.* • *If trimming or removal of trees and disturbance to bridge structures during the periods when bats are active is not feasible and bat roosts being used for maternity or hibernation purposes are found on or in the immediate vicinity of the Project site where these activities are planned, a no-disturbance buffer as determined by a qualified biologist shall be established around these roost sites until they are determined to be no longer in-use as maternity or hibernation roosts.* • *Buffer distances may be adjusted around roosts depending on the level of surrounding ambient activity (i.e., if the Project site is adjacent to a road) and if an obstruction, such as a building structure, is within line-of-sight between the roost and construction. If pallid bat or any other State-sensitive species is detected, a City representative, supported by the wildlife biologist, shall confer with CDFW regarding modifying roost buffers and allowable construction within the buffer, and modifying construction around maternity and hibernation roosts.* • *The qualified biologist shall be present during tree trimming if bat roosts are present. Trees with roosts shall be disturbed only when no rain is occurring or is forecast to occur within the next 3 days and when daytime temperatures are at least 50°F. Branches and limbs not containing cavities or fissures in which bats could roost shall be cut only using chainsaws. Branches or limbs containing roost sites shall be*	If pallid bat or any other State-sensitive species is detected, a City representative, supported by the wildlife biologist, shall confer with CDFW regarding modifying roost buffers and allowable construction within the buffer.	City/Biologist	Prior to construction

Impact	Mitigation Measure	Monitoring / Reporting Action	Responsible Party	Timing
	trimmed the following day, under the supervision of the qualified biologist, also using chainsaws. • *Bat roosts that become established during remediation shall be presumed to be unaffected, and no buffer would be necessary.*			
	Mitigation Measure BIO-5: Relocation of Special-Status Fish and California Freshwater Shrimp. *If necessary and as specified in and authorized by regulatory permits, fish and California freshwater shrimp shall be captured and relocated to avoid injury and mortality and minimize disturbance during construction. The NMFS would be the point of contact for any fish relocation activities and results; and the USFWS and CDFW would be the lead for California freshwater shrimp. Handling of special-status fish and shrimp could result in increased stress or mortality if conducted with insufficient care. The following relocation plan contains sufficient detail related to handling protocol to minimize impacts to these special-status species. The process shall follow these guidelines:* *a. The federal lead agency shall consult with NMFS and USFWS (under Section 7 of the federal Endangered Species Act) and CDFW for state listed species to confirm preservation and avoidance measures commensurate with the agency standards for the affected species.* *b. Prior to and during the initiation of construction activities, a qualified, regulatory agency -approved biologist shall be present during installation and removal of creek diversions.* *c. For sites that require flow diversion and exclusion, the work area will be blocked by placing fine-meshed nets or screens above and below the work area to prevent state or federally listed species from re-entering the work area. To minimize entanglement, mesh diameter will not exceed 1/8 inch. The bottom edge of the net or screen will be secured to the channel bed to prevent fish from passing under the screen and avoid scour by flow. Exclusion screening will be placed in low velocity areas to minimize impingement. Screens will be checked twice daily (at the beginning and end of each work day) and cleaned of debris to permit free flow of water. Block nets will remain in place in order to prevent aquatic species from re-entering the project area following relocation.* *d. Before removal and relocation begins, a qualified biologist will identify the most appropriate release location(s). In general, release locations should have water temperatures similar to (<3.6°F difference) the capture location and offer ample habitat (e.g., depth, velocity, cover, connectivity) for released fish and/or shrimp, and should be selected to minimize the likelihood of reentering the work area or becoming impinged on exclusion nets or screens.* *e. The means of capture will depend on the nature of the work site, and will be selected by a qualified biologist. Complex stream habitat may require the use of electrofishing equipment (e.g., Smith-root LR-24 backpack electrofisher) to capture fish, whereas in outlet pools, California freshwater shrimp may be captured by pumping down the pool and then seining or dipnetting. Electrofishing will be used only as a last resort;*	Reports on fish relocation activities will be submitted to NMFS	Biologist/Contractor	During construction

Impact	Mitigation Measure	Monitoring / Reporting Action	Responsible Party	Timing
	if electrofishing is necessary, it will be conducted only by properly trained personnel following the NMFS guidelines dated June 2000 (NMFS, 2000). f. *When feasible, initial relocation efforts will be performed several days prior to the scheduled start of construction. To the extent feasible, flow diversions and species relocation will be performed during morning periods. The qualified biologist will survey the flow exclosures throughout the diversion effort to verify that no state or federally listed fish or aquatic invertebrates are present. Afternoon pumping activities should generally not occur and pumping should be limited to days when ambient air temperatures are not expected to be high. Air and water temperatures will be measured periodically, and flow diversion and species relocation activities will be suspended if temperatures exceed the limits allowed by NMFS guidelines (e.g., electrofishing should not occur when water temperatures are above 18°C) (NMFS, 2000).* g. *Handling of fish and California freshwater shrimp will be minimized. When fish handling is necessary, personnel will wet hands or nets before touching them.* h. *Prior to translocation, any state or federally listed species that are collected during surveys will be temporarily held in cool, aerated, shaded water using a five-gallon container with a lid. Overcrowding in containers will be avoided; at least two containers will be used and no more than 25 fish will be kept in each bucket. Aeration will be provided with a battery-powered external bubbler. Fish will be protected from jostling and noise, and will not be removed from the container until the time of release. A thermometer will be placed in each holding container and partial water changes will be conducted as necessary to maintain a stable water temperature. Special-status fish and shrimp will not be held more than 30 minutes. If water temperature reaches or exceeds NMFS limits, the fish and other aquatic species will be released and relocation operations will cease.* i. *If state or federally listed fish or shrimp are abundant, capture will cease periodically to allow release and minimize the time spent in holding containers.* j. *Fish will not be anesthetized or measured. However, they will be visually identified to species level, and year classes will be estimated and recorded.* k. *Reports on fish relocation activities will be submitted to NMFS in a timely fashion, as will reports on California freshwater shrimp to USFWS and CDFW.* l. *If mortality during relocation exceeds three percent (or as determined by NMFS), relocation will cease and NMFS will be contacted immediately or as soon as feasible.*			
	Mitigation Measure BIO-6: Protection for and Restoration of Sensitive Natural Communities • *No construction activities, parking, or staging shall occur outside of designated areas.* • *During construction, as much understory vegetation and as many trees as possible will be retained. All trees to remain during construction within the grading area will*	Habitat Restoration and Monitoring Plan for restoration of sensitive natural communities and jurisdictional waters	City	Prior to and during construction

Impact	Mitigation Measure	Monitoring / Reporting Action	Responsible Party	Timing
	be flagged for avoidance, and trimmed if necessary to ensure their trunks and/or limbs to not get disturbed during construction. • *All vehicles and equipment entering each Project site shall be clean of noxious weeds and pathogens. All construction equipment shall be washed thoroughly to remove all dirt, plant, and other foreign material prior to entering the Project sites.* • *Certified weed-free permanent and temporary erosion control measures shall be implemented to minimize erosion and sedimentation during and after construction.* • *The City shall prepare a Habitat Restoration and Monitoring Plan (HRMP) for restoration of sensitive natural communities and jurisdictional waters following construction activities. This plan shall include protocols for restoring these areas, replanting of vegetation removed prior to or during construction, success criteria, and management and monitoring of the plants and channel banks to ensure site success.* • *The HRMP shall describe a five-year riparian monitoring program that assesses the survival and health of on-site plantings. Appropriate performance standards may include, but are not limited to: a 75 percent survival rate of restoration plantings; absence of invasive plant species in restored areas; and self-sustaining conditions (i.e., plant viability without supplemental water) at the end of five years and shall be submitted to the appropriate regulatory agencies for review and approval. The plan shall contain vegetation management protocols, protocols for monitoring replanting success, and an adaptive management plan if success criteria are not being met. The plan shall include interim thresholds for planting success and alternative management approaches, such as weed control or additional replanting, to undertake if thresholds are not met.* • *The plan shall specify that areas impacted from construction-related activity shall be replanted or reseeded with native trees, shrubs, wetland vegetation, and herbaceous species under guidance from a qualified biologist.*			
	Mitigation Measure BIO-8: Tree Protection Plan. *A Tree Protection and Replacement Plan consistent with Calistoga Municipal Code Chapter 19.01 shall be reviewed and approved by the City of Calistoga before construction and tree removal commences. The plan may additionally require CDFW review and approval under the 1602 Lake and Streambed Alternation Agreement permit. All requirements and restrictions contained in Chapter 19.01 shall be complied with, including the incorporation of replacement trees for those trees slated for removal at a ratio of 1:1 or greater, determined in coordination with the City Public Works Department, as well as any recommendations of the Project arborist, to ensure the survival of replaced trees.*	A Tree Protection and Replacement Plan	City	Prior to construction

Impact	Mitigation Measure	Monitoring / Reporting Action	Responsible Party	Timing
Cultural Resources				
	Mitigation Measure CR-1: Unanticipated Discovery Protocol for Archaeological Resources. *If indigenous or historic-era archaeological resources are encountered during Project development or operation, all activity within 100 feet of the find shall cease and the find shall be flagged for avoidance. The City and a qualified archaeologist, defined as one meeting the U.S. Secretary of the Interior's Professional Qualifications Standards for Archeology, shall be immediately informed of the discovery. The qualified archaeologist shall inspect the find within 24 hours of discovery and notify the City of their initial assessment. Indigenous archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (midden) containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-era materials might include building or structure footings and walls, and deposits of metal, glass, and/or ceramic refuse.* *If the City determines, based on recommendations from the qualified archaeologist, that the resource may qualify as a historical resource or unique archaeological resource (as defined in CEQA Guidelines Section 15064.5), or a tribal cultural resource (as defined in PRC Section 21074), the resource shall be avoided if feasible. Avoidance means that no activities associated with the Project that may affect cultural resources shall occur within the boundaries of the resource or any defined buffer zones. If avoidance is not feasible, the City shall consult with appropriate Native American tribes (if the resource is indigenous), and other appropriate interested parties to determine treatment measures to avoid, minimize, or mitigate any potential impacts to the resource pursuant to PRC Section 21083.2, CEQA Guidelines Section 15126.4. This shall include documentation of the resource and may include data recovery or other measures. Treatment for most resources would consist of (but would not be not limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource. The resource and treatment method shall be documented in a professional-level technical report to be filed with CHRIS. Work in the area may commence upon completion of approved treatment and under the direction of the qualified archaeologist.*	Consultation with appropriate Native American tribes (if the resource is indigenous) and other appropriate interested parties	City/Qualified Archaeologist	During construction
	Mitigation Measure CR-2: Unanticipated Discovery Protocol for Human Remains. *If human remains are uncovered during Project construction, all work shall immediately halt at the find and the Napa County Coroner shall be contacted to evaluate the remains, and follow the procedures and protocols set forth in CEQA Guidelines Section 15064.5(e)(1). If the County Coroner determines that the remains are Native American, the County Coroner shall contact the NAHC, in accordance with HSC Section 7050.5(c) and PRC Section 5097.98. Per PRC Section 5097.98, the City shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the City has discussed and conferred, as prescribed in this section (PRC Section 5097.98), with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains.*	Coroner to contact the NAHC	Contractor/City	During construction

Impact	Mitigation Measure	Monitoring / Reporting Action	Responsible Party	Timing
Geology and Soils				
	Mitigation Measure GEO-1: Implementation of Design Criteria recommended in Geotechnical Report. *The structural requirements of the CBC are applicable to certain structural components of the Project, including retaining walls, screen walls, fences, and control shelters. The Lead Agency and/or its contractors shall design such structures to comply with such CBC standards and shall adhere to and implement all design recommendations and parameters established in the Project's Geotechnical Investigation Report by A3GEO Inc. In addition, The Lead Agency shall retain a California registered professional engineer(s) to prepare a supplemental geotechnical report. This report shall address specific geotechnical hazards that were not addressed in the Geotechnical Investigation Report (i.e., seismic ground shaking and liquefaction), and provide recommendations for mitigating such hazards.*	Supplemental geotechnical report	City	Prior to construction
Transportation				
	Mitigation Measure TRAN-1: Construction Traffic Management Plan (CTMP). *To ensure that construction of the Project does not adversely interfere with local traffic safety and circulation, a CTMP shall be prepared for the Project. The CTMP would be subject to review and approval by the City of Calistoga, and shall include, but not be limited to the following elements:* *1. The contractor shall provide flaggers as needed to temporarily hold traffic to safely stage equipment in advance of and/or during construction.* *2. The contractor shall coordinate with the City of Calistoga's Police Department to ensure that the movement, staging, and storage of materials in and near the proposed offsite staging and stockpile areas does not interfere with law enforcement activities, emergency response, or evacuation procedures.* *3. The contractor shall install advance warning signs to alert motorists and Napa Valley Vine Trail users of the work zone and temporary trail closure. Advance warning signs might be reflective signs, cones, or barricades. Signage should state the anticipated duration for construction, and reflect that the work is scheduled to occur between the hours of 7:00 am to 7:00 pm, Monday through Friday.* *4. Signage shall be installed at both ends of the Napa Valley Vine Trail segment affected by Project construction, directing pedestrians and bicyclists to detours facilities.* *5. Work shall be confined to the immediate Project site and work shall be performed in a manner that would be least disruptive to the public.*	Construction Traffic Management Plan	Contractor/City	Prior to construction

Impact	Mitigation Measure	Monitoring / Reporting Action	Responsible Party	Timing
Utilities and Service Systems				
	Mitigation Measure UTIL-1: Utility Safety and Emergency Response Plan. • *Prior to construction activities, the locations of overhead and underground utility lines, such as natural gas, electricity, sewer, telephone, cable, and water that may be encountered during construction work will be determined. Pursuant to various provisions of California law, the City or its contractor(s) is required to notify USA (Underground Services Alert) North so that utility companies may be advised of the work and may field-mark or otherwise protect and warn the contractor of their existing utility lines. Information regarding the location of existing utilities shall be reviewed before construction activities begin. Utilities may be located by customary techniques such as geophysical methods and hand excavation.* • *Contract specifications shall include procedures for the excavation, support, and fill of areas around subsurface utilities, cables, and pipes. If the Project encounters overhead electric and/or telephone lines during pipeline construction, coordination with appropriate telecommunication service providers shall occur to de-energize overhead electric lines as required by the federal and State OSHA regulations.* • *As required by CalOSHA (Section 1926.651), while any excavation is open, measures will be taken to protect, support, or remove underground utilities as necessary to safeguard employees. If construction activities result in damage to high-priority utility lines, the Calistoga Fire Department will be immediately notified to protect worker and public safety.* • *As part of contract specifications, the contractor(s) will be required to provide updates on excavations planned for the upcoming week and to specify when construction would occur near a high-priority[1] utility. At the beginning of each week when this work would take place, per CalOSHA, the contractor is required to hold safety tailgate meetings and to document contents of meeting. The City or its contractor(s) shall promptly notify utility providers to reconnect any disconnected utility lines as soon as it is safe to do so.* • *As required by CalOSHA, an emergency response plan will be developed prior to the commencement of construction activities. The emergency response plan shall identify measures to be taken in response to a leak or explosion resulting from a utility rupture. In addition, the City of Calistoga's Police Department and/or other appropriate emergency response department (to be determined in consultation with the City of Calistoga) shall be notified whenever damage to any utility results in a threat to public safety.*	Emergency Response plan	City/Contractors	Prior to construction

1 Electric, water, and/or sewer lines.