Administrative Draft

Lower Blue Lake Dam Seepage Mitigation and Weir Replacement Project

Initial Study/Proposed Mitigated Negative Declaration

Prepared for:

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Proposed Mitigated Negative Declaration Lower Blue Lake Dam Seepage Mitigation and Weir Replacement Project

The Central Valley Regional Water Quality Control Board (Central Valley Water Board), acting as the California Environmental Quality Act lead agency, has reviewed the proposed project described below to determine whether substantial evidence supports a finding that project implementation could have a significant effect on the environment. "Significant effect on the environment" means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land use, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance.

Name of Project: Lower Blue Lake Dam Seepage Mitigation and Weir Replacement Project.

Project Location: The proposed project is located at Lower Blue Lake, which is approximately 9.7 miles southwest of Markleeville and 6.7 miles southeast of Carson Pass in Alpine County.

Project Description: The Pacific Gas & Electric Company (PG&E) is proposing to construct the Lower Blue Lake Dam Seepage Mitigation and Weir Replacement Project at Lower Blue Lake reservoir in Alpine County. In summer 2018, PG&E observed evidence of adverse seepage conditions developing on the downstream embankment face of the Lower Blue Lake Dam. In response, PG&E performed subsurface investigations of the dam embankment and foundation, which suggested that there are likely two sources of the observed seepage issues: (1) through the embankment fill itself during times of elevated water levels in the reservoir, and (2) through the native alluvium/glacial deposits left in place below the dam and spillway, which appear to be affected less by reservoir levels and more by groundwater conditions. One purpose of the proposed project is to reduce the risk of instability and internal erosion/piping associated with seepage through the installation of a filter, seepage collection system, and rock fill buttress along the downstream earthen embankment portion of the dam. As part of the project, PG&E would also raise the dam crest by approximately 2 feet to increase the available freeboard above the maximum water surface elevation, replace the existing reservoir staff gauge, and install a public safety railing along the steeper rock wall portion of the dam. The Lower Blue Lake Dam is operated by PG&E as part of the Mokelumne River FERC No. 137 Project, which is licensed by the Federal Energy Regulatory Commission.

An instream flow release (IFR) weir built of concrete that has degraded over time is located downstream of the Lower Blue Lake Dam. The gauging station at the IFR weir has remote telemetry that alerts PG&E in the event of a sudden flow increase or decrease. In order to maintain calibration of the weir, the degraded concrete would be replaced as part of the proposed project.

The project area consists of the dam crest, the downstream face and toe of the embankment section of the dam, upper and lower laydown areas, an equipment and construction staging area, a temporary material and equipment offload area, access road, IFR weir, temporary IFR weir cofferdam and flow bypass, access path to the IFR weir, and an IFR weir staging area.

Findings: The attached Initial Study (IS) identifies one or more potentially significant effects on the environment in the resource areas listed in the table below. After consideration of the analysis contained in the IS, the Central Valley Water Board finds that the proposed project as described above would not have a significant effect on the environment following mitigation measures described therein and listed below.

Lower Blue Lake Dam Seepage Mitigation and Weir Replacement Project Mitigation Measures

Biological Resources
M**itigation Measure BIO-MM-1**: Retain Qualified Botanists to Conduct a Floristic Survey for Special-Status Plants during Appropriate Identification Periods
Mitigation Measure BIO-MM-2: Implement Measures to Minimize Long-Term Effects on Special-Status Plants Documented in the Project Area
Mitigation Measure BIO-MM-3: Conduct Worker Environmental Awareness Training and Implement General Requirements
Mitigation Measure BIO-MM-4: Implement Cofferdam and Construction Site Dewatering Restrictions
Mitigation Measure BIO-MM-5: Rescue and Relocate Fish from Affected Habitat
Mitigation Measure BIO-MM-6: Implement Flow Pumping System Requirements
Mitigation Measure BIO-MM-7: Relocate and Monitor Yosemite Toad Tadpoles at Risk of Stranding
Mitigation Measure BIO-MM-8: Conduct an Upland Use Study of the Blue Lakes Yosemite Toad Population
Mitigation Measure BIO-MM-9: Conduct Surveys and Implement Protective Measures for Yosemite Toad and Sierra Nevada Yellow-Legged Frog
Mitigation Measure BIO-MM-10: Conduct a Preconstruction Survey for Nesting Birds and Implement Protective Buffers around Active Nests
Mitigation Measure BIO-MM-11: Implement Protective Measures to Avoid or Minimize Injury or Mortality of Roosting Bats
Mitigation Measure BIO-MM-12: Retain a Qualified Biologist to Conduct Periodic Monitoring of Sensitive Habitats during Construction
Mitigation Measure BIO-MM-13: Minimize the Introduction and Spread of Invasive Plants
Mitigation Measure BIO-MM-14: Avoid and Minimize Disturbance of Waters of the United States/Waters of the State
Mitigation Measure BIO-MM-15: Compensate for the Temporary and Permanent Loss of Waters of the United States/Waters of the State
Geology and Soils
Mitigation Measure GEO-MM-1: Educate Construction Personnel in Recognizing Fossil Material
Mitigation Measure GEO-MM-2: Stop Work if Substantial Fossil Remains are Encountered during Construction
Greenhouse Gas Emissions
Mitigation Measure GHG-MM-1: Implement Best Management Practices to Mitigate Tree Loss and Reduce Construction Generated Greenhouse Gas Emissions
Cultural Resources
Mitigation Measure CUL-MM-1: Conduct a Survey of Inaccessible Properties to Identify Previously Unrecorded Archaeological Sites and Implement Treatment Plan if Necessary
Mitigation Measure CUL-MM-2: Conduct Mandatory Cultural Resources Awareness Training for All Project Personnel

Mitigation Measure CUL-MM-3: Stop Work if Previously Unidentified Archaeological Resources are Encountered until a Qualified Archaeologist Assesses the Find and Native American Consultation Has Been Conducted

Mitigation Measure CUL-MM-4: Stop Work in Case of Accidental Discovery of Buried Human Remains until Procedures in Public Resources Code Section 5097 Have Been Completed

Public Review Period: The proposed project's IS and proposed Mitigated Negative Declaration (IS/MND) is available for review from XX date to XX date, 2023. No later than **XX date**, any person may:

1. Review the IS/MND; and
2. Submit written comments regarding the information, analysis, and mitigation measures in the IS/MND by mail or email.

The IS/MND may be viewed at the following location:

- [Please provide website and/or physical location].

Lead Agency Contact: Questions, comments, or requests for digital or physical copies may be directed to **Ms. Sara Gevorgyan** by email at sara.gevorgyan@waterboards.ca.gov; or in writing care of Central Valley Water Board, 11020 Sun Center Drive #200, Rancho Cordova, CA 95670; or by telephone at **(916) 464-4710**.

Name: ______________________

Title: ______________________

Signed: ______________________

Circulated on: ______________________

Adopted on: ______________________

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Acronyms and Abbreviations

Acronym	Definition
°C	degree Celsius
AB	Assembly Bill
ACAPCD	Amador County Air Pollution Control District
ACHP	Advisory Council on Historic Preservation
ACMC	Amador Canal and Mining Company
Alquist-Priolo Act	Alquist-Priolo Earthquake Fault Zoning Act
BAs	Biological assessments
Basin Plan	Water Quality Control Plan for the Sacramento River and San Joaquin River Basins
BMPs	best management practices
BO	biological opinion
CAA	Clean Air Act
CAAQS	California ambient air quality standards
CAL FIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
Central Valley Water Board	Central Valley Water Resources Control Board
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH_4	methane
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CRHR	California Register of Historical Resources

Acronym	Definition
CWA	Clean Water Act
dB	decibels
DO	dissolved oxygen
DPM	diesel particulate matter
DSOD	Division of Safety of Dams
DWR	Department of Water Resources
EDCAQMD	El Dorado County Air Quality Management District
EID	El Dorado Irrigation District
EO	executive orders
EPA	U.S. Environmental Protection Agency
ERC	Ecological Resources Committee
ESA	Endangered Species Act of 1973
FERC	Federal Energy Regulatory Commission
FHSZ	fire hazard severity zones
FHWA	Federal Highway Administration
FOCA	Federal Office of Civil Aviation
FR	Federal Register
FTA	Federal Transit Administration
GBUAPCD	Great Basin Unified Air Pollution Control District
GBVAB	Great Basin Valleys Air Basin
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbons
HPMP	Historic Properties Management Plan
I-	Interstate
IEPR	Integrated Energy Policy Report
IFR weir	instream flow release weir
IPCC	Intergovernmental Panel on Climate Change
IS	initial study
LLO	low-level outlet
L_{max}	maximum sound levels
LOS	Level of Service
LRAs	Local Responsibility Areas
LTAB	Lake Tahoe Air Basin

Acronym	Definition
LTO	landing and takeoff
MCAB	Mountain Counties Air Basin
MLD	most likely descendant
MPO	metropolitan planning organization
NAAQS	national ambient air quality standards
NEPA	National Environmental Policy Act
NFS	National Forest System
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NMFS	National Marine Fisheries Service
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OHV	off-highway vehicle
OHWM	ordinary high-water mark
OPR	Office of Planning and Research
PA	Programmatic Agreement
PCAPCD	Placer County Air Pollution Control District
PCT	Pacific Crest Trail
PG&E	Pacific Gas & Electric Company
PM	particulate matter
PPV	peak particle velocity
Regional Water Board	Regional Water Quality Control Board
ROG	reactive organic gases
RPS	Renewables Portfolio Standard
RTP	regional transportation plan
SB	Senate Bill
SCS	sustainable communities strategy
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SMAQMD	Sacramento Metropolitan Air Quality Management District
SNYLF	Sierra Nevada yellow-legged frog
SO_2	sulfur dioxide
SR	State Route

Acronym	Definition
SRAs	State Responsibility Areas
State Water Board	State Water Resources Control Board
SWPPP	stormwater pollution prevention program
TAC	toxic air contaminants
TCEAP	Temporary Construction Emergency Action Plan
TCRs	transportation concept reports
TMDL	total maximum daily load
US	U.S. Highway
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VHFHSZs	Very High Fire Hazard Severity Zones
VMT	vehicle miles traveled
WSE	water surface elevation

Chapter 1
Introduction

1.1 Project Purpose

Pacific Gas & Electric Company (PG&E) is proposing to construct the Lower Blue Lake Dam Seepage Mitigation Project and the Instream Flow Release Weir Replacement Project at Lower Blue Lake reservoir (reservoir). Activities associated with each would occur in close proximity to each other, and PG&E intends to construct the projects at the same time, using some of the same equipment and staff to make efficient and shared use of construction resources. Therefore, for the purposes of this initial study (IS), the Lower Blue Lake Dam Seepage Mitigation Project and the Instream Flow Release Weir Replacement Project comprise the "project" or "proposed project."[1]

In summer 2018, PG&E observed evidence of adverse seepage conditions developing on the downstream embankment face of the Lower Blue Lake Dam. In response, PG&E performed subsurface investigations of the dam embankment and foundation, which suggested that there are likely two sources of the observed seepage issues: (1) through the embankment fill itself during times of elevated water levels in the reservoir, and (2) through the native alluvium/glacial deposits left in place below the dam and spillway, which appear to be affected less by reservoir levels and more by groundwater conditions. One purpose of the proposed project is to reduce the risk of instability and internal erosion/piping associated with seepage through the installation of a filter, seepage collection system, and rockfill buttress along the downstream earthen embankment portion of the dam. As part of the project, PG&E would also raise the dam crest by approximately 2 feet to increase the available freeboard above the maximum water surface elevation (WSE), replace the existing reservoir staff gauge, and install a public safety railing along the steeper rock wall portion of the dam. The Lower Blue Lake Dam is operated by PG&E as part of the Mokelumne River FERC No. 137 Project, which is licensed by the Federal Energy Regulatory Commission (FERC).

An instream flow release weir (IFR weir) built of concrete that has degraded over time is located downstream of the Lower Blue Lake Dam. The gauging station at the IFR weir has remote telemetry that alerts PG&E in the event of a sudden flow increase or decrease. In order to maintain calibration of the weir, the degraded concrete would be replaced as part of the proposed project.

1.2 Document Purpose and Use

This IS was prepared in accordance with Article 5, Section 15060 et seq. of the California Environmental Quality Act (CEQA) Guidelines (California Code of Regulations [CCR], Title 14, Division 6, Chapter 3). This IS describes the existing environmental resources in the project area, evaluates the environmental impacts of the proposed project on these resources, and identifies

[1] Note that Lower Blue Lake Dam Seepage Mitigation Project and the Instream Flow Release Weir Replacement Project could be constructed and operated independent of each other, and, as a result, they could be separately reviewed under the National Environmental Policy Act, the federal Endangered Species Act, Section 106 of the National Historic Preservation Act, and/or Section 404 of the Clean Water Act.

mitigation measures to avoid or reduce any potentially significant impacts to a less-than-significant level.

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) is the CEQA lead agency, considering discretionary actions under Sections 401 and 402 of the federal Clean Water Act (CWA). The Central Valley Water Board will consider the findings of this IS in determining whether preparation of an environmental impact report would be necessary prior to implementation of the proposed project.

1.3 Project Area and Setting

The Lower Blue Lake Dam and IFR weir are located on Middle Creek,[2] a tributary to the North Fork of the Mokelumne River, approximately 9.7 miles southwest of Markleeville, California, and approximately 6.7 miles southeast of Carson Pass in Alpine County, California (Figure 1-1). Lower Blue Lake is accessible from State Route (SR) 88 by traveling south and then southwest on Blue Lakes Road for approximately 11.5 miles. The dam and IFR weir are located in the Pacific Valley U.S. Geological Survey (USGS) 7.5-minute quadrangle in Township 9 North, Range 19 East, Section 30 (latitude 38.6089, longitude -119.9259).

The dam and weir are located at an elevation of approximately 8,040 feet, near the crest of the Sierra Nevada mountain range, on land owned by PG&E and under a conservation easement held by the Mother Lode Land Trust. The conservation easement restricts development of the lands to protect and preserve beneficial public values but includes an express reservation of PG&E's right for continued operation, maintenance, and improvements of structures on the property, including the Lower Blue Lake dam and IFR weir.

In general, the Blue Lakes area (including Upper Blue Lake and Lower Blue Lake) is characteristic of high-elevation granite basins in the Sierra Nevada. Granite outcrops are a prominent feature of the area, and there are numerous outcrops, ridges, and peaks of younger volcanic rock. The dominant vegetation type is Sierra Nevada mixed conifer forest. Recreation uses of the area primarily consist of camping, hunting, fishing, hiking, swimming, off-highway vehicle use, and boating. Developed campgrounds, day use areas, and boat ramps owned and operated by PG&E are located at both lakes, as are trailheads to the adjacent Mokelumne Wilderness. The land surrounding PG&E's Upper Blue Lake and Lower Blue Lake parcels consists of both private property and National Forest System (NFS) lands managed by the Eldorado National Forest.

1.4 Project Background

Historically, Lower Blue Lake was a natural lake before it was enlarged by the addition of a dam. Lower Blue Lake Dam is an earthfill embankment dam that was constructed in three stages between 1874 and 1899. The original dam consisted of a 4-foot-high earth embankment with timber crib retaining walls on the upstream and downstream faces. In 1881 the dam was raised to 32 feet. In 1899 the dam was raised to its current height of 40.5 feet at the maximum section with hand-

[2] Middle Creek becomes Blue Creek approximately 800 feet downstream of the IFR weir, where it has its confluence with Blue Creek (which drains from Twin Lake southwest of Lower Blue Lake).

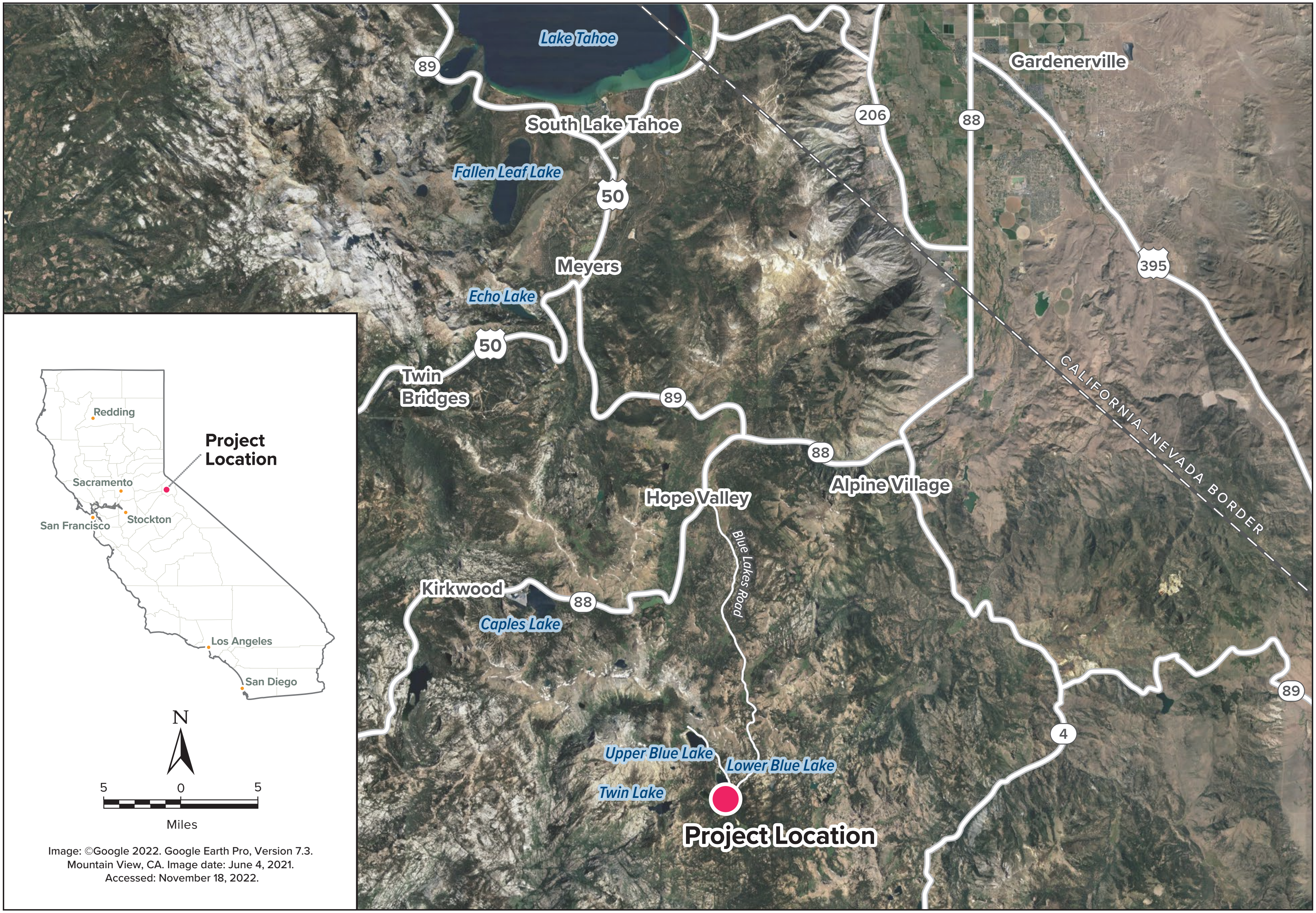

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Figure 1-1
Project Location

stacked rock/dry masonry walls on the upstream and downstream faces. Shallower sections are predominantly sloped, homogenous embankments.

Lower Blue Lake is operated primarily for seasonal storage and regulation of water for power generation further downstream. The reservoir has an area of about 198 acres and a usable capacity of approximately 5,091 acre-feet at the maximum normal operation WSE. There are no major hydroelectric facilities directly related to Lower Blue Lake Dam.

As summarized above, PG&E observed evidence of adverse seepage conditions developing on the downstream embankment face of the dam in 2018. These conditions included surficial dampness and localized active seepage springs high on the slope, as well as along the embankment toe on the left side (looking downstream). In response, PG&E performed a two-phase subsurface investigation of the dam embankment and foundation, which included installation of nine vibrating wire piezometers to evaluate the seepage conditions and seismic performance of the dam. The results of this investigation suggested that there are likely two sources of the observed seepage issues at the left reach of the dam: (1) through the embankment fill itself during times of elevated water levels in the reservoir, and (2) through the native alluvium/glacial deposits left in place below the dam and spillway, which appear to be affected less by reservoir levels and more by groundwater conditions. Since identification of the seepage issue in 2018, PG&E has been operating the reservoir under a self-imposed temporary elevation restriction of 8,050.6[3] feet (equal to the invert of the shallow section of the spillway) which provides for a minimum freeboard of 4.8 feet to the existing nominal crest elevation of 8,055.4 feet.

The IFR weir and an associated gauging station were constructed in the early 1970s to assist PG&E in meeting FERC license requirements to monitor instream flow releases and water quality conditions downstream of Lower Blue Lake Dam. The system also provides alerts to PG&E if unexpected increases or decreases in flow are detected, which could indicate problems at the dam. The concrete weir has degraded over time and needs to be replaced in order to maintain calibration of the system.

1.5 Regulatory Compliance

In addition to compliance with Sections 401 and 402 of the CWA, PG&E will seek all necessary permissions, authorizations, concurrences, and permits to comply with the following regulations for implementation of the proposed project.

1.5.1 Federal Endangered Species Act

Because the proposed project is part of the Mokelumne River Project, which is licensed by FERC, FERC is required to consult with the U.S. Fish and Wildlife Service (USFWS) on the effects of the proposed project on federally listed species and critical habitat pursuant to Section 7(a)(2) of the federal Endangered Species Act of 1973 (ESA). Biological assessments (BAs) have been prepared for the Lower Blue Lake Dam Seepage Mitigation Project and the Instream Flow Release Weir Replacement Project in compliance with legal requirements set forth under Section 7 of the ESA (16 United States Code [USC] 1536) and to support PG&E and FERC's consultation with USFWS. The BAs

[3] USGS datum is used throughout this document. USGS datum can be converted to PG&E datum, which may be used in other project permitting documents, by subtracting 14.7 feet from the USGS datum.

document the potential effects of the proposed projects on Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*) and Yosemite toad (*Anaxyrus canorus*).

1.5.2 Clean Water Act, Section 404

Section 404 of the CWA (33 USC 1344) requires that a permit be obtained from the U.S. Army Corps of Engineers (USACE) for the discharge of fill material into waters of the United States. PG&E is consulting with USACE to ensure compliance with Section 404 of the CWA.

1.5.3 National Historic Preservation Act, Section 106

PG&E's application to USACE for a CWA Section 404 permit for the proposed project triggers compliance with Section 106 of the National Historic Preservation Act (NHPA), which requires federal agencies to evaluate the effects of their undertakings on historic properties. FERC is coordinating with USACE and the California State Historic Preservation Officer (SHPO) to ensure compliance with Section 106 of the NHPA.

1.6 Document Organization

This IS is organized as follows:

- Chapter 1, *Introduction*, describes the project purpose, project area and setting, project background, and regulatory compliance requirements.
- Chapter 2, *Project Description*, describes construction of the proposed project as well as best management practices (BMPs) that PG&E would implement as part of the proposed project.
- Chapter 3, *Environmental Setting and Impacts*, describes the environmental resources present in the project area, and analyzes the proposed project's potential to affect such resources.
- Chapter 4, *Cumulative Impacts*, discusses the potential for the proposed project's incremental effect to be cumulatively considerable when combined with other projects causing related impacts.
- Chapter 5, *Mandatory Findings of Significance*, discloses whether the project would result in any significant effects on the environment and subsequently, whether an environmental impact report needs to be prepared.
- Chapter 6, *References*, provides a list of all printed references and personal communications used to prepare this document.
- Chapter 7, *List of Preparers*, presents a list of all personnel who assisted in the preparation of this document.
- Appendix A, *Environmental Checklist*, contains the Environmental Checklist Form from State CEQA Guidelines Appendix G.
- Appendix B, *Species Lists,* contains the result of database searches for plant and wildlife species that occur in the project vicinity and the USFWS species list for the project area.
- Appendix C, *Plants and Animals Observed in the Lower Blue Lake Dam Seepage Mitigation and Weir Replacement Project Area,* lists the species of plants and animals observed during surveys.

- Appendix D, *Air Quality Calculations and Assumptions,* contains air quality modeling assumptions and outputs*.*
- Appendix E, *Short-Term Noise Measurement Data,* contains the complete dataset of noise measurement data from the field survey*.*

Chapter 2
Project Description

The proposed project includes installing a downstream filter, seepage collection system, and buttress along the left side embankment section of the dam, increasing the dam crest elevation by approximately 2 feet, installing a safety railing across the right side rock wall section of the dam, placing asphalt paving along the entire crest of the dam, replacing the staff gauge, and repairing the IFR weir downstream of the dam. Construction BMPs described in Section 2.5, *Best Management Practices*, will be implemented as part of the proposed project. The project area consists of the dam crest, the downstream face and toe of the embankment section of the dam, an upper and lower laydown area, an equipment and construction staging area, a temporary material and equipment offload area, access road, IFR weir, temporary IFR weir cofferdam and flow bypass, access path to the IFR weir, and an IFR weir staging area (Figure 2-1).

2.1 Construction Methods and Activities

2.1.1 Reservoir Drawdown

To reduce seepage into the downstream excavations, the reservoir would be drawn down to a target elevation of 8,029.7 feet (15 feet on the staff gauge) prior to performing any excavation. The reservoir drawdown would be coordinated with PG&E operations and water management and would depend on seasonal snowpack, runoff conditions, and storage capacity at the upstream Upper Blue Lake Dam. It is expected that the reservoir would reach this target by the end of August 2023. The reservoir would be drawn down by managing inflow from the Upper Blue Lake Dam while releasing water through the twin 24-inch-diameter low-level outlet (LLO) pipes at the Lower Blue Lake dam. A drawdown plan would be developed once information is available on the annual snowpack prior to the construction season.

If necessary, drawdown pumps would be installed to supplement outflow in the unlikely event of an issue with one or both of the LLO pipes in order to achieve the target drawdown elevation by the end of August 2023. These drawdown pumps, if needed, would utilize floating screened intakes on the left side of the reservoir, which would convey water through pipes into the spillway. A generator would be staged along the shoreline (in containment) to power the pumps. A mobile bridge would be used to allow access over the discharge pipes along the access route near the spillway. Figure 2-2 shows an approximate layout of the drawdown pumps if they are necessary. Total outflow from the reservoir during drawdown would not exceed the maximum flow capacity of the LLO pipes even if the drawdown pumps were to be utilized.

Once the reservoir has reached the target drawdown elevation, all reservoir releases would be managed using the LLO, including maintenance of required instream flow releases.

2.1.2 Crest Raise

The entire crest of the dam (shown in Figure 2-3) would be raised approximately 2 feet to a consistent elevation of 8,057.4 feet. This would only increase the freeboard of the dam and would not lead to any change in the storage or normal operations of the reservoir. The crest raise would not require any discharge of fill material into the reservoir. Imported fill material or processed spoils from downstream excavations would be used for the crest raise in addition to an asphalt cap along the entire length of the crest. Equipment used for the crest raise would work on the top of the dam, which would be accessed from either side of the dam along the access route.

2.1.2.1 Crest Raise at the Embankment Section of the Dam

Approximately 6 inches of loose material would be removed from the crest of the dam prior to preparing the subgrade for installation of new embankment fill. The loose crest material would be dug up with loaders, excavators, or backhoes and loaded into dump trucks to haul away to the spoils disposal site or to an offsite permitted disposal location. The spoils may be temporarily stored at one of the laydown areas before being taken to the final disposal site. Removal of the existing helipad would also be required. Demolished concrete from the existing helipad would be temporarily staged in the laydown areas, then hauled offsite for concrete recycling at a permitted plant.

New embankment fill would be placed in lifts by dumping material from dump trucks, spreading it with a grader or backhoe, then compacting it with vibrating compaction equipment to meet specified compaction criteria. The outboard slopes would be laid back to the specified slope and dressed with rock slope protection. The crest raise would be completed with a layer of asphalt along the entire length of the dam. If deemed necessary, a portion of the new asphalt would be striped to reestablish a helicopter landing zone. Figure 2-4 shows the details of the crest raise in the embankment section of the dam.

2.1.2.2 Crest Raise at the Rock Wall Section of the Dam

In the rock wall section of the dam, the crest raise would consist of installing a precast concrete block barrier with safety railing on the downstream side of the crest. The block wall would be installed prior to placing new embankment fill in this section. Foundations for the block wall would be dug with excavation equipment and leveled prior to placing the blocks individually with an excavator or forklift. Approximately 200 precast concrete blocks would be required. Placement of embankment fill, erosion protection, and asphalt cap would be similar to what is described for the embankment section of the dam. Walk-behind compaction equipment would be used to compact the embankment fill immediately adjacent to the block wall. Figure 2-4 shows the details of the crest raise and safety railing in the rock wall section of the dam.

2.1.3 Downstream Filter, Seepage Collection System, and Buttress

2.1.3.1 Site Preparation

Prior to installing the downstream filter, seepage collection system, and buttress on the downstream face of the dam, the site would be prepared for excavation. Site preparation work would include the following actions, which are shown on Figure 2-5.

- Removal of approximately four to five trees along the toe of the dam.
- Removal/abandonment of an existing water line (which is no longer in use). The water line was used in the past to provide water to the buildings east of the dam before construction of a

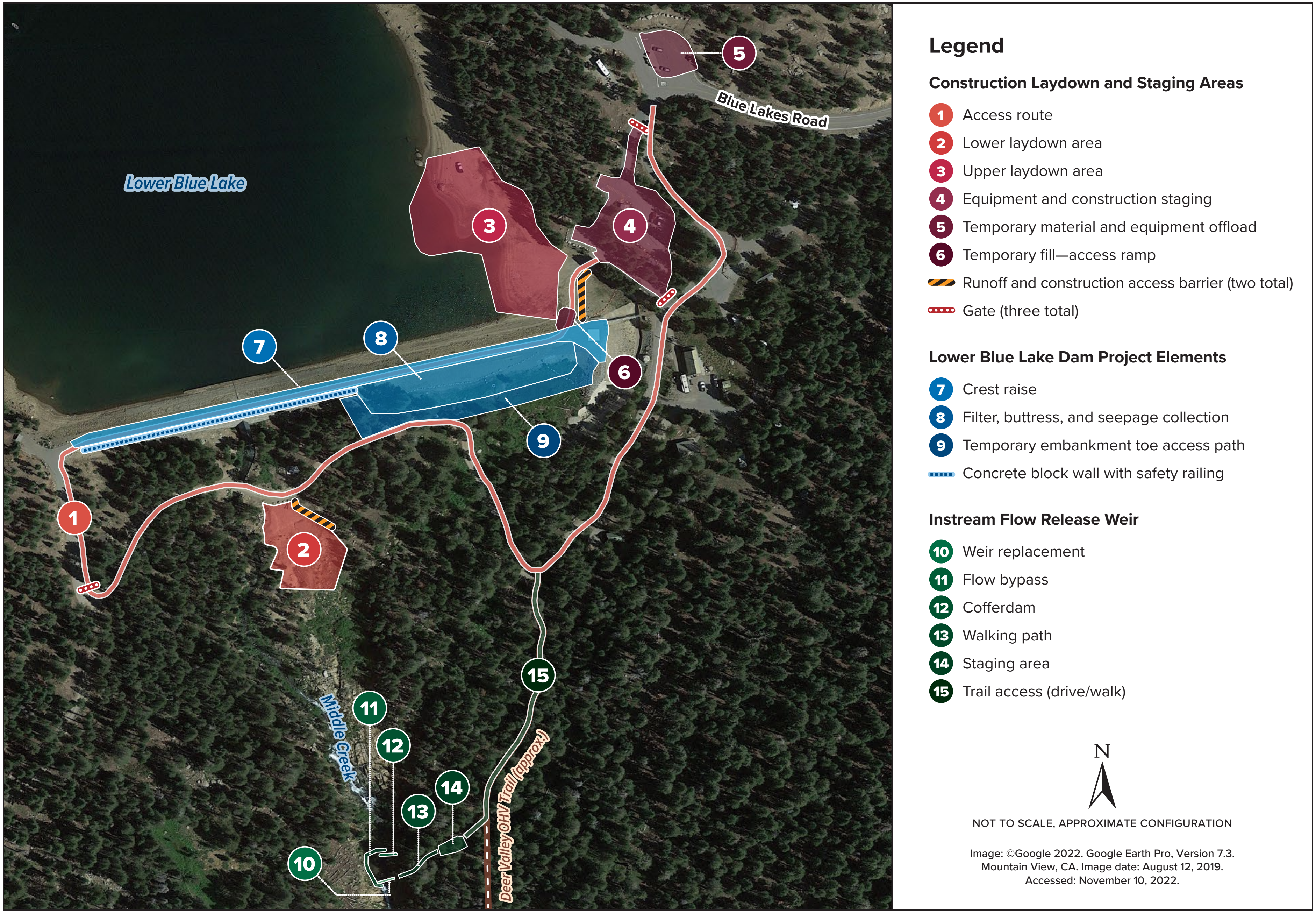

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Figure 2-1
Project Area

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Figure 2-2

Optional Drawdown Pump Configuration

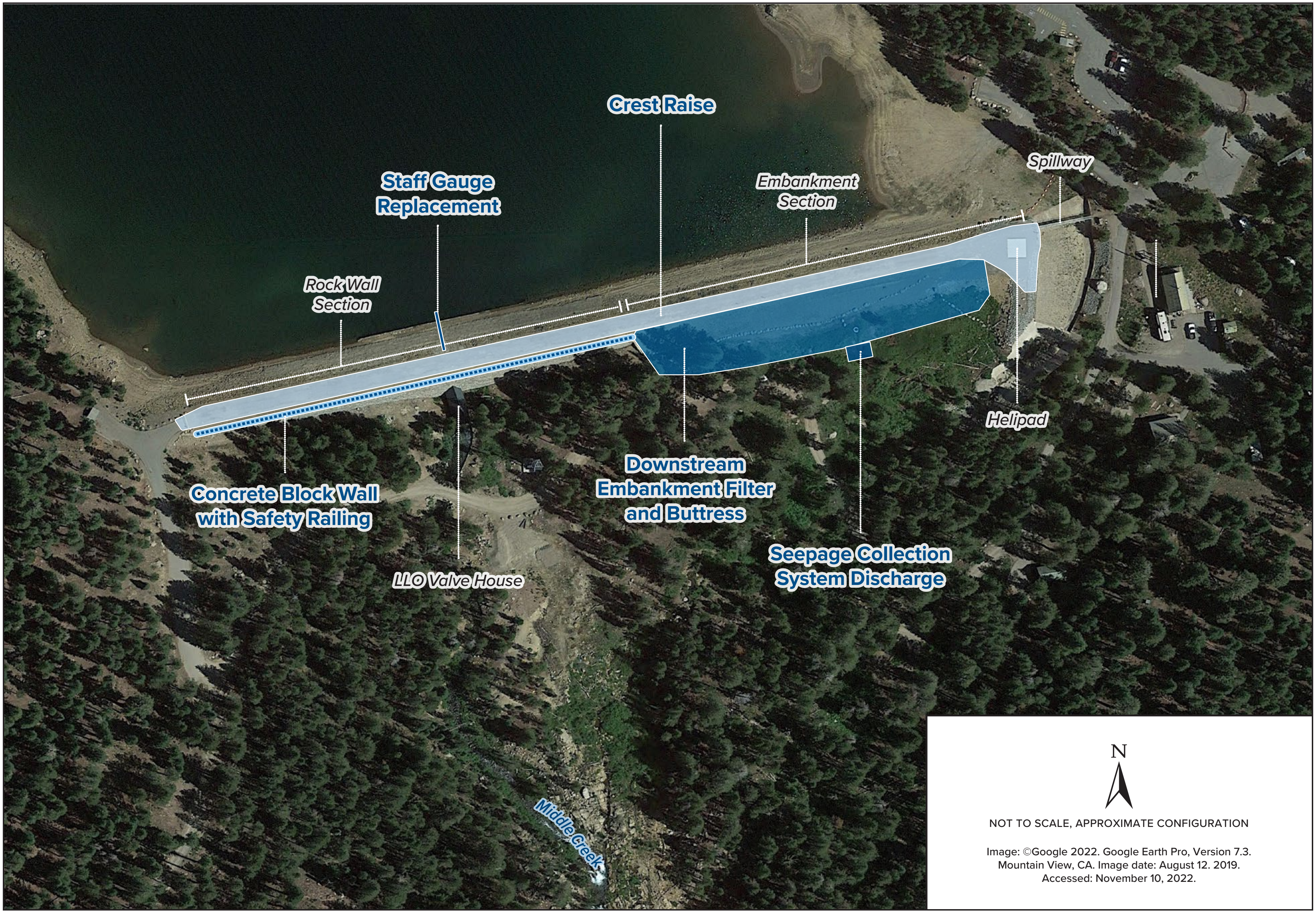

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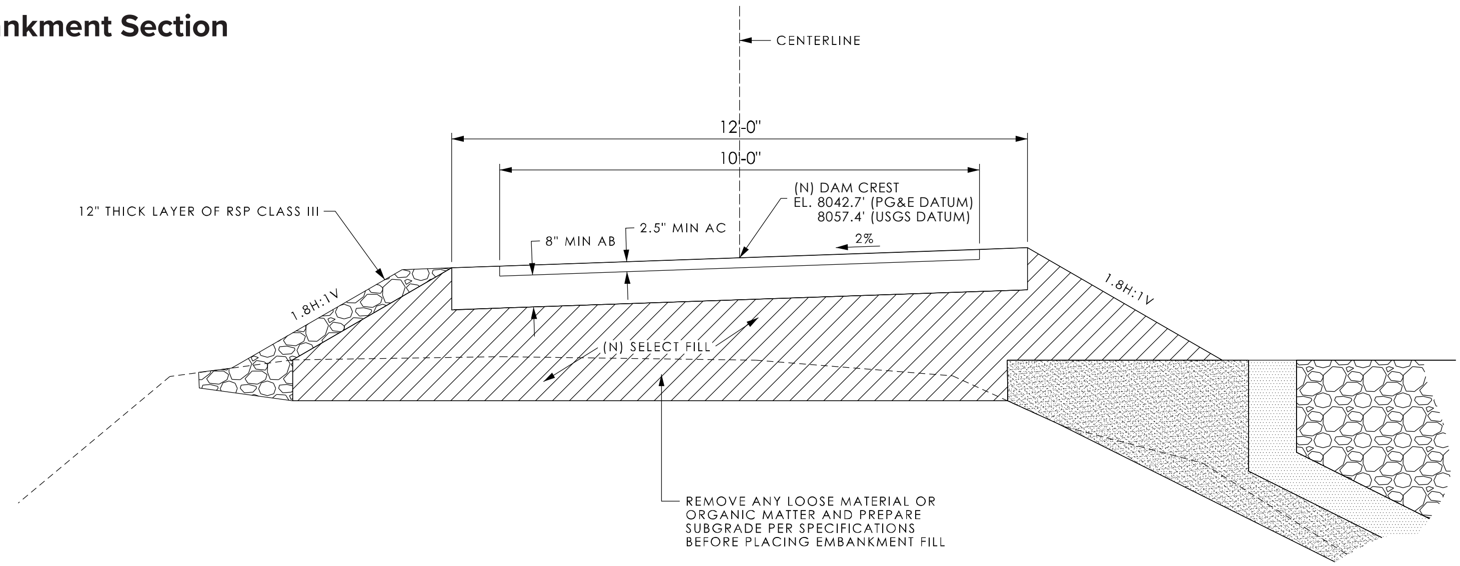
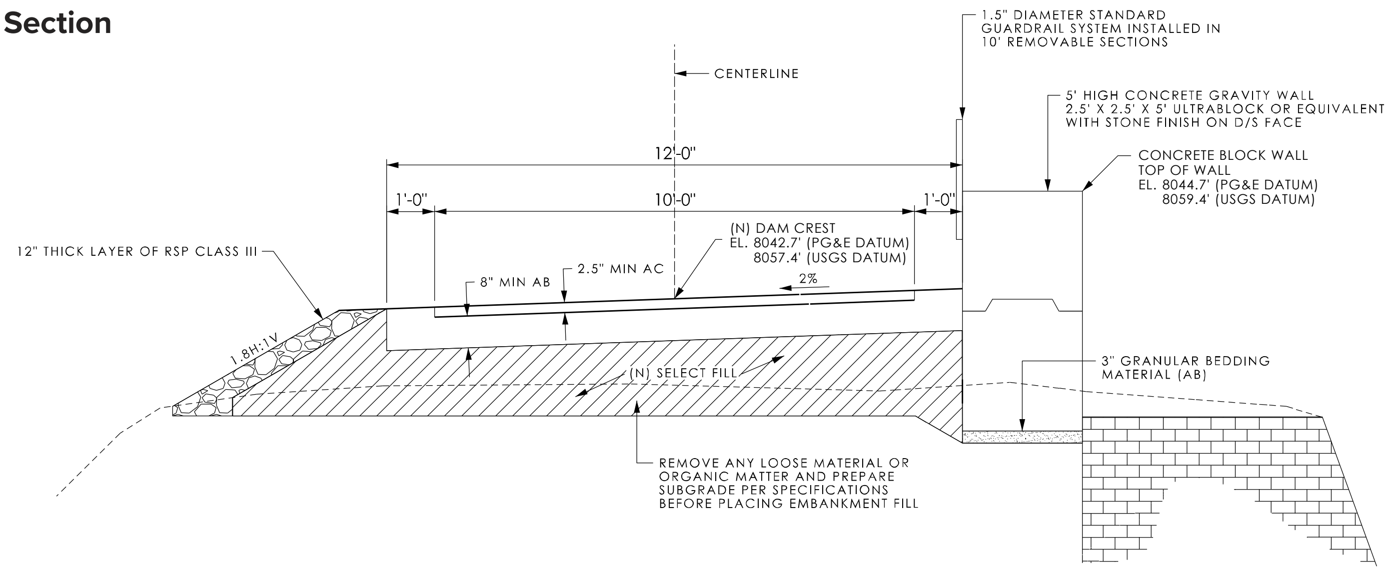
Figure 2-3
Proposed Lower Blue Lake Dam Modifications

A. Embankment Section



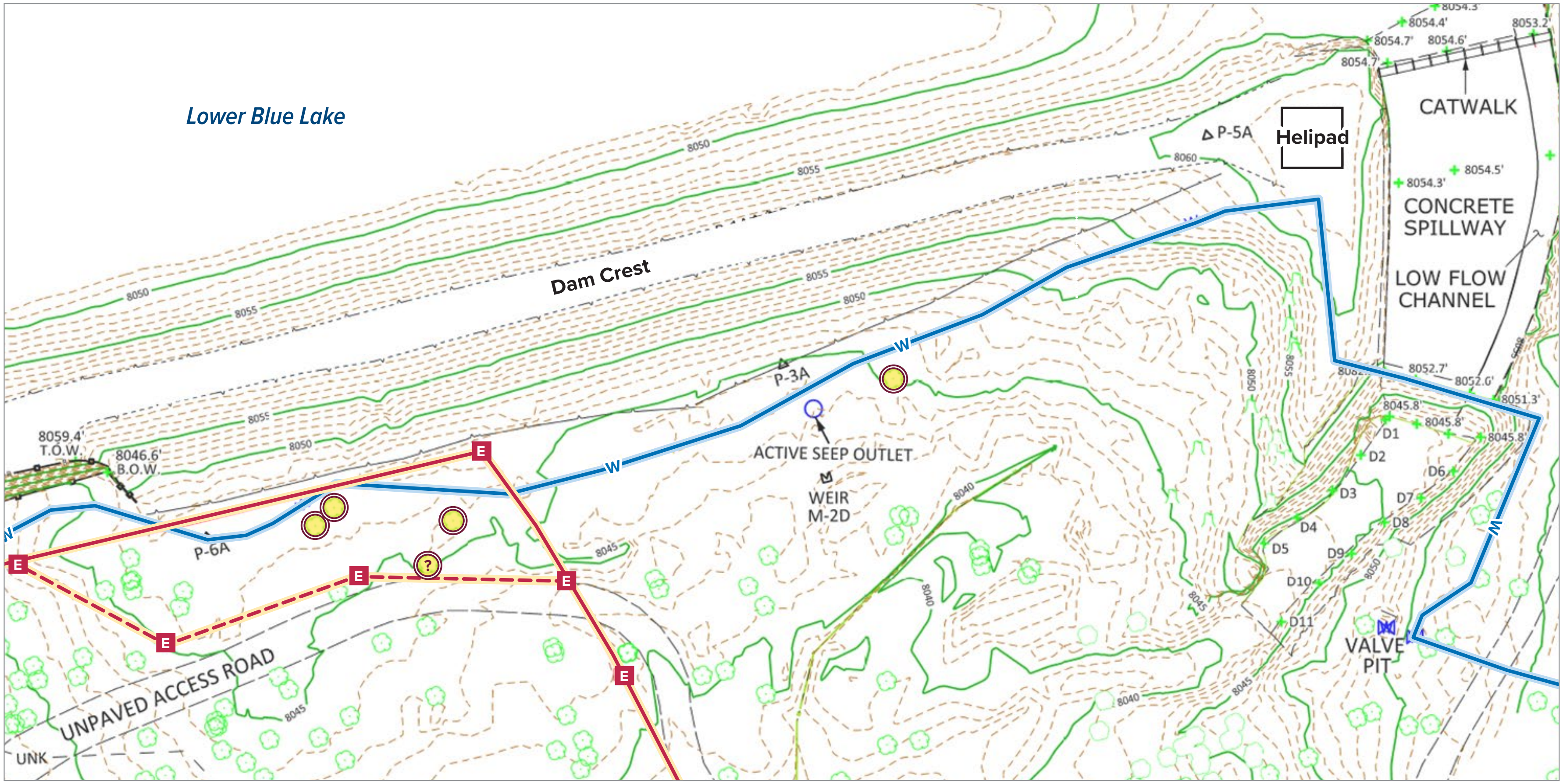
B. Rock Wall Section



Source: Mott MacDonald and Slate Geotechnical Consultants 2022:12.

Graphics … PGE 103642 LB Lake ISMND (12-12-2022) TAG

Figure 2-4
Crest Raise Details—Embankment and Rock Wall Sections



Legend

Utility Relocations

- Water line to be abandoned
- Electrical conduit to be relocated
- Relocated electrical conduit (approximate)

Tree Removals

- Tree to be removed (four total)
- Tree potentially needing removal (one total)

N

NOT TO SCALE,
APPROXIMATE CONFIGURATION

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Figure 2-5
Utility Relocations and Tree Removals

dedicated well. Removal/abandonment would be achieved by cutting out the section of the water line that is within the project footprint and plugging the cut ends.

- Relocation of a portion of the existing underground electrical conduit that provides power and communications to the IFR weir gauging station to a location outside the rock fill buttress footprint.

2.1.3.2 Construction

Once the reservoir is drawn down to the target elevation of 8,029.7 feet, the downstream side of the dam, from the left abutment adjacent to the spillway to the start of the rock wall section, would be prepared for installation of the new filter, seepage collection system, and buttress. A local dewatering system would be installed to keep local groundwater out of the construction area and maintain a dry excavation. The details of the local dewatering system would be developed prior to construction but would likely consist of dewatering wells or trenches equipped with sump pumps that would discharge through filters into the spillway channel or drainage swales downstream of the dam.

Approximately 6 inches of the embankment at the top of the slope would be trimmed back and an excavated cut would continue down at the design slope of 2:1 (2 horizontal to 1 vertical) to the desired foundation elevation. The toe excavation would extend a minimum of 1 foot into competent native material, to be confirmed during construction by the field engineer. The toe excavation depth would vary but is expected to be between 4 and 7 feet below the existing ground surface. If the foundation material does not meet the design criteria, the excavation may extend down to bedrock. Bedrock depth varies but is expected to be an additional 8 feet (approximate) deeper than the designed foundation.

A two-stage granular filter would be installed along the contact of the existing embankment and foundation material to separate the proposed rock fill buttresses. These filter materials would be distinct gradations of sand and gravel and would be compacted in place with walk-behind compaction equipment. A larger riprap material would be used for the rock fill which would create the final buttress configuration. Perforated and solid drainpipes would be used to construct a seepage collection system within the filters and rock fill buttress. Seepage from the dam embankment and toe of the dam would be collected in these drainpipes and discharged into flow-measuring weirs and then onto the ground surface just downstream of the improvements.

Excavators would be used on the crest of the dam and adjacent to the toe excavation area to complete both the removal of existing material and placement of new filter and rock fill material. Off-road haul trucks would be used to remove excavated spoils to the laydown areas from the excavation area and to deliver fill materials from the laydown areas to the excavated area. A 15-foot-wide path beyond the excavation boundary along the toe of the embankment section would be used to move materials and equipment. Mats may be used in this area to protect the existing ground from damage from construction traffic.

2.1.4 Staff Gauge Replacement

The existing staff gauge would be replaced in-kind in the same location as the existing staff gauge. As the reservoir is drawn down, the staff gauge would be removed in sections. This work would take place prior to the crest raise as removal of the staff gauge is required to raise the dam crest. Prior to the final section being removed down to the top of the existing LLO intake trash rack (approximately

9 feet on the staff gauge), a temporary staff gauge would be installed in the reservoir. The upper section of the staff gauge (down to approximately 28 feet on the staff gauge) would be installed from the dam crest and accessed by foot. The steeper, lower section of the staff gauge (from approximately 28 feet to 9 feet on the staff gauge) would be installed from a temporary floating platform in the reservoir or from a ladder temporarily secured to the upstream dam face. Fall protection and ladders would be used to access anchor locations for the new staff gauge in this steeper section. Once the staff gauge concrete curb and steel structure have been installed, the elevation delineators would be installed.

2.1.5 IFR Weir Replacement

The IFR weir downstream of the Lower Blue Lake Dam is built of concrete that has degraded over time. The gauging station at the IFR weir has remote telemetry and can alarm PG&E's Tiger Creek Switching Center in the event of a sudden flow increase, including increased flow associated with excessive seepage through the proposed seepage collection system. In order to maintain calibration of the weir, the degraded concrete would be repaired as part of the proposed project. Figure 2-6 shows the layout of the project area at the IFR weir replacement site.

Work would commence on the IFR weir once the reservoir has been drawn down to the target elevation of 8,029.7 feet and the instream flow releases are reduced to a minimum. Equipment and materials would be mobilized and demobilized from the site using helicopters. A clearing just northeast of the weir site would be used to stage materials and equipment during construction, including portable generator(s) and fuel. Crew vehicles (one to two per day) and a vacuum truck would utilize the Deer Valley Off-Highway Vehicle (OHV) Trail to access and park at the staging area. Access from the staging area to the construction site at the weir would be by foot. No improvements are needed to the access route or staging area.

2.1.5.1 Cofferdam and Flow Bypass

Prior to demolishing the damaged concrete at the weir, a temporary cofferdam and flow bypass system would be installed upstream of the work area. The system is expected to include a bypass pump (or pumps) and would discharge flow just downstream of the IFR weir structure.

A sump pump (or pumps) would be installed downstream of the cofferdam to pump leakage water back over the cofferdam and prevent it from entering the work area. The intake for the flow bypass pump (or pumps) would be equipped with a screen to prevent foreign entry and aquatic wildlife impacts. The sump pump (or pumps) would be filtered to prevent turbid water from entering the bypass system. Power required to run bypass pumps and sump pumps would be supplied by portable generators. Additional pumps may be used to supply water to a fire suppression sprinkler system around the generator (or generators). A temporary stream flow gauge would be installed prior to installing the cofferdam and dewatering the weir.

2.1.5.2 Construction

Once the work area has been dewatered, sediment would be removed from upstream of the weir with a vacuum truck and disposed of offsite at a permitted disposal site or landfill. The damaged concrete would be demolished by saw cutting and chipping the existing concrete to the demolition lines on the design drawings. The demolished concrete would be collected by hand in debris bags and flown to the laydown area to be recycled along with the other concrete materials.

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Figure 2-6
Weir Replacement Area Detail

After demolition is complete, new concrete reinforcement and forms would be installed. Concrete mixer trucks would be staged at one of the laydown areas to pour ready-mix concrete into 1/3-yard buckets, which would be flown by helicopter and placed in the forms. Concrete washout and excess material would also be managed in one of the laydown areas.

Once the concrete has cured, the forms would be removed and the sump pumps controlling leakage would be stopped to allow water to equalize on either side of the cofferdam. The cofferdam and bypass pumps would then be removed to allow streamflow to run through the newly repaired structure.

2.1.6 Site Cleanup and Demobilization

Following completion of construction activities, the project site would be returned, as much as is reasonably practicable, to its original condition. All equipment and surplus materials would be removed from the project site and associated laydown areas. All construction debris and environmentally deleterious material would be removed from the construction site and from the laydown and parking areas and disposed of at a permitted waste collection site.

2.1.7 Operations and Maintenance

Operations and maintenance activities after completion of the proposed project would be the same as pre-project operations and maintenance activities. There would be no changes to reservoir levels.

2.2 Access, Staging, Laydown, and Spoils Sites

The project would be accessed from Blue Lakes Road off SR 88. The Lower Blue Lake Launch Ramp and associated parking area and restrooms as well as the Lower Blue Lake Dam Day Use Area would be closed to the public to accommodate construction activities. Public access to these areas would be blocked with temporary fencing and gates as shown on Figure 2-1. The parking lot near the boat ramp at Lower Blue Lake would be used for construction vehicle, equipment, and employee parking; fuel tank storage; a tool trailer; and an office trailer. The information kiosk area may be used as a temporary drop-off area for equipment and materials before they are moved down to the laydown areas.

Two laydown areas would be used for the proposed project as shown on Figure 2-1 to stage imported materials and excavated spoils. Approximately 9,000 to 13,000 cubic yards of import fill materials would be used to construct the project, depending on the foundation conditions. The upper laydown area would be located on the exposed shoreline upstream of the spillway on the left side of the reservoir. No site preparation is anticipated for the upper laydown area. The lower laydown area would be located in the clearing downstream of the dam just south of the access road near the LLO valve house. Construction access to this lower laydown area would occur via the Deer Valley OHV Trail and the existing road that leads to Twin Lake, both of which would remain open to public access. Some minor brush and stump removal is expected in the lower laydown area to improve access for construction equipment and to prepare the area to receive excavated spoils. At both laydown sites, barriers would be installed to ensure construction equipment, workers, and runoff do not enter adjacent sensitive areas. Material and spoils stockpiles would be handled with loaders and excavators to maintain the laydown areas. Trench plates or similar flat barriers may be placed on the existing ground and surrounded by vertical barriers to contain stockpiles of the more fine-grained filter material and prevent it from mixing with the existing soil. These trench plates and barriers would be removed at the end of construction.

An access ramp would be built on the upstream side of the dam to allow access from the boat ramp to the dam crest near the spillway. Import fill would be placed over geotextile fabric to create a gradual slope for truck and equipment access. A temporary barrier would be placed from the boat ramp to the access ramp to prevent access to the spillway.

All fill placed in the reservoir at the upper laydown area and access ramp would be removed from below the ordinary high-water mark (OHWM) prior to fully demobilizing. These areas would be returned to their pre-project contours.

As described in Section 2.1.5, *IFR Weir Replacement*, one to two crew vehicles per day as well as a vacuum truck would utilize the Deer Valley OHV Trail to access and park at the IFR weir staging area during IFR weir construction work. Access from the staging area to the construction site at the weir would be by foot.

Excavated spoils would be either hauled offsite to an approved disposal site or permanently placed in the lower laydown area. Permanently placed spoils would be compacted in lifts and dressed with erosion protection measures outlined in the stormwater pollution prevention plan (SWPPP) (Section 2.5.1, *BMP-1: Implement Water Quality Protection Measures and Erosion and Sediment Control Plans*). Approximately 2,500 cubic yards of excavated spoils are expected, but the actual quantity would depend on the foundation conditions discovered during excavation.

2.3 Construction Schedule

It is anticipated that construction work would begin around July 3, 2023. Construction would occur within a window of available access to the high-elevation project site (above 8,000 feet), and mobilization would start after snow has cleared enough to provide reasonable and safe access to the site and construction laydown areas, which typically occurs by July. Excavation on the downstream side of the dam would require the reservoir to be drawn down to a target elevation of around or below 8,029.7 feet, or 15 feet on the staff gauge. This is expected to occur by the end of August. Demobilization activities would be planned to take place prior to winter storms blocking access to and from the site, typically late October. Construction is expected to take place from 7 a.m. to 7 p.m. Monday through Sunday. Table 2-1 shows the anticipated work schedule.

Table 2-1. Lower Blue Lake Dam Seepage Mitigation Project Construction Schedule

Project Element/Phase	Construction Start/End Date
During Reservoir Draw-Down	
Reservoir Drawdown	July 3 to Aug 25, 2023 (~8 weeks)
Mobilization and Laydown Area Setup	July 17 to July 28, 2023 (~2 weeks)
Site Preparation and Demolition *Demolish existing helipad; remove loose dam crest material and prepare subgrade for crest raise; remove trees and brush, as required, on downstream side of dam; and demolish existing staff gauge down to at least 28 feet*	July 31 to Aug 7, 2023 (~1 week)
Install Crest Raise on Rock Wall Section of Dam	Aug 8 to Aug 23, 2023 (~2 weeks)

Project Element/Phase	Construction Start/End Date
Install precast concrete block wall on downstream side of crest; place and compact new embankment fill; and install safety railing on precast concrete block wall	
During Reservoir Draw-Down and Continuing through Construction	
Fill Delivery and Backhaul	July 17 to Sept 22, 2023 (~10 weeks)
After Reservoir Drawdown is Complete	
Install Downstream Filter, Seepage Collection System, and Buttress on Embankment Section of Dam *Relocate/abandon existing utilities in conflict with work area; install local dewatering system; excavate and prepare foundation; and install filter, drains, and rock fill*	Aug 28 to Sept 22, 2023 (~4 weeks)
Install Crest Raise on Embankment Section of Dam *Place and compact new embankment fill; install upstream erosion protection along entire length of crest; place asphalt along entire length of crest; and stripe as needed for helicopter landing zone*	Sept 25 to Oct 4, 2023 (~1 week)
Replace Staff Gauge *Install temporary staff gauge; demolish remaining staff gauge down to approximately 9 feet (at top of intake trash rack); install new staff gauge concrete curb and structure; and install new staff gauge delineators*	Aug 28 to Sept 5, 2023 (~ 1 week)
Replace IFR Weir *Mobilize materials and equipment to weir site; install temporary cofferdam and flow bypass system; dewater work area and remove sediment adjacent to weir structure; demolish existing damaged concrete; install new reinforced concrete structure; remove flow bypass system and temporary cofferdam; and demobilize materials and equipment from weir site*	Sep 18 to Oct 3 (~2 weeks)
Demobilization	Oct 5 to Oct 11 (~1 week)

2.4 Construction Equipment and Vehicle Use

2.4.1 Construction Equipment

Table 2-2 shows the type and quantities of equipment expected to be used onsite during construction of the proposed project. Construction activities at the IFR weir would require the occasional use of a helicopter. Anticipated helicopter use is shown in Table 2-3.

Table 2-2. Construction Phases and Equipment Use

Project Phase	Equipment Type	Fuel Type	Quantity per Day	Hours/ Day	Onsite Miles/Day
Site Preparation and Demolition	Backhoe	Diesel	1	8	-
	Telehandler (forklift)	Diesel	1	8	-
	Loader	Diesel	1	8	-

Project Phase	Equipment Type	Fuel Type	Quantity per Day	Hours/ Day	Onsite Miles/Day
	328 Excavator	Diesel	1	8	-
	Dozer D4	Diesel	1	8	-
	Water Truck	Diesel	1	1	5
	Generator	Diesel	1	8	-
Install Crest Raise on Rock Wall Section of Dam	10 YD dump Truck (onsite)	Diesel	2	6	5
	304 Loader	Diesel	1	8	-
	Compactor	Diesel	2	4	-
	Motor Grader	Diesel	1	8	-
	Water Truck	Diesel	1	6	5
	Generator	Diesel	1	8	-
Install Downstream Filter, Seepage Collection System, and Buttress on Embankment Section of Dam	335 Excavator	Diesel	2	8	-
	Haul Truck (onsite)	Diesel	2	8	5
	Loader	Diesel	1	8	-
	Backhoe	Diesel	1	8	-
	Compactor/Jumping Jack	Gas	1	6	-
	Water Truck	Diesel	1	4	5
	Generator	Diesel	1	8	-
Install Crest Raise on Embankment Section of Dam	328 Excavator	Diesel	1	8	-
	Compactor/Jumping Jack	Gas	1	4	-
	Loader	Diesel	1	8	-
	Dump Truck (onsite)	Diesel	1	6	5
	Concrete Pump	Diesel	1	4	-
	Water Truck	Diesel	1	6	5
	Generator	Diesel	1	8	-
Replace Staff Gauge	Telehandler (forklift)	Diesel	1	8	-
Replace IFR Weir	Compressor	Diesel	1	8	-
	Concrete Pump	Diesel	1	4	-
	Generator	Diesel	1	8	-

Table 2-3. Helicopter Use

Project Phase	Helicopter Type	Landing/Takeoff Cycles per Day	Cruise Hours per Day	Days
Replace IFR Weir (Mobilization)	Bell 407	2	2	1
Replace IFR Weir (Concrete)	Bell 407	2	4	1
Replace IFR Weir (Demobilization)	Bell 407	2	2	1

2.4.2 On-Road Vehicle Use

Vendor and haul truck trips would originate either in Ione, CA or in Carson City, NV (or a combination of both). For the purposes of this analysis, unless otherwise stated in the specific resource analyses, it is assumed that all vendor and haul truck trips would originate in Ione, CA, traveling via SR 88 and Blue Lakes Road to the project site. This assumption ensures that the most conservative scenario has been analyzed because (1) the distance from Ione to the project site is approximately twice as long as the distance from Carson City to the project site and (2) it includes an analysis of impacts in Amador County as well as Alpine County. Worker trips are expected to originate in South Lake Tahoe, and workers will carpool in crew vehicles to the project site each day. Table 2-4 shows the anticipated number of worker, vendor, and haul truck trips for each phase of the proposed project.

Table 2-4. Construction Phases and On-Road Vehicle Use

	Maximum Daily Vehicle Trips			Total Vehicle Trips for Each Phase		
Project Phase	**One-Way Worker Trips**	**One-Way Vendor Trips (Light/Med. Trucks)**	**One-Way Haul Trips (Heavy Trucks)**	**One-Way Worker Trips**	**One-Way Vendor Trips (Light/Med. Trucks)**	**One-Way Haul Trips (Heavy Trucks)**
Mobilization and Laydown Area Setup	14	10	-	196	40	-
Site Preparation and Demolition	10	2	-	60	10	-
Install Crest Raise on Rock Wall Section of Dam	10	2	-	120	10	-
Fill Delivery and Backhaul	-	-	30	-	-	1300
Install Downstream Filter, Seepage Collection System, and Buttress on Embankment Section of Dam	10	2	-	200	4	-
Install Crest Raise on Embankment Section of Dam	10	2	-	80	4	-
Replace Staff Gauge	-	2	-	-	6	-
Replace IFR Weir	-	2	-	-	6	-
Demobilization	14	14	-	98	40	-

2.5 Best Management Practices

PG&E will implement the following BMPs as part of project construction. The resource analyses in Chapter 3, *Environmental Setting and Impacts*, include descriptions of how these practices help to minimize and avoid specific impacts.

2.5.1 BMP-1: Implement Water Quality Protection Measures and Erosion and Sediment Control Plans

PG&E will comply with all applicable construction BMPs specified in PG&E's Activity Specific Erosion and Sediment Control Plans[1], the SWPPP, and any other permit conditions to minimize the

[1] The relevant Activity Specific Erosion and Sediment Control Plans are *Good Housekeeping* (PG&E Construction Stormwater Group 2017a), *Laydown/Staging Area Construction* (PG&E Storm Water Program Group 2011), *Dirt*

introduction of construction-related contaminants and mobilization of sediment into wetlands and other waters in and adjacent to the project area. These BMPs will address soil stabilization, sediment control, wind erosion control, vehicle tracking control, non-stormwater management, and waste management practices. The BMPs will be based on the best conventional and best available technology.

The proposed project is subject to stormwater quality regulations established under the National Pollutant Discharge Elimination System (NPDES), described in Section 402 of the federal CWA. In California, the NPDES program requires that any construction activity disturbing 1 or more acres comply with the statewide General Permit, as authorized by the State Water Resources Control Board (State Water Board). The General Permit requires elimination or minimization of non-stormwater discharges from construction sites and development and implementation of a SWPPP for the site. The SWPPP will include the following primary elements:

- Description of site characteristics—including runoff and streamflow characteristics and soil erosion hazard—and construction procedures.
- Guidelines for proper application of erosion and sediment control BMPs.
- Description of measures to prevent and control toxic materials spills.
- Description of construction site housekeeping practices.

In addition to these primary elements, the SWPPP will specify that the extent of soil and vegetative disturbance will be minimized by control fencing or other means, and that the extent of soil disturbed at any given time will be minimized. The SWPPP must be retained at the construction site. PG&E will perform routine inspections of the construction area to verify that the BMPs are properly implemented and maintained.

These BMPs will include, but are not limited to the following, as well as those listed in BMP-2: *Implement Hazardous Materials Control Measures*.

- At both laydown sites, barriers will be installed to ensure construction equipment, workers, and runoff do not enter adjacent sensitive areas.
- A filter will be installed on the IFR weir flow bypass system to prevent turbid water from being discharged into Middle Creek.
- PG&E will monitor turbidity levels at multiple locations during the IFR weir replacement work. These locations will include, but are not limited to, (1) immediately upstream of the cofferdam, and (2) up to 300 feet downstream of the outlet of the stream diversion pipe. If the optional drawdown pumps are utilized during reservoir drawdown, PG&E will monitor turbidity levels at appropriate locations, including, but not limited to, downstream of the valve house and spillway.
- Concrete, solvents, adhesives, fuels, dirt, and gasoline will not be rinsed or washed into the reservoir, reservoir bottom, drainages, or wetlands.

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and Gravel Access Road Maintenance—Mountain Regions (PG&E Water Quality Group 2013), *and Stockpile Management* (PG&E Construction Stormwater Group 2017b).

2.5.2 BMP-2: Implement Hazardous Materials Control Measures

Hazardous materials such as fuel (gasoline/diesel), hydraulic oil, motor oil and other lubricants, and cementitious materials would be used during project construction. To ensure the potential effects of hazardous materials or potential spills are minimized, PG&E will implement the following measures.

- Construction personnel will be trained in proper hazardous material management and will be able to access Safety Data Sheets for all substances used on the project site by contacting Safetec at 800-704-9215.
- All hazardous materials will be contained in appropriate spill-proof containers and/or secondary containment, and stored in a designated area away from waterways.
- Temporary storage of hazardous materials, equipment staging, and servicing and refueling of equipment, will be conducted at pre-designated locations away from water bodies and will only be permitted at designated areas.
- Refueling will only take place in a designated area away from any waterways. Drip pans or absorbent pads will be used during equipment fueling. Absorbent spill clean-up materials and spill kits will be available in fueling areas. Fuels will be stored in containment basins.
- Hazardous waste generated onsite will be placed in proper containers, labeled appropriately, and transported from the job site to an authorized hazardous waste consolidation site.
- Bulk fuel storage tanks will be double-walled or will be placed in secondary containment. All refueling operations will be attended by trained personnel and be conducted in accordance with applicable PG&E policies.
- Prior to operation, all equipment will be inspected for fluid leaks and for signs of worn or damaged parts that may result in a release.
- All power equipment and vehicles will be free of petroleum residue and kept in good working order and inspected each day for leaks prior to use. Leaks will be repaired immediately, or problem vehicles or equipment will be removed from the project site.
- Small-engine-powered equipment will be provided with secondary containment. Whenever possible, vehicles and equipment with engines supplying motive power will be parked in designated areas located 200 feet or more from water. Drip pans or other containment measures will be placed under vehicles and equipment when not in use while located within 200 feet of water.
- Equipment will be staged overnight in secondary containment or with other suitable barriers to prevent accidental leakage of fuel, oils, or other liquid from soaking into the soil, or being carried to waterways.
- Appropriate spill containment and clean-up materials will be available onsite at all times. Any spills will be cleaned up immediately and will not be buried or washed with water. Initial containment would be with absorbent material or, if necessary, the construction of berms. Contaminated soil will be excavated, contained, and transported to an approved disposal site.
- In accordance with PG&E policy, all hazardous substance releases to the environment will be reported internally. A spill kit will be maintained onsite to ensure prompt containment in the

unlikely event of a release to the environment. All media affected by a spill will be cleaned up and disposed of offsite in accordance with applicable regulations.

2.5.3 BMP-3: Implement Fire Hazard Prevention Measures

During construction, crews will take appropriate measures to eliminate the potential for fire, including the following.

- Construction crews will follow the safe working practices outlined below and will abide by all facility programs to prevent and suppress fires in the project area. Initial action will be prompt and will include the use of all personnel and equipment available in the project area. All personnel are expected to take all reasonable action to prevent the occurrence of fires.
- Crews will follow PG&E's latest guidelines described in Utility Standard TD-1464S, *Preventing and Mitigating Fires while Performing PG&E Work* (Pacific Gas and Electric Company 2022).
- For any hot work (welding, cutting, or heating) onsite, fire prevention and suppression tools (e.g., backpack-type water pumps, shovels) will be made available onsite.
- Project vehicles will be equipped with appropriate fire response equipment and fire prevention and suppression tools.
- Contractor crews will have the following equipment:
  - One shovel, one axe, and one or more UL-rated 4BC extinguishers on each crew truck/vehicle.
  - One shovel and one 5-gallon water-filled backpack pump with each welder.
  - One shovel and one fully charged chemical fire extinguisher at a point not more than 25 feet from the work site for each gasoline-powered tool, including rock drills. Fire extinguishers shall be of the type and size set forth in California Public Resources Code Section 4431 and California Administrative Code Title 14, Section 1234.
- Fire extinguishers will be placed in easily accessible locations near potential ignition sources (e.g., internal combustion engines). Each vehicle and trailer will be equipped with a multi-purpose dry chemical extinguisher in a readily accessible location. All internal combustion engines brought onto the job site will be equipped with a spark arrestor.
- All personnel will perform daily inspections of work areas, laydown areas, and walkways to ensure they are clear of debris and trash and that flammable or combustible materials are not allowed to accumulate. All flammable liquids will be stored appropriately and at a safe distance from ignition sources. All flammable gas containers will be secured in an upright position with their valve caps in place at a safe distance from ignition sources.
- PG&E's hot work permit process (Pacific Gas and Electric Company 2008) will be followed before any welding or cutting operations are performed. A fire watch will be stationed at the work location in certain situations and will have either a portable fire extinguisher or water hose with a nozzle immediately available. The fire watch and person that will be performing hot work will ensure that the area is safe for hot work before work will be allowed to begin. The hot work permit will be posted at the job site until hot work is complete.
- If there is a need to activate fire hazard response measures, project crews will be directed to the Temporary Construction Emergency Action Plan (TCEAP) (Slate Geotechnical Consultants, Inc.

2022) for response actions developed to respond to a potential fire near the project site. The TCEAP provides instructional evacuation orders and procedures.

2.5.4 BMP-4: Implement Traffic Control Plan

To avoid potential conflicts between members of the public and construction vehicles, a traffic control plan will be implemented that contains the following measures.

- Warning signs of construction activities will be posted near the intersection of SR 88 and Blue Lakes Road, as well as at points along Blue Lakes Road.
- PG&E will post a notice on its recreation website by May 1, 2023 that the Lower Blue Lake Launch Ramp and the Lower Blue Lake Dam Day Use Area will be closed for the 2023 season.
- Signs will be posted near the intersection of SR 88 and Blue Lakes Road to notify the public of the closures for the 2023 season of the Lower Blue Lake Launch Ramp and associated parking area and restrooms as well as the Lower Blue Lake Dam Day Use Area.
- Flaggers will be utilized for traffic control along the portions of the construction access road shared with the public when heavy traffic is expected, and if necessary, while the existing electrical conduit is rerouted adjacent to the existing road.
- The construction contractor must comply with Title 13 of the CCR, which includes idling restrictions on construction vehicles and equipment to no more than 5 minutes.
- Construction equipment and vehicles will be properly tuned and maintained.
- All on-street construction traffic will be required to comply with the local jurisdiction's standard construction specifications.
- To the extent feasible, construction traffic will be scheduled and routed to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.
- When feasible, haul truck traffic on Blue Lakes Road will be limited to Monday through Thursday to minimize effects on weekend recreation users of the Blue Lakes area.

2.5.5 BMP-5: Implement Measures to Minimize the Spread/Introduction of Noxious Weeds

To minimize the spread and introduction of noxious weeds, PG&E will implement the following measures:

- Prior to mobilization to the project site, all equipment will be pressure-washed clean to ensure noxious weeds are not imported into or out of the project area. Equipment will be considered clean when there are no visible soil or plant parts on the equipment.
- Any erosion control materials required for the project will be rice straw or come from certified weed-free sources, as practicable (e.g., certified weed-free straw wattles, mulch).
- Gravel and spoil piles will be maintained free of noxious weeds
- Areas known to be weed-free will be used for staging and laydown areas.

2.5.6 BMP-6: Implement Fugitive Dust Abatement Measures

To limit fugitive dust from project activities, PG&E will implement the following measures:

- Vehicle speeds will be limited to 15 miles per hour when traveling on unpaved roads.
- A water truck will be used to control dust on roads and in the laydown areas. Given the rural location of the project, the water truck will be refilled by pumping water from Lower Blue Lake.
- The water truck will be equipped to provide a focused knockdown spray during excavation activities if excessive dust is created.

Chapter 3
Environmental Setting and Impacts

3.1 Introduction

This chapter provides an overview of the existing physical environment and regulatory requirements for each of the resources that may be affected by the proposed project. For each resource, there is a discussion of the environmental setting, followed by an evaluation of the environmental impacts on the resource. This chapter is organized by resource topic and corresponds to the Environmental Checklist Form of the State CEQA Guidelines. A complete environmental checklist from Appendix G of the State CEQA Guidelines is provided in Appendix A, *Environmental Checklist*.

The mitigation measures specified in the impact analysis would either avoid adverse impacts completely or reduce the impacts to a less-than-significant level. The Central Valley Water Board would adopt a mitigation and monitoring plan at the time it adopts a mitigated negative declaration. The purpose of the plan is to ensure that the mitigation measures adopted as part of the project approval would be implemented when the project is constructed. Some impacts have been avoided or minimized by including certain BMPs in the project description (see Chapter 2, *Project Description*).

The following terminology is used to describe the level of significance of impacts.

- A finding of *no impact* is appropriate if the analysis concludes that the project would not affect the particular topic area in any adverse way.
- An impact is considered *less than significant* if the analysis concludes that the project would cause no substantial adverse change to the environment and requires no mitigation.
- An impact is considered *less than significant with mitigation incorporated* if the analysis concludes that the project would cause no substantial adverse change to the environment with the inclusion of mitigation measures.
- An impact is considered *significant and unavoidable* if the analysis concludes that the project could have a substantial adverse effect on the environment and mitigation to a less-than-significant level of impact is not feasible.

If an impact is determined to be significant and unavoidable, an environmental impact report would be prepared pursuant to Section 15063 of the State CEQA Guidelines.

3.2 Resources Not Likely to Be Affected

Initial evaluation identified several resources that would not likely be affected by the proposed project. The resources for which there would be little to no impact are discussed below.

3.2.1 Agriculture and Forestry Resources

No soil units in Alpine County have the qualities of Prime Farmland or Farmland or Statewide Importance (California Department of Conservation 2018), nor is any land in Alpine County under Williamson Act contract (California Department of Conservation 2022). No agricultural activities are conducted in or around the project area. PG&E's timbered lands around the project area are managed for uses other than sustained timber production under a salvage management prescription (Stewardship Council 2017:9). The project would remove up to five trees along the toe of the dam. However, the land immediately adjacent to the project is not identified as forest land (California Department of Conservation 2018). Therefore, removal of these trees would not conflict with any existing zoning or result in the loss or conversion of any forest land. Accordingly, agriculture and forestry resources are not discussed further in this IS.

3.2.2 Land Use and Planning

The lands within and around the project area are classified as Open Space (Alpine County 2017:96). There are no established communities in or near the project area. The project would not change the land use in the project area. Dam improvements and weir replacement would not physically divide an established community or conflict with any applicable land use plan, policy, or regulation, including the Alpine County General Plan. The project, therefore, would not result in any changes to existing land uses, and land use and planning are not discussed further in this IS.

3.2.3 Mineral Resources

No known mineral resources or mineral resource extraction sites are located in the project area; nor has a locally important mineral resource recovery site been delineated by Alpine County in its General Plan or by the California Geological Survey Minerals Program (California Department of Conservation 2015). The project involves dam and weir improvements and construction of the buttress would expand the dam footprint somewhat but would not have an impact on mineral resources by precluding future discovery or utilization of mineral resources. The project would have no impact on mineral resources, and these resources are not discussed further in this IS.

3.2.4 Population and Housing

The proposed project would not involve the construction of any new housing, businesses, roads, or infrastructure. The project would not displace existing housing units or residents because there are no homes within the project area; therefore, the construction of replacement housing units offsite would not be required. Accordingly, population and housing are not discussed further in this IS.

3.2.5 Public Services

Public services in and around the project area consist of law enforcement, fire protection, and emergency medical assistance. There are no schools, formal parks, or other public facilities near the project area. The project would improve dam facilities and replace the IFR weir and would not result in an increased demand for fire or police protection. The project would occur on undeveloped lands and not cause traffic delays that could potentially affect the deployment of emergency services. BMP-4: *Implement Traffic Control Plan*, as described in Section 2.5, *Best Management Practices*, would ensure that emergency vehicle access be maintained.

Therefore, the proposed project would not result in an increased demand for space in schools, parks, or public facilities in the area and would not affect access to these public places. As such, potential impacts on public services would not be significant and are not discussed further in the IS.

3.2.6 Utilities and Service Systems

Wastewater treatment would not be part of the project because the project does not involve the development of infrastructure needing wastewater treatment. The project would not require, or result in, the construction or expansion of stormwater drainage facilities because the project does not involve the development of infrastructure requiring stormwater drainage. No additional water supply would be needed. All construction debris would be removed from the project site and disposed of at a permitted waste collection site. The project would comply with statutes and regulations related to solid waste during construction.

The project involves removal and abandonment of an existing water line. The water line was used in the past to provide water to the buildings east of the dam before construction of a dedicated well. As such, water supply would not be affected by the project.

A portion of electrical conduit that provides power and communications to the IFR weir gauging station would be relocated outside of the rock fill buttress footprint. This disruption would be temporary and would not require construction of additional utilities. Accordingly, utilities and service systems are not discussed further in this IS.

3.2.7 Growth Inducement

The proposed project involves improvements to an existing dam and weir. System capacity and water release volumes would not change relative to existing conditions as a result of the project. The project would not affect land uses, growth rates, employment, or housing values which would continue to be determined by local government regulations and economic conditions. As such, the project is not growth-inducing and no further discussion is required for this IS.

3.3 Hydrology and Water Quality

3.3.1 Introduction

This section analyzes the proposed project's potential impacts related to hydrology and water quality. It describes existing conditions in the project area and summarizes the overall regulatory framework for hydrology and water quality, and it analyzes the potential for the proposed project to affect these resources.

3.3.2 Existing Conditions

This section discusses the existing conditions related to hydrology and water quality in the project area. The Lower Blue Lake Dam is located on Middle Creek, a tributary to the North Fork of the Mokelumne River, approximately 9.7 miles southwest of Markleeville and 6.7 miles south of Carson Pass in Alpine County, California (Figure 1-1). The project area is located at an elevation of approximately 8,040 feet above mean sea level.

3.3.2.1 Regional Setting

The project area is within the San Joaquin River Hydrologic Region, which encompasses an area of approximately 9.7 million acres (15,200 square miles) and includes all of Calaveras, Tuolumne, Mariposa, Madera, San Joaquin, and Stanislaus Counties, most of Merced and Amador Counties, and parts of Alpine, Fresno, Alameda, Contra Costa, Sacramento, El Dorado, and San Benito Counties (California Department of Water Resources 2003:169). The project area is within the Upper Mokelumne Watershed (USGS Hydrologic Unit Code #18040012) (U.S. Geological Survey 1978).

3.3.2.2 Surface Water Hydrology

Reservoir Description

The Lower Blue Lake Dam is located on Middle Creek, a tributary to Blue Creek thence to the North Fork of the Mokelumne River. There are no hydroelectric facilities directly related to Lower Blue Lake Dam; rather, the Lower Blue Lake reservoir is operated primarily for seasonal storage and regulation of water for power generation farther downstream. The reservoir has an area of approximately 198 acres and a usable capacity of approximately 5,091 acre-feet at the normal maximum water level elevation, which is 8,053.4 feet (USGS datum). Elevations in the area range from approximately 8,040 feet at the reservoir to 9,374 feet in the surrounding mountains.

The outlet of the reservoir supplies water to Middle Creek, which flows approximately 0.3 mile (1,675 feet) to its confluence with Blue Creek. PG&E operates the reservoir by capturing snowmelt runoff in spring (April to June) and releasing the water to Middle Creek through the LLO from summer into fall, consistent with available runoff and storage, and with ecological needs (see *Federal Energy Regulatory Commission and U.S. Forest Service Operating Condition*s below). Surface releases have occurred infrequently when the reservoir is full and spilling through the reservoir spillway channel. When water is not spilling over the spillway, most or all of the flow in Middle Creek downstream of the dam is derived from releases through the LLO, the invert of which is at an elevation of approximately 8,015 feet.

Since identification of the seepage issue in 2018, PG&E has been operating the reservoir under a self-imposed temporary elevation restriction of 8,035.9 feet (equal to the invert of the shallow section of the spillway) which provides for a minimum freeboard of 4.8 feet to the existing nominal crest elevation of 8,040.7 feet.

According to the most recent as-built drawings (PG&E Dwg. No. 700144-2) the main embankment maximum height section is a 40.4-foot-high earthfill dam with grouted rock fill core, and upstream and downstream hand-placed rock fill walls. Other shallower sections are predominantly sloped earthfill with a placed rock fill buttress at the upstream toe. The earthfill is composed of silty sand and poorly graded sand. The dam length is about 1,003 feet (or 1,060 feet including the spillway), with a crest width that varies from about 17 to 25 feet at an elevation of about 8,055.4 feet. Both the upstream and downstream slopes have inclinations of about 2(H):1(V) (GEI Consultants 2007 as cited in Gannett Fleming 2020:2) for the predominantly earthfill sections, and 1(H):2(V) for the hand-placed rock fill shell sections, though they may be steeper or shallower in localized areas (Gannett Fleming 2020:2).

The dam spillway is a two-level concrete sill. The lower sill is 12 feet wide at elevation 8,048.6 feet, while the upper sill is 47.5 feet wide and at elevation 8,050.3 feet. There are steel flashboard stanchions at the sill, and the maximum WSE with flashboards installed is elevation 8,053.4 feet. The maximum operating reservoir WSE is 8,053.4 feet (Gannett Fleming 2020:2).

Inflow Channels

The main contributing channel to Lower Blue Lake is Middle Creek. Middle Creek extends for approximately 0.7 mile (3,500 feet) from Upper Blue Lake Dam to Lower Blue Lake. Middle Creek flows are supplied by springs and snowmelt runoff, by releases from Upper Blue Lake Dam, and by infrequent, uncontrolled spills via the Upper Blue Lake Dam spillway. The hydrology is primarily snowmelt driven, with natural summer and fall flows augmented by releases of stored water from the reservoir. Streamflows on Middle Creek upstream of Lower Blue Lake are measured and recorded at the stream gaging station located approximately 1,200 feet downstream of Upper Blue Lake Dam near the Middle Creek campground. Streamflow varies seasonally, with low flows occurring during late fall and winter and high flows occurring during summer when releases from the reservoir are made. In summer, flows are highly variable within the season and among years in response to the annual variability of snowpack and runoff in the watershed. In general, mean daily summer flows[1] in Middle Creek have ranged from 1 to 89 cubic feet per second (cfs) (Pacific Gas and Electric Company 2018).

ICF staff also surveyed the other various drainage channels (besides Middle Creek) that provide inflow into Lower Blue Lake reservoir during the fall of 2021 and again on October 21, 2022. In fall 2021, an ICF fish biologist identified an ephemeral drainage that generally runs parallel to Middle Creek and is approximately 1,000 feet west/southwest of where Middle Creek flows into Lower Blue Lake. Based on topographic map review, this ephemeral drainage has an approximate drainage area of 0.1 square mile with its drainage basin entirely situated in the landmass between Lower Blue Lake and Upper Blue Lake. The ICF fish biologist also identified a perennial drainage in the northwestern corner of Lower Blue Lake, approximately 1,000 feet south of the aforementioned ephemeral drainage. Based on topographic map review, this perennial drainage also has an approximate drainage area of 0.1 square mile with its drainage basin entirely situated on the steeper

[1] Based on analysis for Water Years 2000 through 2017.

landmass northwest of Lower Blue Lake. Finally, the ICF fish biologist identified an area of multiple seeps/springs with small associated rivulets, approximately 230 feet south of the aforementioned perennial channel. These small seeps/springs were close to the edge of the reservoir at the hillside/lacustrine transition.

In 2022, an ICF geomorphologist surveyed the eastern shore of Lower Blue Lake and documented four small ephemeral drainages, each with a culverted crossing along the road that leads to Upper Blue Lake, and each with a drainage area less than 0.1 square mile. The ICF geomorphologist also documented various roadside drainages with culverts associated with the main parking area (i.e., the equipment and construction staging area) at Lower Blue Lake.

Outflow Channel

The outlet of the reservoir supplies water to Middle Creek, which flows approximately 0.3 mile (1,675 feet) to its confluence with Blue Creek. The IFR weir is approximately 900 feet downstream of the reservoir outlet. Middle Creek streamflows downstream of the Lower Blue Lake Dam are primarily supplied by controlled releases, but augmented by springs and snowmelt runoff, and by infrequent, uncontrolled spills via the dam spillway. The hydrology is primarily snowmelt driven, with natural summer and fall flows augmented by releases of stored water from the reservoir.

Streamflows are measured and recorded at the stream gaging station located approximately 850 feet downstream of Lower Blue Lake Dam at the IFR weir location. Streamflow varies seasonally, with low flows occurring during late fall and winter and high flows occurring during summer when releases from the reservoir are made. In summer, flows are highly variable within the season and among years in response to the annual variability of snowpack and runoff in the watershed. Based on streamflow data published by the USGS, mean daily flows in this portion of Middle Creek[2] have ranged from 0.51 to 98 cfs, with an average of 19.2 cfs and median of 15 cfs (U.S. Geological Survey 2022).

Federal Energy Regulatory Commission and U.S. Forest Service Operating Conditions

On October 11, 2001, FERC issued a new license for the Mokelumne Project No. 137. The FERC license included the following U.S. Forest Service (USFS) conditions requiring minimum instream flows downstream of Lower Blue Lake Dam. Instream flows are measured by the gauging station at the IFR weir.

- Winter streamflow releases of at least 2 cfs or natural flow conditions, whichever is less, from December 1 to May 1. The winter streamflow release may begin earlier if the onset of winter prevents access for further regulation (but no earlier than November 1).
- Spring streamflow releases of at least 5 cfs from May 1 until up to 5 days after Salt Springs Reservoir has stopped spilling (or stopped filling, in non-spill years), but no later than July 30.
- Early summer target streamflows, by water year type, for at least 5 consecutive days and not longer than 14 consecutive days based on operator availability:

[2] Based on the period of record from 9/30/87 to 9/30/21 at gage USGS 11313477 LO BLUE LK OUTLET NR MARKLEEVILLE CA.

- 20 cfs in Critically Dry[3] and Dry[4] years
- 40 cfs in Below Normal[5] and Above Normal[6] years
- 60 cfs in Wet[7] years

3.3.2.3 Surface Water Quality

The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* (Basin Plan) describes beneficial uses for various water bodies in the San Joaquin River Hydrologic Region (Central Valley Regional Water Quality Control Board 2019). The project area is considered to be located within the “Sources to Pardee Reservoir” water body. Table 3.3-1 shows the beneficial uses for this water body as listed in the Basin Plan. Section 303(d) of the CWA established the total maximum daily load (TMDL) process to assist in guiding the application of state water quality standards. Section 303(d) requires states to identify streams in which water quality is impaired (i.e., affected by the presence of pollutants or contaminants) and to establish the TMDL, which is the maximum quantity of a particular contaminant that a water body can assimilate without experiencing adverse effects. There are no CWA 303(d) listed impairments for Lower Blue Lake reservoir or the upper Mokelumne River based on the 2020–2022 California Integrated Report (State Water Resources Control Board 2022).

Table 3.3-1. Designated Beneficial Uses for Surface Water Bodies in the Project Vicinity

Water Body	Designated Beneficial Uses
Sources to Pardee Reservoir	Municipal and domestic supply; power; contact recreation; canoeing and rafting; other non-contact water recreation; warm and cold freshwater habitat (resident fish); warmwater fish[a] migration; coldwater fish[b] migration and spawning habitat; wildlife habitat.

Source: Central Valley Regional Water Quality Control Board 2019 (Table 2-1)
[a] Striped bass, sturgeon and shad.
[b] Salmon and steelhead.

No spatial and temporal water quality information specific to surface flows for Middle Creek in the project area is available (U.S. Environmental Protection Agency 2022). The water draining to and from Lower Blue Lake reservoir is likely to be of high quality because of the remote and undisturbed condition of the landscape. Furthermore, the U.S. Environmental Protection Agency (EPA) (2022) describes the water body condition of Lower Blue Lake as “Good”. Based on field reconnaissance, water quality parameters such as water temperature, water clarity values, and dissolved oxygen (DO) all indicate healthy water quality conditions for aquatic organisms throughout the various inlet channels as well as for Middle Creek.

[3] Less than 376,100 acre-feet inflow to Pardee Reservoir.
[4] Less than 518,100 acre-feet but greater than or equal to 376,100 acre-feet inflow to Pardee Reservoir.
[5] Less than 724,400 acre-feet but greater than or equal to 518,100 acre-feet inflow to Pardee Reservoir.
[6] Less than 958,700 acre-feet but greater than or equal to 724,400 acre-feet inflow to Pardee Reservoir.
[7] Greater than or equal to 958,700 acre-feet inflow to Pardee Reservoir.

3.3.2.4 Groundwater Hydrology and Quality

The California Department of Water Resources (DWR) delineates groundwater basins throughout California under the State's Groundwater Bulletin 118 (California Department of Water Resources 2003). The proposed project is not located in a groundwater subbasin or basin, due to the fact it is situated in the headwaters of the Sierra Nevada mountains. The nearest groundwater basins are the Carson Valley Basin (6-6) to the northeast, the Tahoe Valley South Subbasin (6-5.01) to the northwest, and the Slinkard Valley Basin (6-105) to the east. Consequently, limited spatial or temporal water quality information specific to groundwater in the project area is available.

However, based on limited piezometer data from the 2018 and 2019 geotechnical investigations, Slate Geotechnical Consultants (2021) concluded that, because the piezometer data show a clear response to the rise and fall of the reservoir over the study period, there is relatively shallow regional groundwater in the vicinity of the spillway and dam foundation. Less understood is the impact of potential groundwater directed toward the dam from the east side of the spillway, which may be sourced from seasonal groundwater flow transmitted through the native alluvium and widespread glacial deposit units underlying the site, operation of the adjacent campground and cabin facilities, or a combination of both (Slate Geotechnical Consultants 2021:11).

In addition, the more deeply installed piezometers are likely influenced by regional groundwater conditions in addition to reservoir loading. These piezometers indicate some baseline pore pressure levels when the reservoir level is low, which is likely indicative of persistent regional groundwater (Slate Geotechnical Consultants 2021:6).

3.3.3 Regulatory Setting

3.3.3.1 Federal

The following federal regulations related to hydrology and water quality would apply to the proposed project.

Clean Water Act

The CWA is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. It operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit. Permit review is the CWA's primary regulatory tool under the following sections.

- Section 404 regulates the discharge of dredged and fill materials into waters of the United States, which include oceans, bays, rivers, streams, lakes, ponds, and wetlands. Project proponents must obtain a permit from USACE for all discharges of dredged or fill material into waters of the United States before proceeding with a proposed activity. Lower Blue Lake reservoir and other features in the project area (i.e., Middle Creek) are jurisdictional waters of the Unites States and would be subject to Section 404 regulation.
- Section 402 regulates discharges to surface waters through the NPDES program, administered by EPA. In California, the State Water Board is authorized by EPA to oversee the NPDES program through the Regional Water Quality Control Boards (Regional Water Boards). The NPDES program provides for both general permits (those that cover a number of similar or related

activities) and individual permits. A SWPPP and pollution prevention and monitoring program would be required for construction of the project to comply with the Construction General Permit and General Dewatering Permit, respectively, under Section 402.

- Section 401, under which applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate. In this case, the Regional Water Board must issue a certification to USACE or its applicant for USACE Section 404 action.

The State Water Board is the state agency with primary responsibility in California for implementing the CWA, which establishes regulations relating to water resources issues. Typically, all regulatory requirements are implemented by the State Water Board through nine Regional Water Boards established throughout the state. The Central Valley Water Board, discussed in Section 3.3.3.2, *State*, is responsible for regulating discharges to the Mokelumne River and its tributaries.

Federal Energy Regulatory Commission Seismic Safety Policy Standards

The Lower Blue Lake Dam is operated by PG&E as part of the Mokelumne River FERC No. 137 Project, which is licensed by FERC. FERC's seismic safety policy standards are contained within their regulations, guidelines, and manuals pertaining to dam safety and inspections, specifically Chapter 13, Evaluation of Earthquake Ground Motions, of *Engineering Guidelines for the Evaluation of Hydropower Projects* (Federal Energy Regulatory Commission 2018) and *Federal Guidelines for Dam Safety, Earthquake Analyses and Design of Dams* (Federal Emergency Management Agency 2005).

The dam is currently classified as a low hazard potential dam under the FERC guidelines.

3.3.3.2 State

The following state regulations related to hydrology and water quality would apply to the proposed project.

Porter-Cologne Water Quality Control Act of 1969

The Porter-Cologne Water Quality Control Act established the State Water Board and nine Regional Water Boards as the primary state agencies with regulatory authority over California water quality and appropriative surface water rights allocations. Under this act and the CWA, the state is required to adopt a water quality control policy and waste discharge requirements to be implemented by the State Water Board and nine Regional Water Boards. The State Water Board also establishes Basin Plans and statewide plans. The Regional Water Boards carry out State Water Board policies and procedures throughout the state. Basin Plans designate beneficial uses for specific surface water and groundwater resources and establish water quality objectives to protect those uses.

Central Valley Regional Water Quality Control Board

The Central Valley Water Board is responsible for implementing its Basin Plan (2019) for the Sacramento River and its tributaries, which includes the Mokelumne River and its tributaries. The Basin Plan identifies beneficial uses of the river and its tributaries and water quality objectives to protect those uses. Numerical and narrative criteria are contained in the Basin Plan for several key water quality constituents, including DO, water temperature, trace metals, turbidity, suspended material, pesticides, salinity, and radioactivity.

California Water Code, Division 3, Chapter 5, Article 1

The California Division of Safety of Dams (DSOD) has oversight and approval authority for structures considered a dam under the California Water Code. Dams under DSOD jurisdiction are artificial barriers more than 6 feet high impounding more than 50 acre-feet of water or more than 25 feet high impounding more than 15 acre-feet. Additionally, some levees qualify as "dams" (Water Code Section 6002) and are required to meet DSOD standards and design review requirements.

DSOD reviews and approves proposed dam enlargements, repairs, alterations, and removals to ensure that the dam and appurtenant structures are designed to meet minimum requirements. It performs independent analyses to understand dam and appurtenant structure performance, including structural, hydrologic, hydraulic, and geotechnical evaluations. DSOD also oversees construction of dams to ensure that the work is done in accordance with the approved plans and specifications. Dams are inspected by DSOD on an annual basis to ensure the safety of the dam.

Under California Water Code, Division 3, Chapter 5, Article 1 (New Dams and Reservoirs or Enlargements of Dams and Reservoirs), applicants must provide DSOD information about the location, type, size, height, storage capacity, and hydrologic conditions related to the dam. DSOD may also require reports on the materials used to construct the dam; exploratory pits, trenches, and adits; drilling, coring, and geophysical surveys; tests to determine leakage rates; and physical test results on the in-situ properties and behavior of the foundation materials at the dam site; as well as other information.

The dam is currently classified as a significant hazard potential under DSOD guidelines.

3.3.3.3 Local

The following local regulation related to hydrology and water quality would apply to the proposed project.

Alpine County General Plan 2017

Surface Water Quality

The *Alpine County General Plan* Conservation Element, Section C, addresses hydrology and water quality (Alpine County 2017). It includes the following goal related to surface water quality.

> **GP Goal No. 6** Improve and maintain the quality of Alpine County's surface water resources in cooperation with the Lahontan and Central Valley Regional Water Quality Control Boards.

3.3.4 Environmental Effects

Potential impacts of the proposed project related to hydrology and water quality are discussed in the context of State CEQA Guidelines Appendix G checklist. Checklist Section X, *Hydrology and Water Quality*, asks whether the project would result in any of the following conditions.

a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

Ground-disturbing earthwork associated with all proposed project components in the project area could increase soil erosion rates and loss of topsoil, thereby potentially violating water quality standards for reservoir and instream surface water quality. Based on the work scope, the water quality parameter of concern is turbidity. However, as described in Chapter 2, *Project Description*, the crest raise would not require any discharge of fill material into the reservoir. Imported fill material or processed spoils from downstream excavations would be used for the crest raise in addition to an asphalt cap along the entire length of the crest. Equipment used for the crest raise would work on the top of the dam, which would be accessed from either side of the dam along the access route. For the construction of the buttress at the dam and drain system to the downstream face of the dam, no associated materials would be introduced to the reservoir or Middle Creek. If necessary, drawdown pumps, which would be screened to prevent debris and sediment entry, would be installed to supplement outflow in order to achieve the target drawdown elevation. These drawdown pumps, if needed, would utilize floating screened intakes on the left side of the reservoir that would convey water through pipes into the spillway. For the IFR weir, a temporary cofferdam and flow bypass system would be installed upstream of the work area prior to demolishing the damaged concrete at the weir and the intake for the flow bypass pump (or pumps) would be equipped with a screen to prevent foreign entry (i.e., large substrate and/or debris). The sump pump (or pumps) would be filtered to prevent turbid water from entering the bypass system.

Furthermore, PG&E would comply with all applicable construction site BMPs as specified in BMP-1: *Implement Water Quality Protection Measures and Erosion and Sediment Control Plans* (including compliance with the NPDES stormwater permit program and preparation and implementation of a SWPPP), and BMP-6: *Implement Fugitive Dust Abatement Measures* (described in Chapter 2). As part of BMP-1, PG&E will monitor turbidity levels at multiple locations as the reservoir is being drawn down and during the IFR weir replacement work. These locations will include, but are not limited to: (1) downstream of the valve house and spillway, (2) immediately upstream of the IFR weir, and (3) up to 300 feet downstream of the IFR weir. Finally, at both laydown sites, barriers would be installed to ensure construction equipment, workers, and runoff do not enter adjacent sensitive areas.

These BMPs would minimize the introduction of construction-related contaminants and mobilization of sediment into waters in and adjacent to the project area. With adherence to BMP-1 and BMP-6, this impact would be less than significant.

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

Construction activities, including installation of the downstream filter, seepage collection system, buttress on the downstream face of the dam, and the local dewatering system to keep local groundwater out of the construction area and maintain a dry excavation are expected to encounter the local groundwater table because there is relatively shallow regional groundwater in the vicinity of the spillway and dam foundation. In addition, results from the more deeply installed piezometers suggest the presence of persistent regional groundwater. However, dewatering activities would be temporary, and the depths to which excavation would be required (up to 15 feet) would not necessitate deep dewatering (greater than approximately 20–25 feet below ground surface). Furthermore, the proposed project activities would not involve groundwater extraction or the lowering of the local groundwater table. These activities would therefore not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.

In addition, excavation, filling, grading, and transporting soils are not likely to interfere substantially with groundwater recharge because construction would occur during the dry season when recharge is at its lowest. Finally, installation of the coffer dam and bypass system installation at the IFR weir would not result in the exposure of the groundwater table. This impact would be less than significant.

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 that would:

1. Result in substantial erosion or siltation on or off site?

2. Substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site?

Under the proposed project, PG&E proposes installation of a downstream filter, seepage collection system, and buttress on the downstream face of the dam. After project construction, final grading of the project site would return the site to a condition similar to the pre-project condition, except that the entire crest of the dam (as shown in Figure 2-3) would be raised approximately 2 feet to a consistent elevation of 8,042.7 feet, and there would be an additional wedge of material on the back slope (non-water-facing slope) of the dam.[8] Drainage patterns within Lower Blue Lake reservoir would remain unchanged.

During the IFR weir replacement, discharge piping from behind the temporary cofferdam would be routed around the work site (the large pool immediately upstream of the existing weir) and over the local bedrock outcrops to a discharge point below the weir in Middle Creek. Based on field observations and measurements collected by an ICF geomorphologist, Middle Creek immediately downstream of the existing IFR weir location is completely bedrock-dominated, with habitat units comprised of cascades, steps, and pools. It is therefore highly unlikely that the IFR weir upgrade would result in channel bed and bank scour from flows that are temporarily bypassed around the large pool. Furthermore, it is expected that the existing drainage patterns (i.e., channel planform) of the creek would remain unchanged after weir replacement, due to the bedrock control.

In addition, PG&E would comply with all applicable flow pumping system requirements as specified in BMP-1: *Implement Water Quality Protection Measures and Erosion and Sediment Control Plans* (described in Chapter 2). With adherence to BMP-1, this impact would be less than significant.

3. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

The proposed project would not alter the capacity of existing or planned stormwater drainage systems. In addition, the proposed project would not provide substantial additional sources of polluted runoff, and most areas would return to their original, pre-project condition, as described above under checklist item *c*. There would be no impact.

[8] Approximately 9,000 to 13,000 cubic yards of import fill materials would be used to construct the project, depending on the foundation conditions.

4. Impede or redirect flood flows?

A principal purpose of the project is to improve the stability of Lower Blue Lake Dam. After the project is constructed, most areas would return to their original, pre-project condition, as described above under checklist item *c*. Thus, the project would not represent an impediment to the existing flood potential nor redirect any flood flows.

In addition, the proposed project would improve downstream flooding conditions which would thereby decrease the exposure of people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam. Upstream dam or levee failure and ensuing inundation would not pose a risk to the project area because there are no major rivers upstream of the project area, and because Upper Blue Lake Dam has been recently retrofitted to reduce risk of seismic failure. There would be no impact.

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

Because the proposed project, upon completion, would not alter the extent or depth of the lake, it would not cause an increase in the pre-existing seiche inundation hazard nor the pre-existing mudflow hazard. The project area is far from the coastline of the Pacific Ocean, and so there is no tsunami hazard.

As discussed for checklist item *a*, PG&E would comply with all applicable construction site BMPs as specified in BMP-1: *Implement Water Quality Protection Measures and Erosion and Sediment Control Plans*, and BMP-6: *Implement Fugitive Dust Abatement Measures*. Compliance with these BMPs would substantially reduce the potential for construction-related erosion, sedimentation, and turbidity to adversely affect water quality in the project area.

The proposed project would involve the storage and use of toxic and other harmful substances near the Lower Blue Lake reservoir (or in areas that drain to the Lower Blue Lake reservoir or Middle Creek), which could result in discharge of these substances into the associated water bodies. Construction activities would involve the use of heavy machinery, excavators, compactors, and other construction equipment that use petroleum products such as fuels, lubricants, hydraulic fluids, and coolants, all of which can impair water quality and be toxic to fish and other aquatic organisms. Contamination of lakebed and channel bed and banks could result from construction activities, spills, or equipment malfunction. Spills of petroleum products and other pollutants related to machinery could occur during vehicle operation, refueling, parking, and maintenance. Improper handling, storage, or disposal of these materials could cause degradation of surface water quality if they are eventually washed into downstream water bodies. However, PG&E would comply with all applicable construction site hazardous materials control measures as specified in BMP-2: *Implement Hazardous Materials Control Measures* (described in Chapter 2) to ensure the potential effects of hazardous materials or potential spills are minimized.

This impact would be less than significant.

e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan locally or regionally. There would be no impact.

3.4 Geology, Soils, Seismicity, and Paleontological Resources

3.4.1 Introduction

This section analyzes the proposed project's potential impacts related to geology, soils, seismicity, and paleontological resources. It describes existing conditions in the project area and summarizes the overall regulatory framework for these topics, and it analyzes the potential for the proposed project to affect these resources.

3.4.2 Existing Conditions

This section discusses the existing conditions related to geology, soils, seismicity, and paleontological resources in the project area. The Lower Blue Lake Dam is located on Middle Creek, a tributary to the North Fork of the Mokelumne River, approximately 9.7 miles southwest of Markleeville and approximately 6.7 miles south of Carson Pass in Alpine County, California (Figure 1-1). The project area is located at an elevation of approximately 8,040 feet above mean sea level.

3.4.2.1 Geology

This section presents a summary of geology in the surrounding region and within the local area of the Lower Blue Lake reservoir.

Regional Geologic Setting

The project area is located on the west slope of the central Sierra Nevada mountain range, immediately adjacent to the Sierra Nevada crest within the Sierra Nevada geomorphic province. The Sierra Nevada geomorphic province is a linear, tilted fault block almost 400 miles long that extends from northern Butte County to the Mojave Desert. In stark contrast to its steep eastern slope, its western slope is gentle. This western slope is deeply incised by rivers, and bedrock disappears beneath the sediments of the Central Valley. The upper elevation Sierra Nevada is composed of massive granites shaped by glaciation, such as is seen in Yosemite National Park. Lower in the Sierra Nevada is the northwest-trending Mother Lode, which is made up of metamorphic rock containing gold-bearing veins. The Sierra Nevada disappears to the north beneath the Cenozoic volcanic rock of the Cascade Ranges (California Geological Survey 2002:2).

In general, the Sierra Nevada mountain range is composed of a huge mass of granite, a type of igneous rock created beneath the Earth's surface that was uplifted and eroded in the early Tertiary period and subsequently covered with volcanic rocks in the mid- to late Tertiary period. Forces affecting the structure of the earth (in this area referred to as Basin and Range tectonic forces) started to shape the area around the late Tertiary period, and resulted in extension (pulling apart), faulting, and uplift of the range. These forces continue today. The higher elevations of the Sierra Nevada were subjected to glacial activities during the Quaternary period (Hill 1975 as cited in Cirrus Ecological Solutions, LC 2002:4-6 and 4-7).

Physiography

Lower Blue Lake reservoir and its surrounding drainage basin are located on the Pacific Valley 7.5-minute USGS topographic quadrangle (U.S. Geological Survey 2015). Elevations in the area range from approximately 8,040 feet at the lake to 9,374 feet in the surrounding mountains. Since 2018, PG&E has been operating the reservoir under a self-imposed temporary elevation restriction of 8,035.9 feet (equal to the invert of the shallow section of the spillway) which provides for a minimum freeboard of 4.8 feet to the existing nominal crest elevation of 8,040.7 feet.

Historically, Lower Blue Lake reservoir was a natural lake, before the water level was raised by a dam across the outlet (the earthfill embankment dam was constructed in three stages between 1874 and 1899). Topography is relatively flat where Lower Blue Lake reservoir is located and increases on all sides of the lake towards the surrounding hills and mountains. The glacially derived lake is bordered by steep walls to the east and west. Prominent peaks and landforms surrounding the Lower Blue Lake reservoir are the Forestdale Divide to the north, Deadwood Peak to the northwest, and The Nipple to the northeast.

Geology of the Project Area

The geology in the vicinity of Lower Blue Lake reservoir has been mapped on a regional scale (Carlson et al. 1978; Dohrenwend 1982; Hagan et al. 2009; Koenig 1963; McKee and Howe 1981; Saucedo 2005) and a local scale (Armin et al. 1984 as cited in Gannett Fleming 2020). In general, the project area and vicinity are primarily composed of Mesozoic batholithic granitic rocks (Koenig 1963), with the exception being to the north of Lower Blue Lake reservoir, where geology is dominated by primarily andesitic[1] rocks associated with The Nipple (Hagan et al. 2009).

Lower Blue Lake Dam

Based on the mapping performed by Armin et al. 1984 (as cited in Gannett Fleming 2020), in the area of the dam the granitic rocks are overlain by glacial deposits. According to Gannett Fleming (2020:3), the Lower Blue Lake Dam expands a natural glacial lake that was impounded by glacial moraine during the last glaciation. The bedrock in the vicinity of the dam is Ebbetts Pass Granodiorite, while the glacial deposits are classified as older glacial moraine deposits of Pleistocene age (Armin et al. 1984 as cited in Gannett Fleming 2020). Resting on top of the glacial moraine deposits upstream of the dam is a layer of lacustrine sediment; downstream of the dam is a layer of alluvium (and possibly fill) (Gannett Fleming 2020:Figure 8). The dam itself is composed of embankment fill further described in Section 3.4.2.2, *Soils*.

According to Gannett Fleming (2020:3), there is scant data on the foundation preparation or the construction of the Lower Blue Lake Dam, which is mapped as almost entirely underlain by glacial deposits described as compact silty clayey till containing sand through cobble size material. However, historical borings and test pits from 1968 suggest that the Lower Blue Lake Dam is at least partially founded on solid bedrock. It is likely that the embankment and rock materials were sourced locally (Gannett Fleming 2020:3).

[1] Andesite is an extrusive rock intermediate in composition between rhyolite and basalt. Andesite lava is of moderate viscosity and forms thick lava flows and domes, such as The Nipple.

Middle Creek (Instream Flow Release Weir Location)

Middle Creek in the vicinity of the IFR weir is entirely underlain by Ebbetts Pass Granodiorite (with small amounts of Quaternary alluvium and older glacial moraine deposits mapped [Armin et al. 1984 as cited in Gannett Fleming 2020]).

Laydown Areas and Other Locations

Lower Laydown Area

The lower laydown area is composed of older glacial moraine deposits (Armin et al. 1984 as cited in Gannett Fleming 2020; Gannett Fleming 2020:Figure 3).

Upper Laydown Area

The upper laydown area is composed of Ebbetts Pass Granodiorite (Armin et al. 1984 as cited in Gannett Fleming 2020).

Equipment and Construction Staging Area and Temporary Material & Equipment Offload Area (Kiosk Area)

The equipment and construction staging area and temporary material and equipment offload area are both composed of Ebbetts Pass Granodiorite (Armin et al. 1984 as cited in Gannett Fleming 2020).

Access Route

The access route is mostly composed of older glacial moraine deposits (Armin et al. 1984 as cited in Gannett Fleming 2020; Gannett Fleming 2020:Figure 3); its inception off Blue Lakes Road (immediately south of the temporary material and equipment offload area) is composed of Ebbetts Pass Granodiorite (Armin et al. 1984 as cited in Gannett Fleming 2020).

3.4.2.2 Soils

Lower Blue Lake Dam

For the most part, soils within the project area are somewhat disturbed owing to dam construction. In the vicinity of the Lower Blue Lake Dam, soils encountered via borings consisted of fill, alluvium, glacial till, and weathered rock (Gannett Fleming 2020:19).

The borings along the dam toe encountered a relatively thin layer of fill at the ground surface and extending down to underlying alluvium or glacial deposits. The fill layer had a thickness of approximately 2 to 3 feet. The soil in the one sample collected in this unit was described as silty sand with very loose density (Gannett Fleming 2020:20).

A relatively thin layer of alluvium was encountered above underlying glacial deposits, which was described as silty sand with very loose to loose density. The alluvium was distinguished from the embankment fill and glacial deposits because it appeared undisturbed as compared to the overlying embankment materials, and its density was lower than the underlying glacial deposits (Gannett Fleming 2020:20).

The glacial till is mapped as an Upper Pleistocene older glacial moraine deposit (map unit “Qmo”) by Armin et al. (1984 as cited in Gannett Fleming 2020), who describe the glacial material as “unsorted to poorly sorted, slightly compacted sandy to clayey, boulder to cobble till" and note that "granitic boulders on the surface are slightly to moderately weathered and soil is weakly developed." In general, the glacial till was classified as silty sand with gravel, with some lenses of silty gravel. The till was moist to wet, generally non-plastic to low plasticity, with slow to rapid dilatancy.[2] Estimated relative density ranged from medium dense to very dense (Gannett Fleming 2020:21–22).

A thin layer of weathered rock and/or residuum was penetrated in only two borings. The layer varied in thickness from a 1 foot to about 2 feet. The weathered rock was described as non-plastic, dense to very dense, and field classified as poorly graded gravel, poorly graded sand, or silty sand with gravel. The estimated fines content ranged from less than 5 to 20 percent (Gannett Fleming 2020:23-24).

Embankment Fill

The embankment fill was generally non-plastic to low plasticity, very loose to medium dense, and generally classified as silty sand, with lenses of well graded sand with silt. The dilatancy of the embankment material was generally described as slow. Gravel up to 2 inches in length was observed, and some of the larger clasts appeared to have been mechanically broken by the sampling process. Organics (e.g., roots, sticks) were noted within the embankment material in all borings, and pieces of charcoal were noted in several of the borings (Gannett Fleming 2020:21).

Middle Creek (Instream Flow Release Weir Location)

The channel bed of Middle Creek downstream of the Lower Blue Lake Dam is composed primarily of bedrock (Ebbetts Pass Granodiorite). There are also pockets of alluvium and moraine deposits, which are a mixture of boulders, cobbles, gravel, and sand.

The stream banks on the west side of the creek are composed of the Granylith-Hargran-Rock outcrop complex, 8 to 30 percent slopes; the stream banks on the east side of the creek are composed of the Sofgran-Klauspeak-Temo association, 15 to 50 percent slopes (Natural Resources Conservation Service 2022).

West Side Middle Creek

The Granylith portion of the Granylith-Hargran-Rock outcrop complex is shallow (the depth to a restrictive feature [i.e., lithic bedrock] is 10 to 20 inches) and moderately well drained. Parent material is till derived from mixed rock sources and colluvium from granodiorite. Typically, the surface layers are very gravelly loamy coarse sandy about 4 inches thick. The subsoil between 4 and 15 inches is similar. Bedrock occurs at a depth below 15 inches (Natural Resources Conservation Service 2022).

The Hargran portion of the Granylith-Hargran-Rock outcrop complex is moderately deep (the depth to a restrictive feature [i.e., lithic bedrock] is 20 to 40 inches) and moderately well drained. Parent material is till derived from mixed rock sources and colluvium from granodiorite. Typically, the surface layers are stony moderately decomposed plant material and stony coarse sandy loam about 24 inches thick. The subsoil between 24 and 39 inches is very stony sandy loam. Bedrock occurs at a depth below 39 inches (Natural Resources Conservation Service 2022).

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[2] Dilatancy is the property of soil material that refers to a change in its volume in response to shearing under a certain normal or confining stress.

East Side Middle Creek

The Sofgran portion of the Sofgran-Klauspeak-Temo association is deep (the depth to a restrictive feature [i.e., lithic bedrock] is greater than 80 inches) and somewhat excessively drained. Parent material is colluvium over residuum derived from granodiorite. Typically, the surface layers are gravelly loamy coarse sand about 4 inches thick. The subsoil between 4 and 60 inches is generally very gravelly loamy coarse sand. Bedrock occurs at a depth below 60 inches (Natural Resources Conservation Service 2022).

The Klauspeak portion of the Sofgran-Klauspeak-Temo association is deep (the depth to a restrictive feature [i.e., lithic bedrock] is greater than 80 inches) and somewhat excessively drained. Parent material is colluvium derived from granodiorite. Typically, the surface layers are gravelly loamy sand about 16 inches thick. The subsoil between 16 and 60 inches is generally very stony loamy sand, with cobbles present in the lowest layer. Bedrock occurs at a depth below 60 inches (Natural Resources Conservation Service 2022).

The Temo portion of the Sofgran-Klauspeak-Temo association is shallow (the depth to a restrictive feature [i.e., paralithic bedrock] is between 8 and 20 inches) and excessively drained. Parent material is colluvium over residuum derived from granodiorite. Typically, the surface layer is very gravelly loamy coarse sand about 16 inches thick. Bedrock occurs at a depth below 16 inches (Natural Resources Conservation Service 2022).

Middle Creek Erosion Potential Summary

Based on the K factor for the soils,[3] the erosion hazard for the Granylith-Hargran-Rock outcrop complex, 8 to 30 percent slopes is 0.10, which is considered low; the erosion hazard for the Sofgran-Klauspeak-Temo association, 15 to 50 percent slopes is 0.05, which is also considered low. The wind erodibility group[4] for the Granylith-Hargran-Rock outcrop complex, 8 to 30 percent slopes is 3; the wind erodibility group for the Sofgran-Klauspeak-Temo association, 15 to 50 percent slopes is 2 (Natural Resources Conservation Service 2022).

Laydown Areas and Other Locations

Lower Laydown Area

The soils in the lower laydown area (downslope/downstream of the Lower Blue Lake Dam) are composed of the Granylith-Hargran-Rock outcrop complex, 8 to 30 percent slopes, which are described in detail above under *West Side Middle Creek* (Natural Resources Conservation Service 2022). However, based on field reconnaissance the lower laydown area has been previously disturbed (cleared and graded) for other similar construction activities.

[3] Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation and the Revised Universal Soil Loss Equation to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

[4] Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible (Natural Resources Conservation Service 2022).

Upper Laydown Area

The soils in the upper laydown area (upslope/upstream of the Lower Blue Lake Dam) are composed of water and the Rock outcrop-Cryumbrepts association, 15 to 75 percent slopes. The Cryumbrepts portion of the Rock outcrop-Cryumbrepts association is deep (the depth to a restrictive feature [i.e., lithic bedrock] is greater than 80 inches) and well drained. Parent material is outwash derived from granite. Typically, the surface layers are sandy loam about 17 inches thick. The subsoil between 17 and 25 inches is stratified sand to silt loam. Between 25 and 61 inches, the subsoil transitions to stratified sandy loam. Bedrock occurs at a depth below 61 inches (Natural Resources Conservation Service 2022).

The erosion hazard for the Rock outcrop-Cryumbrepts association, 15 to 75 percent slopes is not rated, but presumably low based on the erosion hazard of the adjacent soils. The wind erodibility group for the Rock outcrop-Cryumbrepts association, 15 to 75 percent slopes is 6 (Natural Resources Conservation Service 2022).

However, based on field reconnaissance the upper laydown area has been previously disturbed (cleared) when the dam was originally constructed.

Equipment and Construction Staging Area and Temporary Material & Equipment Offload Area (Kiosk Area)

The equipment and construction staging area and temporary material and equipment offload area (kiosk area) are both paved. Underlying (and along the edges of the pavement around) the equipment and construction staging area, soils are composed of the Rock outcrop-Cryumbrepts association, 15 to 75 percent slopes (previously described above under *Upper Laydown Area*). Underlying (and along the edges of the pavement around) the temporary material and equipment offload area (kiosk area), soils are composed of the Granylith-Hargran-Rock outcrop complex, 8 to 30 percent slopes (previously described above under *West Side Middle Creek*).

Access Route

The access route is a pre-existing gravel road as shown on Figure 2-1. The access route traverses the Granylith-Hargran-Rock outcrop complex, 8 to 30 percent slopes; the Sofgran-Klauspeak-Temo association, 15 to 50 percent slopes; and the Rock outcrop-Cryumbrepts association, 15 to 75 percent slopes (each previously described above).

3.4.2.3 Seismicity

The project area is in the Sierra Nevada and is potentially affected by seismic sources in the Sierra Nevada mountains, the Sierra Nevada foothills fault system to the west, and the Sierra Nevada frontal fault system to the east. Most of the seismicity in the region is concentrated along the Sierra Nevada frontal fault system. The project area is located in a region of California characterized by relatively moderate seismic activity (California Geological Survey 2016).

Primary Seismic Hazards

The state considers two aspects of earthquake events as primary seismic hazards: surface fault rupture (disruption at the ground surface as a result of fault activity) and seismic ground shaking.

Surface Fault Rupture

The project area is not located in an Alquist-Priolo Earthquake Fault Zone (California Geological Survey 2015), and no active faults[5] have been identified (California Geological Survey 2010); therefore, the risk of surface fault rupture in the project area is considered low. The nearest major faults are as follows. Refer to Figure 12 of Gannett Fleming (2020) for a map of the controlling faults described below.

- Waterhouse Peak fault, a late Quaternary fault but possibly active[6] (Cotton, Shires and Associates, and InfraTerra 2016:28) located approximately 2.5 miles north-northwest of the project area.
- Tahoe-Sierra frontal fault zone, an age-undifferentiated Quaternary fault located approximately 11.5 miles north of the project area.
- West Tahoe-Dollar Point fault zone, an active fault located approximately 16.5 miles north of the project area.
- Carson Range fault zone, consisting of the active Genoa and the Folger Peak faults and located approximately 11.5 miles east of the project area (California Geological Survey 2010).

Other smaller pre-Quaternary faults and Quaternary faults (age undifferentiated), including the Hope Valley fault (a pre-Quaternary fault), are located within a few miles of the project area (Hagan et al. 2009).

Waterhouse Peak Fault Parameters

As the Waterhouse Peak fault approaches Upper Blue Lake reservoir (approximately 1.5 miles northwest of Lower Blue Lake reservoir) from the north, the range-front topography is diminished, and essentially is reversed at the Upper Blue Lake reservoir. The volcanic/granitic contact is depositional rather than faulted, and the fault is not expressed within bedrock or Quaternary deposits south of Upper Blue Lake reservoir. The fault is not expressed west of Upper Blue Lake reservoir as previously mapped for other studies. In addition, the characteristic deeply weathered bedrock demarking the fault in many locations to the north is not observed at, or south of, Upper Blue Lake reservoir. Therefore the Waterhouse Peak fault does not extend to Upper Blue Lake Dam or pose a surface rupture hazard to the dam (Cotton, Shires and Associates, and InfraTerra 2016:28–29) and therefore does not extend to Lower Blue Lake Dam or pose a surface rupture hazard to it.

Strong Ground Shaking

Unlike surface rupture, ground shaking is not confined to the trace of a fault, but rather propagates into the surrounding area during an earthquake. The intensity of ground shaking typically diminishes with distance from the fault, but ground shaking may be locally amplified or prolonged by some types of substrate materials.

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[5] As defined under the Alquist-Priolo Act, an *active fault* is one that has had surface displacement within the Holocene epoch (the last 11,000 years); a *late Quaternary fault* is a fault that has undergone displacement during the past 700,000 years; a *Quaternary fault (age undifferentiated)* is one that has had surface displacement at some point during Quaternary time (the last 1.6 million years); and a *pre-Quaternary fault* is one that has had surface displacement before the Quaternary period.

[6] Based on Division of Safety of Dams criteria, the Waterhouse Peak fault should be considered active for purposes of evaluating seismic safety of Upper Blue Lake Dam (Cotton, Shires and Associates and InfraTerra 2016:28).

The ground-shaking hazard in the project area is considered moderate[7] (California Geological Survey 2016; Gannett Fleming 2020:27).

Secondary Seismic Hazards

Secondary seismic hazards refer to seismically induced landsliding, liquefaction, and related types of ground failure. As discussed in Section 3.4.3, *Regulatory Setting*, the state maps areas that are subject to secondary seismic hazards pursuant to the Seismic Hazards Mapping Act of 1990. The state has not published seismic hazard mapping in the vicinity of the project area under the Seismic Hazards Mapping Program (California Geological Survey 2015). These hazards are addressed briefly below based on available information.

Landslide Hazards

Most of the project area is located on gentle lake bottom topography. Consequently, the potential for slope failure, including seismically induced landsliding, is likely low.

Liquefaction

Liquefaction is the process in which soils and sediments lose shear strength and fail during seismic ground shaking. The vibration caused by an earthquake can increase pore pressure in saturated materials. If the pore pressure is raised to be equivalent to the load pressure, a temporary loss of shear strength results, allowing the material to flow as a fluid. This temporary condition can result in severe settlement of foundations and slope failure. The susceptibility of an area to liquefaction is determined largely by the depth to groundwater and the properties (e.g., grain size, density) of the soil and sediment within and above the groundwater. The sediments most susceptible to liquefaction are saturated, unconsolidated sand and silt within 50 feet of the ground surface (California Geological Survey 2008b).

In 2020, Gannett Fleming performed a liquefaction triggering evaluation to assess liquefaction potential in the embankment fill and glacial deposit unit beneath the dam. In general, both liquefaction triggering analyses indicated significant liquefaction potential within the embankment fill and that the glacial deposits are not susceptible to liquefaction (Gannett Fleming 2022:27–28).

Elsewhere in the project area, the potential for liquefaction is likely low because of the type and coarseness of the sediments (the presence of numerous rock outcrops and glacial moraine deposits).

Stability and Deformation Analyses

In 2020, Gannett Fleming performed a series of post-earthquake slope stability and deformation analyses for the idealized geometry at the maximum height section, right flank, and left flank of the dam. The seismic stability analyses indicated the earthfill would likely liquefy under the postulated ground shaking following an earthquake event on the Waterhouse Peak fault considering median

[7] The California Geological Survey's (CGS) Ground Motion Interpolator (GMI) is no longer available. The data source for the GMI was the *2008 National Seismic Hazard Model for the Conterminous U.S*. The National Seismic Hazard Model has been updated at least twice since that time, and the CGS GMI does not reflect these changes. CGS has no plan to update the GMI. However, based on an older probabilistic seismic hazard map from the GMI that depicted the peak horizontal ground acceleration values exceeded at a 10 percent probability in 50 years (California Geological Survey 2008a), the probabilistic peak horizontal ground acceleration value for the project area is 0.26g (where *g* equals the acceleration of gravity). As a point of comparison, probabilistic peak horizontal ground acceleration values for the San Francisco Bay Area range from 0.4g to more than 0.8g.

ground motions (PGA = 0.46g, Mw = 6.7). The analyses performed for the dam using fully liquefied residual strengths indicate that the dam would be stable following the earthquake, with post-earthquake factors of safety of at least 1.3, although seismically induced permanent crest deformations were calculated to range from 1.2 inches to 7.9 inches (Bray and Travasarou 2007 as cited in Gannett Fleming 2022:36). These calculated crest deformations are generally less than 2 percent of the height at the maximum section (considered low) and are below the freeboard of 2 feet at the maximum operating WSE (Gannett Fleming 2022:36-37).

While the calculated crest deformations are less than the available freeboard, there is a potential for cracking to occur that may extend below the maximum operating water surface, which could lead to seepage, erosion, and/or piping. Transverse cracks can develop in embankments that deform non-uniformly, usually at locations where there is an abrupt change in material type or depth to foundation bedrock. The transition from the hand-placed rock section to the sloped embankment section of the dam creates a condition for potential transverse cracking (Gannett Fleming 2022:37).

3.4.2.4 Paleontological Resources

As described in Section 3.4.2.1, *Geology*, the project area is underlain by Ebbetts Pass Granodiorite, while the glacial deposits are classified as older glacial moraine deposits of Pleistocene age (Armin et al. 1984 as cited in Gannett Fleming 2020).

The determination of paleontological sensitivity is a qualitative assessment that takes into account the paleontological potential of the stratigraphic units present, the local geology and geomorphology, and any other local factors that may be germane to fossil preservation and potential yield. The Society of Vertebrate Paleontology considers an area to have a high potential (sensitivity) to contain fossils if it is a unit from which "vertebrate or significant invertebrate, plant, or trace fossils have been recovered." Paleontological resources are considered to be older than middle Holocene (i.e., older than approximately 5,000 years) (Society of Vertebrate Paleontology 2010:11).

According to the Society of Vertebrate Paleontology (2010:2), standard considerations for determining sensitivity are: (1) the potential for a geological unit to yield abundant or significant vertebrate fossils or to yield a few significant fossils, large or small, vertebrate, invertebrate, or paleobotanical remains; and (2) the importance of recovered evidence for new and significant taxonomic, phylogenetic, paleoecological, or stratigraphic data (Table 3.4-1).

Table 3.4-1. Paleontological Sensitivity Ratings

Potential	Definition
High	Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional significant paleontological resources. Paleontological potential consists of both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, plant, or trace fossils and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, paleoecologic, taphonomic, biochronologic, or stratigraphic data.
Undetermined	Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment are considered to have undetermined potential. Further study is necessary to determine if these rock units have high or low potential to contain significant paleontological resources.

Potential	Definition
Low	Reports in the paleontological literature or field surveys by a qualified professional paleontologist may allow determination that some rock units have low potential for yielding significant fossils. Such rock units will be poorly represented by fossil specimens in institutional collections, or based on general scientific consensus, will only preserve fossils in rare circumstances and the presence of fossils is the exception not the rule.
None	Some rock units, such as high-grade metamorphic rocks (e.g., gneisses, schists) and plutonic igneous rocks (e.g., granites, diorites), have no potential to contain significant paleontological resources. Rock units with no potential require neither protection nor mitigation measures relative to paleontological resources.

Source: Society of Vertebrate Paleontology 2010:1–2.

Most of the geological units in the vicinity of the Lower Blue Lake Dam (embankment fill, stacked [hand-placed] rock forming a buttressing wall on the downstream side of the dam, and the granitic bedrock [Ebbetts Pass granodiorite]) are not considered suitable for the preservation of vertebrate fossils (granite and other plutonic rocks develop from cooling magma deep in the Earth's crust, an environment that is neither conducive to life, nor to the preservation of fossils).

Although no fossils have been recorded in Pleistocene deposits in Alpine County (University of California Museum of Paleontology 2022), the Pleistocene glacial deposits in the project area are considered to have high sensitivity for paleontological resources, consistent with prevailing professional standards. California's Pleistocene nonmarine strata have yielded stratigraphically important vertebrate fossils, and continental deposits of Pleistocene age are almost universally treated as paleontologically sensitive in California.

3.4.3 Regulatory Setting

3.4.3.1 Federal

Clean Water Act Section 402 (National Pollutant Discharge Elimination System Program)

Section 402 is discussed under *Construction Activities Stormwater General Permit (2010-0014-DWQ Permit)* in the following section on state regulations.

Federal Energy Regulatory Commission Seismic Safety Policy Standards

The Lower Blue Lake Dam is operated by PG&E as part of the Mokelumne River FERC No. 137 Project, which is licensed by FERC. FERC's seismic safety policy standards are contained within their regulations, guidelines, and manuals pertaining to dam safety and inspections, specifically Chapter 13, Evaluation of Earthquake Ground Motions, of *Engineering Guidelines for the Evaluation of Hydropower Projects* (Federal Energy Regulatory Commission 2018) and *Federal Guidelines for Dam Safety, Earthquake Analyses and Design of Dams* (Federal Emergency Management Agency 2005).

The dam is currently classified as a "low" hazard potential dam under the FERC guidelines.

3.4.3.2 State

Alquist-Priolo Earthquake Fault Zoning Act

California's Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) (Public Resources Code Section 2621 et seq.) is intended to reduce risks to life and property from surface fault rupture during earthquakes. The Alquist-Priolo Act prohibits the location of most types of structures intended for human occupancy[8] across the traces of active faults and strictly regulates construction in the corridors along active faults (earthquake fault zones). It also defines criteria for identifying active faults, giving legal weight to terms such as *active*, and establishes a process for reviewing building proposals in and adjacent to earthquake fault zones.

Under the Alquist-Priolo Act, faults are zoned, and construction along or across them is strictly regulated if they are "sufficiently active" and "well defined." A fault is considered sufficiently active if one or more of its segments or strands shows evidence of surface displacement during Holocene time (defined for purposes of the act as referring to approximately the last 11,000 years). A fault is considered well-defined if its trace can be identified clearly by a trained geologist at the ground surface, or in the shallow subsurface using standard professional techniques, criteria, and judgment (Bryant and Hart 2007).

Seismic Hazards Mapping Act

Like the Alquist-Priolo Act, the Seismic Hazards Mapping Act of 1990 (Public Resources Code Sections 2690–2699.6) is intended to reduce damage resulting from earthquakes. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including strong ground shaking, liquefaction, and seismically induced landslides. Its provisions are similar in concept to those of the Alquist-Priolo Act: the state is charged with identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other corollary hazards; and cities and counties are required to regulate development within mapped seismic hazard zones.

Under the Seismic Hazards Mapping Act, permit review is the primary mechanism for local regulation of development. Specifically, cities and counties are prohibited from issuing development permits for sites within seismic hazard zones until appropriate site-specific geologic or geotechnical investigations have been carried out and measures to reduce potential damage have been incorporated into the development plans.

Construction Activities Stormwater General Permit (2010-0014-DWQ Permit)

Section 402 of the CWA mandates that certain types of construction activity comply with the requirements of EPA's NPDES program. EPA has delegated to the State Water Board the authority for the NPDES program in California, where it is implemented by the state's nine Regional Water Boards. Construction activity disturbing 1 acre or more must obtain coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction and other Land Disturbance Activities.

[8] With reference to the Alquist-Priolo Act, a *structure for human occupancy* is defined as one "used or 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" (14 CCR Section 3601(e)).

The Central Valley Water Board administers the NPDES stormwater permit program in the project area portion of Alpine County. Obtaining coverage under the General Permit requires that the project applicant take the following steps.

- File a Notice of Intent and other permit registration documents to obtain coverage under the General Permit before construction begins.
- Prepare and implement a SWPPP.
- Conduct inspections, prepare monitoring reports, and conduct pollution prevention and monitoring.
- File a notice of termination with the State Water Board when construction is complete and the construction area has been permanently stabilized.

The SWPPP describes proposed construction activities, receiving waters, stormwater discharge locations, and BMPs that will be used to reduce project construction effects on receiving water quality. The components of the SWPPP most relevant to geology and soils are erosion and sediment control measures.

Dischargers whose projects disturb 1 or more acres of soil, or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under the General Permit Order 2010-0014-DWQ. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility.

Coverage under the General Permit is obtained by submitting permit registration documents to the State Water Board that include a risk level assessment and a site-specific SWPPP identifying an effective combination of erosion control, sediment control, and non-stormwater BMPs. The General Permit requires that the SWPPP define a program of regular inspections of the BMPs and, in some cases, sampling of water quality parameters.

2010 California Building Standards Code

The California Building Standards Code (Title 24 CCR) provides the minimum standards for structural design and construction. The Building Standards Code is based on the International Building Code, which is used widely throughout the United States and has been modified for California conditions with numerous more detailed or more stringent regulations. The Building Standards Code requires that “classification of the soil at each building site will be determined when required by the building official” and that “the classification will be based on observation and any necessary test of the materials disclosed by borings or excavations.” In addition, the Building Standards Code states that “the soil classification and design-bearing capacity will be shown on the (building) plans, unless the foundation conforms to specified requirements.” The code provides standards for various aspects of construction, including excavation, grading, and earthwork construction; fills and embankments; expansive soils; foundation investigations; and liquefaction potential and soil strength loss. The Building Standards Code requires extensive geotechnical analysis and engineering for grading, foundations, retaining walls, and other structures, including criteria for seismic design.

California Water Code, Division 3, Chapter 5, Article 1

DSOD has oversight and approval authority for structures considered a dam under the California Water Code. Dams under DSOD jurisdiction are artificial barriers more than 6 feet high impounding more than 50 acre-feet of water or more than 25 feet high impounding more than 15 acre-feet. Additionally, some levees qualify as "dams" (Water Code Section 6002) and are required to meet DSOD standards and design review requirements.

DSOD reviews and approves proposed dam enlargements, repairs, alterations, and removals to ensure that the dam and appurtenant structures are designed to meet minimum requirements. It performs independent analyses to understand dam and appurtenant structure performance, including structural, hydrologic, hydraulic, and geotechnical evaluations. DSOD also oversees construction of dams to ensure that the work is done in accordance with the approved plans and specifications. Dams are inspected by DSOD on an annual basis to ensure the safety of the dam.

Under California Water Code, Division 3, Chapter 5, Article 1 (New Dams and Reservoirs or Enlargements of Dams and Reservoirs), applicants must provide DSOD information about the location, type, size, height, storage capacity, and hydrologic conditions related to the dam. DSOD may also require reports on the materials used to construct the dam; exploratory pits, trenches, and adits; drilling, coring, and geophysical surveys; tests to determine leakage rates; and physical test results on the *in situ* properties and behavior of the foundation materials at the dam site; as well as other information.

The dam is currently classified as a significant hazard potential under DSOD guidelines.

California Public Resources Code

Several sections of the California Public Resources Code protect paleontological resources. Section 5097.5 prohibits "knowing and willful" excavation, removal, destruction, injury, and defacement of any paleontological feature on lands owned by or under the jurisdiction of the state or any county, city, district, or public corporation, except where the agency with jurisdiction has granted express permission.

3.4.3.3 Local

Alpine County General Plan 2017

Soils

The *Alpine County General Plan* Conservation Element, Section A, addresses soils and geological resources. It includes the following goal, policy, and objective related to soils (Alpine County 2017).

GP Goal No. 1 Consider Soil and Related Resources

- **Policy No. 1** Require soils and geologic reports for all land development projects.
    - **Objective No. 1** Adopt a comprehensive erosion control and grading ordinance.

3.4.4 Environmental Effects

Potential impacts of the proposed project related to geology and soils are discussed in the context of State CEQA Guidelines Appendix G checklist. Checklist Section VII, *Geology and Soils*, asks whether the project would result in any of the following conditions.

a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

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

The project area is not identified as being within an Alquist-Priolo Fault Zone (Bryant and Hart 2007). There is no evidence of recent (i.e., Holocene) faulting within the project area and no active faults are mapped to cut at or near the project area (California Geological Survey 2010). Furthermore, review of aerial photographs does not indicate the presence of lineaments or other features that would suggest the presence of recent faulting on or trending toward the project area. Accordingly, the project area is not subject to surface rupture hazard. There would be no impact.

2. Strong seismic ground shaking?

3. Seismic-related ground failure, including liquefaction?

As described in Section 3.4.2, *Existing Conditions*, the ground-shaking hazard in the project area is moderate and a 2020 technical evaluation indicated that there is significant liquefaction potential within the embankment fill portion of the dam. However, potential impacts associated with ground shaking would be minimized because PG&E would be required to incorporate DSOD and FERC seismic safety policy standards into the project design for applicable features to minimize the ground-shaking hazards on associated project features. Structures must be designed to meet the regulations and associated standards. FERC and DSOD review and approval will be required for the final design of this project. The geotechnical studies, a requirement of the Building Standards Code, have been developed prior to construction activities and have served to inform the seismic design parameters.

Further, the purpose of the dam modification portion of the project is to reduce to an acceptable level the risk of internal erosion/piping and embankment instability related to an elevated phreatic condition during normal maximum reservoir operations and flood conditions. An acceptable level of risk is one characterized by industry-standard metrics defined by factors of safety against dam instability and post-earthquake deformation potential, filtering compatibility of dissimilar materials, and available freeboard. The proposed project would therefore reduce risks at the dam associated with seismic ground shaking and seismic-related ground failure, including liquefaction. This impact would be less than significant.

4. Landslides?

A large earthquake on a nearby fault could cause minor to moderate ground shaking in the vicinity of the project area, potentially resulting in an increased risk of structural loss, injury, or death from the triggering of a landslide. However, the risk of a landslide runout reaching the project area is minimal due to the gentle surrounding topography. The impact would be less than significant.

b. Result in substantial soil erosion or the loss of topsoil?

Ground-disturbing earthwork associated with project components in the project area could increase soil erosion rates and loss of topsoil. Construction activities also could result in soil compaction and wind erosion effects that could adversely affect soils and reduce the revegetation potential at the staging areas and spoils sites. However, PG&E would comply with all applicable construction site BMPs as specified in BMP-1: *Implement Water Quality Protection Measures and Erosion and Sediment Control Plans* (including compliance with the NPDES stormwater permit program and preparation and implementation of a SWPPP), and BMP-6: *Implement Fugitive Dust Abatement Measures* (described in Chapter 2, *Project Description*). BMP-1 and BMP-6 include soil stabilization, sediment control, and wind erosion control BMPs to ensure soil erosion is minimized. This impact would be less than significant.

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 an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?

Improper grading or construction associated with the proposed project could put people at risk as a result of ground failure. Improvement activities would generally involve grading, buttressing, and compacting at the dam location, as well as removal and replacement of materials at the IFR weir. If buttress fill placement and/or the new weir were not engineered appropriately, these activities could result in slope instability and ensuing ground failure. However, project construction would be implemented in accordance with the requirements of the USACE permit (which would apply to both the dam and the IFR weir), and DSOD and FERC seismic safety policy standards (which would apply to the dam). In addition, the project area is fairly level overall and no habitable structures would be built. There would be no impact.

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

Expansive soils are not known to occur in the project area due to the low clay content of the mapped and field-sampled soils. In addition, the project design would conform to the requirements of the USACE permit, and DSOD and FERC seismic safety policy standards. There would be no impact.

e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?

The proposed project would not include a septic system. There would be no impact.

f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

In general, the project is unlikely to disturb paleontological resources because much of the area is underlain by plutonic igneous rock, which has no sensitivity for paleontological resources; excavation would occur in previously disturbed sediment beneath the dam; and excavation would be relatively shallow. However, deeper excavation, up to 20 feet below ground surface, may be needed below the dam, and this excavation would occur in Pleistocene glacial sediments with a high sensitivity for paleontological resources. The excavation area overall is fairly small and localized, and therefore paleontological resources are unlikely to be encountered. At the IFR weir, no excavation would be required. However, in the event unexpected paleontological resources are encountered, mitigation measures GEO-MM-1: *Educate Construction Personnel in Recognizing Fossil Material* and GEO-MM-2: *Stop Work if Substantial Fossil Remains are Encountered during Construction* would reduce this impact to a less-than-significant level.

GEO-MM-1: Educate Construction Personnel in Recognizing Fossil Material

Prior to construction, PG&E will ensure that all construction personnel receive training provided by a qualified professional paleontologist experienced in teaching non-specialists, so they can recognize fossil materials in the event any are discovered during construction. Training will include information on the possibility of encountering fossils during construction, the types of fossils likely to be seen and how to recognize them, and proper procedures in the event fossils are encountered. All field management and supervisory personnel and construction workers involved with ground-disturbing activities will be required to take this training prior to beginning work. Training materials will include an informational brochure that provides contacts and summarizes procedures in the event paleontological resources are encountered.

GEO-MM-2: Stop Work if Substantial Fossil Remains are Encountered during Construction

If substantial fossil remains (particularly vertebrate remains) are discovered during earth-disturbing activities, the construction contractor will stop activities immediately until a state-registered professional geologist or qualified professional paleontologist can assess the nature and importance of the find and a qualified professional paleontologist can recommend appropriate treatment. This person must meet the qualifications defined by the Society of Vertebrate Paleontology Standard Procedures (Society of Vertebrate Paleontology 2010:10). Treatment may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection and may also include preparation of a report for publication describing the finds. PG&E will be responsible for ensuring that recommendations regarding treatment and reporting are implemented. Construction can resume once the paleontologist has assessed the find and taken the necessary measures to collect data and retrieve the fossil.

3.5 Biological Resources

3.5.1 Introduction

This section describes the biological resources in the project area and the proposed project's potential impacts on these resources. This section discusses the existing conditions in the project area; federal, state, and local regulatory framework for biological resources; and the potential for the proposed project to affect biological resources.

The project area encompasses the Lower Blue Lake Dam, laydown and staging areas, access routes, and the weir replacement area along Middle Creek (Figure 2-1). The biological resources study area encompasses the project area and intervening areas and is shown on Figure 3.5-1.

3.5.2 Methods

3.5.2.1 Review of Existing Information

The sources below were used to develop lists of special-status plant and animal species and to identify other sensitive biological resources (e.g., sensitive natural communities) that could be affected by the proposed project.

- California Native Plant Society's (CNPS's) online *Inventory of Rare and Endangered Plants of California* records search of the Pacific Valley, Caples Lake, Carson Pass, Markleeville, Mokelumne Peak, and Ebbetts Pass USGS 7.5-minute quadrangles (California Native Plant Society 2022).
- California Natural Diversity Database (CNDDB) records search of the Pacific Valley, Caples Lake, Carson Pass, Markleeville, Mokelumne Peak, and Ebbetts Pass USGS 7.5-minute quadrangles (California Department of Fish and Wildlife 2022a).
- USFWS list of endangered and threatened species that may occur in the project area or be affected by the proposed project (U.S. Fish and Wildlife Service 2022).
- *Survey for Special-Status Plants, Pacific Gas and Electric Company, Mokelumne River Hydroelectric Project, Amador and Alpine Counties, California* (Pacific Gas and Electric Company 2015a).
- Fish population monitoring information from Stream Ecology Monitoring Program Reports for the Mokelumne River Project (Pacific Gas and Electric Company 2017a, 2017b, 2020, 2021, 2022a)

The USFWS, CNDDB, and CNPS lists can be found in Appendix B, *Species Lists*.

3.5.2.2 Field Surveys

ICF botanists/wetland ecologists conducted an aquatic resources delineation of the study area on October 12, 2021, and September 29, 2022. The delineation was conducted on foot throughout the delineation area. A sub-meter accuracy global positioning system unit was used to record the location of the wetland sample points, the OHWM sample point, and map the boundaries of aquatic resources. On September 29, 2022, the botanists/wetland ecologists also conducted a botanical survey in the study area. The survey consisted of walking meandering transects throughout the study area and identifying and recording plants observed.

ICF wildlife biologists conducted an amphibian habitat assessment and survey of the perimeter of Lower Blue Lake, the wetland area just downstream of the Lower Blue Lake Dam, and the spillway creek along the southern border of the wetland area on June 17, 2021. Follow-up surveys at identified amphibian breeding areas at Lower Blue Lake were conducted on June 28 and July 14, 2021, to identify and estimate the number of individuals present. An ICF biologist also conducted an amphibian survey along the perimeter of the reservoir on June 22, 2022, and a follow-up survey was conducted on July 21, 2022.

An ICF fish biologist conducted a reconnaissance-level survey of the study area, including the shoreline of the reservoir, on October 13, 2021. The biologist walked Middle Creek from a short distance downstream of the IFR weir to Lower Blue Lake Dam and the reservoir inundation zone to assess fish habitat and passage conditions for Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*) in tributary streams. Fish species observed during the surveys were recorded, stream habitats in Middle Creek were mapped, and representative photographs of the study area were taken.

Lists of plants and animals observed in the study area are provided in Appendix C, *Plants and Animals Observed in the Lower Blue Lake Dam Seepage Mitigation and Weir Replacement Project Area*.

3.5.3 Existing Conditions

3.5.3.1 Physical Conditions

The approximately 7.09-acre study area is in the High Sierra Nevada subregion of the California Floristic Province (Baldwin et al. 2012). The study area is relatively level, with elevations ranging from approximately 8,000 to 8,040 feet above mean sea level, although the surrounding region is mountainous. The dam and weir are located at an elevation of approximately 8,040 feet.

Soil mapping units in the study area are Sofgran-Klauspeak-Temo association, 15 to 50 percent slopes; Rock outcrop-Cryumbrepts association, 15 to 75 percent slopes; Granylith-Hargran-Rock outcrop complex, 8 to 30 percent slopes; and Water (Natural Resources Conservation Service 2021). Inclusions of hydric soils may occur on floodplains.

The study area is within the Upper Mokelumne watershed (HUC 18040012) (U.S. Geological Survey 2022). The dam outlet from the Lower Blue Lake reservoir connects to Middle Creek, which connects to Blue Creek approximately 0.3 mile south of the dam. The climate is temperate, with cold, snowy winters and warm summers. Precipitation occurs year-round, but most heavily between September and May. The average total annual precipitation is approximately 43.08 inches (Western Regional Climate Center 2022).

Lower Blue Lake Reservoir

Lower Blue Lake was a natural lake before it was enlarged in three stages between 1874 and 1901 to provide a maximum usable storage of 5,091 acre-feet (Division of Safety of Dams 2022). The resultant Lower Blue Lake reservoir supplies PG&E's Mokelumne River Project (FERC Project No. 137), a series of four power developments downstream on the North Fork of the Mokelumne River. The outlet of the reservoir has a maximum capacity of approximately 220 cfs at full pool (elevation

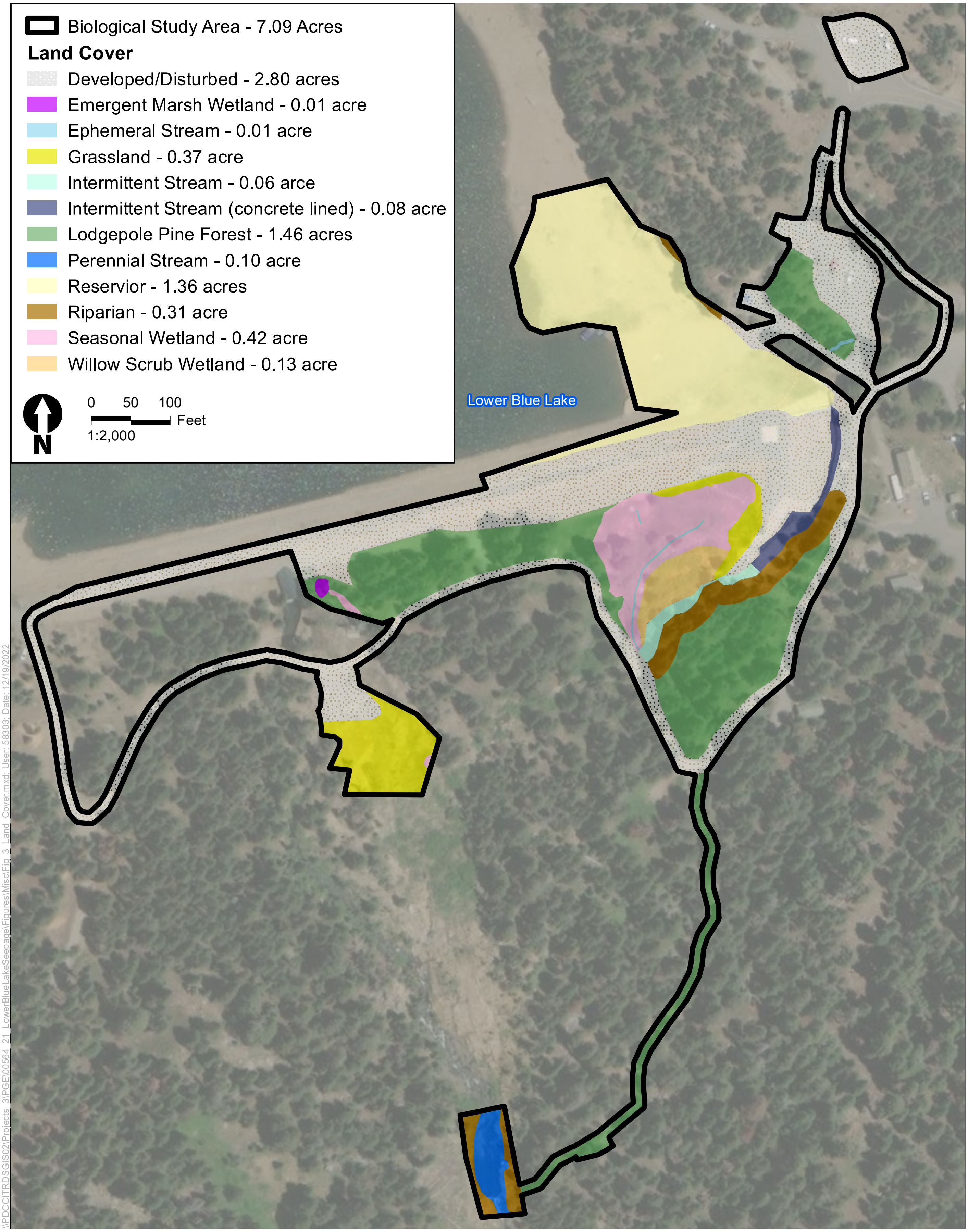


Figure 3.5-1
Land Cover in the Biological Resources Study Area

8,053.4 feet USGS datum) and supplies water to Middle Creek, which flows approximately 0.3 mile (1,675 feet) to its confluence with Blue Creek. During high runoff periods, inflows cause water to spill over the reservoir spillway and into Middle Creek. The only perennial tributary to Lower Blue Lake is Middle Creek, which receives water from Upper Blue Lake, springs, and seeps.

PG&E operates the reservoir by capturing snowmelt runoff during spring (April to June) and releasing the water to Middle Creek through the LLO pipes from summer into fall, consistent with available runoff and storage, the USFS annually approved Upper Lakes Drawdown Plan and ecological needs. Figure 3.5-2 shows the pattern of reservoir-level fluctuation for the period spanning water year 2002 to water year 2022, which includes the current self-imposed interim operational elevation restriction (8,050.6 feet) for the reservoir that was put in place on July 2, 2018.

Lower Blue Lake reservoir lies within the headwaters of the North Fork of the Mokelumne River. When full, the reservoir is approximately 1 mile long by 0.4 mile wide and has a surface area of approximately 198 acres. Maximum depth of the reservoir at full pool is approximately 107 feet (Pacific Gas and Electric Company 2022b). The reservoir is oligotrophic (low in dissolved nutrients and high in DO) and deep. The water is clear, and visibility often exceeds 30 feet.

Located near the crest of the Sierra Nevada, the reservoir is covered in ice for approximately 6 months of the year. The reservoir generally becomes ice free by May or June, depending on snow levels the previous winter. Soon after the ice has melted, a thermocline (the transition layer between warmer mixed water at the reservoir's surface and cooler deep water below) typically forms. Based on previous studies at Upper Blue Lake (Calhoun 1944a), which is similar to Lower Blue Lake, the thermocline in Lower Blue Lake likely forms at approximately 13 to 20 feet below the surface and sinks progressively deeper throughout the summer to a depth of around 33 feet by September. Similar to Upper Blue Lake, water temperatures are cold and DO levels likely remain above 5 milligrams per liter over most of its depth (Figure 3.5-3).

Prior to the construction of present-day Lower Blue Lake Dam in 1901, surface waters in the lake flowed out the natural outlet and downstream into Middle Creek. Following construction of Lower Blue Lake Dam, surface releases have occurred infrequently when the reservoir is full and spilling over the spillway. When water is not spilling over the spillway, most or all of the flow in Middle Creek downstream of the dam is derived from releases through the LLO, the invert of which is located at elevation 8,015.3 feet. Consequently, the depth at which releases are made from the reservoir is a function of the reservoir's WSE.

Perennial Stream (Middle Creek)

Middle Creek extends for approximately 0.3 mile (1,675 feet) from Lower Blue Lake Dam to its confluence with Blue Creek. Middle Creek flows are supplied by springs and snowmelt runoff, by releases from Lower Blue Lake Dam, and by infrequent, uncontrolled spills via the dam spillway. The hydrology is primarily snowmelt driven, with natural summer and fall flows augmented by releases of stored water from the reservoir. Stream flows are measured and recorded at the stream gauging station, or IFR weir, approximately 850 feet downstream of Lower Blue Lake Dam. Figure 3.5-4 shows the pattern of flows in Middle Creek for the period spanning water year 2001 to water year 2021, which includes the current self-imposed interim operational elevation restriction for the reservoir that was put in place on July 2, 2018.

The following information on the physical characteristics of Middle Creek is based on the characteristics observed in the field by the ICF fish biologist during a habitat assessment of the creek, from approximately 100 feet downstream of the IFR weir to Lower Blue Lake Dam. Middle Creek is characterized by a single channel, with a substrate dominated by sand, boulder, and bedrock. Runs are the dominant habitat type by length (58 percent), followed by pools (28 percent), cascades (12 percent), and one culvert (2 percent). The documented occurrence of young trout in Middle Creek indicates that spawning habitat for Lahontan cutthroat trout is also present in Middle Creek. Instream cover is comprised of primarily substrate (cobble and boulder) and surface turbulence. Stream shading is variable with the highest level of shading occurring in the 500 feet of stream closest to Lower Blue Lake Dam. Stream shading is provided by grand fir (*Abies grandis*), lodgepole pine (*Pinus contorta* ssp*. murrayana*), and mountain hemlock (*Tsuga mertensiana*). The abundance of bedrock in the lower half of the survey reach limits the growth of these species and accordingly stream shading is low.

Pool habitat in Middle Creek provides Lahontan cutthroat trout and other fish species with important habitat refugia during periods of low flow, such as when wintertime sub-freezing temperatures cause Middle Creek to freeze, during periods of drought, or during periods of reduced flow at other times of the year. Based on a habitat survey of Middle Creek conducted by an ICF fish biologist in October 2021, several pool habitats were observed in the reach from below the IFR weir to the dam. Maximum water depth of these pools was estimated to be several feet.

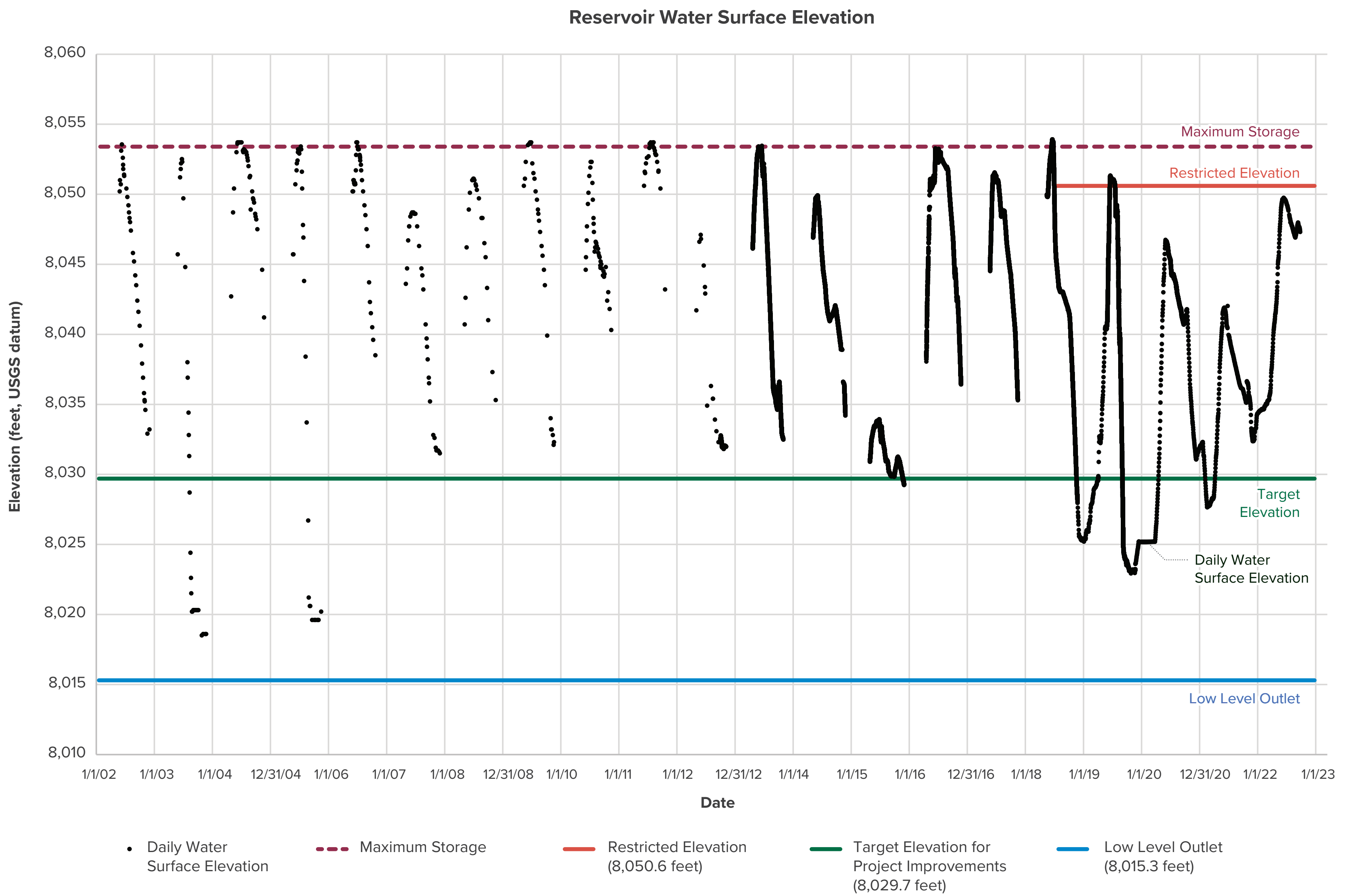
Streamflow varies seasonally, with low flows occurring during late fall and winter and high flows occurring during summer when releases from the reservoir are made. In summer, flows are highly variable within the season and among years in response to the annual variability of snowpack and runoff in the watershed. In general, mean daily summer (July–August) flows in Middle Creek have ranged from 2.7 to 98 cfs (U.S. Geological Survey 2022). Water temperatures are also highly variable between months and across years. Based on 5 years (2005–2009) of water temperature monitoring, mean monthly temperatures (degrees Fahrenheit [°F] in summer [June–September]) range from the mid-30s during June to the mid-60s during August (Pacific Gas and Electric Company 2010). Daily maximum water temperatures typically are below 68^0F, with August typically being the warmest month. Over the 5-year monitoring period, water temperatures in Middle Creek never exceed the established cold-water objective of 68^0F (Pacific Gas and Electric Company 2010).

3.5.3.2 Land Cover Types in the Study Area

The designation of land cover types in the study area was based on the September 2022 survey. Figure 3.5-1 shows the locations of the mapped land cover types.

The study area supports both common and sensitive land cover types. Common land cover types are widespread vegetation communities with low plant species diversity. These types may reestablish naturally after disturbance, support primarily nonnative plant species, or be highly managed. They are not generally protected by resource agencies unless they provide habitat for special-status species (e.g., raptor foraging or nesting habitat, upland habitat in a wetland watershed). Common land cover types in the study area are lodgepole pine forest and ruderal grassland. The developed/disturbed cover type is not considered a vegetation community and is not sensitive.

Sensitive land cover types are rare vegetation communities with limited distribution. They may have high species diversity, high productivity, distinctive characteristics, or a declining status. Local, state, and federal agencies that regulate biological resources consider these types to be important, and



Data Source: Pacific Gas and Electric Company 2022d

Graphics … PGE 103642 LB Lake ISMND (12-15-2022) TAG

Figure 3.5-2
Daily Lower Blue Lake Reservoir Levels under Baseline Conditions and with the Interim Operational Elevation Restriction

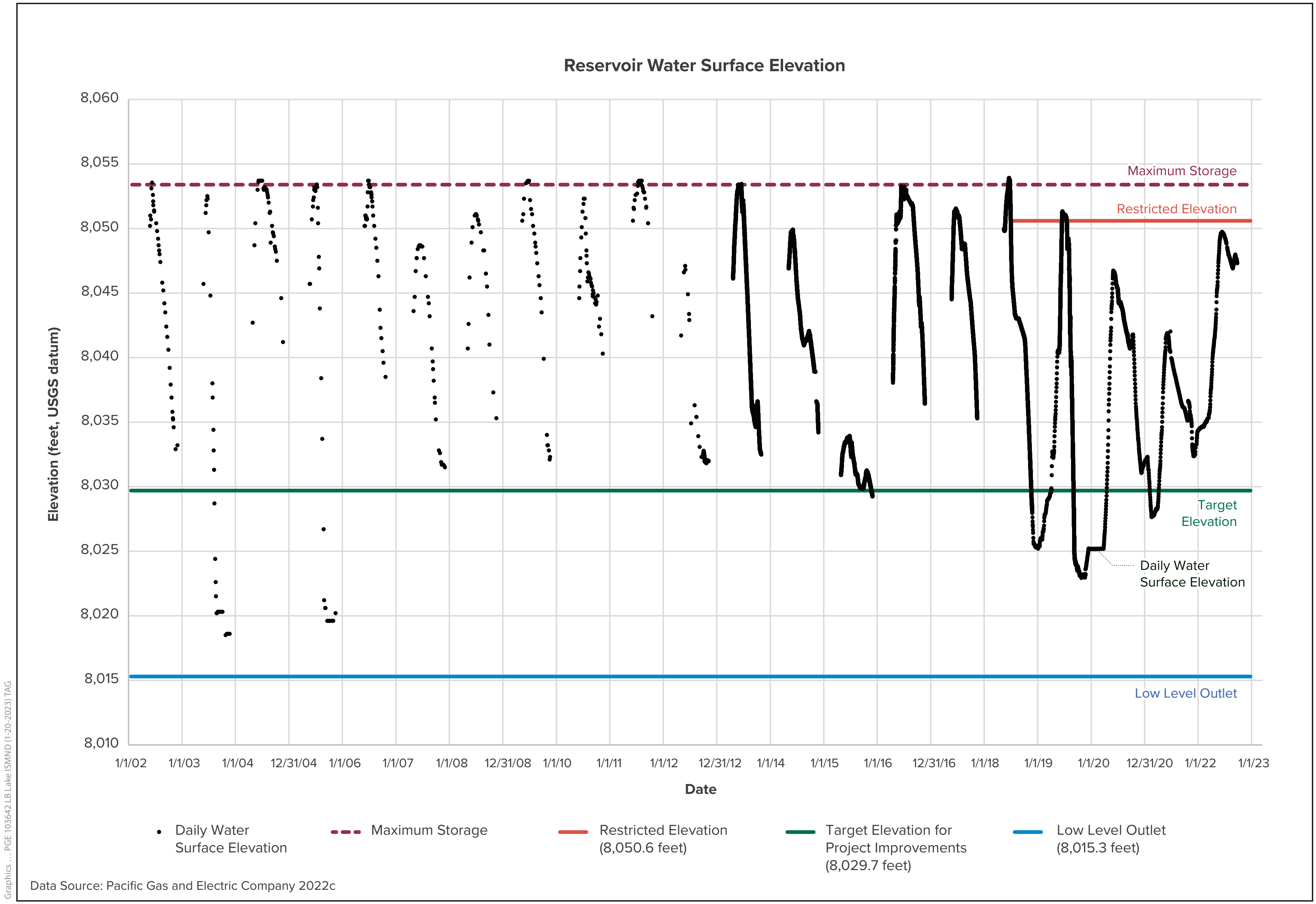
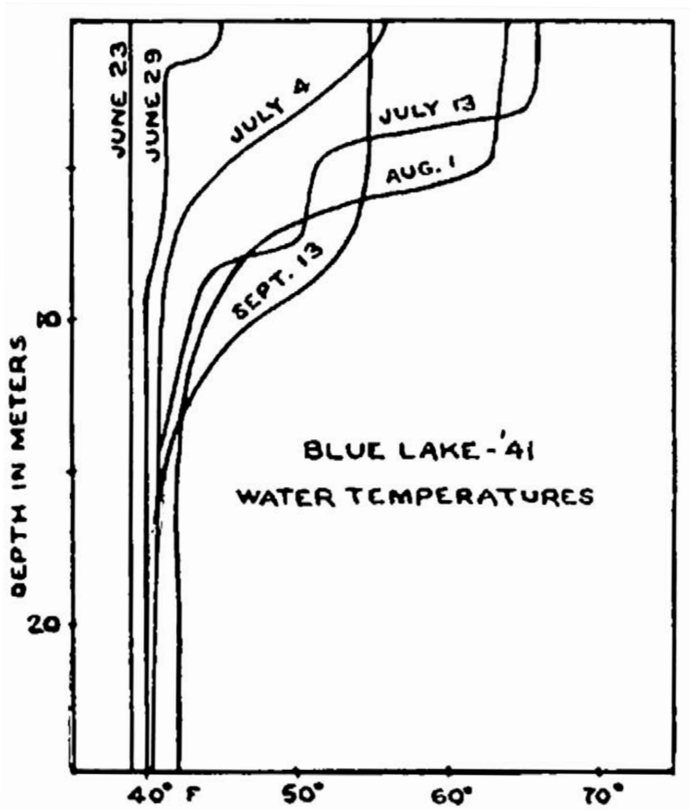


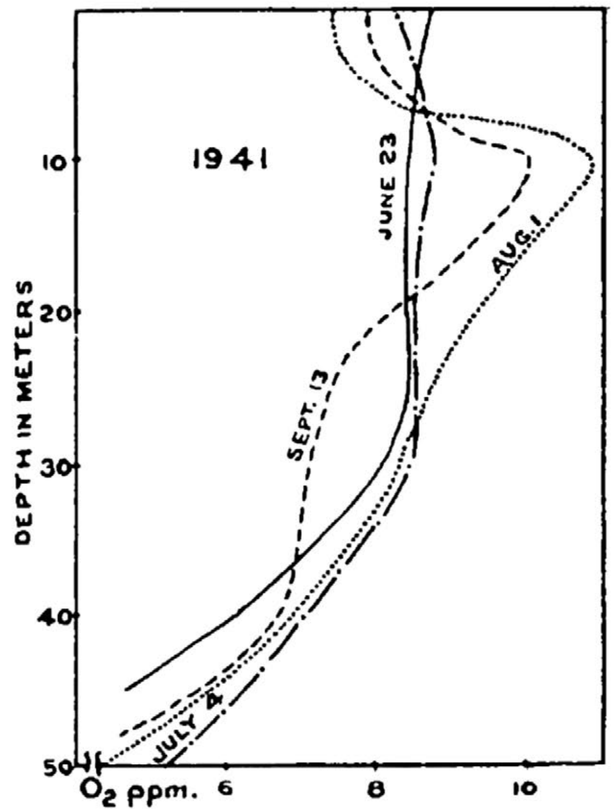
Figure 3.5-2

Daily Lower Blue Lake Reservoir Levels under Baseline Conditions and with the Interim Operational Elevation Restriction

Thermal stratification in Blue Lake, summer 1941

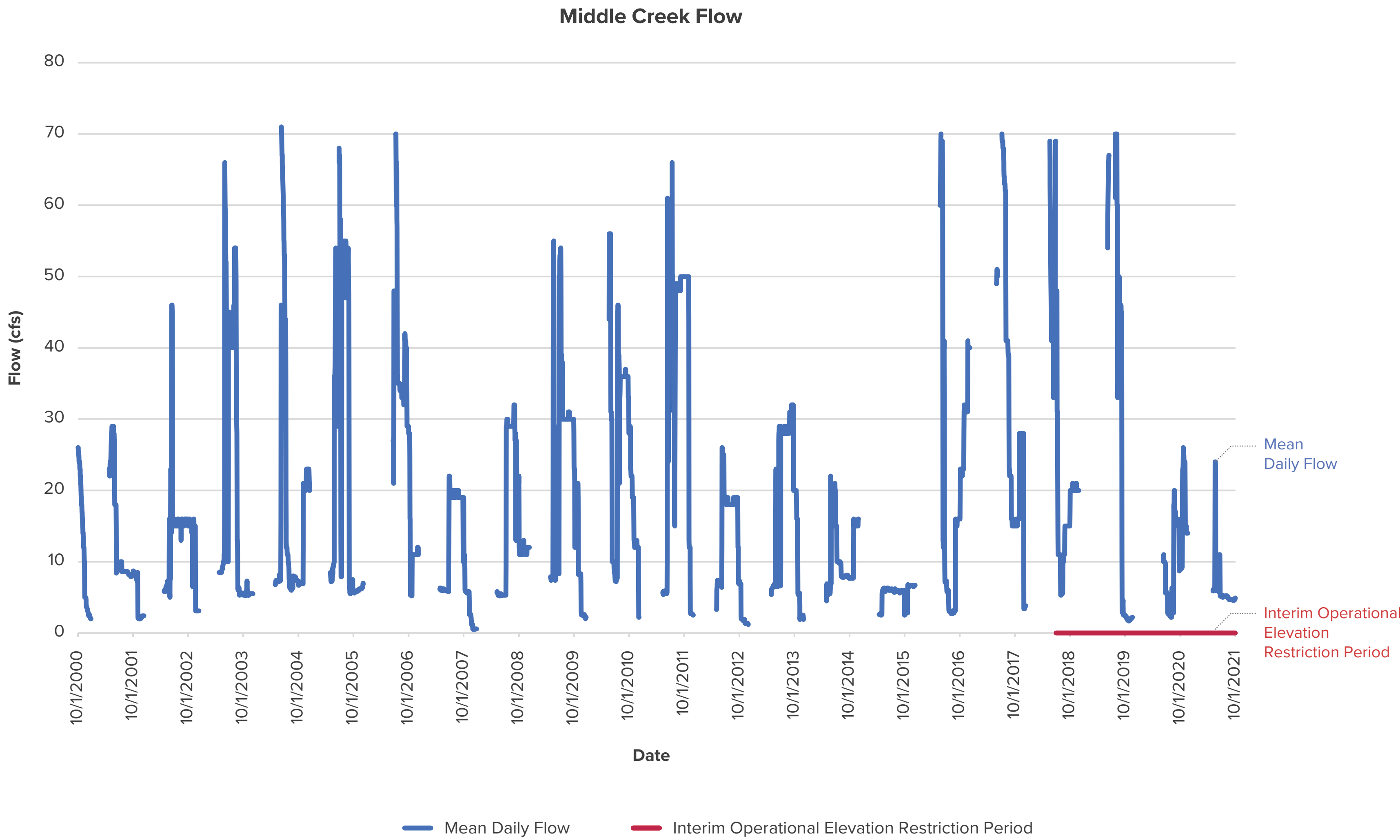


Vertical distribution of dissolved oxygen in Blue Lake, summer 1941



Source: Calhoun 1944a

Figure 3.5-3
Thermal Stratification and Vertical Distribution of Dissolved Oxygen in Upper Blue Lake, Summer 1941



Data Source: U.S. Geological Survey 2022

ICF

Figure 3.5-4

Mean Daily Flow in Middle Creek Downstream of Lower Blue Lake Dam under Baseline Conditions compensation for loss of sensitive land cover types is generally required by these agencies. USFWS considers certain types, such as wetlands and riparian communities, important to wildlife, and USACE and the EPA consider wetlands important for water quality and wildlife. Waters of the United States and waters of the State are regulated by USACE and the Regional Water Boards, respectively. The California Department of Fish and Wildlife (CDFW) maintains a database (the CNDDB) of rare habitat types throughout the state. The land cover types in the study area that are considered sensitive are riparian, seasonal wetland, willow scrub wetland, emergent marsh wetland, reservoir shore (vegetated part of Lower Blue Lake reservoir), reservoir (open water part of Lower Blue Lake), perennial stream (Middle Creek), intermittent stream, and ephemeral stream.

Locations of land cover types and the dominant plant species observed in land cover types in the study area are described below. A list of the plants observed in each part of the study area is provided in Appendix C.

Lodgepole Pine Forest

Lodgepole pine forest surrounds Middle Creek in the study area and is outside the edges of the project area at the upper laydown area, as well as the proposed staging and parking areas. The lodgepole pine forest canopy is dominated by lodgepole pine associated with mountain hemlock and grand fir. Understory species include western prickly gooseberry (*Ribes montigenum*), mountain redtop (*Agrostis variabilis*), Harford's wild buckwheat (*Eriogonum nudum* var. *oblongifolium*), and glaucous checker mallow (*Sidalcea glaucescens*).

Grassland

Grassland habitat is located at the edge of the seasonal wetland south of the dam, as described below, and in the lower laydown area. The grassland at the edge of the seasonal wetland supports mountain redtop, California corn lily (*Veratrum californicum* var. *californicum*), glaucous check mallow, and other herbaceous species. The lower laydown area has been used as a parking and staging area and has a helicopter landing pad. Grassland in this area is disturbed and supports patchy wetland plants in small depressional areas that hold snowmelt, but the substrate is disturbed soil with 1- to 3-foot-deep fill containing gravel and wood chips. Species include blue wildrye (*Elymus glaucus*), Spanish lotus (*Acmispon americanus*), yarrow (*Achillea millefolium*), Harford's wild buckwheat, and glaucous checker mallow. Outside of the eastern boundary and within the southeast boundary of the laydown area, natural substrate occurs and supports hydrophytic species, including rush (*Juncus* species) and annual hairgrass (*Deschampsia danthonioides*).

Riparian

Middle Creek, the Lower Blue Lake overflow channel, and Lower Blue Lake reservoir in the delineation area contain riparian communities generally above the OHWM and at the top of bank. These communities are dominated by grand fir, lodgepole pine, and mountain hemlock. The overflow channel and edge of the Lower Blue Lake reservoir supports these conifers, but also Lemmon's willow (*Salix lemmonii*) and Sierra gray willow (*Salix orestera*).

Reservoir Shore

The reservoir shore land cover type refers to the Lower Blue Lake reservoir shore below the OHWM in the upper laydown area. This area is exposed when the reservoir level is lower and is transitional between the forest habitat and the open water. The soil is primarily sandy with small gravel-sized rock. Dominant species on the reservoir shore include a mix of wetland and upland herbaceous species, such as annual hairgrass, Spanish lotus, Donner woodrush (*Luzula subcongesta*), red sand spurry (*Spergularia rubra*), and a variety of other herbaceous species, with Lemmon's willow and Sierra gray willow at the OHWM edge.

Reservoir

The reservoir land cover type is the open water portion of Lower Blue Lake reservoir. This is an unvegetated cover type in the inundated portion of the lake. The reservoir is known to support rainbow trout (*Oncorhynchus mykiss*), brook trout (*Salvelinus fontinalis*), Lahontan cutthroat trout, and Lahontan redside (*Richardsonius egregius*). Speckled dace (*Rhinichthys osculus*), Tahoe sucker (*Catostomus tahoensis*), and tui chub (*Siphateles bicolor*) may also occur in the reservoir based on their occurrence in Upper Blue Lake and Middle Creek upstream of the reservoir. The reservoir also provides habitat for benthic macroinvertebrates, an important food item for reservoir fish, including Lahontan cutthroat trout.

Seasonal Wetland

The study area supports three areas of seasonal wetland (see Figure 3.5-1). The largest occurs on a gentle slope just south of the dam that is hydrologically connected to adjacent ephemeral and intermittent streams, which eventually flow into Middle Creek. Dominant species in this wetland include blister sedge (*Carex vesicaria*) and long-anthered rush (*Juncus macrandrus*). Where the vegetation shifts to an overstory of willow, the wetland transitions to a willow scrub wetland, described below. Two ephemeral streams, described below, extend through and function as part of the seasonal wetland.

Another seasonal wetland is located in a topographic depression within the lower laydown area east of Middle Creek and south of the access road through the study area. Dominant species observed in this wetland include annual hairgrass and California dock (*Rumex californicus*).

A third seasonal wetland is a swale-like depression that drains into an emergent marsh wetland, described below. The wetland supports long-anthered rush, California dock, and annual hairgrass.

Willow Scrub Wetland

A willow scrub wetland abuts the intermittent stream (described below) that drains from Lower Blue Lake reservoir and the seasonal wetland on the slope south of the dam. The willow scrub wetland occurs where the vegetation shifts from herbaceous seasonal wetland species to an overstory of Lemmon's willow with an herbaceous understory of the seasonal wetland species.

Emergent Marsh Wetland

An emergent marsh occurs at the foot of the dam in a local topographic depression. This wetland is dominated by diffuse rush (*Scirpus diffusus*) in the depression and long-anthered rush around the water's margin. Six-inch-deep water was observed in the emergent wetland.

Perennial Stream

The only perennial stream in the study area is Middle Creek, which originates at Lower Blue Lake Dam and is a tributary of the North Fork of the Mokelumne River. Middle Creek ranges from approximately 10 to 40 feet wide in the study area and is mostly unvegetated with a cobble bottom, but also contains an approximately 30-foot-long sand bar below the OHWM on the west side that supports willows. Based on fish community sampling of Blue Creek downstream of the study area conducted by PG&E and their consultants, the fish community in Middle Creek likely comprises trout (brook, rainbow, brown), Lahontan redside, and Tahoe sucker (Pacific Gas and Electric Company 2017a, 2017b, 2020, 2021, 2022a). Lahontan cutthroat trout may also be present in the study area as they occur in upstream aquatic habitats including Lower Blue Lake, Middle Creek upstream of Lower Blue Lake, and Upper Blue Lake.

Intermittent Stream

One intermittent stream that includes a concrete-lined section and an earth-lined section occurs in the study area. The upstream part is a constructed, unvegetated, and concrete-lined spillway from the Lower Blue Lake reservoir. The dam spillway is a two-level concrete sill. The lower sill is 12 feet wide and encompasses the OHWM. The upper sill is 47.5 feet wide and is above the OHWM. This channel directly connects to a partially vegetated 8- to 25-foot-wide earth-lined stream (the spillway stream). The upstream bed of the earth-lined stream supports herbaceous species, including California dock and grasses, in between large cobbles, while the downstream bed is primarily open water. The stream drains through three 36-inch-diameter metal culverts under the dirt access road and drains into Middle Creek.

Ephemeral Stream

Three ephemeral streams are in the study area. Two of the ephemeral streams extend through the large seasonal wetland south of the Lower Blue Lake Dam, as described above. Both streams are 2 feet wide. One of the streams drains directly into the intermittent stream, and the other drains from a seep on the south side of the dam and ends at a metal v-notch weir that disperses the flow and ends the defined channel. Both streams support seasonal wetland plant species, except for the last approximately 10 feet of the stream that connects to the intermittent stream, where it is unvegetated and contains a high density of coniferous leaf litter.

A third ephemeral stream is a 4-foot-wide drainage that crosses under the parking lot in the study area through two 36-inch-diameter corrugated metal pipe culverts. An approximately 34-foot-long section of this stream daylights in the equipment and construction staging area and then drains through two 36-inch-diameter corrugated metal pipe culverts to the bank of the Lower Blue Lake reservoir. The bed of the stream is primarily large cobbles that prevent excessive erosion of the stream and sedimentation into the lake.

Developed/Disturbed

The developed/disturbed cover type includes existing roads, parking lots, and areas where vegetation has been removed.

3.5.3.3 Waters of the United States and Waters of the State

The study area contains five features that are wetlands and seven that are non-wetland waters. All features are at least preliminarily considered waters of the United States, under USACE jurisdiction, and waters of the State, under State Water Board jurisdiction. Waters of the United States that are wetlands meet the three criteria of supporting a dominance of wetland plants, hydric soils, and wetland hydrology. Waters of the State must meet at least two of those three criteria. For non-wetland water features, such as rivers, streams, channels, and lakes, the extent of potential USACE jurisdiction is determined by identification of the OHWM, which is defined as “that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas” (33 Code of Federal Regulations [CFR] 328.3[e]). The OHWM also represents the extent of waters of the State.

A delineation of waters of the United States was conducted for Lower Blue Lake (Pacific Gas and Electric Company 2023a and 2023b). The boundaries of the potential waters of the United States in the study area as shown on Figure 3.5-1 are pending submittal and subsequent verification by the USACE Sacramento District.

3.5.3.4 Special-Status Species

Special-status species are plants and animals that are legally protected under the ESA, the California Endangered Species Act (CESA), or other regulations, and species considered sufficiently rare by the scientific community to qualify for such listing. For the purposes of this document, special-status species fall into the following categories.

- Species listed or proposed for listing as threatened or endangered under ESA (50 CFR 17.11 [listed animals] and 17.12 [listed plants], and various notices in the *Federal Register* [FR] [proposed species]).
- Species that are candidates for possible future listing as threatened or endangered under the ESA (87 FR 26152, May 3, 2022).
- Species listed or proposed for listing by the State of California as threatened or endangered under the CESA (14 CCR 670.5).
- Species that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines 15380).
- Animals listed as California species of special concern on CDFW’s Special Animals List (California Department of Fish and Wildlife 2022b).
- Animals that are fully protected in California under the California Fish and Game Code (Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).
- Bats identified as medium or high priority on the Western Bat Working Group regional priority species matrix (Western Bat Working Group 2018a).
- Plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code 1900 et seq.).
- Plants considered by CDFW and CNPS to be “rare, threatened, or endangered in California” (Rare Plant Ranks 1B and 2) (California Department of Fish and Wildlife 2022a; California Native Plant Society 2022).
- Plants identified by CDFW and CNPS about which more information is needed to determine their status, and plants of limited distribution (Rare Plant Ranks 3 and 4), (California Department of Fish and Wildlife 2022a; California Native Plant Society 2022), which may be included as special-status species based on local significance or recent biological information.

Special-Status Plants

Twenty-nine special-status plant species have been reported in the six USGS 7.5-minute quadrangles around the study area, although only 13 of these species are within approximately 5 miles of the study area (California Department of Fish and Wildlife 2022a; California Native Plant Society 2022). No plants were included on the USFWS lists. One additional special-status plant species, small bur reed (*Sparganium natans*), was not documented on the CNDDB or CNPS lists but was found approximately 0.4 mile north of the study area during special-status plant surveys conducted in 2015 for PG&E's Mokelumne River Hydroelectric Project (Pacific Gas and Electric Company 2015a). The 29 special-status plants documented on the CNDDB and CNPS lists and in the PG&E report are listed in Table 3.5-1, including the scientific name, common name, status, distribution, habitat requirements, and potential for occurrence in the study area.

Ten of the 29 special-status plants were identified as having no potential for occurrence in the study area because it lacks suitable habitat (i.e., pinyon-juniper woodland, desert scrub or volcanic soils) and/or is not in the known elevational range for the species.

Ten of the 29 special-status plants were identified as having low potential to occur in the study area, because suitable habitat is present, and species are recorded more than 5 miles from the study area; six species were identified as having moderate potential to occur in the study area, because suitable habitat is present and species are recorded within 2 to 5 miles of the study area;, and three species were considered to have high potential, because suitable habitat is present and there are recorded occurrences within approximately 2 miles of the study area.

Table 3.5-1. Special-Status Plants with Potential to Occur in the Vicinity of the Lower Blue Lake Dam Seepage Mitigation and Weir Replacement Project Area

Common and Scientific Name	Legal Status* (Federal/State /CRPR)	Geographic Distribution	Habitat Requirements	Potential for Occurrence in Project Area
Mountain bent grass *Agrostis humilis*	–/–/2B.3	Central and southern high Sierra Nevada, including portions of Alpine, Madera, Mono, Mariposa, Tuolumne Counties; Nevada, Oregon, Washington, and elsewhere	Alpine boulder and rock field, meadows and seeps, subalpine coniferous forest, sometimes on carbonate substrates; 8,760–10,500 feet; blooms Jul–Sep	Low potential. Habitat present in lodgepole pine forest. Nearest recorded occurrence is ~6.5 miles southeast of study area. Not observed during September 2022 survey.
Three-bracted onion *Allium tribracteatum*	–/–/1B.2	Central high Sierra Nevada: Calaveras and Tuolumne Counties	Volcanic soils in chaparral, lower and upper montane coniferous forest; 3,600–9,840 feet; blooms Apr–Aug	No potential. Habitat absent, no suitable soils. Nearest recorded occurrence is ~9.7 miles southwest of study area.
Austin's astragalus *Astragalus austiniae*	–/–/1B.3	Alpine, El Dorado, Nevada, and Placer Counties	Alpine boulder and rock field, rocky soils in subalpine coniferous forest; 7,350–9,740 feet; blooms (May) Jul–Sep	Low potential. Habitat present in lodgepole pine forest. No recorded occurrences within 10 miles of study area. Not observed during September 2022 survey.
Woolly-leaved milk-vetch *Astragalus whitneyi* var. *lenophyllus*	–/–/4.3	Northern high Sierra Nevada with occurrences in Alpine, Butte, Nevada, Placer, Plumas, and Sierra Counties	Alpine boulder and rock field, rocky soils in subalpine coniferous forest; 7,000–10,000 feet; blooms Jul–Aug	Low potential. Habitat present in lodgepole pine forest. Nearest recorded occurrence is ~6.2 miles northwest of study area (Consortium of California Herbaria 2022).
Small-leaved rockcress *Boechera microphylla*	–/–/3	Northern high Sierra Nevada, Great Basin: Alpine, Inyo, Mono, Modoc, and Plumas Counties; Nevada, Oregon, and elsewhere	Volcanic or granitic, rocky soils in pinyon-juniper woodland; 5,580–10,700 feet; blooms Jul	No potential. Habitat absent. No recorded occurrences within 10 miles of study area.

Common and Scientific Name	Legal Status* (Federal/State /CRPR)	Geographic Distribution	Habitat Requirements	Potential for Occurrence in Project Area
Upswept moonwort *Botrychium ascendens*	–/–/2B.3	Southern high Cascade Range, and scattered occurrences elsewhere: Butte, El Dorado, Lassen, Mono, Modoc, Plumas, Shasta, Tehama, and Tulare Counties; Idaho, Oregon, Nevada, Washington, and elsewhere	Wet areas in lower montane coniferous forest; 4,920–8,500 feet; fertile Jul–Aug	Moderate potential. Habitat present in seasonal wetlands. Nearest recorded occurrence is ~5 miles northwest of study area.
Mingan moonwort *Botrychium minganense*	–/–/2B.2	High Cascade Range, southern high Sierra Nevada	Lower montane coniferous forest, on creek banks; 4,920–7,460 feet; blooms Jul–Sep	Low potential. Habitat present in lodgepole pine forest and riparian. Nearest recorded occurrence is ~10 miles southeast of study area. Not observed during September 2022 survey.
Davy's sedge *Carex davyi*	–/–/1B.3	Northern and central high Sierra Nevada	Dry meadows and slopes in subalpine coniferous forest and upper montane coniferous forest; 4,920–10,500 feet; blooms Jun–Sep	Moderate potential. Habitat present in lodgepole pine forest and ruderal annual grassland. Nearest recorded occurrence is ~5.3 miles northwest of study area. Not observed during September 2022 survey.
Porcupine sedge *Carex hystericina*	–/–/2B.1	Klamath Ranges in Lake County, formerly in Trinity County; Arizona, Idaho, Oregon, Washington, and elsewhere	Marshes and swamps along streambanks; 2,000–3,000 feet; blooms May–Jun	No potential. Project area is above the known elevational range for the species. No recorded occurrences within 10 miles of study area.
Western single-spiked sedge *Carex scirpoidea* ssp. *pseudoscirpoidea*	–/–/2B.2	Alpine, Inyo, Mono, and Tuolumne Counties; Nevada, Utah, and elsewhere	Wet areas, often on carbonate in alpine boulder and rock field, meadows and seeps, and rocky areas in subalpine coniferous forest; 10,500–12,140 feet; blooms Jul–Sep	No potential. Project area is below the known elevational range for the species. Nearest recorded occurrence is ~6 miles northwest of study area.

Common and Scientific Name	Legal Status* (Federal/State /CRPR)	Geographic Distribution	Habitat Requirements	Potential for Occurrence in Project Area
				Not observed during September 2022 survey.
Alpine dusty maidens *Chaenactis douglasii* var. *alpina*	–/–/2B.3	Northern high Sierra Nevada, northern desert mountains in Alpine, El Dorado, Inyo, Mono, Siskiyou, Tulare, and Tuolumne Counties; Nevada, Oregon and elsewhere	Granitic soils in alpine boulder and rock field; 9,840–11,150 feet; blooms Jul–Sep	No potential. Project area is below the known elevational range for the species. Nearest recorded occurrence is ~5.5 miles northwest of study area. Not observed during September 2022 survey.
Fell-fields claytonia *Claytonia megarhiza*	–/–/2B.3	Northern and central High Sierra Nevada and Warner Mountains in Alpine, Fresno, Mono, Modoc, Mariposa, Nevada, and Tuolumne Counties; Colorado, Montana, Wyoming, New Mexico, Canada	Alpine boulder and rock field, rocky or gravelly substrates in subalpine coniferous forest; 8,530–11,590 feet; blooms Jul–Sep	Low potential. Habitat present in lodgepole pine forest. Nearest recorded occurrence is ~9.3 miles southeast of study area. Not observed during September 2022 survey.
Fiddleleaf hawksbeard *Crepis runcinata*	–/–/2B.2	Alpine, Inyo, Lassen, Mono, Modoc, Sierra Counties; Arizona, Colorado, Iowa, Idaho, Kansas, Minnesota, Montana, North Dakota, Nebraska, New Mexico, Nevada, Oregon, South Dakota, Texas, Utah, Washington, Wyoming	Mojavean desert scrub, pinyon and juniper woodland, mesic, alkaline; 4,100–7,200 feet; blooms May–Aug	No potential. No suitable habitat in the study area. Nearest recorded occurrence is ~7.4 miles northeast of study area.
Subalpine cryptantha *Cryptantha crymophila*	–/–/1B.3	Alpine, Mono, and Tuolumne Counties	Subalpine coniferous forest on volcanic, rocky substrates; 8,530–10,500 feet; blooms Jul–Aug	No potential. Habitat absent, no suitable soil. Nearest recorded occurrences are ~3.6 miles east of study area.
Clustered-flower cryptantha *Cryptantha glomeriflora*	–/–/4.3	Alpine, Fresno, Inyo, Mono, Nevada, Sierra, Tulare, and Tuolumne Counties	Sandy soils derived from granite or volcanic substrates in Great Basin scrub, meadows and seeps, subalpine coniferous forest, upper montane coniferous forest;	Low potential. Habitat present in lodgepole pine forest around the reservoir. Nearest recorded occurrences are ~7.2 miles southeast and 8.7 miles north of study area (Consortium of

Common and Scientific Name	Legal Status* (Federal/State /CRPR)	Geographic Distribution	Habitat Requirements	Potential for Occurrence in Project Area
			5,900–12,300 feet; blooms Jun–Sep	California Herbaria 2022). Not observed during September 2022 survey.
Tahoe draba *Draba asterophora* var. *asterophora*	–/–/1B.2	Alpine, El Dorado, Mono, and Tuolumne Counties; also Nevada	Alpine boulder and rock field, subalpine coniferous forest; 8,200–11,500 feet; blooms Jul–Aug(Sep)	Moderate potential. Habitat present in lodgepole pine forest. Nearest recorded occurrence is ~5.2 miles northwest of study area. Not observed during September 2022 survey.
Tall draba *Draba praelta*	–/–/2B.3	Alpine, Fresno, Inyo, Mono, and Tuolumne Counties; Nevada and elsewhere	Meadows and seeps; 8,200–11,200 feet; blooms Jul–Aug	Moderate potential. Habitat present in seasonal wetland. Nearest recorded occurrence is ~2.4 miles northwest of study area.
Scribner's wheat grass *Elymus scribneri*	–/–/2B.3	Mono and Tuolumne Counties; Nevada, Arizona, and elsewhere	Alpine boulder and rock field; 9,510–13,780 feet; blooms Jul–Aug	No potential. No suitable habitat present. Nearest recorded occurrence is ~4 miles northwest of study area.
Subalpine fireweed *Epilobium howellii*	–/–/4.3	Northern and central high Sierra Nevada	Wet meadows, seeps, in subalpine coniferous forest; 6,460–8,860 feet; blooms Jul–Aug	Low potential. Suitable habitat in seasonal wetland and emergent marsh wetland. Nearest recorded occurrence is ~6.6 miles southeast of study area.
Alpine slender buckwheat *Eriogonum microthecum* var. *alpinum*	–/–/4.3	Central Sierra Nevada and the Sweetwater Range of California in Alpine, Mono, San Bernardino, and Tuolumne Counties	Alpine dwarf scrub, Great Basin scrub, sometimes gravelly or rocky; 8,200–10,830 feet; blooms Jul–Sep	No potential. No suitable habitat. Nearest recorded occurrence is ~1.6 miles north of study area on Blue Lakes Road (Consortium of California Herbaria 2022). Not observed during September 2022 survey.

Common and Scientific Name	Legal Status* (Federal/State /CRPR)	Geographic Distribution	Habitat Requirements	Potential for Occurrence in Project Area
Amethyst stickseed *Hackelia amethystina*	–/–/4.3	Glenn, Lake, Lassen, Mendocino, Plumas, Tehama, and Trinity Counties	Lower montane coniferous forest, meadows, upper montane coniferous forest in disturbed areas and openings; 4,920–7,600 feet; blooms Jun–Jul(Aug)	Low potential. Habitat present in lodgepole pine forest. Nearest recorded occurrence is ~7.7 miles east of study area (Consortium of California Herbaria 2022).
Hutchison's lewisia *Lewisia kelloggii* ssp. *hutchisonii*	–/–/3.2	Northern Sierra Nevada	Openings in upper montane coniferous forest;5,900–7,000 feet; blooms Jul–Aug	High potential. Habitat present in lodgepole pine forest. Nearest recorded occurrences are ~1.4 and 1.5 miles northeast of study area on Blue Lakes Road (Consortium of California Herbaria 2022).
Kellogg's lewisia *Lewisia kelloggii* ssp. *kelloggii*	–/–/3.2	Central and southern Sierra Nevada	Ridges and openings in upper montane coniferous forest; 4,800–7,760 feet; blooms May–Jul	High potential. Habitat present in lodgepole pine forest. Nearest recorded occurrences are ~1.4 and 1.6 miles northeast of study area on Blue Lakes Road (Consortium of California Herbaria 2022).
Three-ranked hump moss *Meesia triquetra*	–/–/4.2	Widespread, with occurrences from Humboldt and Lassen Counties south to Riverside Counties; Nevada, Oregon, and elsewhere	On soil in bogs and fens, meadows and seeps, moist sites in subalpine and upper montane coniferous forest; 3,970–9,690 feet; spores Jul	Low potential. Suitable habitat in seasonal wetland and emergent marsh wetland. No recorded occurrences within 10 miles of study area (Consortium of California Herbaria 2022).
Subalpine cryptantha *Oreocarya crymophila*	–/–/1B.3	Alpine, Mono, and Tuolumne Counties	Subalpine coniferous forest; 8,530–10,500 feet; blooms Jul–Aug	Moderate potential. Habitat present in lodgepole pine forest. Nearest recorded occurrence is ~3.6 miles east of study area.

Common and Scientific Name	Legal Status* (Federal/State /CRPR)	Geographic Distribution	Habitat Requirements	Potential for Occurrence in Project Area
White-stemmed pondweed *Potamogeton praelongus*	–/–/2B.3	El Dorado, Lassen, Madera, Mono, Nevada, Plumas, Shasta, and Sierra Counties; Oregon, Washington, and elsewhere	Marshes and swamps, lakes and deep water; 5,900–9,840 feet; blooms Jul–Aug	Low potential. Suitable habitat in emergent marsh wetland. No recorded occurrences within 10 miles of study area.
Robbins' pondweed *Potamogeton robbinsii*	–/–/2B.3	Alpine, Fresno, Inyo, Lassen, Madera, Mono, Nevada, Sierra, Siskiyou, and Tuolumne Counties	Lakes and other deep water emergent wetlands; 5,020–10,830 feet; blooms Jul–Aug	Moderate potential. Suitable habitat in reservoir and emergent marsh wetland. Nearest recorded occurrence is ~2.2 miles east of study area.
Small bur reed *Sparganium natans*	–/–/4.3	El Dorado, Lassen, Madera, Mariposa, Nevada, Placer, Plumas, Riverside, Sierra, Shasta, and Tuolumne Counties; Idaho, Oregon, Washington, and elsewhere	Bogs and fens, lake margins of marshes and swamps;5,400–8,200 feet; blooms Jun–Sep	High potential. Suitable habitat in emergent marsh wetland. Nearest recorded occurrence is ~0.4 mile north of study area. Not observed during September 2022 survey.
Golden violet *Viola purpurea* ssp. *aurea*	–/–/2B.2	East side of the Sierra Nevada and Mojave Desert, from Lassen County to San Diego County	Great Basin scrub and pinyon-juniper woodland, on dry, sandy slopes; 3,280–8,200 feet; blooms Apr–Jun	No potential. No suitable habitat. Nearest recorded occurrence is ~1.4 miles northeast of study area.

Sources: California Department of Fish and Wildlife 2022a; California Native Plant Society 2022; Pacific Gas and Electric Company 2015a; Consortium of California Herbaria 2022 (used for all CRPR List 3 and List 4 species without records in the CNDDB).

*Status explanations:

Federal

– = No status

State

– = No status

California Rare Plant Rank

1B = Rare, threatened, or endangered in California and elsewhere.

2B = Rare, threatened, or endangered in California, but more common elsewhere.

3 = Plants about which we need more information.

4 = Plants of limited distribution.

0.1 = Seriously endangered in California

0.2 = Fairly endangered in California

0.3 = Not very endangered in California

Special-Status Animals

Based on the USFWS (2022) species list and CNDDB (California Department of Fish and Wildlife 2022a) records search, 25 special-status animal species were identified as having potential to occur in the study area. Of the 25 special-status animal species identified, six have a moderate or high potential to occur in the study area given their known range, presence of suitable habitat, or reported occurrence in the project vicinity. The remaining 19 special-status animals have low to no potential to occur in the study area and are not discussed further. One additional special-status animal species, bald eagle (*Haliaeetus leucocephalus*), was not on the CNDDB list but has been observed repeatedly in the vicinity of the study area at Upper Blue Lake and Twin Lake during amphibian surveys. All special-status animals that were considered are listed in Table 3.5-2, which identifies their regulatory status, distribution, habitat requirements, and a rationale for their potential to occur in the study area. The seven special-status animal species that have a high or moderate potential to occur in the study area are discussed below.

Table 3.5-2. Special-Status Animal Species with Potential to Occur in the Vicinity of the Lower Blue Lake Dam Seepage Mitigation Project Area

Common and Scientific Name	Legal Status (Federal/State / Other)[a]	Geographic Distribution and Habitat Requirements	Potential for Occurrence in the Project Area[b]
Monarch butterfly *Danaus plexippus*	C/–/–	Adults migrate August–October, and winter along the California coast and in central Mexico. Open habitats including fields, meadows, weedy areas, marshes, and roadsides. Monarch butterflies roost in wind-protected tree groves (such as eucalyptus) with nectar and water sources nearby. Caterpillar host plants are milkweeds.	Low potential. Could pass through the project area or briefly forage in the project area in late summer.
Mono checkerspot butterfly *Euphydryas editha monoensis*	–/–/–	Eastern side of the Sierra Nevada; distribution centered in Mono County. Associated with riparian habitats.	No potential. Project area is outside of species known range.
Morrison bumble bee *Bombus morrisoni*	–/–/–	Sierra-Cascade Ranges east to the intermountain west; also found sporadically west of the Sierra-Cascade crest. Associated with a wide variety of wildflowers including those in the genus *Aster*, *Chrysothamnus*, *Cirsium*, *Cleome*, *Delphinium*, *Helieanthus*, *Salvia*, and *Senecio*.	No potential. Uncommon in this region of the state; one historic (1935) CNDDB record from Hope Valley.
Western bumble bee *Bombus occidentalis*	–/CE/–	Historically occurred throughout much of Northern California but appears to be absent from much of this area. Nests underground. Visits a wide variety of wildflowers including those in the genus *Melilotus*, *Cirsium*, *Trifolium*, *Centaurea*, *Chrysothamnus*, and *Eriogonum*.	Low potential. One historic (1948) CNDDB record for Hope Valley; small patches of lower quality foraging habitat are present.
Lahontan cutthroat trout Oncorhynchus clarkii henshawi	T/–/–	Endemic to lakes and streams of the Lahontan basin in northern Nevada, eastern California, and southern Oregon, but now only found in scattered populations in the Carson, Humboldt, Quinn, Truckee, and Walker Rivers. The species has been introduced into habitats outside its native range, including the upper Mokelumne River drainage. Spawns in streams from April through July, depending on streamflow, elevation, and water temperature. Deposits eggs in redds (nests) in stream gravels.	Moderate potential. May occur in Lower Blue Lake and Middle Creek downstream of Lower Blue Lake.

Common and Scientific Name	Legal Status (Federal/State / Other)[a]	Geographic Distribution and Habitat Requirements	Potential for Occurrence in the Project Area[b]
Lahontan mountain sucker *Catostomus lahontan*	–/SSC/–	In California, Lahontan mountain sucker occurs in the Walker, Carson, Truckee, and Susan River drainages of the Lahontan basin (Moyle et al. 2015). Inhabits clear, moderate gradient streams containing rubble, sand, or boulder substrates, and has an affinity for pool habitats containing aquatic vegetation, logs, or undercut banks (Moyle 2002). In its native range, the species is often found with Tahoe sucker and speckled dace (Moyle 2002).	No potential. Project area is outside of species current and historical range.
Mountain whitefish Prosopium williamsoni	–/SSC/–	In California, mountain whitefish occurs in the lower Truckee, Carson, and Walker River drainages (Moyle et al. 2015). The species inhabits clear, cold streams and rivers at elevations between 4,600 and 7,500 feet and generally is associated with large pool and deep run habitats (Moyle et al. 2015).	No potential. Project area is outside of species current and historical range.
Southern long-toed salamander Ambystoma macrodactylum sigillatum	–/SSC/–	High-elevation meadows, ponds, and lakes in the Sierra Nevada, Cascade, and Klamath mountains. Breeds in high mountain ponds and lakes. Adults utilize small mammal burrows and moist areas under logs and rocks.	Low potential. Presence of trout in Lower Blue Lake likely precludes presence; CNDDB record for an occurrence at a pond approximately 500 feet east of the project area.
Yosemite toad Anaxyrus canorusi	T/SSC/–	Sierra Nevada from Blue Lakes region north of Ebbetts Pass in Alpine County to 5 km south of Kaiser Pass in the Evolution Lake/Darwin Canyon area in Fresno County; 4,800–12,000 feet, mostly above 9,000 feet. Inhabits montane wet meadows and seasonal ponds associated with lodgepole pine and subalpine conifer forests. Breeds in shallow pools or lake margins, shelters in burrows or clumps of grass, sedges or willows.	High potential. Known to occur in and near Lower Blue Lake.
Sierra Nevada yellow-legged frog *Rana sierrae*	T/SSC/–	Found in the Sierra Nevada above 4,500 feet from Plumas County to southern Tulare County. Isolated populations in Butte County and near Mono Lake, Mono County. Associated with streams, lakes, and ponds in montane riparian, lodgepole pine, sub-alpine conifer, and wet meadow habitats; also includes sunny river margins, meadow streams, isolated pools, and lake borders in the Sierra Nevada.	Moderate potential. Unlikely to breed in Lower Blue Lake due to the presence of trout; could occasionally disperse along the lake or through the project area.

Common and Scientific Name	Legal Status (Federal/State / Other)[a]	Geographic Distribution and Habitat Requirements	Potential for Occurrence in the Project Area[b]
Bald eagle Haliaeetus leucocephalus	–/E/P	Nests in Siskiyou, Modoc, Trinity, Shasta, Lassen, Plumas, Butte, Tehama, Lake, and Mendocino Counties and in the Lake Tahoe Basin. Reintroduced into central coast. Winter range includes the rest of California, except the southeastern deserts, very high altitudes in the Sierra Nevada, east of the Sierra Nevada south of Mono County, and some rangelands and coastal wetlands. In western North America, nests and roosts in coniferous forests, woodlands, grasslands, and wetland habitats within 1 mile of a lake, reservoir, stream, or the ocean; nests are normally built in upper canopy of large trees, such as conifers.	High potential. Has been observed at Upper Blue Lake and Twin Lake during amphibian surveys; no records for nests within 5 miles of the project area.
Great gray owl *Strix nebulosa*	–/E/–	Permanent resident of the Sierra Nevada from Plumas County south to the Yosemite area. Occasionally occurs in northwestern California in the winter and the Warner mountains in the summer. Found in or near late successional coniferous forests bordering meadows; this provides cover and a cooler sub-canopy microclimate.	No potential. No meadows in the project area.
Black-backed woodpecker *Picoides articus*	–/–/–	Sierra Nevada and Cascade Mountains to the Siskiyou Mountains. Coniferous forests, especially recently burned forests with wood-boring beetles.	No potential. No recently burned conifer forest in the project area.
Willow flycatcher *Empidonax traillii*	–/E/–	Summers along the western Sierra Nevada from El Dorado to Madera County, in the Cascade and northern Sierra Nevada in Trinity, Shasta, Tehama, Butte, and Plumas Counties, and along the eastern Sierra Nevada from Lassen to Inyo County. Riparian areas and large wet meadows with abundant willows. Usually found in riparian habitats during migration.	No potential. No riparian or large wet meadows with abundant willows in the project area.
Fringed myotis Myotis thysanodes	–/–/WBWG-high	Found the length of the state, from the coast (including Santa Cruz Island) to >5,900 feet in the Sierra Nevada. Records exist for the high desert and east of the Sierra Nevada; however, the majority of known localities are on the west side of the Sierra Nevada. Found in a wide variety of habitats from low desert scrub to high-elevation coniferous forests. Roosts in crevices in buildings, underground mines, rocks, cliff faces, and bridges.	Moderate potential. Could roost in trees near the project area and forage or drink water in the project area.

Common and Scientific Name	Legal Status (Federal/State / Other)[a]	Geographic Distribution and Habitat Requirements	Potential for Occurrence in the Project Area[b]
		Roosts in a variety of trees, particularly large, decadent trees and snags. Has been found in mixed deciduous/coniferous forest and in both redwood and giant sequoia habitat.	
Long-legged myotis *Myotis volans*	–/–/WBWG-high	Mountains throughout California, including ranges in the Mojave desert; found from the coast to high elevation in the Sierra Nevada and White Mountains, central San Diego County, the Coast Range, and the transverse ranges between the Los Angeles basin and the Central Valley. Most common in woodlands and forests above 4,000 feet, but occurs from sea level to 11,000 feet. Uses abandoned buildings, cracks in the ground, cliff crevices, exfoliating tree bark, and hollows within snags as summer day roosts. Uses caves and mine tunnels for hibernation.	Moderate potential. Could roost in trees near the project area and forage or drink water in the project area.
Silver haired bat Lasionycteris noctivagans	–/–/WBWG-moderate	Found from the Oregon border south along the coast to San Francisco Bay and along the Sierra Nevada and Great Basin region to Inyo County. Also occurs in Southern California from Ventura and San Bernardino Counties south to Mexico. May be found anywhere in California during spring and fall migrations. Primarily a forest bat that is associated with conifer and mixed conifer and hardwood forests. Nearly all maternity roosts are in natural hollows and bird excavated cavities of trees or under loose bark of large diameter snags. Roosting sites are generally at least 50 feet above the ground. Uses multiple roosts and change roosts frequently throughout the summer, indicating that clusters of large trees are necessary. Has been found hibernating in hollow trees, under sloughing bark, in rock crevices, and occasionally under wood piles, in leaf litter, under foundations, and in buildings, mines and caves.	Moderate potential. Could roost in trees near the project area and forage or drink water in the project area.
Gray-headed pika Ochotona princeps schisticeps	–/–/–	Boreal zones of the northern Sierra Nevada, from Mount Shasta south to Donner Pass at elevations from 5,000 to 9,000 feet. Occurs at high elevations, often above the tree line. Found in rocky areas at lower elevations. Associated with talus slopes and occasionally mine tailings; prefers talus-meadow interfaces.	No potential. No talus slopes or talus-meadow interfaces in or near the project area.

Common and Scientific Name	Legal Status (Federal/State / Other)[a]	Geographic Distribution and Habitat Requirements	Potential for Occurrence in the Project Area[b]
Western white-tailed jackrabbit *Lepus townsendii townsendii*	–/SSC/–	Crest and eastern slope of the Sierra Nevada from the Oregon border to Tulare and Inyo Counties. Occurs in sagebrush, juniper, high-elevation open meadow, and early successional stages of conifer habitat.	No potential. Project area is outside of species known range.
Sierra Nevada mountain beaver *Aplodontia rufa californica*	–/SSC/–	Occurs from Mount Shasta east and south through the Sierra Nevada range and Mono Lake Basin, Mono County. Populations scattered and local. Slopes of ridges or gullies where there is abundant moisture, thick undergrowth, and soft soil for burrowing; forested areas from sea level to the timberline.	Low potential. May occur in the vicinity of the project area but unlikely to be present
Sierra Nevada red fox *Vulpes vulpes necator*	–/T/–	Occurs in the Cascade Range, in Siskiyou County, and in the Sierra Nevada from Lassen County south to Tulare County. Coniferous forests, generally from 5,000 to 8,400 feet. Often associated with mountain meadows.	Low potential. May occasionally occur in the project area but would not den in the project area.
Fisher Pekania pennanti	–/SSC/–	Coastal mountains from Del Norte County to Sonoma Counties, east through the Cascades to Lassen County, and south in the Sierra Nevada to Kern County. Late successional coniferous forests and montane riparian habitats.	Low potential. May occasionally occur in the project area but would not den in the project area; one CNDDB record for an occurrence from 1969 between Lower Blue Lake and Twin Lake.
North American porcupine *Erethizon dorsatum*	–/–/–	Occurs in forests in the Sierra Nevada, Cascade, Coast, and Transverse Ranges. Found in coniferous forest and mixed woodlands. Den in hollow trees or rocky areas.	Low potential. May occasionally occur in the project area but would not den in the project area.
American badger *Taxidea taxus*	–/SSC/–	Throughout California, except for the humid coastal forests of northwestern California in Del Norte and the northwestern Humboldt Counties. Occurs in a wide variety of open, arid habitats but are most commonly associated with grasslands, savannas, and mountain meadows near timberline; they require sufficient food (burrowing rodents), friable soils, and relatively open, uncultivated ground.	No potential. No meadows in the project area.
California wolverine *Gulo gulo luteus*	–/T, FP/–	Klamath and Cascade Ranges south through the Sierra Nevada to Tulare County; Mount Whitney, Tulare County.	Low potential. May occasionally occur during the winter or early spring when human presence is low or absent but is

Common and Scientific Name	Legal Status (Federal/State / Other)[a]	Geographic Distribution and Habitat Requirements	Potential for Occurrence in the Project Area[b]
		Sighted in a variety of habitats from 1,600 to 14,200 feet. Most common in open terrain above timberline and subalpine forests.	not expected to be present when construction occurs (late summer/early fall) because of moderate to high human presence for camping and recreation during this time.
Sierra marten Martes caurina sierrae	–/–/–	Occurs from eastern Siskiyou and northwestern Shasta Counties through the western slope of the Sierra Nevada to northern Kern County and the eastern slope of the Sierra Nevada to Inyo County. Mature coniferous or deciduous-coniferous forests. Uses cavities in large trees, snags, stumps, logs, or burrows, caves, and crevices in rocky areas for dens.	Low potential. May occasionally occur in the project area but would not den in the project area.

[a] Status explanations:
Federal
– = no listing.
T = listed as threatened under the federal Endangered Species Act.
PT = proposed for listing as threatened under the federal Endangered Species Act.
State
– = no listing.
E = listed as endangered under the California Endangered Species Act.
FP = fully protected under the California Fish and Game Code.
SSC = species of special concern in California.
T = listed as threatened under the California Endangered Species Act.
Other
P = protected under the Bald and Golden Eagle Protection Act.
Western Bat Working Group (WBWG) Priority
High = Species are imperiled or at high risk of imperilment.
Moderate = This designation indicates a level of concern that should warrant closer evaluation, more research, and conservation actions of both the species and possible threats.
A lack of meaningful information is a major obstacle in adequately assessing these species' status and should be considered a threat.
[b] Potential for occurrence in the project area is based on whether the project area is within the species range, presence and quality of suitable habitat, CNDDB records of occurrences or other observations in and near the project area, and professional judgment.

Lahontan Cutthroat Trout

Lahontan cutthroat trout is federally listed as threatened. Lahontan cutthroat trout is endemic to lakes and streams of the Lahontan basin in northern Nevada, eastern California, and southern Oregon (U.S. Fish and Wildlife Service 2018a). Scattered, isolated populations within the historical range are currently found in the Carson, Humboldt, Quinn, Truckee, and Walker Rivers and in the Pilot Peak Mountain range near the Nevada-Utah border (Moyle 2002; U.S. Fish and Wildlife Service 2018b). The species has been introduced into habitats outside its native range, including drainages in the upper Mokelumne (e.g., Upper Blue Lake reservoir), Owens, San Joaquin, Stanislaus, and Yuba watersheds, for species conservation and recreational fishing purposes (Moyle 2002; U.S. Fish and Wildlife Service 1995). The species is protected wherever it is found (U.S. Fish and Wildlife Service 2018a).

Lahontan cutthroat trout are stream spawners. Spawning takes place from April through July, depending on streamflow, elevation, and water temperature. Spawning migrations of stream fish are limited, but lake-dwelling fish have been known to migrate many miles upstream to spawn. Stream fish mature in 2 to 3 years, whereas lake fish mature in 3 to 5 years. As with many other salmonid species, eggs are deposited in redds (nests) in stream gravels. Egg incubation requires water temperatures between 43 and 56°F and DO concentrations of at least 5 milligrams per liter, or high mortality can occur. Eggs generally hatch in 4 to 6 weeks, and fry emerge and begin feeding 2 to 3 weeks later. Some juveniles migrate downstream into lakes during their first year, whereas others remain in streams for 1 or more years provided that rearing conditions are suitable.

In a study of Lahontan cutthroat trout in Upper Blue Lake, Calhoun (1944b) found chironomid larvae and pupae to be the primary food source of Lahontan cutthroat trout in the reservoir. Calhoun (1944c) also found chironomid larvae and pupae to occupy all depths of the reservoir but were most abundant in the vicinity of the thermocline, which was found to form approximately 13 to 20 feet, and as deep as approximately 33 feet, below the reservoir surface. Comparatively, the littoral fauna was found to be very poor, presumably because of the consolidated mixture of gravelly sand that occurs in this zone of the reservoir (Calhoun 1944c). It is expected that the benthic macroinvertebrate community in Lower Blue Lake is similar to the one found in Upper Blue Lake given the similarities between the two reservoirs and the close proximity of Lower Blue Lake to Upper Blue Lake. Although Lahontan cutthroat trout tend to stay close to the bottom where they feed on benthic macroinvertebrates, they are known to feed in the open water on small fish (Moyle 2002).

Lahontan cutthroat trout are expected to occur in Lower Blue Lake given their presence in upstream waterways (i.e., Upper Blue Lake and Middle Creek upstream of Lower Blue Lake) (Calhoun 1944a; California Department of Fish and Wildlife 2017; Pacific Gas and Electric Company 2017a). Lahontan cutthroat trout may also occur in Middle Creek downstream of Lower Blue Lake as a result of fish leaving the reservoir with flow released through the LLO or over the spillway, although they have not been encountered during annual fish monitoring of Blue Creek downstream of the action area (Pacific Gas and Electric Company 2017a, 2017b, 2020, 2021, 2022a). Adult Lahontan cutthroat trout in Lower Blue Lake may ascend Middle Creek in spring and early summer to spawn in Middle Creek upstream of the reservoir. However, entry into Middle Creek from Lower Blue Lake may be affected by a fish passage impediment in the Middle Creek channel that is located within the inundation zone of the reservoir. This fish passage impediment consists of a boulder-bedrock step that is several feet high. The top of the step is located at approximately elevation 8,038 feet, based on field observations.

An ICF fish biologist conducted a habitat assessment of Lower Blue Lake and of Middle Creek downstream of Lower Blue Lake but did not observe any Lahontan cutthroat trout. Although Lahontan cutthroat trout were not observed during the habitat assessment, both water bodies were found to support suitable habitat for the species. However, the presence of other trout species in these water bodies likely diminishes the quality of the habitat for Lahontan cutthroat trout as their populations often decline in the presence of other trout species (Moyle 2002).

Yosemite Toad

Yosemite toad is federally threatened and a California species of special concern. Yosemite toad occurs in higher-elevation areas of the Sierra Nevada from the vicinity of Blue Lakes in Alpine County to the Evolution Lakes area in Fresno County (Thomson et al. 2016:72). Critical habitat for Yosemite toad was designated on August 26, 2016 (81 FR 59046). Yosemite toad hybridizes with western toad (now called California toad) in the Blue Lakes region and other areas in the northern part of Yosemite toad's range (Stebbins 1985:72, 2003:211). Although the toads at Lower Blue Lake reservoir are a hybrid population, they are referred to as Yosemite toads in this document.

Yosemite toad is associated with relatively open montane wet meadows with grasses, sedges (*Carex* spp.), rushes (*Juncus* spp.), or stands of willow (Thomson et al. 2016:72). Suitable breeding sites consist of shallow pools, lake margins, and quiet streams (Stebbins 2003:211). Lodgepole pine, whitebark pine (*Pinus albicaulis*), and subalpine conifer forests surrounding meadows are also used for cover (Jennings and Hayes 1994:53). Yosemite toads take refuge during the winter in rodent burrows (Thomson et al. 2016:72). Rodent burrows and spaces under logs and rocks are used as temporary refuge sites during the summer (Jennings and Hayes 1994:53; 78 FR 24498).

Yosemite toad is largely diurnal and usually active only in sunny areas (Stebbins 2003:211). Male toads emerge from winter hibernation sites as soon as snowmelt pools form (Thomson et al. 2016:71). The timing of emergence varies with elevation and local conditions, but generally occurs during May and June (Jennings and Hayes 1994:52; Thomson et al. 2016:71). Eggs are deposited in strings around short emergent vegetation in still water no more than 3 inches deep. Larvae hatch in 3 to 14 days and metamorphosis occurs within 40 to 60 days (Thomson et al. 2016:71). Yosemite toads are active into late September and early October, after which they enter hibernation sites. The majority of their life is spent in the upland habitats near breeding meadows (78 FR 24498).

ICF wildlife biologists conducted a habitat assessment for Yosemite toad in the study area in 2021 and visual surveys for Yosemite toad at Lower Blue Lake in 2021 and 2022 to gather information to support the impact analysis for the proposed project. The habitat assessment in 2021 and the first survey in 2022 also included the entire perimeter of Lower Blue Lake. Suitable breeding habitat for Yosemite toad is located along the northwestern and northern shorelines of Lower Blue Lake reservoir, and at a pool near the spillway (the "spillway pool"). A flat shelf along the northwestern and northern shores within the lake creates shallow water that provides suitable breeding habitat for Yosemite toad in drier years when the reservoir water level is lower. The spillway pool is an approximately 60-foot by 20-foot pool at the south end of the lake north of the spillway and provides suitable breeding habitat for Yosemite toad.

On June 17, 2021, ICF wildlife biologists observed Yosemite toad tadpoles in the spillway pool and along the northwestern and northern shore of Lower Blue Lake. On July 14, 2021, Yosemite toad tadpoles were observed along the northwestern and northern shore of Lower Blue Lake but the spillway pool was dry. In 2022, due to the high water level in the reservoir, there was no breeding habitat present at the north end of the lake. Yosemite toad tadpoles were observed in the spillway pool in 2022.

The seasonal wetland downstream of the dam provides upland cover habitat for Yosemite toad but does not provide suitable breeding habitat. Middle Creek and the spillway creek do not provide suitable aquatic habitat for Yosemite toad.

Except for paved and graveled areas, the rest of the study area provides suitable upland habitat for Yosemite toad. The seasonal wetland downstream of the dam, other areas with vegetative cover, and small mammal burrows provide cover and/or foraging habitat in the study area. Yosemite toads could also disperse throughout the study area.

Sierra Nevada Yellow-Legged Frog

Sierra Nevada yellow-legged frog (SNYLF) is one of two species of mountain yellow-legged frog in the Sierra Nevada, *Rana muscosa* and *R. sierrae*. SNYLF is federally listed as endangered and is state-listed as threatened. SNYLF occurs along the western Sierra Nevada north of the Monarch Divide in Fresno County and the eastern Sierra Nevada in Inyo and Mono Counties (78 FR 24475). Critical habitat for SNYLF was designated on August 26, 2016 (81 FR 59046). Although SNYLF is genetically distinct from the mountain yellow-legged frog, it shares similar habitat and ecology with the northern population (i.e., distinct population segment) of the mountain yellow-legged frog. Consequently, references to mountain yellow-legged frog below are applicable to SNYLF.

Mountain yellow-legged frog is highly aquatic species that is frequently found within a few feet of water. It inhabits riverbanks, meadow streams, isolated pools, and lake borders in the Sierra Nevada (Stebbins 2003:233). It is closely associated with montane riparian habitats in lodgepole pine, yellow pine (*Pinus ponderosa* complex), sugar pine, white fir, whitebark pine, and wet meadow vegetation types (Brown et al. 2014). Mountain yellow-legged frogs prefer open and sunny stream and lake margins with gently sloping banks that have rocks or vegetation to the water's edge (Stebbins 2003:233; Jennings and Hayes 1994:77).

At high elevations, breeding begins as soon as lakes and streams are free of snow and ice, usually from May through August (Stebbins 2003:233). Eggs are laid in clusters in shallow water, either unattached in quiet waters or attached to vegetation, rocks, gravel, or banks, or under banks of ponds, lakes, and streams (Jennings and Hayes 1994:74; Stebbins 2003:444). Depending on local conditions and site-specific variables, tadpoles often take 2 to 4 years to transform into frogs (79 FR 24259). At high elevations, mountain yellow-legged frogs and tadpoles overwinter under ice in lakes and streams for up to 9 months (79 FR 24260).

ICF wildlife biologists conducted a habitat assessment for SNYLF in the study area and along the entire perimeter of Lower Blue Lake in 2021. The shoreline of the reservoir provides suitable nonbreeding aquatic habitat, and the remainder of the action area (excluding paved and graveled areas) provides suitable upland habitat for SNYLF. Lower Blue Lake is not considered suitable breeding habitat due to the presence of predatory fish. Juvenile or adult SNYLFs could occur along the lake shoreline on occasion.

SNYLF could travel along the spillway creek, but the creek does not provide characteristic breeding habitat for the species. While SNYLF could occur at the IFR weir replacement location if dispersing through the area, Middle Creek does not provide breeding habitat for the species because of the fast flow and presence of predatory fish. The spillway creek and Middle Creek are considered suitable SNYLF aquatic nonbreeding habitat. SNYLF could also disperse through the study area, but this is expected to occur infrequently.

The closest occurrence of SNYLF is a meadow area approximately 0.8 mile southeast of the study area. SNYLF has also been recorded at a pond near the southeastern shore of Upper Blue Lake, approximately 0.4 mile from the north end of Lower Blue Lake (and 1.2 miles from the study area) (California Department of Fish and Wildlife 2022a). A population of SNYLF (known as Site 13 – Upper Blue Lake meadow and pond complex) is also located approximately 0.4 mile from the west shore of Lower Blue Lake (and approximately 1 mile from the project) (Pacific Gas and Electric Company 2015b).

Bald Eagle

Bald eagle is state listed as endangered and is fully protected by the California Fish and Game Code. Bald eagle is also protected under the federal Bald and Golden Eagle Protection Act. Bald eagle is a permanent resident and uncommon winter migrant in California (Zeiner et al. 1990a:122). The species breeds at coastal areas, rivers, lakes, and reservoirs with forested shorelines or cliffs in Northern California. Wintering bald eagles are associated with aquatic areas containing some open water for foraging. Bald eagles nest in trees in mature and old growth forests that have some habitat edge and are somewhat close (within 1.25 miles) to water with suitable foraging opportunities. Bald eagles tend to select nest trees that are more than 1,640 feet from human development and disturbance (Buehler 2000). The species' breeding season is between February 1 and August 1. Bald eagles use snags or other hunting perches adjacent to large bodies of water or rivers to hunt for fish (Zeiner et al. 1990a:122).

Bald eagles have been observed flying and perched near Upper Blue Lake and flying over Twin Lake during amphibian surveys conducted between 2019 and 2022. Lower Blue Lake provides suitable foraging habitat and bald eagles could perch in the trees around Lower Blue Lake. Bald eagles could occur year-round in the vicinity of the study area but are most likely to be present when Lower Blue Lake reservoir is unfrozen and they can forage for fish in the lake. There are no records for bald eagle nests within 5 miles of the study area (California Department of Fish and Wildlife 2022a).

Fringed Myotis, Long-Legged Myotis, and Silver-Haired Bat

Fringed myotis is considered a high priority species in California by the Western Bat Working Group (2018a). Fringed myotis occurs throughout much of California from coastal areas to 9,350 feet in the Sierra Nevada, although it is most common at middle elevations (4,000–7,000 feet) (Brown and Pierson 1996; Western Bat Working Group 2005). Fringed myotis can be found in a wide range of habitats including desert scrub, mixed deciduous/conifer forest, and redwood and giant sequoia groves (Brown and Pierson 1996). Fringed myotis day and night roosts in mines, caves, crevices in buildings, bridges, tree hollows, and rock crevices (Brown and Pierson 1996; Western Bat Working Group 2005). Maternal colonies range from 10 to 2,000 individuals but large colonies are extremely rare (Western Bat Working Group 2005). There is one record for an occurrence of fringed myotis approximately 12 miles northwest of the study area (California Department of Fish and Wildlife 2022a).

Long-legged myotis is considered a high priority species in California by the Western Bat Working Group (2018a). Long-legged myotis occurs throughout California primarily in coniferous forests but is also found seasonally in riparian and desert habitats (Western Bat Working Group 2018b). Day roosts include hollow trees, abandoned buildings, mines, rock crevices, and beneath exfoliating bark. Caves and mines are used for hibernation and may be used for night roosting (Brown and Pierson 1996; Western Bat Working Group 2018b). Maternity colonies consist of 200 to 500 individuals (Brown and Pierson 1996). There is one record for an occurrence of long-legged myotis that is approximately 10 miles northwest of the study area (California Department of Fish and Wildlife 2022a).

Silver-haired bat is considered a moderate priority species in California by the Western Bat Working Group (2018a). Silver-haired bats occur primarily in the northern portion of California and at higher elevations in the southern and coastal mountain ranges (Brown and Pierson 1996) but may occur anywhere in California during their spring and fall migrations. They are associated with coastal and montane coniferous forests, valley foothill woodlands, pinyon-juniper woodlands, and valley foothill and montane riparian habitats (Zeiner et al. 1990b:54). Silver-haired bats roost in trees almost exclusively in the summer, and maternity roosts typically are located in woodpecker hollows. Maternal colonies range from several to about 75 individuals (Brown and Pierson 1996). There is one record for an occurrence of silver-haired bat that is approximately 10 miles northeast of the study area (California Department of Fish and Wildlife 2022a).

3.5.3.5 Migratory Birds

Non-special-status migratory birds could nest in shrubs or trees in and adjacent to the study area. Land cover types in the study area that could support nesting birds are lodgepole pine forest, ruderal grassland, riparian, seasonal wetland, willow scrub wetland, and emergent marsh wetland. The breeding season for most birds is generally from February 15 to August 31. The occupied nests and eggs of migratory birds are protected by federal and state laws, including the Migratory Bird Treaty Act and California Fish and Game Code Sections 3503 and 3503.5. USFWS is responsible for overseeing compliance with the Migratory Bird Treaty Act, and CDFW is responsible for overseeing compliance with the California Fish and Game Code and making recommendations on nesting bird protection.

3.5.3.6 Invasive Plant Species

Invasive plant species are species designated as federal noxious weeds by the U.S. Department of Agriculture, species listed by the California Department of Food and Agriculture, and invasive plants identified by the California Invasive Plant Council. Invasive plants displace native species, change ecosystem processes, alter plant community structure, and reduce wildlife habitat quality. The only invasive species observed during the October 2021 and September 2022 surveys was sheep sorrel (*Rumex acetosella*), which was found in several areas. This species has no California Department of Food and Agriculture rating and a California Invasive Plant Council rating of Moderate (species with substantial and apparent ecological impacts, moderate to high rates of dispersal, establishment dependent on disturbance, and limited to widespread distribution) (California Department of Agriculture 2021; California Invasive Plant Council 2022). No plant species designated as federal noxious weeds have been identified in the study area (U.S. Department of Agriculture 2010).

3.5.4 Regulatory Setting

3.5.4.1 Federal

The following federal regulations related to biological resources would apply to the proposed project.

National Environmental Policy Act

The National Environmental Policy Act (NEPA) was enacted to address concerns about environmental quality. NEPA acts to ensure that federal agencies evaluate the potential environmental effects of proposed programs, projects, and actions before decisions are made to implement them, inform the public of federal agency proposed activities that have the potential to significantly affect environmental quality, and encourage and facilitate public involvement in the decision-making process.

Federal Endangered Species Act

The federal ESA of 1973 and subsequent amendments provide for the conservation of listed endangered or threatened species or candidates for listing and the ecosystems on which they depend. USFWS has jurisdiction over federally listed plants, wildlife, and resident fish.

Section 7 of the ESA provides a means for authorizing take of threatened and endangered species by federal agencies. *Take* is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct" (16 USC 1532[19]). Section 7 applies to actions that are conducted, permitted, or funded by a federal agency. Under ESA Section 7, the lead federal agency conducting, funding, or permitting an action must consult with USFWS or the National Marine Fisheries Service (NMFS) to ensure that a proposed action would not jeopardize the continued existence of an endangered or threatened species or destroy or adversely modify designated critical habitat. If a proposed action may affect a listed species or designated critical habitat, the lead agency is required to prepare a BA evaluating the nature and severity of the expected effect. In response, USFWS or NMFS issues a biological opinion (BO), with one of the following determinations about the proposed action:

- May jeopardize the continued existence of one or more listed species (*jeopardy finding*) or result in the destruction or adverse modification of critical habitat (*adverse modification finding*).
- Will not jeopardize the continued existence of any listed species (*no jeopardy finding*) or result in adverse modification of critical habitat (*no adverse modification finding*).

The BO issued by USFWS or NMFS may stipulate mandatory *reasonable and prudent measures* and *terms and conditions*. If it is determined the proposed project would not jeopardize the continued existence of a listed species, USFWS or NMFS would issue an incidental take statement to authorize the proposed activity.

Clean Water Act

The CWA serves as the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The CWA empowers EPA to set national water quality standards and effluent limitations and includes programs addressing both point-source and nonpoint-source pollution. *Point-source pollution* is pollution that originates or enters surface waters at a single, discrete location, such as an outfall structure or an excavation or construction site. *Nonpoint-source pollution* originates over a broader area and includes urban contaminants in stormwater runoff and sediment loading from upstream areas. The CWA operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool. The following sections provide additional details on specific sections of the CWA.

Permits for Fill Placement in Waters and Wetlands (Section 404)

CWA Section 404 regulates the discharge of dredged and fill materials into waters of the United States, which are oceans, bays, rivers, streams, lakes, ponds, and wetlands, including any or all of the following.

- Areas within the OHWM of a stream, including nonperennial streams with a defined bed and bank and any stream channel that conveys natural runoff, even if it has been realigned.
- Seasonal and perennial wetlands, including coastal wetlands.

Applicants must obtain a permit from USACE for all discharges of dredged or fill material into waters of the United States, including adjacent wetlands, before proceeding with a proposed activity. USACE may issue either an individual permit evaluated on a case-by-case basis, or a general permit evaluated at a program level for a series of related activities. General permits are preauthorized and are issued to cover multiple instances of similar activities expected to cause only minimal adverse environmental effects. The nationwide permits are a type of general permit issued to cover particular fill activities. Each nationwide permit specifies conditions that must be met for the nationwide permit to apply to a particular project.

Compliance with CWA Section 404 requires compliance with several other environmental laws and regulations. USACE cannot issue an individual permit or verify the use of a general permit until the requirements of NEPA, ESA, and the NHPA have been met. In addition, USACE cannot issue or verify any permit until a water quality certification, or a waiver of certification has been issued pursuant to CWA Section 401.

Permits for Stormwater Discharge (Section 402)

CWA Section 402 regulates construction-related stormwater discharges to surface waters through the NPDES program, which is administered by EPA. In California, the State Water Board is authorized by EPA to oversee the NPDES program through the Regional Water Boards. The project area is located within the jurisdiction of the Central Valley Water Board.

NPDES permits are required for projects that disturb more than 1 acre of land. The NPDES permitting process requires the applicant to file a public notice of intent to discharge stormwater, and to prepare and implement a SWPPP. The SWPPP includes a site map and a description of proposed construction activities. In addition, it describes the BMPs that would prevent soil erosion and discharge of other construction-related pollutants (e.g., petroleum products, solvents, paints, cement) that could contaminate nearby water resources. Permittees are required to conduct annual monitoring and reporting to ensure that BMPs are correctly implemented and effective in controlling the discharge of stormwater-related pollutants.

Water Quality Certification (Section 401)

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401.

Executive Order 11990: Protection of Wetlands

Executive Order (EO) 11990, signed May 24, 1977, requires federal agencies to prepare wetland assessments for proposed actions located in or affecting wetlands. Agencies must avoid undertaking new construction in wetlands unless no practicable alternative is available, and the proposed action includes all practicable measures to minimize harm to wetlands.

Executive Order 13112: Prevention and Control of Invasive Species

EO 13112, signed February 3, 1999, directs all federal agencies to prevent and control the introduction of invasive species in a cost-effective and environmentally sound manner. This EO established the National Invasive Species Council, which is composed of federal agencies and departments, and a supporting Invasive Species Advisory Committee composed of state, local, and private entities. In 2008, the National Invasive Species Council released an updated national invasive species management plan that recommends objectives and measures to implement the EO and prevent the introduction and spread of invasive species (National Invasive Species Council 2008). The EO requires consideration of invasive species in NEPA analyses, including their identification and distribution, their potential effects, and measures to prevent or eradicate them.

3.5.4.2 State

The following state regulations related to biological resources apply to the proposed project.

California Environmental Quality Act

CEQA (Public Resource Code 21000 et. sec) is the regulatory framework by which California public agencies identify and mitigate significant environmental effects. A project normally has a significant environmental effect on biological resources if it substantially affects a rare or endangered species or the habitat of that species; substantially interferes with the movement of resident or migratory fish or wildlife; or substantially diminishes habitat for fish, wildlife, or plants. The State CEQA Guidelines define rare, threatened, and endangered species as those listed under ESA and CESA and any other species that meet the criteria of the resource agencies or local agencies (e.g., CDFW-designated species of special concern). The guidelines state that the lead agency preparing an environmental impact report must consult with and receive written findings from CDFW concerning project effects on species listed as endangered or threatened. The effects of a proposed project on these resources are important in determining whether the project has significant environmental effects under CEQA.

California Endangered Species Act

CESA (California Fish and Game Code 2050–2098) prohibits the take of listed endangered and threatened species. *Take* is defined as to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill. Section 2090 of CESA requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. CDFW administers the act and authorizes take through Section 2081 agreements (except for species designated as fully protected).

California Native Plant Protection Act

The California Native Plant Protection Act of 1977 (California Fish and Game Code 1900–1913) prohibits importation of rare and endangered plants into California, take of rare and endangered plants, and sale of rare and endangered plants. CESA defers to the plant protection act, which ensures that state-listed plant species are protected when state agencies are involved in projects subject to CEQA. In this case, plants listed as rare under the act are not protected under CESA but rather under CEQA.

Porter-Cologne Water Quality Control Act

The California Water Code addresses the full range of water issues in the state and includes Division 7, known as the Porter-Cologne Water Quality Control Act (California Water Code Sections 13000–16104). Section 13260 requires "any person discharging waste, or proposing to discharge waste, in any region that could affect the waters of the State to file a report of discharge (an application for waste discharge requirements)" with the appropriate Regional Water Board. Under this act, each of the nine Regional Water Boards must prepare and periodically update Water Quality Control Basin Plans (Basin Plans). Each Basin Plan sets forth water quality standards for surface water and groundwater, as well as actions to control nonpoint and point sources of pollution. Projects that affect waters of the State must meet the waste discharge requirements of the Regional Water Board. Pursuant to CWA Section 401, an applicant for a Section 404 permit to conduct any activity that may result in discharge into navigable waters must provide a certification from the Regional Water Board that such discharge will comply with state water quality standards. As part of the wetlands permitting process under Section 404, the project proponent would be required to apply for water quality certification from the Central Valley Water Board.

Section 13050 of the Porter-Cologne Water Quality Control Act authorizes the State Water Board and the relevant Regional Water Board to regulate biological pollutants. The California Water Code generally regulates more substances contained in discharges and defines discharges to receiving waters more broadly than does the CWA.

3.5.4.3 Local

Alpine County General Plan

Alpine County General Plan Conservation Element Section E addresses threatened, rare, or endangered plant species. Policy No. 9 addresses areas containing or suspected of containing rare, endangered, or threatened plants (Alpine County 2017).

> **Policy No. 9:** Areas containing or suspected of containing rare, endangered, or threatened plants should not be disturbed without providing the California Department of Fish and Game a reasonable period of time within which to investigate, remove, or otherwise protect them.

General Plan Policy No. 13 specifically addresses the protection of critical habitat of all federally or state-listed sensitive, threatened, rare, or endangered wildlife.

> **Policy No. 13:** The County should provide the California Department of Fish and Game notice of all development that may encroach upon critical habitat of sensitive, threatened, rare, or endangered species with reasonable time for the Department to respond with recommendations for project alternatives and mitigation measures.

General Plan Policies No. 14a and 14b require the protection of important deer habitats and migration routes to the greatest extent feasible.

> **Policy No. 14a:** The County should provide The California Department of Fish and Game with notice of all development projects located within known or suspected critical summer or winter range or deer migration corridors within reasonable time for the Department to respond with recommendations for project alternatives and mitigation measures.

> **Policy No. 14b:** The County should encourage cluster development to protect wildlife habitats and migration routes by placing them in permanent open space in conjunction with approved cluster development.

3.5.5 Environmental Effects

The impact analysis for biological resources was conducted by evaluating the potential changes to existing biological communities and the effects on special-status species that could result from project implementation. The following activities could cause direct and indirect impacts of varying degrees on sensitive biological resources present in and near the project area.

- Reservoir drawdown.
- New embankment fill associated with the crest raise.
- Site preparation for the downstream filter, seepage collection system, and buttress.
- Vegetation removal in the filter and rock fill buttresses construction area.
- Construction of downstream filter, seepage collection system, and buttress.
- Staging of equipment and material for construction.
- Movement of construction equipment into and within the dam construction area and to laydown areas.
- Placement of excavated material at the laydown areas.
- Installing the temporary cofferdam and flow bypass system installed upstream of the IFR weir work area in Middle Creek.
- Discharging water to Middle Creek from a bypass pipe if supplemental pumping is needed to draw the reservoir down.
- Removal of the damaged portion of the IFR weir and construction of the new portion.
- The use of helicopters during IFR replacement.

The following assumptions were used in assessing project impacts on biological resources.

- All construction, staging (including vehicle parking and material and equipment offloading), laydown, and access areas would be restricted to the project area depicted in Figure 2-1.
- Use of existing roads for project access, the existing parking lot, and the information kiosk area would not affect adjacent vegetation communities beyond pre-project levels.
- Construction BMPs described in Chapter 2 would be implemented to ensure that indirect effects on habitats outside of the project area are avoided or minimized.

Potential impacts of the proposed project on biological resources are discussed in the context of State CEQA Guidelines Appendix G checklist. Checklist Section IV, *Biological Resources*, asks whether the project would result in any of the following conditions.

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?

Impacts on land cover types and associated wildlife habitat were determined by overlaying the project footprint onto an aerial photograph of the land cover types in the project area.

Construction Effects on Special-Status Plants

Special-status plant surveys were conducted in the study area in 2015 for PG&E’s Mokelumne River Hydroelectric Project (Pacific Gas and Electric Company 2015a). No special-status plants were observed in the study area. Based on the current CDFW guidelines for special-status plant surveys and impact evaluation (California Department of Fish and Wildlife 2018), which are the standard for special-status plant survey protocol in California, surveys in forested areas can be considered current for intervals of 5 years and in grasslands with many annual species, for as little as 1 year. Because special-status plant surveys of the project area have not yet been conducted for all species with potential to occur within the last 7.5 years, surveys should be conducted to verify the presence or absence of special-status plants. Without confirmation of absence in the study area, the project should be considered as having potential to remove special-status plants that could be present in the project area. If special-status plants occur in the project area, loss of special-status plants could result from construction disturbance or placement of spoils in proposed laydown areas that are vegetated.

Placement of fill for the temporary and new embankment; removal of vegetation; and use of the upper and lower laydown areas would occur on the reservoir shore and in seasonal wetland, emergent wetland, ruderal grassland, and lodgepole pine forest where special-status plants could occur. Construction and staging activities could remove special-status plants, and placement of spoils or permanent fill could bury special-status plants, if any are present within the temporary or new embankment. Construction activities and fill placement could also result in alteration of occupied special-status plant habitat, if present, by removing existing vegetation or changing local topography and hydrology of the habitat. Although PG&E would implement BMP-1: *Implement Water Quality Protection Measures and Erosion and Sediment Control Plans*, the impact on special-status plants could be significant. Mitigation measures BIO-MM-1: *Retain a Qualified Botanist to Conduct a Floristic Survey for Special-Status Plants during Appropriate Identification Periods* through

BIO-MM-3: *Conduct Worker Environmental Awareness Training and Implement General Requirements* would reduce impacts on special-status plants to a less-than-significant level.

BIO-MM-1: Retain a Qualified Botanist to Conduct a Floristic Survey for Special-Status Plants during Appropriate Identification Periods

PG&E will retain a qualified botanist to survey the project area to document the presence of special-status plants before project construction. The botanist will conduct a floristic survey that follows the CDFW botanical survey guidelines (California Department of Fish and Wildlife 2018). All plant species observed will be identified to the level necessary to determine whether they qualify as special-status plants or are plant species with unusual or significant range extensions. The guidelines also require that field surveys be conducted when special-status plants that could occur in the area are evident and identifiable, generally during the reported blooming period, which would be in July for all species with moderate or high potential to occur in the project area.

If any special-status plants are identified during the survey, the botanist will photograph and map locations of the plants, document the location and extent of the special-status plant population on a CNDDB Survey Form, and submit the completed Survey Form to the CNDDB. If special-status plants are found in the project area during the survey and could be affected by project construction, BIO-MM-2 will be implemented.

BIO-MM-2: Implement Measures to Avoid or Minimize Long-Term Effects on Special-Status Plants Documented in the Project Area

If special-status plant species are found during the survey conducted under BIO-MM-1, PG&E will modify the project to avoid or minimize potential impacts on special-status plants to the extent practicable and in consideration of other design requirements and constraints (e.g., meeting project objectives and needs, avoidance of other sensitive resources). If special-status plants cannot be avoided, PG&E will salvage the topsoil and spread it in similar habitat outside of the project footprint.

BIO-MM-3: Conduct Worker Environmental Awareness Training and Implement General Requirements

PG&E will retain a qualified biologist to develop and conduct a mandatory worker environmental awareness training about special-status species and other sensitive resources that could be encountered during project work (e.g., sensitive natural communities, special-status plants, Lahontan cutthroat trout, Yosemite toad, SNYLF, special-status bats). In addition, construction employees will be educated about the importance of controlling and preventing the spread of invasive plant infestations.

The biologist will prepare a handout that contains information (including photographs) about how to identify pertinent species, their habitat requirements, and the avoidance and minimization measures to be implemented. All personnel will receive worker environmental awareness training before conducting project work and new personnel will receive the training as they are brought onto the project. Proof of personnel environmental training attendance will be kept on file by PG&E. Each worker will be provided with a copy of the handout and at least one copy will remain onsite throughout the duration of the project with the construction foreman.

General restrictions and guidelines that will be followed by project personnel are listed below. The project foreman will be responsible for ensuring that crew members adhere to these guidelines and restrictions.

- Before construction begins, the construction contractor will work with the project engineer and a biologist to identify sensitive locations to be protected with k-rail or orange construction fencing and will place stakes to indicate these locations. Fencing will be installed with a 1-foot gap between the ground and the bottom of the fence so that small animals do not become trapped in the fence. The k-rail and fencing will be installed before construction activities are initiated, maintained throughout the construction period, and removed when construction is completed. The protected areas will be designated as environmentally sensitive areas and clearly identified on the construction plans.
- Work crews will be restricted to designated and clearly defined work areas and access routes. Staging of equipment and material sites will be restricted to designated areas.
- Vehicles will not exceed a speed of 10 miles per hour when traveling off paved roads.
- Vehicle access across streams and wetlands will be limited to existing roads and crossings.
- Laydown and staging areas will be located in previously developed or disturbed areas.
- All trash will be disposed of and removed from the work area daily. Workers will not feed or otherwise attract fish or wildlife to the work area.
- No pets or firearms will be allowed in the project area.
- Workers will look underneath vehicles and other heavy equipment for wildlife before moving vehicles or equipment to ensure that no animals are crushed.
- No wildlife or plants will be handled or removed from the site by anyone except approved biologists. Wildlife in project areas will be permitted to leave on its own, except as otherwise described in other mitigation measures for the project.
- Any worker who inadvertently injures or kills a listed species or finds one dead, injured, or entrapped will immediately report the incident to the project foreman, who will immediately report the incident to the PG&E biologist. Questions about wetlands, protected species, or mitigation measures should also be directed to the PG&E biologist.

Effects of Reservoir Drawdown and Spoils Placement on Lahontan Cutthroat Trout Habitat in the Reservoir

As discussed in Chapter 2, *Project Description*, the reservoir would be drawn down beginning July 3, 2023, to the target elevation of 8,029.7 feet by August 25, 2023, to expose the staff gauge on the reservoir side of the dam face and to allow for excavation on the downstream side of the dam to commence. At the target elevation of 8,029.7 feet, the reservoir would have a maximum depth of approximately 83 feet and a surface area of approximately 103 acres. This would leave approximately 15 feet of water over the LLO and approximately 1,200 acre-feet of water in the reservoir portion of the lake (i.e., above the elevation of the LLO and approximately the rim of the natural portion of the lake) to meet downstream flow needs during construction and over the 2023–2024 winter. As part of construction, excavated spoils would be temporarily stored in the upper laydown area on the exposed reservoir shoreline and either hauled offsite to an approved disposal site or permanently placed in the lower laydown area. Temporary storage and spoils placement in the reservoir could adversely affect fish and aquatic habitat in the reservoir, while spoils placement in the lower laydown area could adversely affect fish and aquatic habitat in Middle Creek downstream of Lower Blue Lake.

Reservoir Drawdown: Under baseline conditions, the reservoir has been drawn down to the proposed August 2023 target elevation of elevation 8,029.7 feet and has on occasion been drawn down to this elevation as early as August (e.g., 2003, 2004) (Figure 3.5-2). Generally, lower reservoir storage can result in a multitude of biotic and abiotic responses in lakes and reservoirs, including effects on primary and secondary production, water quality (temperature and DO), cover for fish, and angling success (i.e., increased harvest). Dewatering of the littoral zone can reduce the abundance of benthic macroinvertebrates (an important food item for fish), reduce the abundance of benthic algae and macrophytes that provide attachment sites for aquatic invertebrates and cover for fish, and lead to erosion of the shoreline, which can further induce direct and indirect effects on lake biota (Carmignani and Roy 2017).

As discussed above, the natural basin of the reservoir is deep, and the reservoir has an abundance of cold, well-oxygenated water across nearly the entire water column. Therefore, the reservoir would continue to provide sufficient living space and suitable environmental conditions (temperature and DO) for Lahontan cutthroat trout after it has been drawn down to elevation 8,029.7 feet. In addition, drawing down the reservoir to elevation 8,029.7 feet would not be expected to dewater the primary habitat for benthic macroinvertebrates (the primary food item for Lahontan cutthroat trout) in the reservoir. During a study of Upper Blue Lake, a lake having similar physical and biological attributes as Lower Blue Lake, Calhoun (1944c) found that although benthic macroinvertebrates were distributed throughout all reservoir depths, they were most abundant in the vicinity of the thermocline, which would be expected to form approximately 13 to 20 feet, and as deep as approximately 33 feet, below the reservoir surface. These findings suggest that habitat for benthic macroinvertebrates is present throughout all elevation strata in the reservoir and that the vertical distribution of benthic macroinvertebrates in the reservoir is governed by thermocline depth, rather than substrate conditions. In Upper Blue Lake, Lahontan cutthroat trout were found to subsist largely on chironomid larvae and pupae (Calhoun 1944b), which have a high reproduction rate and mature rapidly (Baxter 1977). Because chironomid larvae and pupae are known to quickly colonize disturbed or newly flooded habitats, especially during the summer (Baxter 1977), it is anticipated that benthic macroinvertebrates in the reservoir would likely respond to lower reservoir levels by colonizing lower elevation habitats in proximity to the thermocline. Furthermore, Lahontan cutthroat trout are known to also feed on small fish in open water. At the target elevation of 8,029.7 feet, Lower Blue Lake would have a surface area of approximately 103 acres, or 71 percent of the average surface area in summer (i.e., June–September). Therefore, no substantial adverse effects on Lahontan cutthroat trout feeding success from reservoir lowering are anticipated. Furthermore, the lower reservoir levels that would occur over the winter of 2023–2024 following construction are not expected to adversely affect Lahontan cutthroat trout because the remaining volume and depth of water in the natural basin of Lower Blue Lake would provide sufficient habitat for fish, benthic macroinvertebrates, and small fish below the surface ice.

It is anticipated that the dam seepage mitigation project would take approximately 6 weeks to complete. Once completed, the interim operational elevation restriction would be lifted and reservoir operation would return to storing water and maintaining minimum instream flows in Middle Creek in compliance with FERC Project Number 137 license requirements. This return to previous reservoir operation would restore habitat conditions for Lahontan cutthroat trout in the reservoir to conditions prior to implementation of the interim operational elevation restriction. The dam seepage mitigation project is not anticipated to have any other indirect effects on Lahontan cutthroat trout. This impact would be less than significant.

Spoils Placement: As discussed in Chapter 2, a portion of the approximate 2,500 cubic yards of excavated materials and 9,000 to 13,000 cubic yards of import fill materials used to construct the project would be placed at the upper laydown area in the reservoir that is shown on Figure 2-1. This site is below the normal maximum elevation of the reservoir. Although this material would be placed during the dry season while the reservoir is drawn down for construction, the temporary placement of spoils material at the upper laydown area would be on existing substrates that form the littoral area of the reservoir when this area is inundated. However, the placement of this material would not directly affect food producing areas in the reservoir because all temporary fill placed at this laydown area would be removed prior to project completion and the area would be returned to its pre-project contours. Therefore, spoils placement is not anticipated to affect the prey base for Lahontan cutthroat trout in the reservoir. This impact would be less than significant.

Effects on Lahontan Cutthroat Trout Habitat in Middle Creek from Changes in Flow and Water Temperature

Change in Middle Creek Flow: To facilitate meeting the target elevation of 8,029.7 feet by August 25, 2023, PG&E would begin releasing additional water from the reservoir through the LLO on July 2, 2023. An optional drawdown pump system may also be used in conjunction with the LLO pipes to lower the reservoir in the unlikely event there is a problem with the LLO; however, the combined releases from the LLO and drawdown pumps would not exceed the maximum outflow capacity of the two LLO pipes at full open. These extra releases have the potential to affect Lahontan cutthroat trout and aquatic habitats in Middle Creek through changes in wetted area, depth, velocity, and geomorphic processes such as erosion, sediment transport, and sediment deposition. Of greatest concern would be flow modifications that cause bank erosion or channel scour to accelerate in Middle Creek downstream of Lower Blue Lake reservoir or that are incompatible with the timing of sensitive life stages of Lahontan cutthroat trout (e.g., spawning).

Prior to drawing down the reservoir, PG&E would develop a 2023 summer Upper Lakes drawdown plan. This plan would describe the process for drawing down Lower Blue Lake reservoir to the target elevation of 8,029.7 feet by the end of August 2023 and would ensure that the reservoir would have sufficient water to meet minimum instream flows in Middle Creek through the summer and fall of 2023. The plan would also ensure that flows would not result in added bank erosion or scour in Middle Creek downstream of Lower Blue Lake reservoir by establishing a flow rate and schedule for reservoir releases. Because the ultimate flow rate needed to drawdown the reservoir would depend on various factors that cannot be determined at this time (e.g., snowpack abundance, starting reservoir elevation, inflow rate to the reservoir) it is not possible at this time to determine what flow rate would be needed to drawdown the reservoir to the target elevation of 8,029.7 feet by the end of August. However, PG&E has indicated that it would limit releases through the LLO during reservoir drawdown to a maximum of 80 cfs and would pattern the reservoir drawdown after previous wet years (McGuckin pers. comm.). The maximum flow release of 80 cfs through the LLO would be similar to releases that have been made during the summer in previous years (Table 3.5-3). Therefore, no added bank erosion or scour in Middle Creek downstream of Lower Blue Lake reservoir would be expected. In addition, the abundance of bedrock in Middle Creek would be expected to further limit the potential for bank erosion and channel scour from these higher reservoir releases.

Reservoir releases associated with drawing down the reservoir in July and August would avoid the primary migration and spawning period (April–July) of Lahontan cutthroat trout. Flow increases during spawning can cause adults to construct redds (nests) in high-flow side channels or along stream margins that later become too shallow for incubating eggs and alevins (salmonid larvae) or become dry altogether when flows recede. This can lead to reduced spawning success from mortality of eggs and alevins. However, based on the habitat assessment no high-flow side channels were observed in Middle Creek and the abundance of bedrock on the banks preclude spawning along the stream margins. Furthermore, increased flows in July and August may benefit Lahontan cutthroat trout by increasing the availability of habitat for individuals through increases in-stream wetted area and depth at a time of year when low flows are declining, and water temperatures are at their peak. Table 3.5-3 presents monthly minimum, mean, and maximum flows for Middle Creek downstream of the reservoir for water years 1998–2021.

Therefore, no substantial effects on the Lahontan cutthroat trout population in Middle Creek would be expected from increases in reservoir releases. This impact would be less than significant.

Table 3.5-3. Monthly Minimum, Median, and Maximum Stream Flow in Middle Creek Before (WY 1988–WY 2018 [June]) and After (WY 2018 [July] to WY 2021) Implementation of the Interim Operational Elevation Restriction at Lower Blue Lake

	Baseline Conditions (cfs)			Interim Operational Elevation Restriction (cfs)		
Month	**Minimum**	**Median**	**Maximum**	**Minimum**	**Median**	**Maximum**
October	1.7	20.6	75	1.7	13.1	26
November	0.6	13.7	72	1.8	13.7	24
December	0.5	6.4	40	NA[a]	NA[a]	NA[a]
January	3.8	27.0	32	NA[a]	NA[a]	NA[a]
February	26.0	26.3	27	NA[a]	NA[a]	NA[a]
March	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]
April	2.1	8.5	25	NA[a]	NA[a]	NA[a]
May	2.6	15.4	70	5.9	9.6	24
June	5.0	21.7	74	5.1	16.7	67
July	3.0	23.8	98	2.2	10.2	70
August	2.7	24.5	62	2.2	15.9	70
September	2.5	22.7	56	2.4	12.2	46
TOTALS	**0.5**	**19.7**	**98**	**1.7**	**13.3**	**70**

Data Source: U.S. Geological Survey 2022
[a] Flow data not available.

Change in Water Temperature: Lowering of the reservoir may also affect water temperatures in Middle Creek because of changes in reservoir release temperatures. As discussed in in Section 3.5.3.1, *Physical Conditions*, the depth at which water is released from the reservoir is dependent on the reservoir's WSE. For example, at full reservoir capacity (elevation 8,053.4 feet), the LLO is approximately 38 feet below the water surface, while at the proposed target elevation of 8,029.7 feet, the LLO would be approximately 15 feet below the water surface. As was observed in Upper Blue Lake, water temperatures in Lower Blue Lake are also expected to decrease with increasing depth (Figure 3.5-3). At lower reservoir elevations, the LLO outlet is at a shallower depth (i.e., closer to the warmer surface waters of the reservoir); therefore, releases at a lower reservoir level potentially are warmer than they would be if the reservoir level was higher, although the degree to which temperatures would be warmer would depend on the magnitude of the difference between water levels. Specifically, greater difference between water levels is likely to result in greater temperature differences. However, as discussed in Section 3.5.3.1, surface water temperatures in the reservoir likely warm to 68°F, which is below what is considered to be the maximum optimal summer temperature of 72°F for Lahontan cutthroat trout. Therefore, Middle Creek water temperatures under reduced reservoir storage levels are not expected to adversely affect Lahontan cutthroat trout in Middle Creek even if warmer surface water is released through the LLO and supplemental pumping. This impact would be less than significant.

Effects of Flow Interruption on Lahontan Cutthroat Trout in Middle Creek

The proposed reservoir target elevation of 8,029.7 feet for construction would leave approximately 15 feet of water depth over the LLO. This water level is anticipated to provide a sufficient quantity of available storage in the reservoir to meet minimum instream flow requirements of up to 5 cfs through June 2024, while maintaining the reservoir level above the elevation of the LLO. Therefore, it is anticipated that releases to Middle Creek would continue uninterrupted through fall, winter, and spring following construction and that all releases would be made through the LLO (i.e., at no time would pumping of water from the reservoir over Lower Blue Lake dam be required to maintain minimum instream flows in Middle Creek). Evaluation and refinement of the reservoir target elevation during development of the 2023 summer Upper Lakes drawdown plan, which would be presented to the Mokelumne Ecological Resources Committee (ERC) for approval prior to implementation, would further ensure that sufficient storage would be maintained in the reservoir to meet minimum instream flow requirements in Middle Creek until natural inflows to the reservoir resume. This impact would be less than significant.

Construction Effects on Lahontan Cutthroat Trout

The proposed project involves the following activities that could result in disturbance, injury, or mortality of Lahontan cutthroat trout in Middle Creek and the reservoir: installing and removing a cofferdam and flow bypass system, dewatering, and conducting a fish rescue and relocation in Middle Creek at the IFR weir; installing and operating the optional drawdown pumps system in the reservoir; drafting water from the reservoir; and operating heavy equipment on the dry reservoir bottom adjacent to the reservoir shoreline and adjacent to Middle Creek. Lahontan cutthroat trout, including fry and young juveniles, may be present in Middle Creek and in the vicinity of the optional drawdown pumps and adjacent reservoir shoreline areas and could be affected by these activities.

Noise, vibration, and other physical disturbances resulting from these activities can harass fish, disrupt or delay normal activities, or cause injury or mortality. The potential magnitude of effects depends on a number of factors, including the type and intensity of the disturbance, proximity of the action to the water body, timing of actions relative to the occurrence of sensitive life stages, and frequency and duration of activities. For most activities, the effects on Lahontan cutthroat trout would be temporary and limited to avoidance behavior in response to movements, noises, and shadows caused by construction personnel and equipment where such operations are close to the shoreline. However, survival of fry in Middle Creek and in nearshore areas of the reservoir may be altered if disturbance causes fish to leave protective habitat (e.g., increased exposure to predators), but such fish would be expected to find other suitable nearshore areas in the reservoir and habitats in Middle Creek within close proximity to the disturbance. Injury or mortality may result from direct and indirect contact with humans and equipment, noise, and physiological stress.

Physical disturbance and injury would be most likely to occur during in-water work. The following are project actions that would involve in-water work.

- Installation of the cofferdam and flow bypass system.
- Dewatering.
- Fish rescue and relocation.
- Installation and operation of the optional drawdown pump system in the reservoir.

Installation of the cofferdam in Middle Creek could injure or kill Lahontan cutthroat trout. Potential mechanisms include fish being impinged or crushed during installation of the temporary cofferdam, and fish being stranded as the creek is being dewatered. Any fish that become trapped in the stream reach isolated by the cofferdam could also be exposed to increased levels of turbidity and suspended sediments that may result during installation of the cofferdam and could be injured or killed as a result of this exposure. In addition, any fish trapped between the cofferdam and the IFR weir would be expected to be killed if they were not removed because this area would be dewatered prior to construction. It is anticipated that repeated attempts to capture and relocate fish from deeper water habitats as the channel is being dewatered would be necessary. Fish may be injured or killed during activities to capture and relocate fish, and from handling. The amount of unintentional injury or mortality attributable to fish capture and handling varies widely depending on the method used, stream conditions, and the expertise and experience of the field crew.

To facilitate project construction, the reservoir would be drawn down in July and August 2023 to elevation 8,029.7 feet by releasing water through the twin LLO pipes. However, it may be necessary to install drawdown pumps in the reservoir to supplement outflow in order to achieve the target drawdown elevation by the end of August. Operation of the optional drawdown pump system would have the potential to entrain and kill lake-dwelling Lahontan cutthroat trout if intakes to the pumping system were not screened. Fry and small juveniles would be particularly vulnerable to entrainment because of their smaller size and weaker swimming ability.

Disturbance, injury, or mortality of Lahontan cutthroat trout would be a potentially significant impact. BIO-MM-3: *Conduct Worker Environmental Awareness Training and Implement General Requirements* and BIO-MM-4: *Implement Cofferdam and Construction Site Dewatering Restrictions* through BIO-MM-6: *Implement Flow Pumping System Requirements* would reduce the potential impact to a less-than-significant level.

BIO-MM-4: Implement Cofferdam and Construction Site Dewatering Restrictions

Any activity that temporarily dewaters or isolates (e.g., with a cofferdam) any segment of Middle Creek will trigger implementation of the following conditions:

- The extent of the cofferdam footprint will be limited to the minimum necessary to accommodate construction activities.
- The cofferdam, dewatering, and flow bypass system will be installed and operated for the minimum amount of time necessary to accommodate construction activities (expected to be about 2 weeks duration).

- Before the cofferdam is installed and dewatering commences, any fish present in the area proposed for cofferdam installation and dewatering will be captured and removed from the work area and released to habitats unaffected by project construction (see BIO-MM-5: *Rescue and Relocate Fish from Affected Habitat*).
- Any pumps used during dewatering behind the cofferdam will be screened according to CDFW and NMFS guidelines for pumps (see BIO-MM-6: *Implement Flow Pumping System Requirements*).
- Dewatering of the construction site will commence only after the cofferdam has been installed and biologists are at the work site to rescue and relocate stranded fish. Biologists will remain at the work site during dewater activities until all fish are removed from affected habitats and the site is dewatered.

BIO-MM-5: Rescue and Relocate Fish from Affected Habitat

PG&E will develop and implement a fish rescue and relocation plan to capture and relocate any fish out of harm's way prior to installation of the cofferdam and commencement of dewatering to facilitate construction to replace the IFR weir on Middle Creek. The fish rescue and relocation plan will be submitted to the resource agencies (CDFW, USFWS) for approval at least 60 days before initiating activities to install the cofferdam. At a minimum, the plan will include the following.

- A requirement that fish rescue and relocation activities will commence immediately before cofferdam installation and that fish rescue and relocation in the affected stream reach will occur immediately before (to the extent feasible) and as dewatering is occurring until no more fish are captured or the site is completely dewatered, whichever occurs first.
- A requirement that all gear and tools (e.g., waders, boots, nets, buckets) be decontaminated to minimize and avoid spreading aquatic invasive species and diseases (e.g., chytrid fungus), as briefly summarized below.
  - Soak equipment and gear for 10 minutes in a 7 percent bleach solution: 9 liquid ounces of bleach per gallon of water; or
  - Soak equipment and gear for 30 seconds in 0.015 percent Quat 128: 1/8 teaspoon per gallon of water.
- A description of the methods and equipment proposed to collect, transfer, and release all rescued fish. Capture methods may include seining, dip netting, and electrofishing, as approved by CDFW and USFWS. The precise methods and equipment to be used will be developed cooperatively by CDFW, USFWS, and PG&E.
- A requirement that only qualified fish biologists will conduct the fish rescue and relocation.
- A requirement that the PG&E biologist will notify (by email or telephone) CDFW and USFWS within 1 working day if any Lahontan cutthroat trout are found dead or injured. and follow up with written notification to CDFW and USFWS within 5 working days.

BIO-MM-6: Implement Flow Pumping System Requirements

Any activity that requires pumps to be used to assist in drawing down the reservoir or bypassing flow in Middle Creek during dewatering activities, will trigger implementation of the following conditions:

- When pumps are used to supply 100 percent of all flow in Middle Creek during construction, the following conditions will apply:
  - A pumping and flow bypass system that can pump and deliver all instantaneous instream flow to Middle Creek downstream of the IFR weir will be installed and operated in such a way that uninterrupted flow in Middle Creek is maintained during construction. The pumping system will include a backup system with automatic transfer capability to ensure that downstream flows are maintained uninterrupted in the event of any equipment malfunction.
  - The outlet of the stream bypass will be positioned such that the discharge of water does not induce bank erosion or channel scour in Middle Creek.
- All intakes to pumps placed in the reservoir for the optional drawdown pump system and for water drafting will be screened to protect lake-dwelling Lahontan cutthroat trout and other fish species from being entrained with water being pumped from the reservoir. Screens will be installed, operated, and maintained according to NMFS's fish screen criteria (National Marine Fisheries Service 2011), which apply to federally listed salmonid species and temporary pump intakes (U.S. Fish and Wildlife Service 2013). Fish screens meeting NMFS criteria have the following specifications:
  - A minimum effective surface area[1] of 2.5 square feet per cfs and a nominal maximum approach velocity[2] of 0.4 feet per second for fish screens with an automated cleaning device, or a minimum effective surface area of 1 square foot per cfs and a nominal maximum approach rate of 0.2 foot per second for fish screens with no automated cleaning device.
  - A round or square screen mesh that is no larger than 2.38 millimeters (0.094 inch) in the narrow dimension, or any other shape that is no larger than 1.75 millimeters (0.069 inch) in the narrow dimension.
- The discharge piping will be routed over the dam to a discharge point in the spillway. The dam embankment at the pipe crossing locations will be protected with plastic to prevent erosion of the embankment in the event of an accidental break or leak in the pipe.

Water Quality Effects on Lahontan Cutthroat Trout

Turbidity and Suspended Sediment: The proposed project involves the following construction-related activities that would disturb soil and sediments adjacent to or within Middle Creek: cofferdam installation and removal, soil excavation, drainage improvements, rock placement, use of machinery, and dewatering. Other potential sources of turbidity and suspended sediment include the placement and regrading of spoils at the lower laydown area, the temporary placement of spoils and imported fill at the shoreline area (potentially affecting water quality in the reservoir), the installation and operation of the temporary drawdown pumps in the reservoir (if needed), the

[1] *Effective surface area* is the total submerged screen area, excluding major structural members, but including the screen face material. For rotating drum screens, effective screen area consists only of the submerged area projected onto a vertical plane, excluding major structural members, but including screen face material. The minimum *effective screen area* is calculated by dividing the maximum screened flow by the allowable *approach velocity*.

[2] *Approach velocity* is the vector component of velocity that is perpendicular to the vertical projection of the screen face, calculated by dividing the maximum screened flow by the *effective screen area*. An exception to this definition is for end-of-pipe cylindrical screens, where the *approach velocity* is calculated using the entire *effective screen area*.

installation and operation of the temporary flow bypass system on Middle Creek, and the operation of a sump pump in the dewatered work area on Middle Creek, including the filtered discharge to Middle Creek on the upstream side of the cofferdam (Figure 2-1). These activities could increase erosion and mobilization of sediments, resulting in increased turbidity and suspended sediment in the reservoir and Middle Creek, and potential adverse effects on aquatic species and their habitat. The potential for these effects would be greatest during summer thunderstorms that could generate significant runoff.

Depending on the concentration and duration of exposure, suspended sediment can cause lethal, sublethal, and behavioral effects in fish (Newcombe and Jensen 1996). For salmonids, elevated turbidity and suspended sediment has been linked to a number of physiological and behavioral responses indicative of stress (Bisson and Bilby 1982; Sigler et al. 1984; Berg and Northcote 1985; Servizi and Martens 1992). High suspended sediment levels can cause gill trauma and impaired respiratory function. Very high levels can directly damage gill tissues, resulting in physical injury and even death. Behavioral effects include avoidance or abandonment of preferred habitat, changes in foraging ability, and increased predation risk. Indirect effects include the adverse effects of high concentrations of sediments on macroinvertebrates, the main prey of Lahontan cutthroat trout, and on spawning and rearing habitat for cutthroat trout in Middle Creek. Consequently, prey species and spawning habitat quantity and quality could be reduced if suspended sediment and turbidity levels substantially exceed ambient levels for prolonged periods.

These potential effects would largely be minimized or avoided by conducting construction activities during the dry season and by dewatering and isolating the in-water work area in Middle Creek with a cofferdam. However, some activities, such as installing and removing the cofferdam, dewatering, and installing and operating the flow bypass system in Middle Creek, would require work in water. Therefore, these activities would have the potential to generate turbidity and suspended sediments.

To address effects of construction-related turbidity and suspended sediment, PG&E would implement BMP-1: *Implement Water Quality Protection Measures and Erosion and Sediment Control Plans*, which includes turbidity monitoring that would ensure performance of the SWPPP. With BMP-1, the impact would be less than significant.

Contaminants: Project actions that involve the storage, use, or discharge of toxic and other harmful substances near water bodies (or in areas that drain to these water bodies) can result in contamination of these water bodies and potentially affect fish and other aquatic organisms. The operation of heavy equipment such as excavators, backhoes, dump trucks, cement trucks, bulldozers, and graders, and other construction equipment could result in accidental spills and leakage of fuel, lubricants, hydraulic fluids, and coolants in or near the reservoir or Middle Creek. In addition, wet concrete and other construction materials may accidentally come into contact with water bodies or enter water bodies in surface water runoff during storms. Other sources of contaminants include the discharges from vehicle and concrete washout facilities, as well as nutrients, organic contaminants, and metals adsorbed[3] in suspended sediments that may be transported to the reservoir or Middle Creek. However, conducting construction activities during the dry season, dewatering and isolating in-water work areas with a cofferdam and positioning the outlet of the flow bypass system to avoid inducing erosion of the stream bed or bank, and placing a

[3] *Adsorption* is the adhesion in an extremely thin layer of molecules (as of gases, solutes, or liquids) to the surfaces of solid bodies or liquids with which they are in contact.

filter on the discharge on sump pumps are expected to prevent contamination of water bodies, and the associated effects on fish, from occurring during project construction.

The potential magnitude of biological effects resulting from the accidental or unintentional discharge of contaminants depends on a number of factors, including the proximity of the discharge to water bodies; the type, amount, concentration and solubility of the contaminant; and the timing and duration of the discharge. Contaminants can affect survival and growth rates, as well as the reproductive success of fish and other aquatic organisms. The level of effect depends on species and life stage sensitivity, duration and frequency of exposure, condition or health of individuals (e.g., nutritional status), and physical or chemical properties of the water (e.g., temperature, DO).

To address potential effects on surface water quality from construction-related contaminants, PG&E would implement BMP-1: *Implement Water Quality Protection Measures and Erosion and Sediment Control Plans*, and BMP-2: *Implement Hazardous Materials Control Measures*. With these BMPs, the impact would be less than significant.

Effects of Reservoir Drawdown on Yosemite Toad and Sierra Nevada Yellow-legged Frog

As discussed in Chapter 2, *Project Description*, the reservoir would be drawn down to the target elevation of 8,029.7 feet (15 feet on the staff gauge) by the end of August 2023 to reduce seepage into excavations that would be made downstream of the dam. This level is below the self-imposed temporary elevation restriction of 8,050.6 feet (i.e., existing conditions). Because the presence of suitable breeding habitat for Yosemite toad in Lower Blue Lake depends on the reservoir level at the beginning of the breeding season (generally early June), potential effects of reservoir lowering on breeding also depends on the reservoir level at this time. A comparison of lake elevations from June through August in 2021 and 2022, as measured at the reservoir staff gauge are shown in Table 3.5-4. ICF wildlife biologists observed suitable habitat conditions and Yosemite toad breeding in the reservoir during the summer of 2021, but the water level was too high and suitable breeding conditions were not present in 2022.

Table 3.5-4. Comparison of Breeding Habitat Conditions for Yosemite Toad in Lower Blue Lake

2021 (Suitable Conditions)		2022 (Unsuitable Conditions)	
Date	Reservoir Staff Gauge (Lake Elevation) (feet)	Date	Reservoir Staff Gauge (Lake Elevation) (feet)
6/1	27.09	6/1	34.61
6/5	27.19	6/5	34.90
6/10	27.06	6/10	34.93
6/15	26.80	6/15	35.03
6/20	26.10	6/20	34.96
6/25	25.79	6/25	34.88
7/2	25.25	6/30	34.71
7/5	25.18	7/5	34.53
7/10	24.89	7/10	34.35
7/15	24.58	7/14	34.12
7/20	24.33	7/20	33.77
7/25	24.05	7/25	33.48
7/30	23.87	7/30	33.24
8/5	23.54	8/5	33.03

2021 (Suitable Conditions)		2022 (Unsuitable Conditions)	
Date	**Reservoir Staff Gauge (Lake Elevation) (feet)**	**Date**	**Reservoir Staff Gauge (Lake Elevation) (feet)**
8/10	23.28	8/10	32.84
8/15	23.03	8/15	32.61
8/20	22.78	8/20	32.43
8/25	22.53	8/25	32.28
8/30	22.29	8/30	32.39

Reservoir drawdown would begin on July 3, 2023. If the 2023 water level in early June is like 2022 conditions, Yosemite toads would not likely breed in the reservoir due to the absence of suitable habitat. In this case, reservoir lowering would not likely affect breeding. If the 2023 water level in early June is similar to 2021, suitable habitat conditions would be present and Yosemite toad would be more likely to breed in the reservoir. The reservoir would need to be lowered to approximately 8,029.7 feet (15 feet on the staff gauge) by the end of August. In this situation, reservoir lowering could result in the stranding of Yosemite toad tadpoles. Because Yosemite toad has experienced widespread population declines (78 FR 24500–24501), stranding tadpoles would be a significant impact. PG&E would implement BIO-MM-7: *Relocate and Monitor Yosemite Toad Tadpoles at Risk of Stranding*, and BIO-MM-8: *Conduct an Upland Use Study of the Blue Lakes Yosemite Toad Population*, which would minimize potential effects and compensate for the potential loss of Yosemite toad tadpoles and reduce the impact to a less-than-significant level.

SNYLF is expected to occur along the reservoir shoreline very infrequently and would not be affected by reservoir drawdown since it does not breed in or depend on the water in the reservoir for breeding. As discussed above for Lahontan cutthroat trout, prior to drawing down the reservoir, PG&E would develop a drawdown plan, which would ensure that flows would not result in added bank erosion or scour in Middle Creek downstream of Lower Blue Lake reservoir by establishing a flow rate and schedule for reservoir releases. PG&E would limit releases through the LLO during reservoir drawdown to a maximum of 80 cfs and would pattern the reservoir drawdown after previous wet years (McGuckin pers. comm.). Since the maximum flow release of 80 cfs through the LLO would be similar to releases that have been made during the summer in previous years (Table 3.5-3), effects on aquatic nonbreeding habitat for SNYLF and individual frogs are not anticipated. There would be no effects on SNYLF from reservoir drawdown.

BIO-MM-7: Relocate and Monitor Yosemite Toad Tadpoles at Risk of Stranding

If Yosemite toad breeding occurs in Lower Blue Lake and tadpoles are at risk of stranding, USFWS-approved biologists will relocate the tadpoles to nearby suitable breeding habitat that would not be affected by reservoir lowering. Habitat could consist of pools that are isolated from the reservoir or nearby pools or ponds. The approximate number of relocated tadpoles and the relocation locations will be reported to USFWS within 5 working days. Relocated tadpoles will be monitored by the USFWS-approved biologists throughout the remainder of the breeding season until tadpole metamorphosis.

BIO-MM-8: Conduct an Upland Use Study of the Blue Lakes Yosemite Toad Population

To compensate for possible Yosemite toad tadpole stranding in the reservoir and relocation of tadpoles from the spillway pool, PG&E will conduct a 1-year study to better understand upland habitat use of the Yosemite toad population in the Blue Lakes region. PG&E will review existing information and prepare a study design for USFWS review and approval. The study will include tracking adult Yosemite toads to determine habitat use after breeding. PG&E or its contractor will obtain all necessary permits for conducting the study. The methods and results of the study will be provided in a report to USFWS. The study will contribute to the knowledge of the Yosemite toad population in the northern extent of its range. Understanding the upland habitat use of the population will contribute to knowledge about the species and may result in new or improved management practices that benefit the species.

Construction Effects on Yosemite Toad and Sierra Nevada Yellow-Legged Frog

The dam seepage pool in the project area provides suitable breeding habitat for Yosemite toad and could be disturbed by construction activities. BIO-MM-3: *Conduct Worker Environmental Awareness Training and Implement General Requirements*, requires barriers or fencing to be installed to ensure construction equipment, workers, and runoff do not enter adjacent sensitive areas. The spillway pool would be protected with k-rail barriers to ensure that vehicles and equipment do not enter the pool. During the worker environmental awareness training, construction personnel will be instructed not to walk through or otherwise disturb the pool. Additionally, BIO-MM-9: *Conduct Surveys and Implement Protective Measures for Yosemite Toad and Sierra Nevada Yellow-Legged Frog*, requires weekly monitoring by a qualified biologist to ensure that the k-rail around the pool is in place and the spillway pool is not being disturbed. This measure would ensure that the spillway pool is protected from disturbance.

Although the project area is considered suitable upland and dispersal habitat for Yosemite toad and SNYLF, the dam seepage repair area does not provide suitable breeding habitat for SNYLF, and the spillway creek and Middle Creek do not provide suitable aquatic breeding habitat for Yosemite toad or SNYLF. Construction would result in the permanent loss of 0.09 acre of upland habitat for Yosemite toad and SNYLF from the removal of the seasonal wetland downstream of the dam. While the project would reduce the amount of upland habitat for Yosemite toad and SNYLF, other natural areas within and in the vicinity of the project area are plentiful and would continue to provide cover for the species. The loss of Yosemite toad and SNYLF upland habitat would be less than significant.

The upper and lower laydown areas are considered upland and dispersal habitat for Yosemite toad and SNYLF. Imported materials and excavated spoils would be temporarily placed at the upper and lower laydown areas. Spoils may also be hauled offsite or permanently placed at the lower laydown area. BIO-MM-3: *Conduct Worker Environmental Awareness Training and Implement General Requirements,* requires barriers or fencing to be installed to ensure construction equipment, workers, and runoff do not enter adjacent sensitive areas (e.g., the spillway pool and Middle Creek). All fill at the upper laydown area would be removed prior to fully demobilizing and the area would be returned to its pre-project contours. If spoils are permanently placed at the lower laydown area, they would be compacted, and erosion control measures would be applied. The permanent placement of excavated material at the lower laydown area would not make the area unusable as upland or dispersal habitat for Yosemite toad and SNYLF. The lower laydown area is previously disturbed and does not provide high quality upland or dispersal habitat for these species. The placement of spoils at this laydown area could change the substrate and topography of this area but would not make it unusable upland or dispersal habitat. Impacts on upland and dispersal habitat for Yosemite toad and SNYLF would be less than significant.

There is potential for individual Yosemite toads to be present in the work area until September or October. Vehicle travel, staging of equipment and materials, and the placement of spoils could crush or bury burrows that provide suitable refuge habitat for Yosemite toads. Toads within the burrows could be crushed or trapped. If tadpoles in the spillway pool survive to metamorphosis, metamorphs could be injured or killed by construction equipment or personnel when they move from the spillway pool to upland areas. SNYLF could disperse through the project area, including at the IFR weir. Potential for injury or mortality of SNYLF is low due to the lack of suitable breeding habitat in the project area and limited potential for dispersal through the project area. Because Yosemite toad and SNYLF have experienced widespread population declines (78 FR 24500-24501, 79 FR 24261), injury or mortality of individual Yosemite toad and SNYLF would be a significant impact. BIO-MM-3, BIO-MM-8: *Conduct an Upland Use Study of the Blue Lakes Yosemite Toad Population*, and BIO-MM-9: *Conduct Surveys and Implement Protective Measures for Yosemite Toad and Sierra Nevada Yellow-legged Frog*, would reduce and compensate for potential construction effects on Yosemite toad and SNYLF to a less-than-significant level.

BIO-MM-9: Conduct Surveys and Implement Protective Measures for Yosemite Toad and Sierra Nevada Yellow-Legged Frog

During the 2023 breeding season, a qualified biologist (i.e., a biologist with experience with Yosemite toad and its habitats) will conduct an initial survey for Yosemite toad eggs along the entire wetted perimeter of the reservoir and follow up surveys in breeding locations. Yosemite toad breeding locations will be monitored throughout construction. If breeding occurs in the spillway pool, USFWS-approved biologists will relocate tadpoles to the northern end of the reservoir or other suitable breeding habitat. The timing of relocation will be determined in coordination with USFWS.

Additionally, qualified biologists (i.e., biologists with experience with Yosemite toad and SNYLF and their habitats) will conduct a preconstruction survey for Yosemite toad and SNYLF in the work area and within 500 feet of the work area within 24 hours of the start of work. The biologists will walk transects throughout the seasonal wetland downstream of the dam immediately prior to vegetation clearing in this area. If any Yosemite toads are found, they will be relocated to suitable cover habitat outside the project area. The number of relocated toads and relocation site(s) will be reported to USFWS within 5 working days. If any SNYLF are found, they will be allowed to leave the wetland area on their own. The upper and lower laydown areas will also be surveyed prior to the placement of spoils in these areas. Areas with burrow complexes within the work area and laydown areas will be flagged by the biologists for avoidance. Flagging will be maintained for the duration of construction. The contractor will avoid driving, parking equipment, or placing materials or spoils in the flagged areas. Concrete k-rail barriers will be placed on the northern and western sides of the spillway pool to protect it from equipment and personnel.

A qualified biologist will remain on the project site to monitor all initial ground-disturbing activities to ensure that no amphibians enter the work area or are harmed by initial ground disturbance. After initial ground-disturbing activities are complete, the qualified biologist will make weekly visits to the project area to ensure that flagged burrows are being avoided, the k-rail is in place, the spillway pool is not being disturbed, and spoils are being placed in designated locations. The biologist will complete a monitoring log for each day of monitoring and each weekly visit, which will be available to USFWS and CDFW upon request.

If individual SNYLF are encountered at any time during construction, work in the immediate area will stop and the SNYLF will be allowed to leave the area on its own. The PG&E biologist will be contacted immediately, and the biological monitor (or other project personnel) will continuously monitor the individual's movements until it is safely out of the work area.

Disturbance of Bald Eagle Foraging

As discussed above, bald eagles have been observed in the vicinity of Lower Blue Lake during amphibian surveys at Upper Blue Lake and Twin Lake. Although unlikely to nest at Lower Blue Lake, bald eagles could hunt for fish in the lake and perch from trees in and near the project area. Construction activities and noise, particularly helicopter use, could disturb bald eagles if they are foraging or are perched near the lake when these activities occur. Bald eagles may leave the Lower Blue Lake area as the helicopter approaches and fly to another lake to forage. While this would result in the eagle expending additional energy to travel to an alternative feeding area, this disturbance would not result in harm to the eagle. Therefore, this impact would be less than significant.

Disturbance of Nesting Migratory Birds

Construction activities would be implemented during the nesting season of migratory birds (generally February 15 through August 31) and could result in the disturbance of birds nesting in or near the project area. In addition, up to five trees would be removed along the toe of the dam. Removal of trees with active nests and construction disturbance close to active nests during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. This impact could be significant if it resulted in the reduction of local populations of migratory birds.

The use of helicopters to transport equipment and materials to and from the project site during the nesting season could disturb birds nesting in or near the project area. PG&E uses helicopters to access the lake to perform inspections on a regular basis. The project would increase the frequency of helicopter trips for a short period. A helicopter would be used for approximately 8 hours over 3 days for the IFR weir replacement (Table 2-3). The IFR weir replacement is scheduled to occur between September 18 and October 3. Because helicopter use would occur outside of the nesting season for migratory birds, helicopter use is not anticipated to affect nesting activities.

To ensure that active nests are not disturbed by tree removal or other construction activities and that the Migratory Bird Treaty Act and California Fish and Game Code are not violated, BIO-MM-10: *Conduct a Preconstruction Survey for Nesting Birds and Implement Protective Buffers around Active Nests* would be implemented. With this mitigation measure, potential impacts on nesting migratory birds would be less than significant.

BIO-MM-10: Conduct a Preconstruction Survey for Nesting Birds and Implement Protective Buffers around Active Nests

One or more biologists will conduct at least one preconstruction survey for nesting birds no more than 14 days before the start of mobilization and laydown area setup. If work does not begin within 14 days of the survey or construction activities stop for 14 days or more, work areas will be resurveyed for active nests. The project area and a 300-foot buffer for raptors and a 75-foot buffer for passerines around the project area will be surveyed. If an active nest is found in the survey area, the PG&E biologist will determine and establish no work buffers around the active nests to limit disturbance until the nest is no longer active. The extent of the buffers will depend on the level of noise or construction disturbance, line-of-sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. Suitable buffer distances may vary between species. If an active nest is found in one of the trees to be removed, a no disturbance buffer will be established, and the tree will not be removed until the young have fledged. Monitoring of active nests by a biologist may be required during high disturbance activities (i.e., helicopter use). Construction crew members will review a brochure on identifying and avoiding impacts on nesting birds. Should an active bird nest be found in the project area during work activities, all work will cease, and the PG&E biologist will be contacted to establish an appropriate no work buffer zone.

Disturbance of Fringed Myotis, Long-Legged Myotis, and Silver-Haired Bat

Several of the trees that would be removed are large and may have exfoliating bark or tree hollows (i.e., woodpecker holes) that could be utilized for roosting by fringed myotis, long-legged myotis, or silver–haired bat. Tree removal would occur during site preparation and demolition at the beginning of August when bats could have non-volant (non-flying) young. Removal of trees occupied by roosting bats could result in injury or mortality of bats. This could constitute a significant impact if the local population of the affected bat was impacted. Bats with non-volant young would be capable of flying to other trees near the project area with their young clinging to them. Other construction activities would not prevent or interfere with other bat activities (i.e., drinking and foraging) because these activities occur at night when there would be no construction. To avoid and minimize potential injury or mortality of roosting bats, BIO-MM-11: *Implement Protective Measures to Avoid or Minimize Injury or Mortality of Roosting Bats* would be implemented. With this mitigation measure, potential impacts on roosting bats would be less than significant.

BIO-MM-11: Implement Protective Measures to Avoid or Minimize Injury or Mortality of Roosting Bats

To avoid or minimize the potential for injury or mortality of tree roosting bats, tree removal will be monitored by a qualified biologist (i.e., a biologist with experience with tree roosting habitats and life histories of local bats). Trees will be trimmed and/or removed in a two-phase removal process conducted over two consecutive days. In the afternoon on the first day, limbs and branches will be removed by a tree cutter using chainsaws only. Limbs with cavities, crevices, or deep bark fissures will be avoided, and only branches or limbs without those features will be removed. Trimming in the afternoon of the first day creates disturbance and altered habitat conditions that don't injure bats but may encourage bats to leave the roost site later that night and seek alternative roosting habitat. On the second day, after bats may have left the roost site, the rest of the tree will be removed. The biologist will search downed vegetation for dead and injured bats.

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

Construction Effects on Riparian Habitat

Riparian habitat occurs at the edge of the upper laydown area just above the OHWM of Lower Blue Lake and along Middle Creek. Movement of construction equipment and staging of construction materials could directly affect up to 0.016 acre of woody and herbaceous vegetation in the riparian habitat. Construction activities could also result in alteration of riparian habitat by changing the local topography and hydrology of the habitat. This would be a temporary impact during the construction period; the area would not be permanently altered.

Riparian habitat is a sensitive natural community regulated by CDFW. Temporary impacts on riparian habitat would be significant even with BMP-1: *Implement Water Quality Protection Measures and Erosion and Sediment Control Plans*, and BIO-MM-3 (discussed above). However, BIO-MM-12: *Retain a Qualified Biologist to Conduct Periodic Monitoring of Sensitive Habitats during Construction* would reduce the impact of construction on riparian habitat to a less-than-significant level.

BIO-MM-12: Retain a Qualified Biologist to Conduct Periodic Monitoring of Sensitive Habitats during Construction

PG&E will retain a qualified biologist to conduct periodic construction monitoring in and adjacent to all sensitive habitats (i.e., willow scrub wetland, riparian, seasonal wetland, emergent marsh wetland, reservoir, and streams) in the construction area. The biological monitor will assist the construction crew as needed to comply with all project implementation restrictions and guidelines. The monitor will inspect the orange construction fencing (to be installed 1 foot above the ground level to avoid trapping small mammals) denoting environmentally sensitive areas at least once a week to ensure that fencing is intact and will notify the contractor of any repairs that are needed. The contractor will be responsible for maintaining the k-rail barriers and fencing adjacent to sensitive biological resources. Each inspection will be documented in a monitoring log, which will be provided to and kept on file by PG&E.

Potential Introduction and Spread of Invasive Plant Species

Project construction has the potential to introduce and spread invasive plant species inside and outside of the project area. This would be of particular concern for wilderness areas near the project area and would be a significant impact. Although PG&E would implement BMP-5: *Implement Measures to Minimize the Spread/Introduction of Noxious Weeds*, the potential spread of invasive plants would be a potentially significant impact. BIO-MM-13: *Minimize the Introduction and Spread of Invasive Plants* would reduce this impact to a less-than-significant level.

BIO-MM-13: Minimize the Introduction and Spread of Invasive Plants

PG&E or its contractor will be responsible for avoiding the introduction of new invasive plants and the spread of invasive plants previously documented in the project area. Accordingly, the following measures will be implemented during construction:

- Educate construction supervisors and managers on weed identification and the importance of controlling and preventing the spread of invasive weeds.
- Dispose of invasive species material removed during project construction offsite at an appropriate disposal facility to avoid the spread of invasive plants into natural areas.
- Minimize surface disturbance to the greatest extent feasible to complete the work.

c. ***Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?***

Construction of the proposed project would result in direct impacts on waters of the United States, including seasonal wetland, emergent marsh wetland, and non-wetland waters in reservoir (Lower Blue Lake reservoir shore and reservoir), perennial stream (Middle Creek), and ephemeral stream. All these features are also considered waters of the State. Because the aquatic resources delineations have not been verified by USACE as of December 2022, the impact acreages in this discussion should be considered preliminary. The CWA Section 404 permit application (Pre-Construction Notification) and the aquatic resources delineations have been submitted to USACE, and the exact acreages of impacts associated with the placement of fill material into waters of the United States will be provided in the final applications or permits.

Impacts were considered permanent if the project would result in the placement of permanent fill in waters of the United States and waters of the State. Project construction would have up to 0.09 acre of permanent impacts on waters of the United States and waters of the State. The project would result in permanent impacts on approximately 0.09 acre of seasonal wetland from construction of the filter, buttress, and seepage collection project elements. Weir replacement would occur within the existing weir footprint and would not result in permanent impacts on perennial stream in Middle Creek.

Impacts were considered temporary if fill would be removed following completion of construction and temporarily disturbed portions of non-wetland waters would be restored. Project construction would have up to 1.26 acres of temporary impacts on waters of the United States and waters of the State. The project would result in temporary impacts on approximately 0.14 acre of seasonal wetland and ephemeral stream from use of the temporary embankment toe access path. Use of the upper laydown area for construction staging and potential temporary storage of spoils, the temporary access ramp, and temporary access road would result in up to 1.11 acre of temporary impacts on the Lower Blue Lake reservoir shore and reservoir. Placement of a cofferdam and flow bypass during construction of the weir replacement in Middle Creek would result in up to 0.007 acre of temporary impacts on perennial stream.

Indirect impacts due to adverse effects on water quality, such as increased turbidity and chemical runoff, may also result from project construction within the open water area of Lower Blue Lake reservoir and the portion of Middle Creek downstream of the weir replacement. Discharge from dewatering downstream of the dam into the spillway channel and drainage swales (intermittent stream) could affect water quality in the intermittent stream, however, as required in BMP-1: *Implement Water Quality Protection Measures and Erosion and Sediment Control Plans*, use of filters within the flow bypass system would prevent turbid water from entering the bypass system and affecting the downstream area of Middle Creek. Indirect impacts would be less than significant.

Temporary and permanent loss of wetlands and non-wetland waters would be a significant impact on federally protected waters and waters of the State even with BMP-1. The BMP and BIO-MM-3, BIO-MM-12, BIO-MM-14: *Avoid and Minimize Disturbance of Waters of the United States/Waters of the State*, and BIO-MM-15: *Compensate for the Temporary and Permanent Loss of Waters of the United States/Waters of the State* would reduce these impacts to a less-than-significant level.

BIO-MM-14: Avoid and Minimize Disturbance of Waters of the United States/Waters of the State

To the extent possible, PG&E will avoid and minimize impacts on waters of the United States and waters of the State by implementing the following measures. These measures will be incorporated into contract specifications and implemented by the construction contractor.

- Avoid construction activities in saturated or ponded natural wetlands and drainages during the wet season (spring and winter) to the maximum extent possible.
- Stabilize streams/drainages immediately upon completion of construction activities. Other waters of the United States will be restored in a manner that encourages vegetation to re-establish to pre-project condition and reduces the effects of erosion on the drainage system.
- Remove any debris or soils that are inadvertently deposited below the OHWM of the reservoir or perennial stream in a manner that minimizes disturbance of the bed and bank.
- Complete all activities promptly to minimize their duration and resultant impacts.

BIO-MM-15: Compensate for the Temporary and Permanent Loss of Waters of the United States/Waters of the State

To compensate for temporary impacts on waters of the United States and waters of the State in Lower Blue Lake reservoir and Middle Creek, all temporary fill will be removed and the lakeshore and creek bed will be restored to pre-project contours and conditions within 30 days following completion of construction activities.

To compensate for permanent loss of 0.09 acre of waters of the United States and waters of the State, PG&E will pay into the National Fish and Wildlife Foundation Sacramento District In-lieu Fee Program to ensure no net loss of wetland functions and values. The compensation ratio will be a minimum of 1:1 (1 acre of habitat credit for every 1 acre of impact) to ensure no net loss of habitat functions and values. The actual mitigation ratio and associated credit acreage may be modified based on USACE and Regional Water Board permitting, which will dictate the ultimate compensation for permanent impacts on waters of the United States and waters of the State.

PG&E will also implement the conditions and requirements of state and federal permits that will be obtained for the proposed project.

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?

Effects of Reservoir Drawdown on Fish Movement

As discussed in Chapter 2, *Project Description*, the reservoir would be drawn down to the target elevation of 8,029.7 feet by the end of August 2023 to reduce seepage into the downstream excavations. Lower summer reservoir levels from reservoir drawdown may influence fish passage into Middle Creek, the only perennial tributary to the reservoir. As described in Section 3.5.3.4, *Special-Status Species*, when reservoir storage is high, submergence of the boulder-bedrock step within the reservoir inundation zone ensures that hydrologic connectivity and fish passage conditions are adequate for fish movement. When reservoir storage drops below an elevation of approximately 8,038 feet, upstream migrating adults have to navigate the vertical impediment that is no longer inundated by the reservoir.

However, drawing down the reservoir in July and August is not expected to interfere with the movement of adult Lahontan cutthroat trout that may enter Middle Creek from the reservoir to spawn. Based on the observed behavior of spawning adult Lahontan cutthroat trout in Upper Blue Lake, adults enter tributary streams to initiate their spawning run shortly after the lake is free of surface ice. Therefore, the proposed July and August timing of drawing down the reservoir would avoid the period when adults would be expected to ascend Middle Creek to spawn. This impact would be less than significant.

Potential Effects on Wildlife Movement and Obstruction of Wildlife Nursery Sites

Project construction may cause common wildlife species to temporarily avoid the project area or alter their movement patterns to avoid the project area. However, because the project area is within an area that is used for recreation and is disturbed by the presence of humans on a regular basis, wildlife likely already avoid the project area. Therefore, the project would not have a significant effect on wildlife movement.

Project construction would begin after Yosemite toads breed in the spillway pool and the reservoir and would not affect adults traveling to breeding areas. If breeding were to occur at the north end of the reservoir, construction would not impede movement of metamorphs at the end of the breeding season due to the distance from the project area. If tadpoles in the spillway pool survived until metamorphosis, construction activities could impede movement of metamorphs, or result in injury or mortality. There is no suitable breeding habitat for SNYLF in the project area; therefore, the project would not obstruct SNYLF nursery sites. Construction activities and disturbance could result in birds avoiding potential nesting sites in the project area. Birds may avoid selecting nest sites in or near the project area because of construction noise and activities. Mammals could also avoid raising young near the project area because of construction activity; however, the potential for mammals to raise young in or near the project area is low due to the high level of human disturbance during the summer. Because there are ample trees and shrubs in the surrounding area that could be used as nest sites for birds and undisturbed habitat in the project vicinity that could be used by mammals for rearing young, the impact on wildlife nursery sites would be less than significant.

e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Through compliance with state and federal regulations protecting sensitive biological resources, including waters of the United States and special-status species, the project would not conflict with any of the *Alpine County General Plan* policies. There would be no impact.

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?

There are no adopted or approved habitat conservation plans, natural community conservation plans for the project area. There would be no impact.

3.6 Air Quality

3.6.1 Introduction

This section describes the existing conditions for air quality and analyzes the proposed project's impacts on air quality. The project is in Alpine County, which is in the Great Basin Valleys Air Basin (GBVAB). Some construction materials may originate from neighboring Amador County, which is in the Mountain Counties Air Basin (MCAB). Worker trips are expected to originate in South Lake Tahoe in El Dorado County, which is in the Lake Tahoe Air Basin (LTAB). The analysis focuses on the primary criteria pollutants that would be generated by construction of the proposed project, which are carbon monoxide (CO), particulate matter (PM10 and PM2.5), and sulfur dioxide (SO_2), as well as the ozone precursors of reactive organic gases (ROG) and nitrogen oxides (NO_X). Please refer to Section 3.7, *Greenhouse Gas Emissions*, for a discussion of greenhouse gas (GHG) emissions.

As described in Chapter 2, *Project Description*, the project site would be returned, as much as is reasonably practical, to its original condition following completion of construction activities. All equipment and surplus materials would be removed from the project site. Operations and maintenance activities would be the same as pre-project conditions. Accordingly, there would be no change in operational emissions relative to existing conditions. This analysis therefore focuses exclusively on construction-generated emissions because there would be no long-term operational air quality impact.

3.6.2 Existing Conditions

The GBVAB is north of the Mojave Desert, south of Lake Tahoe, and lies between the Sierra Nevada in the west and the California/Nevada border in the east. The GBVAB has substantial elevation changes. Within the GBVAB are Death Valley, the lowest point in the Unities States at 282 feet below sea level, and Mount Whitney, the highest peak in the 48 states at 14,500 feet. This topography results in contrasting weather within the GBVAB. Pacific Storms bring winter snow to mountain peaks in the Sierra Nevada. Precipitation falls as rain just east of the Sierra Nevada crest, and conditions are arid to the south. Overall, due to the rural nature of Alpine County, low population density, and limited industry, air quality is generally good (Alpine County 2017).

Alpine County and the Lake Tahoe portion of El Dorado County currently attain all federal air quality standards (U.S. Environmental Protection Agency 2022). Alpine County and the Lake Tahoe portion of El Dorado County are currently designated nonattainment areas for the state PM10 standard and attainment areas for all other state standards (California Air Resources Board 2022). Amador County is currently designated a nonattainment area for the federal and state ozone standards and an attainment area for all other state and federal standards (U.S. Environmental Protection Agency 2022; California Air Resources Board 2022).

3.6.3 Regulatory Setting

The federal Clean Air Act (CAA) was first enacted in 1963 and has been amended numerous times in subsequent years (1965, 1967, 1970, 1977, and 1990). The CAA establishes federal air quality standards, known as national ambient air quality standards (NAAQS), for six criteria pollutants and specifies future dates for achieving compliance. The CAA also mandates that the states submit and implement a State Implementation Plan (SIP) for local areas not meeting those standards. The plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA identify specific emission-reduction goals for areas not meeting the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or meet interim milestones. Table 3.6-1 shows the NAAQS currently in effect for each criteria pollutant, as well as the California ambient air quality standards (CAAQS). Table 3.6-2 provides a brief description of sources and health effects of the six criteria pollutants for which there are NAAQS.

Table 3.6-1. National and State Ambient Air Quality Standards

			National Standards[a]	
Criteria Pollutant	**Average Time**	**California Standards**	**Primary**	**Secondary**
Ozone	1-hour	0.09 ppm	None[b]	None[b]
	8-hour	0.070 ppm	0.070 ppm	0.070 ppm
Coarse Particulate Matter (PM10)	24-hour	50 μg/m³	150 μg/m³	150 μg/m³
	Annual mean	20 μg/m³	None	None
Fine Particulate Matter (PM2.5)	24-hour	None	35 μg/m³	35 μg/m³
	Annual mean	12 μg/m³	12.0 μg/m³	15 μg/m³
Carbon Monoxide	8-hour	9.0 ppm	9 ppm	None
	1-hour	20 ppm	35 ppm	None
Nitrogen Dioxide	Annual mean	0.030 ppm	0.053 ppm	0.053 ppm
	1-hour	0.18 ppm	0.100 ppm	None
Sulfur Dioxide[c]	Annual mean	None	0.030 ppm	None
	24-hour	0.04 ppm	0.014 ppm	None
	3-hour	None	None	0.5 ppm
	1-hour	0.25 ppm	0.075 ppm	None
Lead	30-day average	1.5 μg/m³	None	None
	Calendar quarter	None	1.5 μg/m³	1.5 μg/m³
	3-month average	None	0.15 μg/m³	0.15 μg/m³
Sulfates	24-hour	25 μg/m³	None	None
Visibility-Reducing Particles	8-hour	–[d]	None	None
Hydrogen Sulfide	1-hour	0.03 ppm	None	None
Vinyl Chloride	24-hour	0.01 ppm	None	None

Source: California Air Resources Board 2016.
ppm= parts per million; μg/m³ = micrograms per cubic meter; NAAQS = national ambient air quality standards; SO_2 = sulfur dioxide; CAAQS = California ambient air quality standards.
[a] National standards are divided into primary and secondary standards. Primary standards are intended to protect public health, whereas secondary standards are intended to protect public welfare and the environment.
[b] The federal 1-hour standard of 12 parts per hundred million was in effect from 1979 through June 15, 2005. The revoked standard is referenced because it was employed for such a long period and is a benchmark for State Implementation Plans.
[c] The annual and 24-hour NAAQS for SO_2 only apply for 1 year after designation of the new 1-hour standard to those areas that were previously in nonattainment for 24-hour and annual NAAQS.
[d] CAAQS for visibility-reducing particles is defined by an extinction coefficient of 0.23 per kilometer – visibility of 10 miles or more due to particles when relative humidity is less than 70 percent.

Table 3.6-2. Sources and Potential Health and Environmental Effects of Criteria Pollutants

Pollutant	Primary Sources	Potential Effects
Ozone	Formed by a chemical reaction between ROG and NO_X in the presence of sunlight. Primary sources of ROG and NO_X are vehicle exhaust, industrial combustion, gasoline storage and transport, solvents, paints, and landfills.	Inflammation of the mucous membranes and lung airways; wheezing; coughing and pain when inhaling deeply; decreased lung capacity; aggravation of lung and heart problems. Reduced crop yield and damage to plants, rubber, some textiles, and dyes.
Particulate matter	Power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, and automobiles.	Irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
Carbon monoxide	A component of motor vehicle exhaust that is formed when carbon in fuel is not burned completely.	Reduced ability of blood to deliver oxygen to vital tissues, affecting the cardiovascular and nervous system. Impaired vision and dizziness that can lead to unconsciousness or death.
Nitrogen dioxide	Motor vehicles, electric utilities, and other sources that burn fuel.	Aggravation of lung and heart problems. Precursor to ozone and acid rain. Contributes to global warming and nutrient overloading, which deteriorates water quality. Brown discoloration of the atmosphere.
Sulfur dioxide	Petroleum refineries, cement manufacturing, metal processing facilities, locomotives, large ships, and fuel combustion in diesel engines.	Aggravation of lung and heart problems. Converts to sulfuric acid, which can damage marble, iron, and steel. Damage to crops and natural vegetation. Impaired visibility.
Lead	Metal refineries, smelters, battery manufacturers, iron and steel producers, use of leaded fuels by racing and aircraft industries.	Anemia; damage to the kidneys, liver, brain, reproductive and nervous systems, and other organs; and neurological problems, including learning deficits and lowered IQ. Affects animals, plants, and aquatic ecosystems.

Source: California Air Pollution Control Officers Association n.d.

In California, the California Air Resources Board (CARB) delegates air quality management responsibilities to local air quality management districts. The project is located within the local jurisdiction of the Great Basin Unified Air Pollution Control District (GBUAPCD). The Amador County Air Pollution Control District (ACAPCD) has local air quality management authority in neighboring Amador County, which is where some construction materials for the project may originate. The El Dorado County Air Quality Management District (EDCAQMD) has local air quality management authority in El Dorado County, including South Lake Tahoe, which is where employees would be housed.

The GBUAPCD was established in 1974 with a joint powers' agreement among Alpine, Mono, and Inyo Counties. The GBUAPCD is responsible for enforcing federal, state, and local air quality regulations and ensuring that the GBVAB complies with the federal and state air quality standards.

The GBUAPCD has jurisdiction over an area of approximately 13,975 square miles in Inyo, Mono, and Alpine Counties. GBUAPCD has established the following district rules that may apply to the proposed project.

- **Rule 209-A—Standards for Authorities to Construct.** This rule identifies emissions limits and permit criteria for the construction or modification of stationary sources.
- **Rule 401—Fugitive Dust.** This rule requires reasonable precaution measures to prevent visible PM from being airborne, under normal wind conditions, beyond the source from which the emission originates.
- **Rule 402—Nuisance.** This rule prohibits the discharge of air contaminants, from any source, or other materials that cause injury, detriment, nuisance or annoyance to the public.
- **Rule 404-A—Particulate Matter.** This rule regulates the allowable concentration of PM discharged per standard dry cubic foot of exhaust gas. Concentrations may not exceed 0.3 grain per standard dry cubic foot of exhaust gas.
- **Rule 404-B—Oxides of Nitrogen.** This rule regulates the allowable concentration of NO_X emitted in exhaust fumes to not exceed 250 parts per million by volume.
- **Rule 416—Sulfur Compounds and Nitrogen Oxides.** This rule controls the discharge of sulfur compounds and NO_X. Sulfur compounds may not exceed 0.2 percent by volume, and NO_X may not exceed 140 pounds per hour.

Project activities in the ACAPCD and EDCAQMD would be limited to material hauling and employee travel, respectively, resulting in emissions from on-road vehicles. There are no ACAPCD or EDCAQMD rules specifically applicable to mobile sources.

GBUAPCD has not adopted CEQA guidelines for the analysis of air quality impacts. In absence of specific CEQA thresholds, this analysis relies on the construction emissions limits outlined in GBUAPCD Rule 209-A and guidance from GBUAPCD staff. Rule 209-A establishes the following emissions limits that align with the prevention of significant deterioration of air quality (Part C of the CAA), which was designed to prevent emissions sources from affecting continued attainment of the NAAQS.

- Net increase in emissions of 250 or more pounds during any day of any pollutant for which there is an NAAQS (excluding PM and CO), or any precursor of such a pollutant.
- Net increase in PM emissions of 250 or more pounds during any day, or a net increase of 80 pounds or more during any day from existing sources with emissions above 250 pounds per day.
- Net increase in CO emissions that would cause a violation of the NAAQS.

In addition to Rule 209-A, GBUAPCD staff recommend considering thresholds adopted by neighboring air districts with similar emission sources, climate, and meteorology (Logan pers. comm.). ACAPCD does not have adopted CEQA thresholds. El Dorado County is geographically proximate to Amador and Alpine Counties. As discussed above, employee trips are also expected to originate from South Lake Tahoe, which is in El Dorado County. Like Amador and Alpine Counties, the eastern portion of El Dorado County is topographically diverse, with rugged mountain peaks and valleys with extreme slopes and altitude differences. There are likewise limited industry and emission sources.

The EDCAQMD is responsible for ensuring the CAAQS and NAAQS are not violated in El Dorado County. EDCAQMD has adopted a combined ozone precursor (ROG and NO_X) threshold of 164 pounds per day for construction activities (Baughman pers. comm.). This threshold is lower than the GBUAPCD Rule 209-A limit of 250 pounds per day of either ROG or NO_X and considers that much of El Dorado County does not attain the ozone NAAQS (U.S. Environmental Protection Agency 2022). The threshold therefore represents the level above which project-generated emissions could affect EDCAQMD's commitment to attain the federal ozone standards. EDCAQMD's (2002) CEQA Guide also indicates that if ROG and NO_X emissions are not significant, then it can be assumed that other components of exhaust emissions, in this case PM10, are likewise not significant. EDCAQMD also considers uncontrolled construction fugitive dust emissions to be potentially significant.

Table 3.6-3 summarizes the thresholds used for the analysis of project-generated construction emissions. Where GBUAPCD Rule 209-A and EDCAQMD have both identified thresholds for a specific pollutant, the more conservative of the two are applied in the analysis. The thresholds in Table 3.6-3 therefore represent the maximum emissions construction of the project may generate before it would result in significant impact on air quality.

Table 3.6-3. Construction Emissions Thresholds

Pollutant	Pounds per Day
Ozone precursors (NO_X and ROG)	164 [a]
PM10	80 [b]
PM2.5	80 [b]
SO_2	250
CO	Violation of the CAAQS

Source: Great Basin Unified Air Pollution Control District 1993; Baughman pers. comm.
ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; SO_2 = sulfur dioxide; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter.
[a] During construction, the EDCAQMD's 82 pound per day ROG and NO_X threshold can be combined to obtain a total ozone threshold of 164 pounds per day. With the combined threshold, construction emissions of one pollutant may be more than 82 pounds per day; however, if the combined total is below 164 pounds per day, the EDCAQMD considers the impact to be less than significant (Baughman pers. comm.).
[b] The GBUAPCD Rule 209-A 80 pounds per day emission limit is triggered for modifications to existing sources with emissions above 250 pounds per day. While the higher 250-pound limit could therefore be applied to the project, this analysis conservatively uses the lower emission limit of 80 pounds per day given that Alpine County is nonattainment for the state PM10 standard.

The *Alpine County General Plan* Conservation Element, Section B, addresses air quality through the following goal (Alpine County 2017).

GP Goal No. 3. Meet or exceed federal and state air quality regulations.

3.6.4 Environmental Effects

Potential impacts of the proposed project related to air quality are discussed in the context of State CEQA Guidelines Appendix G checklist. Checklist Section III, *Air Quality*, asks whether the project would result in any of the following conditions.

a. Conflict with or obstruct implementation of the applicable air quality plan?

Because Alpine County and the South Lake Tahoe portion of El Dorado County currently attain all NAAQS, there are no applicable SIPs for construction activities in the Alpine County or employee commute emissions through El Dorado County. Considering its federal ozone nonattainment status, ACAPCD (2019) has developed the *Ozone Emergency Episode Plan* to identify control strategies and abatement triggers for reducing ozone levels in Amador County. The simplest test to assess project consistency is to determine if the project proposes development that is consistent with the growth anticipated by the relevant land use plans that were used in the formulation of the air quality attainment plans; if so, then the project would be consistent with the attainment plans.

The purpose of the proposed project is to mitigate the adverse conditions caused by seepage issues and complete minor safety and infrastructure improvements at the Lower Blue Lake Dam and IFR weir. The project, therefore, would not directly induce long-term growth or development that would conflict with general plan growth forecasts. The proposed project would comply with all applicable GBUAPCD rules and the *Alpine County General Plan* goals. In addition, as shown in Table 3.6-4, construction of the proposed project would not exceed any analysis threshold, which were established to prevent emission sources from creating new violations or contributing to existing violations of the CAAQS or NAAQS. Accordingly, impacts on an air quality plan would be less than significant.

b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard?

Project construction has the potential to affect ambient air quality through use of heavy-duty equipment, worker vehicle trips, truck hauling trips, and earthmoving and paving activities. Criteria pollutant and precursor emissions generated by these sources were quantified using information provided by PG&E and the California Emissions Estimator Model (CalEEMod) (version 2022.1) (McGuckin pers. comm.). Helicopters used for material movement would also generate emissions. Emission factors per landing and takeoff (LTO) and per operational cruising hour for a Bell 407 Airbus, which is the expected type of helicopter to be used during project construction, were obtained from the Federal Office of Civil Aviation (FOCA) (2015).

Table 3.6-4 summarizes emissions that would be generated by construction of the proposed project in the GBUAPCD. Material hauling and employee commute emissions through ACAPCD and EDCAQMD, respectively, are also presented.[1] Emissions would be generated over nine phases between July and October 2023, with several phases occurring concurrently. Table 3.6-4 identifies the maximum daily emissions that would occur during peak construction activity. Please refer to Appendix D for all modeling assumptions and outputs.

[1] As discussed in Chapter 2, *Project Description*, Section 2.4.2, *On-Road Vehicle Use*, vendor and haul truck trips may originate in Carson City, NV (or a combination of both Ione, CA and Carson City, NV). The air quality analysis assumes all vendor and haul truck trips would originate in Ione, CA. This option requires a longer travel distance through California, and thus has a higher emissions generation potential. If vehicles originate from Carson City, NV, there would be no emissions generated in ACAPCD. Emissions in GBUAPCD would be slightly higher (due to increased travel from the project site to the Nevada border), but the overall project maximum daily estimate presented in Table 3.6-4 would be lower.

Table 3.6-4. Estimated Criteria Pollutant Emissions from Project Construction (pounds)

Phase	ROG	NO_X	CO	SO_2	PM10	PM2.5
Project Construction in the GBUAPCD [a]						
Mobilization	0.1	0.9	1.7	<0.1	0.4	0.1
Site Prep and Demo	1.8	16.9	16.7	<0.1	13.7	4.7
Fill Delivery and Backhaul	<0.1	2.0	0.5	<0.1	0.4	0.1
Crest Raise R/S of Dam	0.7	6.4	7.4	<0.1	19.1	2.2
Filter and Buttress	26.2	6.9	44.1	<0.1	19.0	2.4
Staff Gauge	0.1	1.0	1.1	<0.1	0.1	0.1
IFR Weir	8.2	12.9	11.2	0.1	0.1	0.1
Crest Raise L/S of Dam	17.4	4.0	28.8	<0.1	12.7	1.6
Demobilization	0.1	1.2	1.8	<0.1	0.4	0.1
Maximum Daily, GBUAPCD	34.4	21.8	55.7	0.2	19.5	4.9
Material Hauling in the ACAPCD [a, b]						
Mobilization	0.1	3.8	0.5	<0.1	0.6	0.2
Site Prep and Demo	<0.1	0.8	0.1	<0.1	0.1	<0.1
Fill Delivery and Backhaul	<0.2	16.1	0.9	0.1	1.9	0.6
Filter and Buttress	<0.1	0.8	0.1	<0.1	0.1	<0.1
Crest Raise L/S of Dam	<0.1	0.4	0.1	<0.1	<0.1	<0.1
Demobilization	<0.1	2.5	0.3	<0.1	0.3	0.1
Maximum Daily, ACAPCD	0.3	19.9	1.4	0.1	2.4	0.8
Employee Commute in the EDCAQMD [a]						
Mobilization	0.1	0.1	0.6	<0.1	3.7	0.4
Site Prep and Demo through Crest Raise L/S of Dam [c]	0.1	<0.1	0.4	<0.1	2.7	0.3
Demobilization	0.1	0.1	0.7	<0.1	3.7	0.4
Maximum Daily, EDCAQMD	0.1	0.1	0.7	<0.1	3.7	0.4
Project Maximum Daily [d]	34.6	39.5	57.3	0.3	24.3	5.8
Threshold	ROG + NO_X (164)		- [e]	250	80	80

Source: See Appendix D

GBUAPCD = Great Basin Unified Air Pollution Control District; ACAPCD = Amador County Air Pollution Control District; EDCAQMD = El Dorado County Air Quality Management District; ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; SO_2 = sulfur dioxide; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter.

[a] The emissions intensity of vehicles can differ in summer and winter. CalEEMod generates summer and winter period emissions, where summer emission factors are used for activities occurring between April and September and winter emission factors are used for activities occurring between October and March. Where applicable for construction phases occurring in October, the higher of the two estimates are presented above.

[b] There would be no material hauling during the Crest Raise R/S of Dam, Staff Gauge, or IFR Weir phases.

[c] Employee commute emissions would remain constant between Site Prep and Demo through Crest Raise L/S of Dam. This is because the crew size would not change, nor would the number of vehicle trips or vehicle miles traveled through EDCAQMD.

[d] Analysis conservatively adds emissions among the three air districts to generate an overall maximum daily estimate for comparison to the analysis thresholds. Maximum daily ROG, CO, SO_2, and PM10 emissions would occur during concurrent Fill Delivery and Backhaul, Filter and Buttress, and IFR Weir. Maximum daily NO_X and PM2.5 emissions would occur during concurrent Site Prep and Demo and Fill Delivery and Backhaul. Values may not add due to rounding.

[e] Violation of the ambient air quality standard.

As discussed in Section 3.6.1, *Introduction*, Alpine County and the South Lake Tahoe portion of El Dorado County attain all ambient air quality standards except the state PM10 standard. Amador County attains all standards except the state and federal ozone standards. As shown in Table 3.6-4, construction of the proposed project would not generate PM or ROG and NO_X (ozone precursors) emissions in excess of the numeric analysis thresholds. SO_2 emissions are also predicted to be well below the GBUAPCD Rule 209-A emissions limit. As discussed in Chapter 2, *Project Description*, Section 2.5, *Best Management Practices*, construction contractors would implement fugitive dust abetment measures (BMP-6: *Implement Fugitive Dust Abatement Measures*). CO hotspots, or violations of the CO ambient air quality standards, are typically observed at heavily congested intersections where a substantial number of gasoline-powered vehicles idle for prolonged durations throughout the day. Assuming concurrent activities, construction would require a maximum of 54 employee, vendor, and haul trips in a single day. These few vehicle trips would not substantially worsen intersection congestion such that CO hotspots would occur. Accordingly, construction-related emissions would have a less-than-significant impact.

c. Expose sensitive receptors to substantial pollutant concentrations?

Sensitive receptors are facilities that house or attract children, the elderly, and people with illnesses, or others who are especially sensitive to the effects of air pollutants. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors. The project is surrounded by undeveloped land. There are no sensitive receptors within 1,000 feet of the project area.[2]

The primary pollutants of concern with respect to health risks to sensitive receptors are criteria pollutants (regional and local) and toxic air contaminants (TAC). Ozone precursors (ROG and NO_X) and PM are considered regional pollutants because they affect air quality on a regional scale. Localized pollutants are deposited and potentially affect populations near the emissions source. Because these pollutants dissipate with distance, emissions from individual projects can result in direct and material health impacts on adjacent sensitive receptors (if any). The localized criteria pollutants of concern that would be generated by the project are PM (fugitive dust) and CO. The TAC of concern is diesel particulate matter (DPM).[3]

Regional Criteria Pollutants

Some individuals exposed to high concentrations of ozone or PM may experience certain health effects, including increased incidence of cardiovascular and respiratory ailments (see Table 3.6-2). The GBUAPCD Rule 209-A emissions limits and EDCAQMD thresholds for these pollutants consider existing air quality concentrations and attainment or nonattainment designations under the NAAQS and CAAQS. Recognizing that air quality is a cumulative problem, projects that generate PM and ozone precursor emissions that are below such thresholds would not adversely affect air quality or exceed the health protective NAAQS or CAAQS. As shown in Table 3.6-4, construction of the proposed project would not generate ozone precursors (ROGs and NO_X) or PM emissions above the analysis thresholds. As such, the proposed project would not be expected to contribute a significant level of air pollution that would degrade long-term, regional air quality. Impacts would be less than significant.

[2] The Lower Blue Lakes Campground is approximately 600 feet north of the temporary material and equipment offload area. Visitation to campgrounds is transitory. There are no permanent residents and as such, the Lower Blue Lakes Campground is not considered a sensitive receptor.

[3] According to the California Department of Conservation (2000:1-7), naturally occurring asbestos is not found within the project area.

Localized Fugitive Dust

Exposure to fugitive dust at certain concentrations can irritate the respiratory system, especially for people who are naturally sensitive or susceptible to breathing problems. The primary sources of localized fugitive dust under the proposed project are earthmoving and vehicle travel over unpaved surfaces. These emissions would be controlled through adherence to GBUAPCD rules and implementation of BMP-6: *Implement Fugitive Dust Abatement Measures*. As shown in Table 3.6-4, construction of the proposed project would not generate fugitive dust (PM) emissions above the analysis thresholds. Moreover, as noted above, there are no sensitive receptors within 1,000 feet of project activities. Because pollutant concentrations decline as a function of distance from the emission source, dust emissions generated by the proposed project would be substantially reduced at the nearest receptor location. Accordingly, the proposed project would not expose sensitive receptors to substantial fugitive dust concentrations. Impacts would be less than significant.

Localized Carbon Monoxide

As discussed above, engine exhaust from offsite project traffic may elevate CO concentrations at local intersections, resulting in hotspots. Receptors exposed to CO hotspots may have a greater likelihood of developing health effects such as fatigue, headaches, confusion, dizziness, and chest pain. Assuming concurrent activities, construction would require a maximum of 54 employee, vendor, and haul trips in a single day. These few vehicle trips would not substantially worsen intersection congestion such that CO hotspots would occur. Accordingly, the proposed project would not expose sensitive receptors to substantial CO concentrations. Impacts would be less than significant.

Diesel Particulate Matter

DPM is a TAC generated by diesel-fueled equipment and vehicles. Exposure to DPM can increase the risk of developing some cancers. While construction would involve the use of diesel equipment, diesel combustion would be limited to equipment and vehicle use during the 4-month construction period. This duration is substantially lower than the 30-year exposure period typically associated with chronic cancer health risks (Office of Environmental Health Hazard Assessment 2015). Moreover, as noted above, there are no sensitive receptors within 1,000 feet of project activities under the proposed project. The concentration of DPM decreases dramatically as a function of distance from the source. For example, studies show that DPM concentrations at 1,000 feet from the source can be reduced by more than 65 percent, compared to concentrations directly at the source (California Air Resources Board 2005:9). Consequently, DPM concentrations, and thus health risks, would be substantially reduced at the nearest receptor location. Impacts would be less than significant.

d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

The generation and severity of odors is dependent on several factors, including the nature, frequency, and intensity of the source; wind direction; and the location of the receptor(s). Odors rarely cause physical harm, but can cause discomfort, leading to complaints to regulatory agencies. CARB (2005:34) identifies sewage treatment plants, landfills, waste transfer stations, recycling facilities, petroleum refineries, biomass and livestock operations, autobody shops, fiberglass manufacturing plants, painting/coating operations, rendering plants, and foundries as potential odor-emitting facilities. The proposed project would not result in the addition of such facilities associated with odors.

Potential sources of odor during construction activities include diesel exhaust from equipment and paving. Odors from these sources would be localized and generally confined to the immediate area surrounding the project area. These odors would only occur during active equipment and vehicle use and paving. Moreover, because there are no receptors within 1,000 feet of proposed project activities and any odors generated by equipment and vehicles would be localized, few (if any) people would be exposed to odors. Construction of the proposed project is therefore not likely to result in nuisance odors that would violate GBUAPCD Rule 402 nuisance standards. This impact would be less than significant.

3.7 Greenhouse Gas Emissions

3.7.1 Introduction

This section describes the existing conditions for GHGs and analyzes the proposed project's contribution to global GHG emissions. The analysis focuses on the primary GHGs that would be generated by construction of the proposed project, which are carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), and hydrofluorocarbons (HFC) (from vehicle air conditioning). Please refer to Section 3.6, *Air Quality*, for a discussion of criteria pollutants and air quality impacts.

As described in Chapter 2, *Project Description*, the project site would be returned, as much as is reasonably practical, to its original condition following completion of construction activities. All equipment and surplus materials would be removed from the project site. Operations and maintenance activities would be the same as pre-project conditions. Accordingly, there would be no change in operational emissions relative to existing conditions. This analysis therefore focuses exclusively on construction-generated emissions as there would be no long-term operational GHG impact.

3.7.2 Existing Conditions

Unlike emissions of criteria and toxic air pollutants, which have local or regional impacts, emissions of GHGs have a broader, global impact. Global warming associated with the "greenhouse effect" is a process whereby GHGs accumulating in the atmosphere contribute to an increase in the temperature of the earth's atmosphere. The principal GHGs contributing to global warming and associated climate change are CO_2, CH_4, N_2O, and fluorinated compounds. Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural sectors.

The Intergovernmental Panel on Climate Change (IPCC) was established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC estimates that human-induced warming reached approximately 1 degree Celsius (°C) above preindustrial levels in 2017, increasing at 0.2°C per decade. Under the current nationally determined contributions of mitigation from each country until 2030, global warming is expected to rise 3°C by 2100, with warming to continue afterward (Intergovernmental Panel on Climate Change 2018:4). Large increases in global temperatures could have substantial impacts on the natural and human environments worldwide and in California.

Methods have been set forth to describe emissions of GHGs in terms of a single gas to simplify reporting and analysis. The most accepted method to compare GHG emissions is the global warming potential (GWP) methodology. IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of carbon dioxide equivalent (CO_2e), which compares the gas in question to that of the same mass of CO_2 (CO_2 has a GWP of 1 by definition).

Table 3.7-1 lists the GWPs of CO_2, CH_4, N_2O, and HFC-134a and their lifetimes in the atmosphere. The GWPs are from the IPCC's fourth assessment report, consistent with statewide GHG emissions reporting protocol (California Air Resources Board 2022a).

Table 3.7-1. Lifetimes and Global Warming Potentials of Principal Greenhouse Gases

Greenhouse Gas	Global Warming Potential (100 years)	Lifetime (years)
Carbon dioxide	1	50–200
Methane	25	12
Nitrous oxide	298	114
Hydrofluorocarbon-134a	1,430	14

Source: California Air Resources Board 2022a.

3.7.3 Regulatory Setting

3.7.3.1 Federal

Several federal EOs have recently been signed by President Joe Biden related to GHG emissions and climate resiliency. EO 13990, signed in January 2021, set a national goal to achieve a 50 to 52 percent reduction from 2005 levels in economy-wide net GHG pollution in 2030. EO 14057, signed in December 2021, requires federal agencies to develop strategic processes for achieving, among other things, carbon-free electricity by 2030 and 100 percent zero-emission vehicle acquisitions by 2035. President Joe Biden has also signed two bills—the Infrastructure Investment and Jobs Act and the Inflation Reduction Act—that provide funding for infrastructure improvements that will reduce GHG emissions and bolster resilience to climate change. Despite these actions, there is currently no federal law or legislatively mandated national GHG reduction target.

3.7.3.2 State

California has adopted statewide legislation addressing various aspects of climate change and GHG emissions mitigation. Much of this legislation establishes a broad framework for the state's long-term GHG reduction and climate change adaptation program. Of particular importance are Senate Bill (SB) 32 and Assembly Bill (AB) 1279, which outline the state's GHG reduction goals of achieving a 40 percent reduction below 1990 emissions levels by 2030 and net zero GHG emissions (i.e., reach a balance between the GHGs emitted and removed from the atmosphere) no later than 2045. AB 1279 also mandates an 85 percent reduction in statewide GHG emissions (from 1990 levels) by 2045. The *2017 Climate Change Scoping Plan* and the *2022 Scoping Plan Update* provide a framework for achieving the 2030 and 2045 reduction targets, respectively, leveraging and enhancing many efforts and programs already adopted by the state (California Air Resources Board 2017, 2022b).

3.7.3.3 Local

At the local level, GBUAPCD has air quality management jurisdiction over an area of approximately 13,975 square miles in Inyo, Mono, and Alpine Counties. Some construction materials may originate from neighboring Amador County, where ACAPCD has local air quality management authority. Worker trips are expected to originate in South Lake Tahoe in El Dorado County, which is under the jurisdiction of EDCAQMD. None of these local air districts have adopted guidance or thresholds for the analysis of GHG emissions under CEQA.

The Conservation Element of the *Alpine County General Plan* outlines the following policies to reduce GHG emissions (Alpine County 2017).

Policy 16a. All new public, private facilities and residences should be designed to meet requirements of Title 24 of the State Energy Code.

Policy 16b. In approving development permits the County should set requirements and/or make recommendations wherever possible that would improve energy conservation and save long-term costs.

Policy 17a. Small scale hydro-electric power generation facilities should be developed where dams, canals, or pipelines exist or are constructed providing any losses of water to present beneficial uses can be determined insignificant.

Policy 17b. Existing and proposed special service districts should consider power generation using locally available hydro, wind, or other resources among the services and facilities they would intend to provide.

Policy 17c. All new lots or parcels intended to contain structures for human occupancy should be designed to allow for and protect maximum utilization of available solar and wind resources.

3.7.4 Environmental Effects

Potential impacts of the proposed project related to GHG emissions are discussed in the context of the CEQA Guidelines Appendix G checklist. Checklist Section VIII, *Greenhouse Gas Emissions*, asks whether the project would result in any of the following conditions.

a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Project construction would generate GHG emissions through use of heavy-duty equipment, worker vehicle trips, truck hauling trips, and the removal of up to five trees. GHG emissions generated by these sources were quantified using information provided by PG&E and CalEEMod (version 2022.1) (McGuckin pers. comm.). Helicopters used for material movement would also generate GHGs. Jet fuel consumption per LTO cycle and operational cruising hour for helicopters used for material movement was obtained from FOCA (2015). This factor was applied to the project's LTO inventory to quantify total annual helicopter fuel use. Resulting CO_2, CH_4, and N_2O emissions were calculated by multiplying the total annual jet fuel consumption by emission factors from the Climate Registry (2021).

Table 3.7-2 summarizes emissions that would be generated by construction of the proposed project in the GBUAPCD. Material hauling and employee commute emissions through ACAPCD and EDCAQMD, respectively, are also presented.[1] Emissions would be generated over nine phases between July and October 2023. Please refer to Appendix D for all modeling assumptions and outputs.

[1] As discussed in Chapter 2, *Project Description*, Section 2.4.2, *On-Road Vehicle Use*, vendor and haul truck trips may originate in Carson City, NV (or a combination of both Ione, CA and Carson City, NV). The GHG analysis assumes all vendor and haul truck trips would originate in Ione, CA. This option requires a longer travel distance through California, and thus has a higher emissions generation potential. If vehicles originate from Carson City, NV, there would be no emissions generated in ACAPCD. Emissions in GBUAPCD would be slightly higher (due to increased travel from the project site to the Nevada border), but the overall project total presented in Table 3.7-2 would be lower.

Table 3.7-2. Estimated GHG Emissions from Project Construction (metric tons)

Location	CO_2	CH_4	N_2O	HFC	CO_2e
Project Construction in the GBUAPCD	99	<0.1	<0.1	<0.1	101
Material Hauling in the ACAPCD	269	<0.1	<0.1	0.2	282
Employee Commute in the EDCAQMD	2	<0.1	<0.1	<0.1	2
Total	370	<0.1	0.1	0.2	385

Source: See Appendix D
GBUAPCD = Great Basin Unified Air Pollution Control District; ACAPCD = Amador County Air Pollution Control District; EDCAQMD = El Dorado County Air Quality Management District; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; HFC = hydrofluorocarbon; CO_2e = carbon dioxide equivalent, which includes the relative warming capacity (i.e., global warming potential) of each GHG.

As discussed in Section 3.7.3, *Regulatory Setting*, none of the local air districts in the study area (GBUAPCD, ACAPCD, and EDCAQMD) have developed quantitative emissions thresholds for CEQA evaluations. Some air districts throughout California have adopted construction screening levels for GHG emissions. For example, the nearby Sacramento Metropolitan Air Quality Management District (SMAQMD) (2020) recommends a threshold of 1,100 metric tons CO_2e per year, whereas the Placer County Air Pollution Control District (PCAPCD) (2017:24) has adopted a construction threshold of 10,000 metric tons CO_2e per year. These thresholds were developed based on emissions levels generated by construction projects in each county. Recognizing that land use development projects in Sacramento and Placer Counties may differ from construction activities required for a dam repair project in Alpine County, this IS uses a two-pronged approach for analyzing the significance of project-generated GHGs. First, emissions are compared to SMAQMD's and PCAPCD's thresholds to assess their magnitude. Second, the analysis evaluates the extent to which the proposed project complies with applicable plans and policies adopted to reduce construction GHG emissions. Compliance with regulatory programs is recognized by the California Supreme Court as a potential pathway for evaluating GHG emissions consistent with CEQA (*Center for Biological Diversity v. Department of Fish and Wildlife*).

Table 3.7-2 indicates that construction of the project would result in an estimated total of 385 metric tons CO_2e. While physical construction activities would occur in the GBUAPCD, more emissions would occur in ACAPCD because of the relatively long hauling distance through Amador County and the resulting vehicle emissions. However, as noted above, GHG emissions are global pollutants and impacts are assessed at a global, not local level. The estimated 385 metric tons CO_2e are considerably less than SMAQMD's and PCAPCD's construction screening thresholds.

EPA and National Highway Traffic Safety Administration (NHTSA) have adopted standards for CO_2 emissions and fuel consumption from heavy- and medium-duty vehicles. CARB has also adopted the Advanced Clean Cars II and Advanced Clean Truck regulations, which will accelerate the use of zero-emission vehicles and trucks in California. The CALGreen Code contains mandatory requirements aimed at reducing construction waste and reducing environmental impacts during and after construction. For example, nonresidential projects must recycle and/or salvage for reuse a minimum of 65 percent of nonhazardous construction and demolition debris or meet local construction and demolition waste management ordinance requirements, whichever is more stringent (Sections 4.4081.1 and 5.408.1). In addition, 100 percent of trees, stumps, rocks, and associated vegetation and soils resulting primarily from land clearing for nonresidential projects must be reused or recycled (Section 5.408.3). The proposed project would comply with these mandatory requirements.

The state's near-term (2030, within which the project would be constructed) GHG strategy is defined by SB 32. The *2017 Climate Change Scoping Plan* identifies increasing sequestration as crucial to achieving the state's long-term climate change strategy (California Air Resources Board 2017). It outlines objectives to maintain natural lands as a resilient carbon sink and sets a goal to reduce GHG emissions from natural and working lands by at least 15 to 20 million metric tons of CO_2e by 2030. SB 1386 also identifies the protection and management of natural and working lands as a key strategy towards meeting the state's 2030 GHG reduction target. As noted above, the project would remove up to five trees during construction. This would conflict with the state's land use and sequestration goals, resulting in a significant impact before mitigation.

Beyond sequestration, the *2017 Climate Change Scoping Plan* includes broad policy objectives to help meet the state's 2030 target across the California economy. While the *2017 Climate Change Scoping Plan* does not have explicit regulatory requirements related to construction equipment, actions undertaken to achieve some policies will GHG reductions in the construction sector. Table 3.7-3 analyzes consistency of the proposed project with the policy objectives of the *2017 Climate Change Scoping Plan*.

Table 3.7-3. Consistency of the Proposed Project with Scoping Plan Policies

Policy	Primary Objective	Consistency Analysis
Senate Bill 350	Reduce GHG emissions in the electricity sector by implementing the 50% Renewables Portfolio Standard, doubling energy savings, and taking other actions as appropriate to achieve the GHG emissions reductions planning targets in the Integrated Resource Plan process.	This policy is a state program that requires no action at the local or project level.
Low-Carbon Fuel Standard	Transition to cleaner/less-polluting fuels that have a lower carbon footprint.	This policy is a state program that requires no action at the local or project level. Nonetheless, GHG-MM-1 prioritizes alternatively or renewably fueled vehicles/equipment.
Mobile-Source Strategy (Cleaner Technology and Fuels Scenario)	Reduce GHGs and other pollutants from the transportation sector by transitioning to zero-emission and low-emission vehicles, operating cleaner transit systems, and reducing vehicle miles traveled.	This policy is a state program that requires no action at the local or project level. Nonetheless, GHG-MM-1 prioritizes alternatively or renewably fueled vehicles/equipment.
Senate Bill 1383	Approve and implement short-lived climate pollutant strategy to reduce highly potent GHGs.	The proposed project does not include any new or expanded sources of high global warming potential GHGs.
California Sustainable Freight Action Plan	Improve freight efficiency, transition to zero-emission technologies, and increase competitiveness of California's freight system.	The proposed project does not include a freight component.

Policy	Primary Objective	Consistency Analysis
Post-2020 Cap-and-Trade Program	Reduce GHGs across largest GHG emissions sources.	The proposed project does not propose any major sources of GHG emissions (i.e., sources with annual emissions greater than 25,000 metric tons of CO_2e).

Mitigation measure GHG-MM-1: *Implement Best Management Practices to Mitigate Tree Loss and Reduce Construction Generated Greenhouse Gas Emissions* is required to replace all removed trees at a 1:1 ratio. The measure also requires BMPs recommended by CARB for the reduction of construction-generated GHGs. With GHG-MM-1, this impact would be less than significant.

GHG-MM-1: Implement Best Management Practices to Mitigate Tree Loss and Reduce Construction Generated Greenhouse Gas Emissions

PG&E will reduce GHG emissions generated during short-term construction by implementing the following measures.

- All trees removed during project construction will be replaced at a 1:1 ratio. Trees may be planted at the construction site, within the project area, or throughout PG&E's service territory. PG&E will prioritize tree plantings of the same size and species as the trees removed. The ultimate planting location and species will be selected to maximize tree survivability and growth.
- Idling times will be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of CCR). Clear signage will be provided for construction workers at all access points.
- Encourage construction contractors to operate vehicles with the highest tier engines commercially available.
- Prioritize use of alternative fuel (e.g., biodiesel, electric) or renewable diesel in project construction vehicles/equipment.

b. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

There are no adopted local climate action plans or policies for the reduction of GHG emissions. The *2017 Climate Change Scoping Plan* is the state's plan for reducing GHG emissions to achieve the 2030 GHG reduction target outlined by SB 32. The proposed project's consistency with SB 32 (including the *2017 Climate Change Scoping Plan*) and other applicable state regulations is assessed below to determine the significance of this impact. Consistency with AB 1279 and the *2022 Scoping Plan Update* is not specifically reviewed because all emissions generated by construction of the project are expected to occur in 2023, which is well before the AB 1279 target year (2045).

Senate Bill 32

SB 32 codified the state's GHG emissions reduction target for 2030. CARB adopted the *2017 Climate Change Scoping Plan* as a framework for achieving the 2030 GHG emissions target. As discussed under impact "a", removal of existing trees would conflict with the scoping plan's objective to maintain natural lands as a resilient carbon sink. This is a significant impact before mitigation. GHG-

MM-1 requires 1:1 replacement ratio of all removed trees. This measure also outlines BMPs for the reduction of construction-generated GHG emissions, which is consistent with the broad policy objectives of the *2017 Climate Change Scoping Plan*. With GHG-MM-1, there would not be a conflict with SB 32, and this impact would be less than significant.

Other State Regulations

California has adopted statewide legislation addressing various aspects of GHG emissions reduction. Regulations, such as the SB 100/1020-mandated 100 percent carbon-free electricity by 2045 and new vehicle mandates and emission standards, will be necessary to attain the magnitude of reductions required for the state's 2030 GHG target. The proposed project would be required to comply with all regulations applicable to new infrastructure construction or would be directly affected by the outcomes (e.g., vehicle travel would be less carbon intensive due to the increasingly stringent zero-emission standards). Unlike the *2017 Climate Change Scoping Plan*, which explicitly calls for additional emissions reductions from local governments and new projects, none of these state regulations identify specific requirements or commitments for new development beyond what is already required by existing regulations or will be required in forthcoming regulation. Therefore, there is no conflict or inconsistency.

GHG-MM-1: Implement Best Management Practices to Mitigate Tree Loss and Reduce Construction Generated Greenhouse Gas Emissions

Refer to the measure description under impact "a".

3.8 Energy

3.8.1 Introduction

This section analyzes the proposed project's potential impacts related to energy resources. It describes existing conditions in the study area and summarizes the overall regulatory framework for energy, and it analyzes the potential for the proposed project to affect energy resources. The study area includes the physical construction footprint in Alpine County, as well as material hauling routes through Amador County and worker trips through El Dorado County.

As described in Chapter 2, *Project Description*, the project site would be returned, as much as is reasonably practical, to its original condition following completion of construction activities. All equipment and surplus materials would be removed from the project site. Operations and maintenance activities would be the same as pre-project conditions. Accordingly, there would be no change in operational energy use relative to existing conditions. This analysis therefore focuses exclusively on construction energy consumption as there would be no long-term operational energy impact.

3.8.2 Existing Conditions

The proposed project would consume energy primarily through construction activities resulting from the use of gasoline and diesel for off road equipment, trucks, and employee traffic. Gasoline is the most used transportation fuel in California, with more than 13 billion gallons sold in 2021 (California Energy Commission 2022a). More than 4 billion gallons of diesel were sold in 2021, making it the second most used transportation fuel in the state (California Energy Commission 2022b). Within Alpine, Amador, and El Dorado Counties, gasoline and diesel are consumed as the primary transportation fuels. Electricity, propane, and natural gas are the most used fuels within the built environment (i.e., by buildings) (Sierra Business Council 2015, 2016).

3.8.3 Regulatory Setting

This section summarizes key federal, state, and local regulations, laws, and policies relevant to energy in the project area. This section also identifies regulations applicable to renewable energy use and energy efficiency. Please also see Sections 3.6, *Air Quality*, and 3.7, *Greenhouse Gas Emissions*, for more information regarding the regulations controlling and governing emissions. Vehicle fuel economy regulations are included in this section because they are relevant to construction vehicles and equipment that would be required for the project.

3.8.3.1 Federal

Energy Policy and Conservation Act of 1975 and Corporate Average Fuel Standards

The Energy Policy and Conservation Act of 1975 established the first fuel economy standards for on-road motor vehicles sold in the United States. NHTSA is responsible for establishing vehicle standards and revising existing standards. Its Corporate Average Fuel Economy program was created to determine vehicle manufacturers' compliance with the fuel economy standards. EPA administers the testing program that generates the fuel economy data.

Energy Policy Act of 2005

The Energy Policy Act of 2005 establishes a comprehensive, long-term federal energy policy and is implemented by the U.S. Department of Energy. The act addresses energy production in the United States, including oil, gas, coal, and alternative forms of energy and energy efficiency and tax incentives. Energy efficiency and tax incentive programs include credits for the construction of new energy-efficient homes, production or purchase of energy-efficient appliances, and loan guarantees for entities that develop or use innovative technologies that avoid the production of GHG emissions.

Energy and Independence Security Act of 2007

The Energy Independence and Security Act of 2007 was passed to increase the production of clean renewable fuels; increase the efficiency of products, buildings, and vehicles; improve the energy performance of the federal government; and increase U.S. energy security, develop renewable fuel production, and improve vehicle fuel economy. The act included the first increase in fuel economy standards for passenger cars since 1975, a new energy grant program for use by local governments in implementing energy-efficiency initiatives, and a variety of green building incentives and programs.

3.8.3.2 State

California has recently focused on energy efficiency and planning for energy resources at a statewide level, which influences local planning efforts. The following state regulations provide context for these planning efforts.

Senate Bill 1389 (2002) and California Integrated Energy Policy Report

SB 1389 requires the California Energy Commission (CEC) to develop an integrated energy plan for electricity, natural gas, and transportation fuels. The CEC adopts an Integrated Energy Policy Report (IEPR) every 2 years and an update every other year. The IEPR covers a broad range of topics, including environmental performance of the electricity generation system, landscape-scale planning, transportation fuel supply reliability, climate adaptation activities, and climate and sea level rise scenarios intended to support improvements to the California energy system that reduce air pollution, congestion, and wasteful energy use. The 2021 IEPR was adopted on February 22, 2022.

Renewables Portfolio Standard Program—Senate Bills 1078 (2002), 107 (2006), 2 (2011), 100 (2018), and 1020 (2022)

In 2002, California established its Renewables Portfolio Standard (RPS) Program, with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent of retail sales by 2010. The goals of the RPS have been revised overtime by several SBs. Pursuant to the latest revisions under SBs 100 and 1020, eligible renewable energy resources and zero-carbon resources must supply 60 percent of all retail sales of electricity to California end-use customers by December 31, 2030, 90 percent of all retail sales of electricity by December 31, 2035, 95 percent of all retail sales by December 31, 2040, and 100 percent of all retail sales by December 31, 2045. All electricity procured to serve state agencies must be provided by 100 percent eligible renewable energy resources and zero-carbon resources by December 31, 2035.

Clean Energy and Pollution Reduction Act of 2015—Senate Bill 350 (2015)

SB 350 was approved by the California legislature in September 2015 and signed by Governor Brown in October 2015. While the bill includes provisions for the RPS, these have been superseded by subsequent bills (described above). With respect to energy efficiency, SB 350 requires a doubling of energy efficiency (electrical and natural gas) by 2030, as well as improvements to the efficiency of existing buildings. These mandates will be implemented by future actions of the California Public Utilities Commission and CEC.

3.8.3.3 Local

Alpine and Amador Counties have adopted energy action plans, as described in the following subsections. El Dorado County does not currently have a specific energy plan.

Alpine County Energy Action Plan

On December 6, 2016, Alpine County adopted the Alpine County Energy Action Plan, which was produced by the Sierra Business Council and supported by PG&E. The Alpine County Energy Action Plan is a roadmap for expanding energy efficiency, water efficiency and renewable energy efforts already underway in the County. It builds upon energy efficiency efforts begun in 2009 with the update to the Housing Element of the General Plan, and the GHG inventory of municipal facilities and community-wide activities and sources, including residential and non-residential sectors conducted by Sierra Business Council in 2010.

Amador County Energy Action Plan

On May 26, 2015, Amador County adopted the Amador County Energy Action Plan, which was produced by the Sierra Business Council and supported by PG&E. The Amador County Energy Action Plan is a roadmap for expanding energy-efficiency and renewable-energy efforts already underway in the County. It builds upon energy-efficiency efforts begun in 2009, including the Amador County Government Operations Energy Use and Greenhouse Gas Emissions Inventory, and the 2011 Sierra Business Council GHG inventory of emissions from community activities, which included residential and non-residential sectors.

3.8.4 Environmental Effects

Potential impacts of the proposed project related to energy are discussed in the context of the CEQA Guidelines Appendix G checklist. Checklist Section VI, *Energy*, asks whether the project would result in any of the following conditions.

a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Sources of gasoline and diesel consumption associated with project construction include off-road equipment and on-road vehicles. Minor amounts of jet fuel would also be consumed by helicopters used for material delivery.

Activities that consume gasoline and diesel also contribute to other related impacts. GHG emissions, such as CO_2, are linked to energy consumption. Energy consumption from the combustion of fossil fuels (i.e., gasoline and diesel) can therefore be quantified from predicted CO_2 levels based on the rate of CO_2 emissions emitted per gallon of combusted diesel (22.4 pounds/gallon) and gasoline (19.6 pounds/gallon) (Climate Registry 2022).

CO_2 emissions from off-road equipment and on-road vehicles were quantified using information provided by PG&E and CalEEMod (version 2022.1) (McGuckin pers. comm.) (see Appendix D, *Air Quality Calculations and Assumptions*). Diesel and gasoline consumption (gallons) were estimated from the modeled CO_2 levels using the equivalence ratios identified above.

Factors for helicopter jet fuel consumption per LTO cycle and operational cruising hour for helicopters used for material movement were obtained from FOCA (2015). These factors were applied to the project's LTO and cruising inventory to quantify total annual helicopter fuel use.

Table 3.8-1 summarizes estimated energy that would be used to construct the project in Alpine County. Diesel fuel consumed by material hauling through Amador County is also presented, as well as gasoline used for employee commuting in El Dorado County. All fuel would be consumed between July and October 2023. Refer to Appendix D, *Air Quality Calculations and Assumptions* for modeling assumptions.

Table 3.8-1. Construction-Period Energy Consumption Estimates (2023)

Location	Gasoline/Diesel (gallons)	Jet Fuel (gallons)
Alpine County (physical project construction)	9,448	511
Amador County (material hauling)	26,475	0
Employee Commute in the EDCAQMD	197	0
Total	36,120	511

Source: Energy modeling (see Appendix D, *Air Quality Calculations and Assumptions*).

Because construction activities are short term, the increase of consumption within the project area would also be short term. As discussed in Chapter 2, *Project Description*, Section 2.5, *Best Management Practices*, a traffic control plan will be developed and implemented under BMP-4: *Implement Traffic Control Plan*. BMP-4 specifies that the traffic control plan will include the measures listed below, some of which may also be required for other purposes such as emissions and stormwater pollution control, which will minimize energy consumption from construction activities.

- The construction contractor must comply with Title 13 of the CCR, which includes idling restrictions on construction vehicles and equipment to no more than 5 minutes.
- Construction equipment and vehicles will be properly tuned and maintained.
- To the extent feasible, construction traffic will be scheduled and routed to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.

Implementation of the above design features required in the traffic control plan would help conserve energy, consistent with state and local policies to reduce energy consumption. Therefore, the project would not result in the inefficient, wasteful, or unnecessary consumption of construction energy. This impact would be less than significant.

b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Construction activities would not require the use of energy in appreciable quantities (see Impact "a" above) and would not directly result in a need to construct new energy generation or supply facilities. There would be no change to existing operational activities and no change to existing operational energy use. Furthermore, the project does not involve investor-owned utilities or retail sellers of electricity that are subject to the requirements of the state and local energy plans or regulations. The project would not affect PG&E's ability to provide renewable energy resources and would not obstruct implementation of the RPS or result in energy consumption that would require Alpine County to install more energy production facilities.

The Alpine and Amador County energy action plans contain measures to increase energy efficiency in existing structures, new buildings, and municipal structures and operations. Additionally, the energy action plans focus on renewable energy efforts and reducing energy associated with water and waste. All of these measures are associated with the operational aspects of new or existing projects. Since this project would not construct any new buildings and is only modifying a dam and replacing a weir with no change to existing operations, these measures and energy action plans are not applicable to this project.

Based on the above analysis, the proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. This impact would be less than significant.

3.9 Noise

3.9.1 Introduction

This section analyzes the proposed project's potential noise impacts on surrounding noise sensitive land uses/receivers. It describes existing conditions in the project area, summarizes the overall regulatory framework as it relates to noise, and analyzes the potential for the noise from construction and operations of the proposed project to affect surrounding noise sensitive receivers.

3.9.2 Existing Conditions

Existing ambient noise levels in the project vicinity are characterized largely by noise associated with natural/undeveloped area, such as rustling of leaves and recreational activities. These activities included cycling, kayaking, and riding in off-road vehicles, which were observed by ICF during noise measurement collection. During construction of the proposed project, Lower Blue Lake Campground is expected to be operational, which may result in additional noise sources due to recreational activities.

To determine the existing ambient noise levels in the vicinity of the project area, short-term (15-minute) ambient noise measurements were conducted by ICF on Friday October 21, 2022. On this day, weather conditions were comprised of clear skies, with wind speeds averaging to 2.6 miles per hour.

Three short-term noise measurements were conducted near the project site. Short-term measurements were conducted using a Larson Davis 831 Type 1 sound level meter, which measured equivalent sound levels (L_{eq}) every 10 seconds for 15 minutes as well as overall L_{eq} (averaged over the 20-minute measurement interval). The measured short-term noise levels ranged from 37.7 to 38.7 A-weighted decibels (dBA) L_{eq}.

Short-term monitoring locations were selected to capture noise levels in areas that are representative of ambient levels throughout the day near the project site, and in areas that have noise-sensitive receptors, such as the campground northeast of the site.

All noise measurement locations are shown in Figure 3.9-1. The relevant noise data from the noise measurement survey are shown in Table 3.9-1. Refer to Appendix E for the complete dataset of noise measurement data from the field survey.

Table 3.9-1. Short-Term Noise Level Measurements in and around the Project Site, October 21, 2022

Site	Site Description	Measurement Start Time	L_{eq}	L_{max}	L_{min}	Dominant Noise Source
ST-1	Camp Host campsite	11:17 a.m.	38.7	54.4	25.9	Roadway traffic
ST-2	Campsite #1	12:27 p.m.	38.4	49.5	27.0	Breeze through trees and recreational activities
ST-3	Water well, near Campsites #7 and #8	11:58 a.m.	37.7	54.8	24.4	Roadway traffic and aircraft noise

ST = short-term (15-minute) ambient noise measurement.
All noise levels are reported in A-weighted decibels.

3.9.3 Regulatory Setting

3.9.3.1 Federal

No federal laws, regulations, or policies for construction-related noise and vibration apply to the proposed project.

3.9.3.2 State

California Governor's Office of Planning and Research

The *State of California General Plan Guidelines,* published and updated by the Office of Planning and Research (OPR), provides guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. These are guidelines for general land use planning that describe noise acceptability categories for different types of land uses considered by the state. California also requires each local government entity to perform noise studies and implement a noise element as part of its general plan. The purpose of the noise element is to limit the exposure of the community to excessive noise levels; the noise element must be used to guide decisions concerning land use.

California Department of Transportation

There are no state noise and vibration standards that directly apply to the proposed project. There are also no quantitative local standards that can be used to assess project-related vibration. The California Department of Transportation's (Caltrans) widely referenced *Transportation and Construction Vibration Guidance Manual* (California Department of Transportation 2020) provides guidance for two types of potential impact: (1) damage to structures, and (2) annoyance to people. Therefore, while the proposed project would not be subject to Caltrans oversight, guidance published by the agency nonetheless provides groundborne vibration criteria that are useful in establishing thresholds for impact determinations. Caltrans guideline criteria for each are provided in Tables 3.9-2 and 3.9-3.

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Figure 3.9-1
Noise Monitoring Locations

Table 3.9-2. Caltrans Guidelines for Vibration-Related Damage

Structure and Condition	Maximum PPV (in/sec) Transient Sources	Maximum PPV (in/sec) Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: California Department of Transportation 2020.
Notes:
Transient sources create a single, isolated vibration event, such as blasting or drop balls.
Continuous/frequent intermittent sources include pile drivers (impact and vibratory), crack-and-seat equipment, and vibratory compaction equipment.
PPV = peak particle velocity (vibration level) in inches per second.

Table 3.9-3. Caltrans Guidelines for Vibration-Related Annoyance

Human Response	Maximum PPV (in/sec) Transient Sources	Maximum PPV (in/sec) Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Source: California Department of Transportation 2020.
Notes:
Transient sources create a single, isolated vibration event, such as blasting or drop balls.
Continuous/frequent intermittent sources include pile drivers (impact and vibratory), crack-and-seat equipment, and vibratory compaction equipment.
PPV = peak particle velocity (vibration level) in inches per second.

3.9.3.3 Local

Alpine County General Plan

The Alpine County General Plan was adopted in 1999 and most recently updated in August 2021 with revisions made to the Safety Element. The Safety Element contains a section related to noise that discusses existing noise sources as well as policies and implementation measures related to noise in the County of Alpine (Alpine County 2021). The following policy and implementation measures are relevant to the proposed project:

- **Policy 23A:** Preserve the character of the county's quiet small rural communities by maintaining existing ambient noise levels and preventing new land uses that would result in significant adverse impact from noise to existing communities.
- **Implementation Measure 23A-1 Noise Ordinance:** Maintain a noise ordinance with noise level standards that are consistent with the above stated policy.

- **Implementation Measure 23A-2 Review Proposed Development:** All land use and development proposals shall be reviewed for compliance with noise and land use compatibility standards. Design changes and/or mitigation measures shall be considered as needed to achieve compliance with the standards.

Alpine County Code

Section 18.68.090 of the Alpine County Code contains the county's noise ordinance. The ordinance states a maximum noise level standard for various land uses when measured beyond the parcel boundary of the land use emitting noise. These noise levels are show in Table 3.9-4.

Table 3.9-4. Alpine County Maximum Allowable Noise Standard

Zone	Maximum L_{eq}(15)
Residential Neighborhood (RN)[a]	65 db(A)[b]
Residential Estates (RE)[a]	60 db(A)
Institutional (INS)	70 db(A)
Planned Development (PD)	70 db(A)
Commercial Recreational (CR)	75 db(A)
Commercial (C)	75 db(A)

L_{eq}(15) means the average noise level measured over a 15-minute period.
[a] Includes all subcategories of these zoning districts, such as RN-20, RE-4, etc.
[b] (A) refers to A-weighted scale.

The county code also allows for exceptions to the previously defined noise standard for special events and temporary/short-duration activities. Special events are regulated through the conditions of approval of a special event permit, which is issued and approved by the county. Temporary/short-duration activities are reserved for instances when it is impractical or unreasonable to meet the county noise standards listed in Table 3.9-4 due to the nature of the activity.[1] In granting an exception in these cases, the permitting/approval authority shall consider the potential impacts on adjacent properties and should impose reasonable conditions on the permit that are intended to mitigate noise impacts.

The county code also defines activities which are considered exempt from noise standards, which may include (but is not limited to) construction, emergency, and public facilities and utilities. Construction activities are exempt from the previously defined noise standard between 8:00 a.m. and 6:00 p.m., Monday through Friday, and between 9:00 a.m. and 3:00 p.m. on Saturday and Sunday. This section also states that construction noise that does not exceed the maximum allowable noise standard are not subject to these time restrictions. During the case of an emergency, the use and operation of equipment and tool necessary to protect life or property and the use of emergency warning devices operated by public safety officers are considered exempt without time restrictions. Furthermore, the operation, maintenance, and repair of facilities by public agencies and utility providers are considered exempt. Similar to emergency exemptions, public facilities and utilities exemptions are not restricted to specific times.

[1] The code does not define what is impractical or unreasonable with respect to meeting the county noise standard. It is assumed that this implies that the event is unable to provide feasible mitigation which would allow compliance with the maximum allowable noise standards listed in Table 3.9-4.

Amador County Code

As stated in Section 2.4.2, *On-Road Vehicle Use*, vendor and haul truck trips may originate in Ione, CA (or a combination of both Ione, CA and Carson City, NV). To account for vendor and haul truck noise traveling through Amador County, the county code is considered for applicable noise standards. The county code does not have specific noise standards listed which would apply to the project-related vendor and haul truck traffic traveling through the county; therefore, noise impacts in Amador County are not considered further in this analysis.

3.9.4 Environmental Effects

Potential impacts of the proposed project related to noise are discussed in the context of State CEQA Guidelines Appendix G checklist. Checklist Section XIII, *Noise*, asks whether the project would result in any of the following conditions.

a. Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?

Construction Noise

The analysis of construction noise considers the equipment that would be required for project demolition and construction, as identified by PG&E based on available information at this time.

Noise from construction of a project varies depending on the type of equipment used, how many pieces of equipment are operating at any one time, the proximity of the equipment to a noise-sensitive receptor, and the duration of the equipment use. Estimates of combined construction and demolition noise levels for the proposed project are based on reference noise levels from the Federal Highway Administration (FHWA) roadway construction noise model (Federal Highway Administration 2006), the Federal Transit Administration (FTA) general assessment construction noise analysis method (Federal Transit Administration 2018), and information provided by PG&E. The FTA recommends combining noise levels from the two loudest pieces of equipment expected to operate simultaneously in roughly the same location. For this analysis, the three loudest pieces of equipment expected to operate in a given construction phase are evaluated assuming simultaneous operation and in roughly the same location on the project site, which represents a reasonable worst-case scenario. Estimated noise levels from the reasonable worst-case scenario are compared to applicable thresholds as well as locally measured ambient noise levels.

The FHWA noise source data used in the construction noise analysis include the A-weighted maximum sound levels (L_{max}) measured at a distance of 50 feet from the construction equipment as well as the usage factors for the equipment. The usage factor is the percentage of time each piece of construction equipment is typically operating at full power and used to estimate L_{eq} values from L_{max} values. For example, the L_{eq} value for a piece of equipment that operates at full power over 50 percent of the time is 3 decibels (dB) less than the L_{max} value (Federal Highway Administration 2006).

Construction progress is expected to comply with the regulations outlined in Alpine County Code, which states that construction noise is exempt from noise standards between 8:00 a.m. and 6:00 p.m., Monday through Friday, and between 9:00 a.m. and 3:00 p.m. on Saturday and Sunday.

Additionally, the code states construction noise that does not exceed the maximum allowable noise standard are not subject to these time restrictions.

The nearest land uses to proposed construction is the Lower Blue Lake Campground. Although it is not a sensitive land use, patrons use this area for outdoor recreation and thus, noise is limited to 75 dBA L_{eq} as identified in the Alpine County Code for commercial recreational land uses.

Staging and Laydown Areas

Apart from the phases identified in Chapter 2, *Project Description*, staging areas and laydown areas are proposed near the campground. The staging area would be used for storing equipment when not actively in use. This area is approximately 70 feet from the campground.

Two laydown areas would be utilized to stage materials and excavated spoils, as outlined in Chapter 2. One of these areas is located on the east bank of Lower Blue Lake, near the campground (upper laydown area). The other would be set up in the clearing downstream of the dam, just south of the access road near the LLO (lower laydown area). Material and spoils stockpiles will be delivered to the laydown areas by front end loaders and excavators. To stay consistent with the construction noise analysis method outlined above, three pieces of equipment were modeled to determine the worst-case noise levels that may be emitted from the upper laydown area. Table 3.9-5 shows noise levels associated with the laydown areas.

The upper laydown area is approximately 225 feet from the nearest campsites (Camp Host Site). At this distance, noise from the operation of excavators and front-end loaders would be 68 dBA L_{eq}. Table 3.9-1 shows measured ambient noise at the camp host site to be 38.7 dBA L_{eq}, which would suggest that construction activities at the upper laydown area would result in a 29.3 dBA increase over ambient.[2] A similar comparison is done for the lower laydown area, which is approximately 925 feet from the nearest campsite (Campsite #1). At this distance, these construction activities would result in a noise level of 56 dBA L_{eq}. Field measurements at Campsite #1 were recorded as 38.4 dBA L_{eq}. These activities would result in a 17.6 dBA increase over the locally measured ambient noise.[3]

Although increases due to laydown areas could be at least 17.6 dBA over local ambient noise levels, noise levels from both laydown areas are below the noise standard threshold for commercial recreational land uses, 75 dBA L_{eq}, the county code states that these activities may occur anytime provided noise stays below the 75 dBA L_{eq} criterion. This noise level is a worst-case scenario, as construction equipment is mobile and would not always be at the closest distance (225 feet) from the nearest receiver. Furthermore, construction activities would be temporary and intermittent. For these reasons, noise from the upper and lower laydown areas would result in a less-than-significant impact. No mitigation is required.

[2] Compared to ST-1, which is representative of the nearest campsite, Camp Host Site.

[3] Compared to ST-2, which is representative of the nearest campsite, Campsite #1.

Table 3.9-5. Construction Noise Associated with Upper Laydown Area

Source Data:	**Maximum Sound Level (dBA L_{max})**	**Usage Factor**	**L_{eq} Sound Level (dBA)**
Construction Condition: Grading			
Source 1: Excavator - Sound level (dBA) at 50 feet =	81	40%	77
Source 2: Excavator - Sound level (dBA) at 50 feet =	81	40%	77
Source 3: Loader (Front End Loader) - Sound level (dBA) at 50 feet =	79	40%	75
Calculated Data:			
All Sources Combined - L_{max} sound level (dBA) at 50 feet =			85
All Sources Combined - L_{eq} sound level (dBA) at 50 feet =			81

Distance Between Source and Receiver (ft.)	Geometric Attenuation (dB)	Calculated L_{max} Sound Level (dBA)	Calculated L_{eq} Sound Level (dBA)
50	0	85	81
100	-6	79	75
200	-12	73	69
225	-13	72	68
600	-22	63	59
900	-25	60	56
925	-25	60	56
1000	-26	59	55

Source: Federal Highway Administration 2006.
Notes:
- Noise levels are rounded to the nearest whole number.
- Geometric attenuation based on a 6 dB per doubling of distance.
- This calculation does not include the effects, if any, of local shielding or ground attenuation from walls, topography, or other barriers that may reduce sound levels further.
- Noise levels are based on source noise levels from the FHWA Roadway Construction Noise Model.

There are six phases which make up project construction: site preparation and demolition; crest raise on the right side of dam; downstream filter, buttress, and seepage collection; crest raise of left side of dam; staff gauge replacement' and IFR weir replacement. Construction of the proposed project occurs in several localized areas of the project site, as described in Chapter 2. As such, each phase will be considered separately to best assess potential impacts related to construction noise. Table 3.9-6 shows a summary of noise levels by phase at various distances.

Table 3.9-6. Construction Noise by Phase at Various Distances

	Site Prep and Demolition	Crest Raise Right Side of Dam	Filter and Buttress	Crest Raise Left Side of Dam	Staff Gauge [a]	IFR Weir
Three loudest equipment	Generator (78 dBA L_{eq})	Compactor (76 dBA L_{eq})	Compactor (76 dBA L_{eq})	Compactor (76 dBA L_{eq})	Forklift (75 dBA L_{eq})	Compactor (76 dBA L_{eq})
	Excavator (77 dBA L_{eq})	Compactor (76 dBA L_{eq})	Excavator (77 dBA L_{eq})	Excavator (77 dBA L_{eq})		Generator (76 dBA L_{eq})
	Dozer (78 dBA L_{eq})	Grader (81 dBA L_{eq})	Excavator (77 dBA L_{eq})	Pump, concrete (74 dBA L_{eq})		Pump, concrete (74 dBA L_{eq})
Distance (ft)	**Noise Levels at Various Distances (dBA L_{eq})**					
50	82	83	81	81	75	80
100	76	77	75	75	69	74
150	73	74	72	71	66	71
200	70	71	69	69	63	68
250	68	69	67	67	61	66
300	67	68	66	65	60	65
350	65	66	64	64	58	63
400	64	65	63	63	57	62
470	63	64	62	61	56	61
500	62	63	61	61	55	60
600	61	62	60	59	54	59
680	59	61	59	58	52	58
780	58	59	57	57	51	56
900	57	58	56	56	50	55
925	57	58	56	55	50	55
1000	56	57	55	55	49	54
1500	53	54	52	51	46	51
2000	50	51	49	49	43	48

Source: Federal Highway Administration 2006.
Notes:
- Noise levels are rounded to the nearest whole number.
- Geometric attenuation based on a 6 dB per doubling of distance.
- This calculation does not include the effects, if any, of local shielding or ground attenuation from walls, topography, or other barriers that may reduce sound levels further.
- Noise levels are based on source noise levels from the FHWA Roadway Construction Noise Model.

[a] Project applicant equipment list only listed one forklift as the equipment needed to complete this phase.

Site Preparation and Demolition

Site preparation and demolition is expected to last about 1 week. The three loudest pieces of equipment proposed for this phase include a front-end loader, excavator, and a dozer. When operating simultaneously and close to one another, combined noise from this equipment would result in 82 dBA L_{eq} at a reference distance of 50 feet. Site preparation and demolition could occur as close as 400 feet from the nearest campsite (Camp Host Site). At this distance, site preparation and demolition activities would result in a noise level of 64 dBA L_{eq}. This noise level is a worst-case scenario because construction equipment is mobile and would not always be at the closest distance (400 feet) from the nearest receiver.

The County Code states that allowable noise levels for commercial recreational land uses are 75 dBA L_{eq}. Anticipated noise levels from this phase would be below this threshold. These activities would also be temporary and intermittent, lasting approximately 1 week.

Crest Raise, Right Side of Dam

The three loudest pieces of equipment proposed for the crest raise (right side of dam) phase are two compactors and a grader. When operating simultaneously and close to one another, combined noise from this equipment would result in 83 dBA L_{eq} at a reference distance of 50 feet. This phase could occur as close as 680 feet to the nearest campsite (Campsite #1). At this distance, crest raising on the right side of the dam would result in a noise level of 61 dBA L_{eq}. This noise level is a worst-case scenario because construction equipment is mobile and would not always be at the closest distance (680 feet) from the nearest receiver.

The County Code states that allowable noise levels for commercial recreational land uses are 75 dBA L_{eq}. Anticipated noise levels from this phase would be below this threshold. These activities would also be temporary and intermittent, lasting approximately 2 weeks.

Downstream Filter, Buttress, and Seepage Collection System

PG&E anticipates that the phase comprising the installation of the downstream filter, buttress, and seepage collection system would have a duration of approximately 4 weeks. The three loudest pieces of equipment proposed for this phase include a compactor and two excavators. When operating simultaneously and close to one another, combined noise from this equipment would result in 81 dBA L_{eq} at a reference distance of 50 feet. This phase could occur as close as 470 feet to the nearest campsite (Camp Host Site). At this distance, crest raising on the right side of the dam would result in a noise level of 62 dBA L_{eq}. This noise level is a worst-case scenario because construction equipment is mobile and would not always be at the closest distance (470 feet) from the nearest receiver.

The County Code states that allowable noise levels for commercial recreational land uses are 75 dBA L_{eq}. Anticipated noise levels from this phase would be below this threshold. These activities would also be temporary and intermittent, lasting approximately 4 weeks.

Crest Raise, Left Side of Dam

The three loudest pieces of equipment proposed for the crest raise (left side of dam) phase are a compactor, an excavator, and a concrete pump. When operating simultaneously and close to one another, combined noise from this equipment would result in 81 dBA L_{eq} at a reference distance of 50 feet. This phase could occur as close as 400 feet to the nearest campsite (Camp Host Site). At this distance, crest raising on the right side of the dam would result in a noise level of 63 dBA L_{eq}. This noise level is a worst-case scenario because construction equipment is mobile and would not always be at the closest distance (400 feet) from the nearest receiver.

The County Code states that allowable noise levels for commercial recreational land uses are 75 dBA L_{eq}. Anticipated noise levels from this phase would be below the applicable threshold. These activities would also be temporary and intermittent, lasting approximately 2 weeks.

Staff Gauge Replacement

The staff gauge replacement phase is anticipated to use a single forklift. As such, only one piece of equipment was used to model noise levels for this phase. Reference data for a forklift is based on a front-end loader. At a reference distance of 50 feet, use of a forklift would result in a noise level of 75 dBA L_{eq}. The staff gauge replacement phase would occur as close as about 780 feet from the nearest campsite (Campsite #1). At this distance, this phase would result in a noise level of 51 dBA L_{eq}. This noise level is a worst-case scenario because construction equipment is mobile and would not always be at the closest distance (780 feet) from the nearest receiver.

The County Code states that allowable noise levels for commercial recreational land uses are 75 dBA L_{eq}. Anticipated noise levels from this phase would be below this threshold. These activities would also be temporary and intermittent, lasting approximately 1 week.

Replace Instream Flow Release Weir

The three loudest pieces of equipment proposed for the IFR weir replacement phase are a compactor, generator, and a concrete pump. When operating simultaneously and close to one another, combined noise from this equipment would result in 80 dBA L_{eq} at a reference distance of 50 feet. This phase could occur as close as 1,500 feet to the nearest campsite (Camp Host Site). At this distance, repair of the IFR weir would result in a noise level of 51 dBA L_{eq}. This noise level is a worst-case scenario because construction equipment is mobile and would not always be at the closest distance (1,500 feet) from the nearest receiver.

In addition to conventional construction equipment, a helicopter would be used during this phase to help transport material and equipment during construction, including the generator and fuel. Helicopter use would occur over 3 days within this phase. In this case the helicopter would take off from the newly constructed helipad, fly in a straight path to the work zone, and hover while the equipment and materials are lowered and released from the helicopter. It would then return to the helipad and land. Each of these flights are anticipated to occur for no more than 10 minutes. LTO cycles are estimated to occur over 4 hours on the worst-case day, while the other 2 days are estimated to occur over 2 hours.

At a reference distance of 50 feet, a helicopter at LTO would omit a noise level of 90 dBA L_{max}. During the flight path, noise levels would be equivalent to that of landing and taking off. The helipad is approximately 440 feet from the nearest campsite (Camp Host Site). The helicopter would fly to the IFR weir site and hover while equipment and materials are loaded/unloaded. This is approximately 1,500 feet from the nearest campsite (Camp Host Site). Table 3.9-7 shows typical helicopter sound levels at these distances. As seen here, the camp host site would be exposed to a maximum noise level of 71 dBA L_{max} during LTO cycles. Once at cruising altitude, noise levels would reduce until it reaches its destination, 1,500 feet away from the camp host site. While the helicopter works at this distance, the nearest campsite (Camp Host Site) would experience noise levels of 61 dBA L_{max}.

Table 3.9-7. Typical Helicopter Sound Levels

	Noise Level (dBA L_{max})		
Equipment[a]	**50 feet**	**440 feet**	**1,500 feet**
Helicopter	90	71	61

Source: Federal Highway Administration 2006.
Notes:

[a] Noise levels listed are for typical equipment used during construction, and not all potential equipment used for the proposed project is listed herein. The equipment used is considered to be representative of the equipment that would be used during construction of the proposed project.

The County Code states that allowable noise levels for commercial recreational land uses are 75 dBA L_{eq}.[4] Anticipated noise levels from this phase would be below this threshold for both conventional construction equipment and the use of helicopters. These activities would also be temporary and intermittent, lasting approximately 2 weeks.

Construction by Phase Noise Summary

As discussed above, each phase is expected to result in noise levels that are below the commercial recreational noise standard of 75 dBA L_{eq}. The worst-case noise increase comes from the use of helicopters during the replace IFR weir phase, at 71 dBA L_{max}. For conventional construction equipment, Site prep and demolition is expected to result in the highest noise level, which is anticipated to be approximately 64 dBA L_{eq}. The use of heavy equipment in laydown areas are anticipated to result in noise levels of 68 dBA L_{eq}. Assuming that the laydown areas are active during all construction, noise contributions from individual phases of construction to the laydown area at the closest receptor would range from 0.8 to 1.5 dBA. Therefore, combined noise levels would result in 69.5 dBA L_{eq} at the nearest sensitive receptor, camp host. Each of the phases discussed above would also be temporary and intermittent, with construction activities complying with acceptable working hours outlined in the county code. In the event work needs to occur outside of these allowable hours, construction work is not anticipated to exceed the noise standard for commercial recreational land uses. For these reasons, noise from these phases would result in a less-than-significant impact. No mitigation is required.

Construction Haul Truck Noise

Haul and vendor trucks would be used for mobilization and demobilization of construction equipment and materials. As discussed in Section 2.4.2, vendor and haul truck trips may originate in either Ione, Ca or Carson City, NV (or a combination of both).

Trucks traveling from Ione, CA would drive east along SR 88, turn right onto Blue Lakes Road, and continue along to Lower Blue Lake. Trucks traveling from Carson City, NV would head west on SR 88 after entering the state, turn left on Blue Lakes Road, and continue to Lower Blue Lake. On a worst-case day, the project applicant has stated approximately 34 one-way truck trips would be made for fill delivery and backhaul (30 one-way haul truck trips, four one-way vendor truck trips). Haul truck and vendor truck pass by noise has been measured to be 84 dBA and may increase local ambient noise levels while a truck is driving by a receptor (Federal Transit Administration 2018). However, these increases are short in duration and generally considered not significant because noise would dissipate as the truck drives further away. For these reasons, impacts related to construction haul and vendor truck noise would be considered less than significant.

Operational Noise

Once construction of the proposed project is complete, there would be no permanent changes to operation and maintenance of the dam or IFR weir. Furthermore, no new stationary equipment will

[4] The helicopter noise is referenced as a maximum noise level (L_{max}). As this is the maximum noise level (71 dBA L_{max}) and would only occur for 10 minutes during any one hour, it is anticipated the L_{eq} would be below the 75 dBA L_{eq} noise standard.

be installed. Due to this, impacts from operational noise would be considered less than significant. No mitigation is required.

b. Generate excessive groundborne vibration or groundborne noise levels?

Vibration-Related Damage

Construction-related vibration resulting from the project was analyzed using data and modeling methodologies provided by Caltrans' *Transportation and Construction Vibration Guidance Manual* (California Department of Transportation 2020). This guidance manual provides typical vibration source levels for various types of construction equipment, as well as methods for estimating the propagation of groundborne vibration over distance. Table 3.9-8 provides peak particle velocity (PPV) vibration levels of construction equipment expected to be used for the proposed project, which shows reference data at a distance of 25 feet as well as the various distances equipment would need to be from existing structures to prevent damage. All of the analyzed equipment is classified as continuous/frequent intermittent vibration sources.

Table 3.9-8. Construction Vibration Analysis—Potential Building Damage, Distance to Criteria

		Building Category:	Extremely fragile historic buildings, ruins, ancient monuments	Fragile buildings	Historic and some old buildings	Older residential structures	New residential structures	Modern industrial/ commercial buildings
Equipment Item	**Reference PPV at 25 feet, in/s** [a]	**Vibration Damage Impact Criteria, PPV, in/s:**	**0.08**	**0.1**	**0.25**	**0.3**	**0.5**	**0.5**
Large bulldozer [b]	0.089	Distance to Impact Criteria, feet:	28	23	10	9	6	6
Small bulldozer	0.003		2	2	<1	<1	<1	<1

Source: California Department of Transportation 2020

[a] Obtained from California Department of Transportation 2020.

[b] Measured in inches per second (in/sec). Considered representative of other heavy earthmoving equipment such as excavators, graders, backhoes, etc.

Construction of the proposed project would involve the use of construction equipment that could generate groundborne vibration. The most vibration-intensive equipment proposed include an excavator, front-end loader, backhoe. A large bulldozer is considered to produce similar vibration levels to equipment such as an excavator, front-end loader, and a backhoe. A small bulldozer would also be used during project construction; however, this equipment generates lower vibration levels than a large bulldozer as seen in Table 3.9-8. The nearest structure to proposed construction areas is a small maintenance building, which approximately 125 feet east of proposed demolition. This structure would be categorized as a modern industrial/commercial building, which has a damage criterion of 0.5 PPV inch per second (in/sec). Table 3.9-8 shows that a large bulldozer would need to be operated closer than 6 feet to cause potential vibration-induced structural damage. Other existing structures, such as pit toilet structures in the campground, are much further away from the proposed construction site and would not experience vibration levels intense enough to cause structural damage as these vibration levels would dissipate as distance increases.

Because the nearest structure (small operations building) is further than 6 feet from operating equipment, vibration levels would be below the applicable Caltrans damage criteria, and vibration-related damage would be considered less than significant. No mitigation is required.

Vibration-Related Annoyance

Regarding the potential for annoyance-related vibration impacts to occur, residential land uses are considered to be most sensitive to vibration during nighttime hours when people generally sleep. Although it would typically be considered a recreational land use, this analysis will conservatively classify the campground as a residential land use. The proposed project however does not anticipate the use of nighttime construction and therefore cannot cause nighttime sleep disturbances. Nonetheless, to provide a conservative assessment with respect to vibration annoyance, vibration from construction activities is assessed during the daytime. Should strongly perceptible vibration levels (PPV of 0.1 in/sec, per the Caltrans Guidelines for Vibration Annoyance Potential) occur at the nearby campground during daytime hours, vibration-related annoyance could occur. Table 3.9-9 presents PPV vibration levels of construction equipment expected to be used for the proposed project, which shows reference data at a distance of 25 feet as well as the distance equipment would need to meet the strongly perceptible vibration-annoyance criterion.

Table 3.9-9. Construction Vibration Analysis—Human Response, Distance to Criteria

Equipment Item	Reference PPV at 25 feet (in/sec) [a]	Vibration Damage Impact Criteria, Strongly Perceptible (in/sec)	Distance to Impact Criteria (feet)
Large bulldozer [b]	0.089	0.1	23
Small bulldozer	0.003	0.1	2

Source: California Department of Transportation 2020
[a] Obtained from California Department of Transportation 2020.
[b] Considered representative of other heavy earthmoving equipment such as excavators, graders, backhoes, etc.

Vibration-intensive equipment could be operated as close as 225 feet from the camp host site while in use at the upper laydown area. To keep this assessment conservative, vibration-related annoyance is considered to be significant if vibration levels are above 0.1 PPV in/sec at the nearest sensitive receiver. Table 3.9-9 shows that a large bulldozer, or equivalent equipment, would need to operate within 23 feet of the nearest sensitive receiver to cause vibration to exceed the “strongly perceptible" vibration annoyance criterion. Furthermore, at a distance of 225 feet, vibration from a large bulldozer would dissipate to a level of 0.008 PPV in/sec, which is below Caltrans vibration annoyance criterion of "strongly perceptible" (0.1 PPV in/sec).

Because the nearest sensitive receiver (Camp Host Site) is further than 23 feet from where vibration-intensive equipment could be operated, vibration levels would be below the applicable Caltrans annoyance criteria and vibration-related annoyance would be considered less than significant. No mitigation is required.

c. Be 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 and expose people residing or working in the project area to excessive noise levels?

The closest airport to the project site is Alpine County Airport, which is approximately 11.9 miles northeast of the project site. Additionally, there are no private airstrips near the project site. Therefore, the proposed project would not expose people working or residing in the project area to excessive noise levels resulting from a public or public use airport or private airstrip. There would be no impact.

3.10 Recreation

3.10.1 Introduction

This section analyzes the proposed project's potential impacts related to recreation. It describes existing conditions in the project area and summarizes the overall regulatory framework for Recreation, and it analyzes the potential for the proposed project to affect these resources.

3.10.2 Existing Conditions

This section discusses the existing conditions related to recreation in the project vicinity. Recreation is a mainstay of Alpine County's economy; almost all businesses in the county, except for ranching, rely on visitors to sustain them (Alpine County 2017:58).

3.10.2.1 Mokelumne Wilderness

Lower Blue Lake is on land owned by PG&E within the Mokelumne Wilderness. The Mokelumne Wilderness is a 104,165-acre area that straddles the crest of the central Sierra Nevada within the Stanislaus, Eldorado, and Toiyabe National Forests. This area lies in portions of Calaveras, Alpine, and Amador Counties and is bordered by SR 4 on the south and SR 88 on the north. Watershed drain into the Mokelumne River on the west slope of the Sierra Nevada, and to the Carson River on the east.

The Mokelumne Wilderness is a rugged landscape of scenic beauty. Hiking, camping, viewing nature, fishing, horseback riding, and cross-county skiing are popular activities within the wilderness. The Mokelumne Wilderness contains approximately 50 trailheads and wilderness access points, 40 campgrounds containing more than 1,000 campsites, 4 "sno-parks," and numerous day-use and all-terrain vehicle trails (U.S. Forest Service 2008). However, the Mokelumne Wilderness is less used than the adjacent Desolation and Carson-Iceberg wilderness areas (U.S. Forest Service 2000).

3.10.2.2 Lower Blue Lake and Blue Lakes Area

PG&E manages recreational facilities for visitors at Lower Blue Lake, including a campground (17 spaces), two day-use areas, and a boat ramp. The trailhead for the Deer Valley OHV Trail and the road to Twin Lake and Meadow Lake is located to the south of the Lower Blue Lake Dam.

PG&E manages Lower Blue Lake as part of its Blue Lakes planning unit, which includes additional camping and day use amenities along Middle Creek and at Upper Blue Lake, Twin Lake, and Meadow Lake. The Blue Lakes area is a popular summertime recreation destination for camping, fishing, and nature viewing; however, the area is closed during the winter months because of heavy snowfall.

The Blue Lakes area is accessed via Blue Lakes Road, which winds approximately 13 miles from its junction with SR 88 through the Hope, Faith, and Charity Valleys. Blue Lakes Road is not cleared of snow during the winter months, when it is used as a snowmobile and cross-country ski trail.

3.10.3 Regulatory Setting

3.10.3.1 Federal

Federal Energy Regulatory Commission

On October 11, 2001, FERC issued a new license to PG&E for the Mokelumne River Project. The FERC license included the following U.S. Forest Service (USFS) conditions related to recreation (Federal Energy Regulatory Commision 2001).

- Condition 19. Maintain recreation use data, conduct surveys, and consult with the Forest Service on the need for additional recreation facilities.
- Condition 20. Meet with the Forest Service every 5 years to consider the need for and timing of recreation facility rehabilitation.
- Condition 21. Designate a liaison to work with the Forest Service on planning and construction of recreation facilities, other major project works, and Project maintenance activities.
- Condition 26. Provide or improve numerous recreation facilities in the Blue Lakes area.

3.10.3.2 Local

Alpine County General Plan

The *Alpine County General Plan* (2017) recognizes recreation as the largest contributor to the economy of Alpine County and acknowledges the local water, animal life, open space, historic, and other resources as valuable to recreation and tourism. The General Plan includes goals and policies to protect those resources but does not contain any goals or policies specific to recreation, other than to oppose the acquisition of water rights that would adversely affect recreational uses and to ensure adequate emergency access to new recreational sites.

3.10.4 Environmental Effects

Potential impacts of the proposed project related to recreation are discussed in the context of State CEQA Guidelines Appendix G checklist. Checklist Section XVI, *Recreation*, asks whether the project would result in any of the following conditions.

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

Effects on recreation due to the proposed project would be temporary and limited to the 2023 summer season during construction activities. No permanent impacts on recreation would result. However, for safety reasons, PG&E would need to close the Lower Blue Lake Launch Ramp, along with its associated parking area and restrooms, and the Lower Blue Lake Dam Day Use Area during construction. This closure would prevent public use of these facilities during the 2023 summer season. The Lower Blue Lake campground, Lower Blue Lake Shoreline Day Use and Picnic Area, Deer Valley OHV Trail and road to Twin Lake and Meadow Lake would remain open during construction activities, as would the facilities along Middle Creek and at Upper Blue Lake, Twin Lake, and Meadow Lake. Once construction is complete, the temporarily closed recreational facilities at Lower Blue Lake would be re-opened.

As part of BMP-4: *Implement Traffic Control Plan*, PG&E will post a notice on its website that the Lower Blue Lake Launch Ramp and the Lower Blue Lake Dam Day Use Area will be closed for the 2023 season and will also post signs at the intersection of SR 88 and Blue Lakes Road notifying the public of the closures. To further minimize construction impacts on recreational users in the area, PG&E will implement additional measures under BMP-4 to ensure that haul truck traffic is limited, when feasible, to Monday through Thursday.

The proposed project would result in a temporary reduction in recreation opportunities in the region. However, because this impact on recreation would be temporary in nature and because of the other abundant recreation opportunities in the region (Mokelumne Wilderness), the closures at Lower Blue Lake would not increase the use of other recreational facilities such that substantial physical deterioration of the facilities would result or be accelerated. This impact would be less than significant.

b. Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

The proposed project would involve repairs to a dam and replacement of a weir; it would not include or require construction or expansion of recreational facilities. There would be no impact.

3.11 Hazards and Hazardous Materials

3.11.1 Introduction

This section analyzes the proposed project's potential impacts related to hazards and hazardous materials. It describes existing conditions in the project area and summarizes the overall regulatory framework for hazards and hazardous materials, and it analyzes the potential for the proposed project to affect these resources.

As described in Chapter 2, *Project Description*, the project site would be returned, as much as is reasonably practical, to its original condition following completion of construction activities and operations and maintenance activities would be the same as pre-project conditions. Accordingly, post-construction project operations of the reservoir, dam, and weir would not result in changes related to hazards and hazardous materials relative to existing conditions. This analysis therefore focuses exclusively on construction-related hazards and hazardous materials impacts because there would be no long-term hazards and hazardous materials impacts.

3.11.2 Existing Conditions

This section discusses the existing conditions related to hazards and hazardous materials in the project area.

3.11.2.1 Schools

No schools are located within or near the project area. The nearest school, Diamond Valley Elementary School in Markleeville, is more than 12 miles northeast of the project area. The population in Alpine County has been declining over the past several years, and no new schools are planned (Alpine County 2017:58, 59, and 138).

3.11.2.2 Known Sources of Hazardous Materials

The California Department of Toxic Substances Control's Envirostor database provides access to detailed information on hazardous waste facilities in California, including permitted activities, and corrective actions for site cleanup. According to the Envirostor database, the nearest potentially hazardous sites are an oil spill area at Kirkwood Meadows, approximately 9.1 miles northwest of the project area, and the Grover Hot Springs Disposal Site, a small, closed dump, approximately 7.7 miles northeast of the project area (California Department of Toxic Substances Control 2022).

3.11.2.3 Airports

The nearest public airport is the Lake Tahoe Airport, which is more than 19 miles north of the project area. The nearest public airstrip is the Alpine County Airport, which is designated as a Limited Use Airport and consists of a paved airstrip, apron area, and tie downs (Alpine County n.d.). It is located approximately 12 miles northeast of the project area. The closest private airstrip is the Bear Valley Airport, which is approximately 12.8 miles southwest of the project area.

The project area is not in an airport land use plan. However, a helicopter would be used for mobilization and demobilization of equipment and materials at the IFR weir site. Helicopter use at the project site would occur for 3 days between September 18 and October 3, 2023.

3.11.2.4 Wildland Fires

The California Department of Forestry and Fire Protection (CAL FIRE) identifies fire hazard severity zones (FHSZs) within both State Responsibility Areas (SRAs) and Local Responsibility Areas (LRAs) and maps these severity zones based on modeling of expected fire behavior over a 30- to 50-year period. The categories of FHSZs are "very high," "high," and "moderate." The project area falls within an SRA categorized as a moderate FHSZ (California Department of Forestry and Fire Protection 2007).

The project area is located on lands owned by PG&E. Wildland fire protection on private lands in California outside of local fire district jurisdictions is typically provided by CAL FIRE. However, CAL FIRE does not maintain a physical presence, such as a fire station or firefighting equipment, in Alpine County. As a result, responsibility for fire protection has been delegated to federal agencies, specifically USFS and the Bureau of Land Management by virtue of an intergovernmental agreement. The goal of this agreement is to efficiently allocate fire suppression resources among federal jurisdiction areas and private lands (Alpine County 2017:36).

3.11.3 Regulatory Setting

3.11.3.1 Alpine County General Plan

Alpine County has adopted goals and policies related to hazards and hazardous materials. The *Alpine County General Plan* Safety Element addresses hazards that are known to have potential for causing injury to people or damaging property, including fire and hazardous materials (Alpine County 2017). The following relevant goals and policies address natural and human-made hazards.

Goal 20: Minimize the threat to lives and property posed by the possibility of wildland and structural fires within the wildland urban interface in the county.

Goal 25: Protect citizens and property from damage by hazardous materials including but not limited to harmful chemicals, radiation levels, gases, explosives, and hazardous waste.

- **Policy 25a:** Ensure the hazardous waste materials used in business and industry are properly handled and that information on their handling and use is available to fire and police protection agencies.
- **Policy 25b:** Ensure the hazardous waste generated in the county is properly planned for, handled, treated, and disposed of.

3.11.3.2 Alpine County Community Wildfire Protection Plan

The Alpine Fire Safe Council published the Community Wildfire Protection Plan in 2018, presenting a coordinated planning effort to address the hazards of fire in the wildland-urban interface. The plan covers all of the communities in Alpine County, which the plan divides into four planning areas, Woodfords, Markleeville, Bear Valley, and Kirkwood. The plan identifies the wildland-urban interface zones within each planning area. The project area is not in any of the identified wildland urban interface zones in Alpine County, nor is the area covered in any of the county's adopted or proposed community evacuation plans (Alpine Fire Safe Council 2018).

3.11.4 Environmental Effects

Potential impacts of the proposed project related to hazards and hazardous materials are discussed in the context of State CEQA Guidelines Appendix G checklist. Checklist Section IX, *Hazards and Hazardous Materials*, asks whether the project would result in any of the following conditions.

a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or

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?

Activities associated with the proposed project would involve use of hazardous materials, such as fuels and lubricants, for the operation of equipment and vehicles, primarily during construction. Fuels and lubricants have the potential to be released into the environment at construction sites and along haul routes, causing potential environmental and human exposure to these hazards. Although the types and quantities of hazardous materials that would be used during project construction are not considered acutely hazardous and would not pose a risk to human health or safety, release of hazardous materials without subsequent containment could create a hazardous condition for the environment. A SWPPP, described in Chapter 2 under BMP-1: *Implement Water Quality Protection Measures and Erosion and Sediment Control Plans*, and BMP-2: *Implement Hazardous Materials Control Measures*, would ensure that hazardous materials are properly used and contained and that any spills are promptly cleaned up. This impact would be less than significant.

c. Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

As described in Section 3.11.2, *Existing Conditions*, the project area is not near an existing or proposed school. The nearest school is more than 11 miles from the project area. There would be no impact.

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

As described in Section 3.11.2, the nearest known hazardous materials site is approximately 7.7 miles from the project area. Thus, the proposed project would not be on a site included on a list of hazardous materials sites. There would be no impact.

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

As described in Section 3.11.2, the project area is not in an airport land use plan area or within 2 miles of a public or public use airport. Helicopters would be used to move materials between the laydown areas and the IFR weir site, which cannot be accessed by vehicle. PG&E uses helicopters to access the lake to perform inspections on a regular basis. The project would increase the frequency of helicopter trips for a short period. Due to the remote nature of the project site, this temporary and limited helicopter traffic would not pose a hazard to people living in the area. Those working on the project would comply with all safety regulations regarding helicopter operations. This impact would be less than significant.

f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

As described in Section 3.11.3, *Regulatory Setting,* the project area is not covered in any of the County's adopted or proposed community evacuation plans. During construction, PG&E would implement BMP-4: *Implement Traffic Control Plan*, which would reduce potential conflicts on roadways by notifying the public of construction activities and keeping roadways as clear as possible to ensure adequate traffic flow for emergency vehicles. This impact would be less than significant.

g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

Public access to the project area would be closed during construction of the proposed project. There are no residences within or adjacent to the project area. The project area is in a moderate FHSZ and, therefore, the risk of wildfire does exist. The most likely source of wildland fire ignition from the proposed project would be associated with operation of construction vehicles or welding equipment in the project area under dry conditions. As part of the proposed project, PG&E would implement BMP-3: *Implement Fire Hazard Prevention Measures*, which would ensure that the potential for wildland fire caused by the project is minimized or eliminated. This impact would be less than significant.

3.12 Cultural Resources

3.12.1 Introduction

This section analyzes the proposed project's potential impacts related to cultural resources. It describes existing conditions in the study area summarizes the overall regulatory framework for cultural resources, and it analyzes the potential for the proposed project to affect these resources.

The project area is defined as the footprint of all project features included in the project description and includes all temporary and permanent project activities. The project area consists of both the horizontal and vertical maximum potential extent of direct project impacts considered under CEQA. The study area for cultural resources is defined as the project area, plus a 50-foot buffer.

3.12.2 Existing Conditions

The following contexts were quoted with light editing from the *Upper Blue Lake Dam Seismic Retrofit Project Cultural Resources Constraints Report* (Taggart 2019:2-3).

3.12.2.1 Prehistoric Context

Five periods of prehistory have been described for the Upper Mokelumne Watershed, each characterized by distinct settlement and subsistence patterns and technological innovation (Table 3.12-1).

Table 3.12-1. Chronology of the West-Central Sierra Nevada

Period	Age Range (Calendar Years Before Present)
Recent Prehistoric II	610–100
Recent Prehistoric I	1,100–610
Late Archaic	3,000–1,100
Middle Archaic	7,000–3,000
Early Archaic	11,500–7,000

3.12.2.2 Ethnographic Context

The Washoe inhabited the eastern slopes of the Sierra Nevada north to Honey Lake and south to Antelope Valley. Hunting, gathering, and trade journeys took them over the crest and sometimes into the western foothills of the Sierra. Permanent settlements were located on valley floors averaging 4,500 feet in elevation. Summer camps were located on the margins of mountain meadows at higher elevations.

The Washoe are technically a Great Basin tribe, although they do not fit neatly into that category. The Washoe language is the only Great Basin tongue that is not of the Numic family. Their language is not genetically related to the Maiduan or Miwok stocks, but rather belongs to the Hokan stock, a language group centered in California and the American Southwest.

Additionally, the Washoe share many characteristics with California groups. They used many hunting techniques common to California and placed more emphasis on fishing and acorn gathering than did other Great Basin groups. Similar to other California groups, they used bedrock mortars and acorn mush paddles.

Many Washoe traits, however, show affinities with other Great Basin groups. Some hunting and fishing methods and tools are typical of those used in the Great Basin. Although they processed acorns and piñon nuts, they did not make use of cylindrical granaries used by California groups. Washoe villages had a Great Basin appearance, with dwellings made in the Great Basin style and villages lacking the multifamily houses and ceremonial structures typical of those found in California.

Permanent villages consisted of two to ten family groups or households, with two to four households being the norm. Family groups and individuals ranged widely in highly divergent and independent subsistence strategies during the summer months, but tended to congregate at the home village during the winter. While most of the inhabitants vacated the village during summer, many of the elderly and young children often stayed in the village year-round. A set pattern of seasonal movement is not evident; movements were highly variable from year to year. Winter dwellings were semisubterranean, conical structures fashioned from wood poles and bark slabs. Summer shelters were dome-shaped and constructed of tule and brush woven together with willow.

The Washoe subsistence strategy was quite varied. Fishing in lakes and streams constituted an important part of their economy, with fish both eaten fresh and dried for storing. Game was taken year-round and consisted primarily of deer, pronghorn antelope, bighorn sheep, rodents, rabbits, and birds. Vegetal foods played an important role in the diet, with a heavy reliance on piñon nuts and acorns, along with berries, bulbs, and roots.

The Washoe were involved in significant trade networks with their neighbors and often traveled great distances to obtain goods from outlying areas. They served as middlemen in the trade between California peoples and the populations of the interior Great Basin. Imported items from the Nisenan and Wintu included papam bulbs, acorns, skins, and marine shells. Exports to the Nisenan included salt, obsidian, piñon nuts, and rabbit skins.

3.12.2.3 History

This section is quoted with light editing from the *National Register of Historic Places Evaluation, Mokelumne River Hydroelectric System, FERC No. 137 Alpine, Amador, and Calaveras Counties, California* (PAR Environmental Services, Inc. 2003:17–32). The history of the Mokelumne River hydroelectric system begins in mining, not electric power generation. Water rights acquired during the early gold and silver booms in the Sierra Nevada established the foundation of a system of dams and canals whose purpose evolved from local mining to city water consumption to hydroelectric generation. From the early basic foundation, engineers spent the next 150 years expanding the system to wrest every drop out of their rights to the watershed. The complete engineering plan for the system dates to 1930, when PG&E engineer A. H. Mark Wart set forth the path for future development. His plans for Bear River, Electra, and West Point Powerhouses were subsequently realized by his protégées, I. C. Steele, Walter Dreyer, T. J. Corwin, and G. C. Green. The Mokelumne is somewhat unique among PG&E's projects in California simply for the number of diversions from small tributaries to the Mokelumne River, including diversions from the Bear River, Deer Creek, Tiger Creek, and Cole Creek.

Upper and Lower Blue Lakes at the head of the system are two of a number of high mountain lakes in Alpine County exploited for gold mining at lower elevations in Amador and Calaveras Counties. As early as 1856, miners were filing claims to both Upper and Lower Blue Lakes waters. Then, in 1859, silver was discovered in the Nevada Comstock Lode. Alpine County quickly developed into mining districts. The Blue Lakes basin became part of the Mokelumne District, which experienced its “rush” of miners in 1862.

Two towns, Summit City and Lower Summit City, were established by 1863 just northwest of Upper Blue Lake. By 1866, the town of Harmonial City was thriving between Upper and Lower Blue Lakes. Other towns were Round Top (between Caples and Blue Lakes) and KirkWood’s Station. Roads and trails connected the towns to emigrant and other trans-county roads. Lumbering and sawmills supplemented the local economy, with one mill at Upper Blue Lake. Summer grazing for cattle and sheep also became an area mainstay and centered around both Blue Lakes. Basque sheepherders kept their main camp between the two lakes. Many of their carvings on aspen trees around the study area are still visible today.

Two early travel routes were carved into the Blue Lakes area. One passed through Hope, Faith, and Charity Valleys. A higher route opened later and closed earlier in the season. It passed near Red Lake and Lost Lake, then went to Upper Blue Lake and the town of Summit.

Silver mining in the vicinity quieted down by the mid-1870s, although gold mining in the lower-elevation counties below the Blue Lakes area flourished under hydraulic mining operations. This water-intensive technology made good use of the high-elevation resources and interest again focused on Blue Lakes water.

In 1870, the Sutter Canal and Mining Company started building the Amador Canal to supply water to the mines of Amador and Calaveras Counties. In 1874, its successor, the Amador Canal and Mining Company (ACMC) completed the canal nearly to Sutter Creek. As water demands increased, ACMC looked for ways to meet demand. Conflicting rights to water from Blue Lakes quickly surfaced. In 1875, ACMC and W. V. Clark acknowledged each other’s claims to the water and prepared the following solution: ACMC could build dams and canals at its own expense and take the additional water storage created by the dams. They also agreed that W. V. Clark or his assignees could use the ACMC dams to build “permanent and substantial dams” to increase storage again. At such time, ACMC would still be entitled to its share of the water. In 1875, ACMC acted on the agreement and constructed timber crib dams at both Blue Lakes.

In 1899, Standard Electric Company purchased part of the capital stock of Blue Lakes Water Company and proceeded with its hydroelectric study. The success of the Blue Lakes Powerhouse, located on the Mokelumne River 5 miles east of Jackson, encouraged Prince Andre Poniatowski, a French prince with a background in mining and an early contributor to the formation of Standard Electric of California, to consider harnessing the waters of the high Sierra to power a hydroelectric plant capable of providing electricity to San Francisco. The result would be Electra Powerhouse on the Mokelumne River, built using power from the new Blue Lakes Powerhouse. Water impounded at Upper Blue Lake exited the dam and flowed through Lower Blue Lake, then down Deer Creek to the Mokelumne River. From here, it was picked up by the Upper and Lower Standard Electric ditches and then carried to Electra Powerhouse.

The Mokelumne River Rock-faced Dams Discontiguous Historic District extends from Upper Blue Lake Dam in Alpine County to Upper Bear River Dam in Amador County. The district is comprised of the upper elevation water storage reservoirs for the Mokelumne River Hydroelectric Project owned and maintained by PG&E since the late 1920s. The dams were designed by Standard Electric in the late 1890s, incorporating plans for domestic water supply sales to the San Francisco Bay Area with pioneering hydroelectric generation methods. The district consists of five dams and a dam camp. All of the dams were completed by 1903, although Standard Electric did perform some modifications to either increase their reservoir capacity or their structural integrity. Since the late 1920s, PG&E has performed regular maintenance and upgrades.

The Lower Blue Lake Dam is in Alpine County, California, approximately 9.7 miles southwest of Markleeville, California, and roughly 6.7 miles southeast of Carson Pass, California. The Lower Blue Lake Dam is a rock wall, earthen-fill dam with a 1939 timber crib and rock fill addition on the reservoir slope. It has a crest length of 1,050 feet and a maximum height of 48 feet from streambed to crest of dam. The dam is 25 feet thick at the crest and contains 43,543 yards of earthen fill. Both the upstream and downstream slopes are 2:1 and 0.5:1, respectively. Its outlet consists of two 24-inch-diameter LLO steel pipes encased in concrete and altered in the early 2000s. Looking downstream, the right side of the dam has carefully laid stone masonry that forms the downstream face of the dam. The left side of the dam is earth finished with a toe wall of large stone boulders (PAR Environmental Services, Inc. 2002a:2).

The dam was built in 1874; enlarged in 1881, 1901, and 1903; and reinforced over its lifetime. An overflow spillway was constructed in 1925 and the channel was widened and modified in 1930–1931 with the addition of two bays, each 2.3 feet deeper than the rest of the channel. In 1939, rock fill was added over the timber crib on the upstream toe of the dam. During the 1970s, the wooden plank boardwalk used to access the valve house door over the stream was replaced with concrete. In the 1990s, the valve house was reconstructed with in-kind materials (PAR Environmental Services, Inc. 2002a:2). Between 2003-2005, the LLO pipes were slip lined, new outlet valves and controls were added, and the valve house was expanded with an addition. In 2010, the existing spillway channel system was removed and replaced due to erosion downstream of the spillway apron. The replacement involved excavation and grading for a new spill channel, the installation of a chute and shotcreting of the channel, and the placement of riprap on slopes (PAR Environmental Services, Inc. 2010:1).

The Lower Blue Lake Dam camp includes two wooden residential cabins that date to circa 1910, as well as a shed, storage building, and barn. The buildings are set just southeast of the dam at the south end of Lower Blue Lake. The cabins, shed, and storage building were designed in a rustic vernacular style. The old barn structure predated PG&E's occupation of the area and represents a late-1800s/early-1900s vernacular-style outbuilding. The camp is surrounded by the pine trees of the Eldorado National Forest. The access road through the PG&E property is asphalt surfaced. Boulders and large rock outcroppings are part of the setting of the property. The boulders were likely excavated during the adjacent dam's construction and were relocated as landscaping elements around the cabins (PAR Environmental Services, Inc. 2002b:1–4).

3.12.3 Regulatory Setting

3.12.3.1 Federal

The following federal regulation related to cultural resources would apply to the proposed project.

National Historic Preservation Act

Section 106 of the NHPA (16 USC 470f) requires federal agencies to evaluate the effects of their undertakings on historic properties, which are those properties listed or eligible for listing on the National Register of Historic Places (NRHP). Implementing regulations at 36 CFR Part 800 require that federal agencies, in consultation with the SHPO, identify historic properties within the area of potential effect of the proposed project and make an assessment of effects if any are identified. If the project is determined to have an adverse effect on historic properties, the federal agency is required to consult further with SHPO and the Advisory Council on Historic Preservation (ACHP) to develop methods to resolve the adverse effects. USACE's issuance of a CWA Section 404 permit for the proposed project constitutes an undertaking as defined by 36 CFR 800.16(y) and triggers compliance with Section 106 of the NHPA.

FERC, ACHP, SHPO, USFS, PG&E and other interested parties adopted a Programmatic Agreement (PA) that requires PG&E to develop and implement a Historic Properties Management Plan (HPMP) for operations and maintenance of the Mokelumne River Project. Pursuant to stipulations of the PA, PG&E has developed and implemented an HPMP in accordance with the Secretary of the Interior's standards and guidelines to manage historic properties within the area of potential effect established for the Mokelumne River Project. The HPMP guides programmatic compliance with Section 106 of the NHPA and directs PG&E to consult with stakeholders on behalf of FERC when activities associated with License 137 have the potential to affect historic properties. As a project subject to FERC approval, the proposed project is subject to the provisions of the PA and HPMP.

In a letter dated September 11, 2018, USACE formally designated FERC as the lead federal agency for compliance with Section 106 of the NHPA (Fancher pers. comm.). As such, FERC is addressing Section 106 compliance for the project pursuant to the requirements of the Mokelumne River Project PA and HPMP.

In 2022, PG&E proposed the Lower Blue Lake Dam Seepage Mitigation and Weir Replacement Project. The project is a part of the FERC Project No. 137-CA (Mokelumne River Project). Lower Blue Lake is regulated by DSOD (No. 97-062). As such, the planned repairs require review and approval from DSOD. As of November 2022, PG&E is completing a *Finding Of No Adverse Effect For The PG&E Lower Blue Lake Dam Seepage Mitigation Project, Alpine County, California* (ICF 2022).

3.12.3.2 State

The following state regulations related to cultural resources would apply to the proposed project.

California Environment Quality Act

Two categories of cultural resources are specifically called out in the State CEQA Guidelines. The categories are historical resources (CEQA Guidelines 15064.5[b]) and unique archaeological sites (CEQA Guidelines 15064.5[c]; California Public Resources Code 21083.2). Different legal rules apply to the two different categories of cultural resources. However, the two categories sometimes overlap where an archaeological historical resource also qualifies as a unique archaeological resource. In such an instance, the more stringent rules for unique archaeological resources apply, as explained below. In most situations, resources that meet the definition of a unique archaeological resource also meet the definition of an historical resource. As a result, it is current professional practice to evaluate cultural resources for significance based on their eligibility for listing in the California Register of Historical Resources (CRHR).

Historical resources are those meeting the following requirements.

- Resources listed in or determined eligible for listing in the CRHR (State CEQA Guidelines 15064.5[a][1]).
- Resources included in a local register as defined in Public Resources Code Section 5020.1(k), “unless the preponderance of evidence demonstrates” that the resource “is not historically or culturally significant” (State CEQA Guidelines 15064.5[a][2]).
- Resources that are identified as significant in surveys that meet the standards provided in Public Resources Code Section 5024.1(g) (State CEQA Guidelines 15064.5[a][3]).
- Resources that the lead agency determines are significant, based on substantial evidence (State CEQA Guidelines 15064.5[a][3]).

Unique archaeological resources, on the other hand, are defined in Public Resources Code Section 21083.2 as a resource that meets at least one of the following criteria.

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

The process for identifying historical resources is typically accomplished by applying the criteria for listing in the CRHR (14 CCR 4852). This section states that a historical resource must be significant at the local, state, or national level under one or more of the following four criteria.

1. It is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage.
2. It is associated with the lives of persons important in our past.
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values.
4. It has yielded, or may be likely to yield, information important in prehistory or history.

To be considered an historical resource for the purpose of CEQA, the resource must also have integrity. Integrity is the authenticity of a resource’s physical identity, evidenced by the survival of characteristics that existed during the resource’s period of significance.

Resources, therefore, must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling and association. It must also be judged with reference to the particular criteria under which a resource is eligible for listing in the CRHR (14 CCR 4852[c]). Integrity assessments made for CEQA purposes typically follow the National Park Service guidance used for integrity assessments for NRHP purposes.

Even if a resource is not listed or eligible for listing in the CRHR, in a local register of historical resources, or identified in an historical resource survey, a lead agency may still determine that the resource is an historical resource as defined in Public Resources Code Sections 5020.1j or 5024.1 (State CEQA Guidelines 15064.5[a][4]).

Resources that meet the significance criteria and integrity considerations must be considered in the impacts analysis under CEQA. Notably, a project that causes a substantial adverse change in the significance of an historical resource is a project that may have significant impact under CEQA (State CEQA Guidelines 15064.5[b]). A substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired. The significance of an historical resource is materially impaired if the project demolishes or materially alters any qualities as follows.

- Qualities that justify the inclusion or eligibility for inclusion of a resource on the CRHR (State CEQA Guidelines 15064.5[b][2][A],[C]).
- Qualities that justify the inclusion of the resource on a local register (State CEQA Guidelines 15064.5[b][2][B]).

California Health and Safety Code and Public Resources Code

Broad provisions for the protection of Native American cultural resources are contained in California Health and Safety Code, Division 7, Part 2, Chapter 5 (Sections 8010 through 8030).

Several provisions of the Public Resources Code also govern archaeological finds of human remains and associated objects. Procedures are detailed under Public Resources Code Sections 5097.98 through 5097.996 for actions to be taken whenever Native American remains are discovered. Furthermore, Section 7050.5 of the California Health and Safety Code states that any person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor, except as provided in Section 5097.99 of the Public Resources Code. Any person removing human remains without authority of law or written permission of the person or persons having the right to control the remains under Public Resources Code Section 7100 has committed a public offense that is punishable by imprisonment.

Public Resources Code Chapter 1.7, Sections 5097.5–5097.9 define any unauthorized disturbance or removal of a fossil site or remains on public land as a misdemeanor and specify that state agencies may undertake surveys, excavations, or other operations as necessary on state lands to preserve or record paleontological resources.

3.12.3.3 Local

No local regulations concerning cultural resources apply to the proposed project.

3.12.4 Methods

3.12.4.1 Records Search

PG&E holds a subscription with the California Historical Resources Information System in which full record search results are periodically provided by the Central California Information Center (CCIC). The record search data is then stored in a secure confidential cultural resource database (CCRD). The CCIC provided PG&E with updated record search results for the entirety of Alpine County on

March 2, 2022 (File No: 12093 Multi). ICF requested a mapping and cultural data extract of PG&E's CCCRD files from Far Western Anthropological Research Group, Inc. (Far Western) on October 4, 2022 for the study area and a 0.25-mile radius around the study area. A total of 19 reports, including multiple findings of no adverse effects, Department of Parks and Recreation form sets, and cultural resources conditions reports, have been completed that address cultural resources in the study area and within a 0.25-mile radius around the study area; seven cultural resources have been previously documented.

The project components (the dam site, dam camp buildings, and staging areas) were overlain on maps depicting the location of known cultural resource sites using the Confidential Cultural Resource Database, which includes all known historic properties within the Mokelumne River Project's administrative boundary.

Prior Studies

This section was summarized from the *Finding of No Adverse Effect for the PG&E Lower Blue Lake Dam Seepage Mitigation Project* (ICF 2022).

The most recent monitoring completed within the current study area is Far Western's 2015 *Year 5 Cultural Resources Monitoring for the PG&E Mokelumne River Hydroelectric Project, FERC Project 137*. Monitoring was conducted in order to assess site condition as part of PG&E's implementation of the Mokelumne River Historic Properties Management Plan for FERC License 137. Crews revisited the location of 51 sites within the Mokelumne River hydroelectric project boundaries that are either eligible for the NRHP or have never been evaluated for eligibility. In the fifth year of HPMP implementation, Far Western's crews attempted to relocate two sites that were ultimately found to be completely submerged and successfully assessed the condition of 49 sites, including the Lower Blue Lake Dam Camp located in the current study area (Far Western Anthropological Research Group 2015:1).

PAR Environmental Services, Inc. conducted a *Finding of No Adverse Effect for Proposed Work on the Lower Blue Lake Dam Spillway Restoration Project, Alpine County, California, FERC No. 137* in 2010 for the removal and replacement of the spillway. The finding was supplemented by an updated physical description of the Lower Blue Lake Dam with a focus on the spillway apron and channel, a brief historic context including association with Standard Electric, and a reiteration of the evaluation of NRHP eligibility during the FERC No. 137 relicensing effort in 2003. Ultimately, the proposed removal and replacement of the existing spillway of the Lower Blue Lake Dam, a contributing element of a historic district, was deemed to result in a "no adverse effect" according to 36 CFR 800.5(b)(2) with SHPO concurrence in on April 5, 2010 (PAR Environmental Services, Inc. 2010:1-11; Office of Historic Preservation, Department of Parks and Recreation 2010).

From 2002 through 2003, PAR Environmental Services, Inc. composed Department of Parks and Recreation form sets of resources in the study area and conducted an all-encompassing NRHP evaluation for the Mokelumne River Hydroelectric Project operating system. Based on the conducted evaluation, PG&E determined that the Mokelumne River Hydroelectric System as a whole was ineligible for the NRHP as a district, but the high-elevation reservoir system of the Mokelumne River Hydroelectric system was eligible as the Mokelumne River Rock-Faced Dams Discontiguous Historic District. In addition to an extensive historic context and physical descriptions of the entire system, the report determined that the historic district was eligible under Criterion A on a local level for its association with Standard Electric, the first company to supply hydroelectricity to the San Francisco Bay Area through the Mokelumne River Hydroelectric System. Additionally, the district was eligible under Criterion C on a local level as an exceptional example of early-twentieth-century hand-placed rock-faced dams. The historic district's period of significance was determined to be 1900–1903. SHPO concurred with the determination of NRHP eligibility on May 7, 2003 (Office of Historic Preservation, Department of Parks and Recreation 2003).

PAR Environmental Services, Inc. conducted a *NRHP Evaluation of Lower Blue Lake Dam and Valve House, Alpine County, California, Final Report* in 1999 that provided a historic context of the Blue Lakes and the Mokelumne System, a physical description, NRHP evaluation, and integrity analysis of the Lower Blue Lake Dam with supplementary information on the adjacent valve house. It appears that the valve house was evaluated for both historic significance and integrity as an integral feature of the dam, not as an individual resource. No subsequent SHPO determination was found in the record search (PAR Environmental Services, Inc. 1999:1-30).

As a result of prior studies, seven resources have been identified within the study area or within the 0.25-mile radius of the study area: Mokelumne Rock-Faced Dams Discontiguous District (P-02-000662), Lower Blue Lake Dam (P-02-000664), Lower Blue Lake Dam Camp (P-02-000253), Blue Lakes Road, FH 134 (P-02-000514), P-02-000252 (unnamed bedrock milling feature and an anchor point), Blue Lake Dam Valve House, and Blue Lake Spillway. Of the seven resources, all but P-02-000252 (the bedrock milling feature) are located in the project area. The bedrock milling feature is located approximately 175 feet south of the lower laydown area. The Office of Historic Preservation has classified the road, valve house, and spillway with a status code of 7, which is used for resources that have not been evaluated for the NRHP or CRHR or need revaluation. The bedrock milling feature has a status code of 7R, which means it has not been evaluated, but it has been identified in a reconnaissance-level survey.

Resources

The Mokelumne Rock-Faced Dams Discontiguous District (P-02-000662) is comprised of the upper elevation water storage reservoirs for the Mokelumne River Hydroelectric Project owned and maintained by PG&E since the late 1920s. The following features are the contributors to the Mokelumne River Rock-Faced Dams Discontiguous Historic District:

- Lower Blue Lake Dam (1903)
- Lower Blue Lake Dam Camp (1880–1920)
- Twin Lake Dam (1901)
- Meadow Lake Dam (1903)
- Upper Bear River Dam (1900)

The following feature is a non-contributor to the Mokelumne River Rock-Faced Dams Discontiguous Historic District:

- Upper Blue Lake Dam (1901)

The Mokelumne Rock-Faced Dams Discontiguous Historic District is an eligible historic district. Most of its elements lack individual eligibility while still contributing to the system’s integrity. The district is eligible under Criterion A on a local level for its association with Standard Electric, a pioneering company that faced great obstacles in constructing an ambitious project in a remote and harsh environment and succeeded in becoming the first company to supply hydroelectricity to the San Francisco Bay Area, specifically through this system. It is eligible under Criterion C on a local level for its exceptional examples of early-twentieth-century hand-placed, rock-faced dams. The district retains a high degree of integrity of its original construction between 1900 and 1903, its period of significance, including the integrity of location, design, materials, setting, feeling, and association. PG&E's routine maintenance has led to the replacement of some minor operating equipment at the dams, as well as additions and modifications to some spillways.

The SHPO concurred with the eligibility determination of the Mokelumne River Rock-Faced Dams Discontiguous Historic District and contributing resources in a letter dated May 7, 2003 (FERC030124A) (Office of Historic Preservation, Department of Parks and Recreation 2003). Because the district has a formal determination of eligibility, it is automatically included in the CRHR as an historical resource for the purposes of CEQA. A Department of Parks and Recreation 523 Update form is included in the *Finding of No Adverse Effect for the PG&E Lower Blue Lake Dam Seepage Mitigation Project* (ICF 2022) and includes a complete summary of NRHP eligibility.

There are two contributors to the Mokelumne River Rock-Faced Dams Discontiguous Historic District in the study area, the Lower Blue Lake Dam and the Lower Blue Lake Dam Camp. The Lower Blue Lake Dam was built in 1874; enlarged in 1881, 1901, and 1903; and reinforced over its lifetime. It is a rock wall, earthen-fill dam with an overflow spillway constructed in 1925 and a channel widened and modified in 1930–1931, a 1939 timber crib, and a rockfill addition on the reservoir slope. In the 1990s, the valve house on the downstream face was reconstructed with in-kind materials (PAR Environmental Services, Inc. 2002a:2). The Lower Blue Lake Dam Camp consists of two wooden residential cabins that date to circa 1910, as well as a shed, storage building, and barn. The cabins, shed, and storage building were designed in a rustic vernacular style. The old barn structure predated PG&E's occupation of the area and represents a late-nineteenth/early-twenthieth-century vernacular-style outbuilding (PAR Environmental Services, Inc. 2002b:1–4).

The character-defining features of the Mokelumne River Rock-Faced Dams Discontiguous Historic District include:

- The unified design of dams with hand-placed rock construction methods reflects early-twentieth-century practices. The dams are similarly constructed of earthen fill and hand-placed rocks on their downstream face.
- All dams constructed by Standard Electric as part of an effort to provide high-elevation water storage for its Electra Powerhouse project on the Mokelumne River are interconnected.
- A cohesive functional and operational linkage is vital between the five dams and a dam camp.
- The five dams and dam camp together maintain functional use as a systematic generator of hydroelectricity.
- Undeveloped hills characterize a surrounding terrain with mature evergreen forest, other native alpine vegetation, and a generally undeveloped surrounding environment with graded and graveled clearing for recreational use. The historic district features are integrated into the surrounding landscape.
- The sprawling engineering and operational plan characterized by substantial distances between resources and a linear operational relationship that extends from the Upper Blue Lake Dam in Alpine County to the Upper Bear River Dam in Amador County.

The following contributors and their character-defining features were identified as part of this historical resource:

- Lower Blue Lake Dam (1903)
  - The combined hand-placed, rock-faced, and earthen dam design and materiality are the most distinctive qualities shared among the five dams of the historic district and exemplify the early-twentieth-century hydroelectric infrastructure development in California. The downstream rock wall is to the right of the dam and the earthen dam design is to the left (looking downstream).
  - The capacity and efficiency of the Lower Blue Lake water storage and role in power generation has been integral to the functionality of the greater system.
  - The operational features and design aspects that maintain the dam's continued functionality in the greater subsystem, including the spillway, valve house and outlet valves, and dam crest
- Lower Blue Lake Dam Camp (1880–1920)
  - The association, configuration, and usage of two cottages built by PG&E in 1910, a storage building, a barn, and a shed that appear to date from 1900 to as late as 1875 were integral to the Lower Blue Lake Dam's early construction and functionality.
  - The camp has a long and continued history of association with the ongoing maintenance and operations with the historic district's dams ensuring continued use in the greater system.

3.12.4.2 Native American Consultation

Tribal consultation for projects associated with the Mokelumne River Project has been undertaken on a programmatic level in cooperation with FERC and USFS over a period of many years and is carried out under an adopted PA that required PG&E to develop a HPMP for operations and maintenance of the Mokelumne River Project. Consultation procedures for project activities that have the potential to affect historic properties on the Mokelumne River Project are detailed in the HPMP (Price et al. 2007). The HPMP identifies 16 individuals representing nine Native American groups that were consulted during the preparation of the HPMP and previous relicensing work (Price et al. 2007: Appendix C).

The HPMP states that "Native American Consultation will be expanded should unavoidable impacts to prehistoric archaeological sites occur and no preservation measures area feasible" (Price et al. 2007:50). Consultation efforts undertaken during past studies, relicensing, and development of the HPMP did not identify areas of concern to the consulting Native Americans in the current study area. Additionally, no known resources are located within the study area.

On November 11, 2022, the following tribes were contacted regarding the project: Washoe Tribe of Nevada and California, Tuolumne Band of Me-Wuk, Calaveras Band of Mi-Wuk Indians, Jackson Rancheria Band of Miwuk Indians, Ione Band of Miwok Indians, Buena Vista Rancheria. Upon further contact with the NAHC in November 2022, the Wilton Rancheria were also identified for contact and a letter was sent November 29, 2022. For more information on PG&E's Native American consultation efforts, please refer to the *Finding of No Adverse Effect for the PG&E Lower Blue Lake Dam Seepage Mitigation Project* (ICF 2022: 3-1—3-5).

3.12.4.3 Survey

As part of HPMP implementation, Far Western conducted condition assessment monitoring at resources within the Mokelumne River Hydroelectric Project boundaries that include both resources eligible for the NRHP and previously unevaluated resources listed in the HPMP surveys. The entirety of the project area within the FERC boundary (which includes all Lower Blue Lake Dam project elements and construction laydown and staging areas as shown in Figure 2-1) was included in the HPMP surveys per issuance of FERC License 137, and therefore has prior cultural resources survey coverage (Far Western Anthropological Research Group 2015).

In addition, one ICF architectural historian conducted a pedestrian survey of the 3.6-acre project area on October 6, 2022, including the Lower Blue Lake Dam, the Lower Blue Lake Dam Camp, and appurtenant structures around the southern end of Lower Blue Lake. The dam and surrounding environs on the downstream dam face were examined for built-environment resources. No new built resources were observed.

The portions of the project area outside of the FERC boundary (the project elements associated with IFR weir replacement as shown in Figure 2-1—approximately 18% of the study area) lack prior archaeological survey coverage. Archaeological survey is not possible until snow melt in the spring. Therefore, an ICF archaeologist will conduct a field survey of the unsurveyed area in late spring 2023 or as soon as access is possible and ground visibility is adequate. Out of an abundance of caution, given the age of the prior survey coverage, the entire study area will be subjected to pedestrian archaeological survey at that time. Pedestrian survey will consist of transects spaced 15 meters or less apart to determine if any previously unrecorded resources are present in the study area.

As described in Section 3.4, *Geology, Soils, Seismicity, and Paleontological Resources*, the geology in the area of Lower Blue Lake Dam and the IFR weir consists of granitic rocks overlain in places by glacial deposits. The bedrock in the vicinity of the dam and IFR weir is Ebbets Pass Granodiorite, while the glacial deposits are classified as older glacial moraine deposits of the Pleistocene age (Gannett Fleming 2020:3 and Figure 2). Due to the absence of soils post-dating the Pleistocene era, the entire study area has a low potential to contain buried archaeological resources. Focusing in on the IFR weir area, there is an additional condition contributing to a low potential for buried cultural resources; specifically, the weir itself is located in the exposed bedrock channel of Middle Creek.

3.12.5 Environmental Effects

Potential impacts of the proposed project related to cultural resources are discussed in the context of State CEQA Guidelines Appendix G checklist. Checklist Section V, *Cultural Resources*, asks whether the project would result in any of the following conditions.

a. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

One historical resource as defined by CEQA has been identified within the study area: Mokelumne Rock-Faced Dams Discontiguous District (P-02-000662).

The proposed project was designed in conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties (Standards) so it would not cause a substantial adverse change in the significance of historical resources in the study area as defined in Section 15064.5 of the State CEQA Guidelines. While the project activities would alter some character-defining features of the property, those changes would not destroy or damage the property in a manner inconsistent with the Standards. Most proposed changes are better described as repair, maintenance, or stabilization of features throughout project work. The installation of the new filter, buttress, and seepage collection system (and a local dewatering system) to mitigate the adverse conditions caused by the seepage issues would cause the removal of existing material and placement of new filter and rockfill material. However, the proposed work would be in compliance with the Standards.

Additionally, the proposed modifications would mitigate the seepage issues at the left reach of the dam and ensure the utilization and longevity of the Lower Blue Lake Dam as an integral, functioning component of the hydroelectric subsystem and historic district. As proposed, with rock fill material, the seepage mitigation measures would support the historic function of the dam and minimize the effect of deterioration on the design and material integrity of other character-defining features.

To demonstrate how the project would conform with the Standards, each standard is evaluated against each project feature. The Standards are as follows:

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archaeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
9. New additions, exterior alterations, or related new construction would not destroy historic materials, features, and spatial relationships that characterize the property. The new work would be differentiated from the old and would be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related new construction would be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

The project would conform with the Standards. For example, the property would be used as it was historically used (Standard 1). The project would not create a false sense of historical development (Standard 3). No previous changes to the property have acquired historic significance (Standard 4 is not applicable). No chemical or physical treatments are planned for the project (Standard 7). Archaeological resources would be protected and preserved in place (Standard 8). No new construction would be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be impaired (Standard 10).

The project elements require analysis to show conformance with Standards 2, 5, 6, and 9. Each of the project elements is analyzed for conformance with the applicable standards, as presented in Table 3.12-2. The project activities that primarily have the potential to permanently alter the integrity of the Mokelumne River Rock-Faced Dams Discontiguous District and its contributor, the Lower Blue Lake Dam, are alterations to an earthen section of the downstream face, raising of the dam crest, installation of the new walkway across the crest, and associated excavation and installation of downstream improvements. The downstream filter, buttress, and seepage collection project activities have the potential to affect the integrity of materials and design.

While the eligibility evaluation of the historic district notes that the materials and design are key aspects of the district's integrity, the evaluation of integrity acknowledges that material alterations are necessary for the continued operation of the system. If alterations are generally compatible in form and utilitarian in design, maintain the existing types of materials, and maintain the functionality of the overall district, then alterations would not diminish the integrity of materials such that the district or contributors cannot convey significance.

Many resources in the historic district have been maintained and rehabilitated over time, including repairing and replacing constituent components and upgrading engineering and operational features to ensure operational integrity. Furthermore, when functional alterations leave key historic-period design features in place, including massing, planning, and detailing, the contributing resources would continue to exhibit their design integrity through their historic-period engineering and aesthetic design features.

Table 3.12-2. Analysis of Project Elements' Conformance with Rehabilitation Standards 2, 6, 5, and 9

Project Element	Type of Project Activity	Analysis of Conformance with Rehabilitation Standard 2	Analysis of Conformance with Rehabilitation Standard 5	Analysis of Conformance with Rehabilitation Standard 6	Analysis of Conformance with Rehabilitation Standard 9
Reservoir Drawdown	Temporary	The temporary reservoir drawdown to a target elevation of 8,029.7 feet (15 feet on the staff gauge) or lower would not remove distinctive materials or alter features, spaces, and spatial relationships that characterize the dam and, accordingly, the historic district.	Standard 5 does not apply to this project element.	Standard 6 does not apply to this project element.	The potential installment of temporary drawdown pumps, floating screened intakes, a generator, and a mobile bridge would occur adjacent to the Lower Blue Lake Dam upstream face. It would not destroy historic materials, features, and spatial relationships that characterize the dam's material or disrupt use.
Crest Raise	Permanent	Removing the existing helipad would not remove distinctive materials or alter features, spaces, and spatial relationships that characterize the dam and, accordingly, the historic district.	Standard 5 does not apply to this project element.	Standard 6 does not apply to this project element.	Adding a precast concrete block barrier with a safety railing on the downstream side of the crest in the rock wall section of the dam would not destroy historic materials or features, but it has the potential to alter spatial relationships of the Lower Blue Lake Dam. However, the new barrier and railing would be differentiated from existing features and compatible along the dam crest in material finish, scale, proportion, and massing. Furthermore, the addition would affect the spatial relationship of dam features to ensure safety and utility but would have a minor overall impact on the dam itself and, accordingly, the historic district.
Downstream Filter, Buttress, and Seepage Collection	Permanent	Although a segment of the downstream face would be excavated, it is a small section that would not affect the extant use or overall earthen and rock-faced design, both character-defining features. The proposed work would primarily focus on the earthen section of the downstream face and retain the hand-placed stone section. Earthen construction is ubiquitous, and the materials are not character defining. Continued function within the larger subsystem is vital to the historic district; therefore, seepage mitigation measures are necessary. As proposed with in-kind rockfill material, the seepage mitigation measures would support the historic function of the dam and minimize the impact on the design and material integrity of other character-defining features.	The riprap material for the proposed buttress configuration is a compatible solution to the necessary replacement of the earthen portion of the downstream face and, as proposed, would be adjacent to the rock-faced wall to the dam's left end. To maintain the design and usage of the dam, a surface treatment must be added to the earthen dam. This design solution of adding stone riprap would result in a similar-finish appearance and would be consistent with the 2010 alteration of the spillway, which did not adversely affect the historic property.	Riprap material overlaid on the dam in a gradation of stone size is the best alternative to maintain the overall functionality of the dam as a contributor to the historic district. Removal of a small amount of existing earthen material and placing new filters and rockfill material would mitigate harmful seepage issues that threaten the stability and longevity of the dam as an operational resource within the greater subsystem and historic district. While the new riprap is not an in-kind alteration, it is consistent with the dam, its setting, and past alterations.	Installing the new filter, buttress, and seepage collection system would not destroy, but would alter, the spatial relationships of the downstream face with other important operational features of the dam to ensure the continued use within the historic district. The new filter, buttress, and seepage collection system would have a minor overall impact on the distinctive spatial relationship between entire dams and structures within the historic district. Additionally, the proposed work would be distinguished from the old with in-kind materials and compatible in size, scale, and proportion. The seepage collection system would maintain the overall integrity of the earthen and rock-faced design for continued use of the dam as a operational feature of the historic district.
M2 Staff Gauge	Permanent	To maintain the continued use and efficiency of the dam after the reservoir is drawn down, the staff gauge must be removed and replaced in kind and in the same location. The staff gauge is not character-defining to the district. As such, the staff gauge's materials, spaces, and spatial relationships, a feature of the Lower Blue Lake Dam, are necessary but would be minimally affected and insignificant to character-defining features of the Lower Blue Lake Dam and, accordingly, the historic district.	The existing staff gauge's materials, finishes, construction techniques, and craftsmanship are not considered distinctive or to characterize the Lower Blue Lake Dam and, accordingly, the historic district.	The existing staff gauge would be replaced in kind and in the same location as the existing staff gauge. The design and construction of the staff gauge do not qualify it as a distinctive feature of the dam and, accordingly, the historic district.	The in-kind replacement of the staff gauge would be compatible with the historic materials, features, size, scale, proportion, and massing to protect the integrity of the Lower Blue Lake Dam and its environment. Additionally, the staff gauge is not considered a distinctive feature of the Lower Blue Lake Dam and, accordingly, the historic district.
M3 Weir	Permanent	The removal of the existing M3 weir does not constitute the removal of distinctive materials or alter features, spaces, and spatial relationships that	The materials, finishes, construction techniques, and craftsmanship of the existing M3 weir are not considered	The new concrete reinforcement and forms of the weir structure would match the material and be a	A series of temporary installations are required for work on the M3 weir, including installing a cofferdam, flow bypass system, and stream flow gauge. After supporting the temporary work, a newly installed sump pump may

Project Element	Type of Project Activity	Analysis of Conformance with Rehabilitation Standard 2	Analysis of Conformance with Rehabilitation Standard 5	Analysis of Conformance with Rehabilitation Standard 6	Analysis of Conformance with Rehabilitation Standard 9
		characterize the Lower Blue Lake Dam and, accordingly, the historic district.	distinctive to the Lower Blue Lake Dam and, accordingly, the historic district.	comparable design, color, and texture to the existing M3 weir.	be retained, but pre-construction conditions would be largely restored. Additionally, the new features would support ongoing maintenance and utilization of the dam, a character-defining feature of the historic district.
Potential Access, Staging, Laydown, and Spoil Sites	Temporary	This project element is temporary and areas would be restored to pre-construction conditions. Standard 2 does not apply.	This project element is temporary and areas would be restored to pre-construction conditions. Standard 5 does not apply.	This project element is temporary and areas would be restored to pre-construction conditions. Standard 6 does not apply.	Gates and fencing around the two laydown areas and the drop off of equipment and materials to and around the laydown areas would be temporary and, when removed in the future, the areas would be restored to pre-construction conditions. Similarly, an access ramp on the dam's upstream side near the spillway and a barrier from the boat ramp and the access ramp to prevent access toward the spillway also would be temporary. All fill would be placed in the reservoir at the upper laydown area, and the access ramp would be removed from below the OHWM prior to fully demobilizing. The areas would be restored to their pre-project condition, thereby retaining the integrity of the setting in the surrounding environment. If the excavated spoils are permanently placed in the lower laydown area, then they would not affect an area or character-defining feature of the historic district that contributes to its significance or integrity.
Traffic Control	Temporary	This project element is temporary and areas would be restored to pre-construction conditions. Standard 2 does not apply.	This project element is temporary and areas would be restored to pre-construction conditions. Standard 5 does not apply.	This project element is temporary and areas would be restored to pre-construction conditions. Standard 6 does not apply.	Gates and fencing around the upper laydown area, staging area, and dam crest would be temporary and areas would be restored to pre-construction conditions. Standard 9 does not apply.
Fire Hazard Prevention	Temporary	This project element is precautionary and would not additionally alter pre-construction conditions. Standard 2 does not apply.	This project element is precautionary and would not additionally alter pre-construction conditions. Standard 5 does not apply.	This project element is precautionary and would not additionally alter pre-construction conditions. Standard 6 does not apply.	This project element is precautionary and would not additionally alter pre-construction conditions. Standard 9 does not apply.
Disposal Cleanup and Demobilization	Temporary	This project element is temporary and areas would be restored to pre-construction conditions. Standard 2 does not apply.	This project element is temporary and areas would be restored to pre-construction conditions. Standard 5 does not apply.	This project element is temporary and areas would be restored to pre-construction conditions. Standard 6 does not apply.	This project element is temporary and areas would be restored to pre-construction conditions. Standard 9 does not apply.

As designed, each project element and the overall project conform with the Rehabilitation Standards. This impact would be less than significant.

b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

No archaeological resources were identified in the study area through the records search, consultation, or previous surveys for this area, but the portion of the study area outside of the FERC boundary (the areas associated with IFR weir replacement) lack prior archaeological survey coverage. Pedestrian surveys have not been possible due to lack of access resulting from snowpack. However, field surveys will be conducted in late spring 2023, or as soon as access is possible and ground visibility is adequate, to ensure no previously unrecorded archaeological resources are found in portions of the study area that have not been surveyed. Out of an abundance of caution, given the age of the prior survey coverage, the entire study area will be subjected to pedestrian archaeological survey at that time. Sensitivity to encounter buried archaeological resources within the study area is low, but it is possible that significant buried archaeological materials are present on natural landforms. Disturbance or destruction of such as-yet unidentified archaeological resources may result from ground-disturbing activities associated with the project. This impact would be significant; however, it would be reduced to a less-than-significant level with mitigation measures CUL-MM-1: *Conduct a Survey of Inaccessible Properties to Identify Previously Unrecorded Archaeological Sites and Implement Treatment Plan if Necessary*, CUL-MM-2: *Conduct Mandatory Cultural Resources Awareness Training for All Project Personnel*, and CUL-MM-3: *Stop Work if Previously Unidentified Archaeological Resources are Encountered until a Qualified Archaeologist Assesses the Find and Native American Consultation Has Been Conducted*.

CUL-MM-1: Conduct a Survey of Inaccessible Properties to Identify Previously Unrecorded Archaeological Sites and Implement Treatment Plan if Necessary

Because access to the study area is prohibited for the season due to weather-related road closures, a pedestrian survey shall be conducted once access is possible before construction commences. Methods and results of the survey will be documented in a technical report. If any archaeological resources are identified as a result of pedestrian survey or tribal consultation, the resource will be avoided, if feasible. If avoidance is not feasible, a treatment plan detailing appropriate treatment of any identified resources will be developed and implemented prior to construction. If the resource is associated with the Native American community, appropriate methods for treatment of the resource will be developed in consultation with consulting tribes.

CUL-MM-2: Conduct Mandatory Cultural Resources Awareness Training for All Project Personnel

Before any ground-disturbing work commences, a qualified archaeologist will conduct a mandatory cultural resources awareness training for all construction personnel. The training will cover the types of materials that could be encountered and the inadvertent discovery protocol to follow in such an event. If new construction personnel are added to the project, the contractor will ensure that the new personnel receive the mandatory training before starting work.

CUL-MM-3: Stop Work if Previously Unidentified Archaeological Resources are Encountered until a Qualified Archaeologist Assesses the Find and Native American Consultation Has Been Conducted

If previously unknown buried archaeological resources, such as chipped or ground stone artifacts, historic debris, building foundations, or human bone are inadvertently unearthed during ground-disturbing activities, work will stop at the location of the find and all areas within 100 feet of the find until a qualified archaeologist can assess the significance of the find. If avoidance is not possible and the resource is determined to be significant, a qualified archaeologist will develop a treatment plan in consultation with project stakeholders. If the find is Native American in origin, consultation with local Native American representatives will be reinitiated to determine appropriate treatment of the resource.

c. Disturb any human remains, including those interred outside of dedicated cemeteries?

No known human remains are present within the study area and there are no known instances of human remains being identified during the development of the project vicinity. However, it is possible that buried human remains are present in the study area to be identified during the archaeological survey. Consequently, the potential exists that human remains could be encountered during ground-disturbing activities associated with the proposed action. This direct impact would be significant; however, it would be reduced to a less-than-significant level with CUL-MM-4: *Stop Work in Case of Accidental Discovery of Buried Human Remains until Procedures in Public Resources Code Section 5097 Have Been Completed*.

CUL-MM-4: Stop Work in Case of Accidental Discovery of Buried Human Remains until Procedures in Public Resources Code Section 5097 Have Been Completed

In the event that human remains are discovered, all project-related ground disturbance will halt within 100 feet of the find and the Alpine County coroner will be notified immediately. If the coroner determines the remains to be Native American in origin, the coroner will be responsible for notifying the NAHC, which will appoint a most likely descendant (MLD) (Public Resources Code 5097.99). The project applicant and MLD will make all reasonable efforts to develop an agreement for the dignified treatment of human remains and associated or unassociated funerary objects (State CEQA Guidelines 15064.5[d]). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. The MLD will have 48 hours after being granted access to the site to make a recommendation (Public Resources Code 5097.98). If the MLD does not agree to the treatment method, the project will follow Public Resources Code Section 5097.98(e), which states, "the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American human remains with appropriate dignity on the property in a location not subject to further and future subsurface disturbance."

3.13 Tribal Cultural Resources

3.13.1 Introduction

This section analyzes the proposed project's potential impacts related to tribal cultural resources. It describes existing conditions in the project area and summarizes the overall regulatory framework for tribal cultural resources, and it analyzes the potential for the proposed project to affect these resources.

3.13.2 Existing Conditions

The approximately 3.6-acre project area is located at Lower Blue Lake and on Middle Creek, a tributary to the North Fork of the Mokelumne River, approximately 10 miles southwest of Markleeville and 7 miles southeast of Carson Pass in Alpine County, California. The project area encompasses the Lower Blue Lake Dam; laydown, staging, and offload areas; the IFR weir area; and access routes. The project area elevation is approximately 8,036 feet above mean sea level.

3.13.3 Regulatory Setting

3.13.3.1 State Assembly Bill 52

Effective July 1, 2015, AB 52 amended CEQA to require that a lead agency provide notice to those California Native American tribes that request notice of projects proposed by the lead agency and that the lead agency consult with any tribe that responds to the notice within 30 days of receipt with a request for consultation.

Topics that may be addressed during consultation include tribal cultural resources, the potential significance of project impacts, type of environmental document that should be prepared, and possible mitigation measures and project alternatives.

Public Resources Code Section 21073 defines California Native American tribes as "a Native American tribe located in California that is on the contact list maintained by the [Native American Heritage Commission] NAHC for the purposes of Chapter 905 of the Statutes of 2004." This includes both federally and non-federally recognized tribes.

Section 21074(a) of the Public Resources Code defines tribal cultural resources for the purpose of CEQA as either of the following:

1. Sites, features, places, cultural landscapes (geographically defined in terms of the size and scope), sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
    A. Included or determined to be eligible for inclusion in the California Register of Historical Resources.
    B. Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
2. 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 Section 5024.1.

> In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

Because criteria A and B also meet the definition of a historical resource under CEQA, a tribal cultural resource may also require additional consideration as a historical resource. Tribal cultural resources may or may not exhibit archaeological, cultural, or physical indicators.

Recognizing that California tribes are experts in their tribal cultural resources and heritage, AB 52 requires that CEQA lead agencies provide tribes that requested notification an opportunity to consult at the commencement of the CEQA process to identify tribal cultural resources. Furthermore, because a significant effect on a tribal cultural resource is considered a significant impact on the environment under CEQA, consultation is used to develop appropriate avoidance, impact minimization, and mitigation measures.

3.13.4 Methods

3.13.4.1 AB 52 Consultation

The Central Valley Water Board is the CEQA lead agency for the proposed project. No tribes have requested to consult with the Central Valley Water Board under AB 52 on projects in the project vicinity (Gevorgyan pers. comm.). Therefore, no AB 52 consultation has been conducted.

In the absence of tribes wishing to consult under AB 52, information about potential impacts on tribal cultural resources was drawn from the results of a search of the NAHC Sacred Lands File and existing information about known archaeological resources and buried site sensitivity in the project vicinity.

3.13.4.2 Sacred Lands File Search and Correspondence with Native American Representatives

Tribal consultation and engagement (not related to AB 52) for projects associated with the Mokelumne River Project have been undertaken on a programmatic level in cooperation with FERC and USFS over a period of many years. Consultation procedures for project activities that have the potential to affect historic properties on the Mokelumne River Project are detailed in the HPMP (Price et al. 2007). The HPMP identifies 16 individuals representing nine Native American groups that were consulted during the preparation of the HPMP and previous relicensing work (Price et al. 2007:Appendix C). Consultation efforts undertaken during past studies, relicensing, and development of the HPMP did not identify areas of concern to the consulting Native Americans in the current project area. Prior surveys, an ethnographic study and past consultation efforts have not identified places of concern in the current project area.

A letter was sent to the NAHC on October 6, 2022 requesting a Sacred Lands File search of the project vicinity and a Native American contact list. On November 11, 2022, request for comment letters were sent by PG&E to the following tribes: the Washoe Tribe of Nevada and California, the Tuolumne Band of Me-Wuk, the Calaveras Band of Mi-Wuk Indians, the Jackson Rancheria Band of Miwuk Indians, the Ione Band of Miwok Indians, and the Buena Vista Rancheria.

The project was also discussed at the annual PG&E Mokelumne River Project Cultural Stakeholder meeting on November 21, 2022. Representatives of the Jackson Rancheria Band of Miwuk Indians were present at the meeting and the meeting notes were provided to tribal stakeholders not in attendance. This included the Washoe Trible of Nevada and California, Tuolumne Band of Me-Wuk, and Calaveras Band of the Mi-Wuk Indians.

The NAHC responded on November 29, 2022, noting that their Sacred Lands File check did not indicate the presence of sacred lands in the project vicinity. After receipt of the letter from the NAHC a request for comment letter was sent to the Wilton Rancheria on November 30, 2022. Follow-up outreach was made to all listed tribes on December 20, 2022, with the exception of the Jackson Rancheria Band of Miwuk Indians on December 30, 2022 with an updated contact.

A Tribal Historic Preservation Officer for the Buena Vista Rancheria was reached on December 20, 2022, and deferred to local tribes for comment as the project is outside of their land of interest and ancestral territory. A representative of the Wilton Rancheria contacted PG&E Senior Consulting Scientist Starla Lane on December 20, 2022, with the following message: "Thank you for consulting with me on December 20, 2022 at 12pm regarding the Lower Blue Lake Project by PG&E and the ICF. The Wilton Rancheria does not have any issues with this project at this time but we request to be notified should there be any inadvertent discoveries made during construction. Please do not hesitate to contact us if you have any questions or concerns. The purpose of this email is to confirm and close our consultation with you. Thank you for your time and consideration." Finally, a Cultural Preservation Representative of the Jackson Rancheria Band of Miwuk Indians was reached on December 30, 2022, and deferred action and support to the Washoe Tribe of Nevada and California. Consultation is ongoing and will continue throughout the project.

3.13.5 Environmental Effects

Potential impacts of the proposed project related to tribal cultural resources are discussed in the context of State CEQA Guidelines Appendix G checklist. Checklist Section XVIII, *Tribal Cultural Resources*, asks:

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

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

Results of the records search, consultation, and survey for the project concluded no tribal cultural resources, that are also historical resources, are in the project area. The records search, consultation, and survey did identify historical resources within the project area, but those are evaluated in Section 3.12, *Cultural Resources*, of this IS. Consequently, the project would result in no impact on tribal cultural resources that are also historical resources and requires no mitigation.

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

No tribes have requested to consult with the CEQA lead agency under AB 52, and no known resources are in the area of impact. There would be no impact.

3.14 Aesthetics

3.14.1 Introduction

This section analyzes the proposed project's potential impacts related to aesthetics. It describes existing conditions in the project area and summarizes the overall regulatory framework for aesthetics, and it analyzes the potential for the proposed project to affect these resources.

3.14.2 Existing Conditions

As described in Chapter 1, *Introduction*, Lower Blue Lake Dam is located near the crest of the Sierra Nevada mountain range in Alpine County, California (Figure 1-1) on PG&E-owned lands that are under a conservation easement. The land surrounding Lower Blue Lake consists of both private property and NFS lands managed by the Eldorado National Forest. Representative key views, taken on October 25, 2023, are mapped on Figure 3.14-1 and the corresponding key views are included in Figures 3.14-2 through 3.14-5.

The lake, surrounding rock formations and mountains, and forests create a dramatic and scenic visual landscape. The flat water surface of Lower Blue Lake contrasts against the tall, conical trees of the mixed conifer forest that lines the edge of the lake and surrounding smooth, undulating volcanic rock outcrops, which line the lake and are also located within the lake, and are a prominent focal point of the area. The lake is backdropped by the ridges and peaks of surrounding mountains that are also covered with mixed conifer forest and interspersed with slopes with little to no vegetation (Figure 3.14-2, Key Views 1 and 2). The sky is a prominent feature of these highly scenic views, where the blues, whites, and greys of the sky and clouds contrast against the browns, tans, and greens of the land and vegetation. The lake reflects the quality of the sky and can range from appearing deep blue to dark grey or almost black.

The dam is at the southern end of Lower Blue Lake. The dam face appears to be constructed of a mix of materials from a thin layer of embankment fill and concrete on the upstream side of the dam (Figure 3.14-3, Key View 3) and earthen fill and a rock-faced wall on the downstream side of the dam. The dark, compacted gravels across the dam crest give the appearance of an older asphalt roadway with crumbling edges (Figure 3.14-3, Key View 4). The upstream face of the dam can be seen from the edges of the lake, which are accessible to the public, from the northern end of the lake (Figure 3.14-2, Key View 2). Details are not very noticeable from that distance, but details begin to become more apparent toward the middle of the lake, as viewers get closer to the dam (Figure 3.14-4, Key View 5). However, views of the dam are obscured in many areas, even in close proximity such as from the Lower Blue Lake Campground, due to the dense canopy cover of the evergreen trees that limits direct views of the project site (Figure 3.14-4, Key View 6). Therefore, the most direct views of the project site are available from the lake's unvegetated shores, the lake's surface, and from locations immediately adjacent to the dam (e.g., the boat ramp, dam crest, restroom and parking/turnaround areas at either end of the dam).

The IFR weir is also not readily visible due to terrain and the dense forest canopy. Viewers must seek out the weir by deviating from the main roadway/trail and hiking to the edge of Middle Creek. From certain locations, the weir is visible, blending in fairly well with the surrounding rock outcroppings (Figure 3.14-5, Key View 7). The weir creates a small waterfall feature that creates visual interest in the landscape.

The Pacific Crest Trail (PCT) is approximately 1.25 miles northeast of the project site. The trail is located at a higher elevation (approximately 9,340 feet above mean sea level) than the project site (approximately 8,040 feet above mean sea level). Although many views of the project site from the trail are obscured from view by terrain and dense evergreen trees, the proposed project would be visible in middleground views from the trail in close proximity to the Nipple, where tree cover is lacking (Figure 3.14-5, Key View 8). There are no scenic roadways with views of the project area (California Department of Transportation 2019; Federal Highway Administration 2022).

Developed campgrounds, day use areas, and a boat ramp are located at the lake, as are trailheads to the adjacent Mokelumne Wilderness. Therefore, viewers primarily include recreationists that use the area for camping, hunting, fishing, hiking, swimming, OHV use, and boating. Recreationists are likely to have a high visual sensitivity for changes in the natural landscape because they are more likely to place high value on and have a high regard for the natural environment. PG&E workers also comprise the viewers who have visual access to the project site. These workers tend to be more focused on their tasks at hand but are also likely to enjoy the setting due to the high-quality views it affords. Therefore, their sensitivity is considered to be moderately high.

3.14.3 Regulatory Setting

3.14.3.1 Federal

National Trails System Act of 1968

The National Trails System Act of 1968 established national recreation, scenic, and historic trails. National scenic trails are designated as such:

> to provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which such trails may pass. National scenic trails may be located so as to represent desert, marsh, grassland, mountain, canyon, river, forest, and other areas, as well as landforms which exhibit significant characteristics of the physiographic regions of the nation (16 USC 1242).

The National Trails System Act of 1968 seeks to preserve scenic and natural qualities along trails. However, it recognizes the rights of private landowners and states that, in development and use of a trail, "full consideration shall be given to minimizing the adverse effects on the adjacent landowner or user and his operation" (National Park Service 2019). The National Trails System Act assigns trail management responsibility to various federal resource agencies, depending on which agency holds jurisdiction over the land where the trail is located in a given area.

The PCT, formally known as the Pacific Crest National Scenic Trail, was created under the National Trails System Act to provide outdoor recreational opportunities and conserve significant scenic, historic, natural, or cultural qualities.

National Scenic Byway

SR 4 is part of the Ebbetts Pass National Scenic Byway (Federal Highway Administration 2022). However, this roadway is 5 miles away and does not have views of, and would not be affected by, the proposed project.

Figure 3.14-1
Key View Map

Key View 1. View from Lower Blue Lake dam looking north toward the surrounding mountains and Pacific Crest Trail.

Key View 2. View from northern end of Lower Blue Lake looking south toward the dam and surrounding mountains.

Figure 3.14-2
Representative Key Views

Key View 3. View from the western side of the dam looking southeast toward the dam.

Key View 4. View from the western end of the dam looking east across the dam crest.

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Figure 3.14-3
Representative Key Views

Key View 5. View from the edge of the lake looking south toward the dam.

Key View 6. View from the Lower Blue Lake Campground looking south toward the dam.

Figure 3.14-4
Representative Key Views

Key View 7. View from edge of Middle Creek looking north toward the IFR weir.

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Key View 8. View from the Pacific Crest Trail looking south toward the surrounding landscape, Lower Blue Lake, and the dam.

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Figure 3.14-5
Representative Key Views

3.14.3.2 State

SRs 4, 88, and 89 are Officially Designated State Scenic Routes (California Department of Transportation 2019). However, these roadways are approximately 5 to 10 miles away and do not have views of, and would not be affected by, the proposed project.

3.14.3.3 Local

Alpine County General Plan

The *Alpine County General Plan, Conservation Element* (Alpine County 2003) recognizes that the "County's Scenic Resources can without dispute be considered among the most beautiful in the world" and that the recreation and tourism are tied directly to these scenic resources. The majority of the aesthetics goals and policies protect resources along SRs 4, 88, and 89, which are scenic routes that would not be affected by the proposed project. The following goal and policy apply to the proposed project.

- **G. P. Goal No. 19:** Maintain and improve existing aesthetic resources in Alpine County.
- **Policy No. 19f:** Protect nighttime views by minimizing outside lighting.

3.14.4 Environmental Effects

Potential impacts of the proposed project related to aesthetics are discussed in the context of State CEQA Guidelines Appendix G checklist. Checklist Section I, *Aesthetics*, asks whether the project would result in any of the following conditions.

a. Have a substantial adverse effect on a scenic vista?

The proposed project would be visible in scenic vista views available from the PCT. However, the project site is located 1.25 miles away from locations along the PCT with views of the proposed project. Most project features would be replaced in kind and would look the same as existing conditions. The upstream face of the dam is visible in this view but not the downstream face of the dam. Therefore, the downstream filter, seepage collection system, and buttress on the downstream face of the dam would not be visible. Similarly, the weir modifications would be blocked by terrain and dense forest vegetation and would not be visible. In addition, at this distance, a crest raise of 2 feet, new embankment fill, the removal of four to five trees along the toe of the dam, and the safety railing would not be discernable because these are very minor visual changes. The concrete block wall would also not be very noticeable because less than 2.5 feet of the wall face would rise above the asphalt pavement along the dam crest and, therefore, would not be discernable from this distance. Impacts would be less than significant.

b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?

Project implementation would not damage any scenic resources or change views from a scenic highway, because the project area is not visible from any federal-, state- or county-designated scenic roadways (California Department of Transportation 2019; Federal Highway Administration 2022). There would be no impact.

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?

The Lower Blue Lake Dam Day Use Area and the Lower Blue Lake Boat Launch Ramp and associated parking area and restrooms would be closed during construction. Public access to Lower Blue Lake camping facilities during construction would be retained so that visual access to most of the lake and day use areas upstream of the Lower Blue Lake campground would be retained. Therefore, visual access to the construction area would be limited to recreationists at the Lower Blue Lake Campground and drivers and recreations on Blue Lakes Road.

Construction of the project would create temporary changes in views of the project site, and construction activities would introduce a considerable amount of heavy equipment, including backhoes, compactors, tractors, and trucks, into the viewshed of all viewer groups. Construction would be expected to take place between 7:00 a.m. and 7:00 p.m. over a period of approximately 3.5 months and require the following temporary facilities on the site: assembly areas, parking areas, and staging and laydown areas. Dust control practices during construction would reduce the potential for slow-moving dust clouds, which could attract attention from visual receptors and reduce the availability of short-range views. In addition, staging and laydown areas would be visible as temporary fixed features in the foreground from the adjacent campground and roadway. However, canopy cover at the campground limits direct views of the construction site. More direct views of the construction site and construction activities would be available to campers who access the shoreline area of the lake, where there is no tree cover to limit views. The project would require minimal grading and would restore the temporarily disturbed areas to pre-construction conditions to the degree possible. Although viewers are not accustomed to seeing heavy machinery associated with the construction activities in this area, the construction period would have a very short duration. Construction would not take place over an extended period of time, and visual changes resulting from construction would be considered short term and temporary.

Overall, once in operation, the project would not substantially degrade the existing visual character of the area or its surroundings because the post-construction view of the dam would be similar to existing conditions. Most project features would be replaced in kind and would look the same as existing conditions. The weir would be repaired by replacing portions of degraded concrete. The new concrete would weather and appear much like existing conditions. A crest raise of 2 feet would not raise the dam enough to alter its visual appearance in the landscape. Removing the old loose gravel pavement and placing asphalt pavement along the crest of the dam would remove the degraded-looking surface and create a better-defined pathway across the dam that is safer for viewers crossing the dam. New embankment fill could include lightly colored rock material that would weather within a short period of time to look like the existing embankment fill. The concrete block wall would not be visually intrusive in the landscape because less than 2.5 feet of the wall face would rise above the asphalt pavement along the dam crest when seen from the upstream side of the dam, and the wall would be approximately 5 feet tall when seen from the downstream side of the dam. The concrete block wall has the potential to be most visible from the downstream side of the dam and from the roadways at both ends of the dam. However, mature trees limit views of the downstream side of the dam so that only small portions of the wall would be visible through the forest. Therefore, the new concrete block wall would be most visible from the dam crest and ends of the dam. However, the coloring of the concrete block wall materials would blend with existing rock wall material. The metal safety railing on top of the concrete block wall would be slightly more visible due to the silver coloring that would stand out, slightly, against the backdrop of evergreen trees. However, the metal safety railing would be consistent with existing bare metal handrails that are present at the eastern end of the dam, near the helicopter pad and overflow spillway. The wall and safety railing would increase safety for viewers walking across the dam crest and provide better opportunities for viewers to experience downstream views from the dam crest. The wall would not block upstream views toward the surrounding mountains, rock formations, lake surface, and forest that are more scenic and dramatic. In general, the project modifications would alter the existing view of a dam that appears slightly visually degraded to one that appears, visually, more maintained. Viewers are likely to view these changes in a positive fashion. Therefore, the scenic quality of views at Lower Blue Lake would be maintained or slightly enhanced.

Overall, the majority of affected viewers recognize that the lake is a human-made feature with a primary function of managing water and downstream water flows, with associated habitat goals, and a secondary function of providing recreation; the existing natural character of the recreation areas would be maintained; the views to the surrounding forests, ridges, and peaks would be retained; there would be very little vegetation removal; the proposed features are mostly in keeping with the existing visual character of features associated with the dam; and major construction activities would be temporary. Once in operation, the proposed structures that are visible aboveground would not detract from views of the project area. Therefore, impacts would be less than significant.

d. Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?

Project construction would not occur at night and, therefore, would not introduce any temporary sources of light or glare that would adversely affect views. Additionally, the project would not introduce any sources of light that would adversely affect daytime or nighttime views in the area because lights are not included in the final project design. Materials used to construct the crest raise would be visually in keeping with the existing materials at the project site. In addition, most project features would be replaced in kind. New embankment fill could include lightly colored rock material that would weather in a short period of time and not create a new source of glare. Changes in glare from the removal of four to five trees along the toe of the dam and installation of the safety railing would be negligible due to these minor changes. Impacts would be less than significant.

3.15 Transportation

3.15.1 Introduction

This section analyzes the proposed project's potential impacts related to transportation. It describes existing conditions in the project area and summarizes the overall regulatory framework for transportation, and it analyzes the potential for the proposed project to affect these resources.

For the purposes of the transportation analysis, the study area consists of the project area and the potential haul routes between the project area and construction material sources in Ione, CA and Carson City, NV, including Blue Lakes Road, SR 104 in Ione, CA, and SR 88 between Ione and the California-Nevada border. Additionally, worker trips are expected to originate in the South Lake Tahoe area and travel via U.S. Highway (US) 50, SR 89, SR 88, and Blue Lakes Road to the project area.

As described in Chapter 2, *Project Description*, the project site would be returned, as much as is reasonably practical, to its original condition following completion of construction activities and operations and maintenance activities would be the same as pre-project conditions. Accordingly, post-construction project operations of the reservoir, dam, and weir would not result in changes related to transportation relative to existing conditions. This analysis therefore focuses exclusively on construction-related transportation impacts because there would be no long-term transportation impact.

3.15.2 Existing Conditions

Blue Lakes Road is classified as a "County Collector" and SR 88, SR 89, and SR 104 are classified as "State Highways". US 50 is classified as a "Federal Highway." Blue Lakes Road provides access to recreational destinations and serves as a snowmobile route during winter road closures. SR 88 is an east-west, two-lane conventional highway beginning in Stockton at SR 99 and ending in Minden, NV and SR 89 is a north-west, two-lane conventional highway beginning at Interstate (I-) 5 near Mount Shasta and ending at US 395 in Mono County. Truck traffic composes up to 13 percent of total traffic on SR 88 and SR 89 (Green Dot Transportation Solutions 2015:2-10 and 2-8; Green Dot Transportation Solutions 2021:27). US 50 is a transcontinental route that is the major shipping route for movement of freight and goods by truck into and out of El Dorado County (El Dorado County Transportation Commission 2020:8-2)

Travel in Alpine, Amador, and El Dorado Counties is primarily automobile-oriented due to the rural nature of the local communities, low development densities, and limited options for using alternative modes of transport. Vehicle miles traveled (VMT) is a computed value which correlates to the extent of an area's reliance on private automobiles. VMT is calculated by adding together the length of each trip made in each county, typically over a set period of time, commonly 1 year. VMT is often used to estimate vehicle emissions and effects on air quality. Alpine County has the fewest VMT on state highways of all counties in California (Alpine County 2017:111). In Amador County, over 77 percent of the daily VMT is served by the state highway system (Amador County 2016:CM-2).

Level of service (LOS) is a grading system used to rate a roadway segment's traffic flow characteristics, and acts as an indicator of roadway performance using a scale of A through F (Table 3.15-1).

Table 3.15-1. Level of Service Definitions/Characteristics

LOS	Description
A	Vehicles don't need to pass to maintain desired speeds.
B	Vehicles need to pass to maintain desired speeds.
C	Passing becomes difficult.
D	Passing becomes very difficult; left turns across traffic delayed.
E	Passing is virtually impossible. Left turns across traffic become very difficult.
F	Very low speeds, no passing, left turns become extremely difficult.

Source: Amador County 2016:CM-6.

LOS A through LOS C are considered to be acceptable, although some situations allow LOS D and E in areas of short peak traffic impacts or in urban or developing areas. LOS for rural highways is largely determined by roadway geometry factors such as grades, vertical and horizontal curves, and the presence of passing opportunities. Table 3.15-2 shows the average daily traffic LOS thresholds for the roadway types in the study area (in Alpine County).

Table 3.15-2. Roadway Segment Average Daily Traffic Level of Service Thresholds in Alpine County

		Level of Service				
Functional Class	**Lanes**	**A**	**B**	**C**	**D**	**E**
County Collector	2	900	2,000	6,800	14,100	17,400
State Highway (Rural Minor Arterial)	2	1,200	2,900	7,900	16,000	20,500

Source: Alpine County 2017:114.

Amador County sets specific LOS thresholds for each roadway segment (Amador County Transportation Commission 2015:40). The LOS thresholds for the study area roadway segments located in Amador County are shown in Table 3.15-3.

Table 3.15-3. Roadway Segment Level of Service Capacity Thresholds in Amador County

		Level of Service				
Road	**Segment**	**A**	**B**	**C**	**D**	**E**
SR 88	West of Kirkwood Meadows Drive to West of Inspiration Drive	2,060	4,240	8,880	11,040	17,840
	From SR 25 to SR 26	2,600	5,300	8,800	13,800	22,300
	East of Ridge Road (Pine Grove)	0	2,200	11,000	13,900	14,900
	From Jackson City Limits to Ridge Road	2,600	5,300	8,880	13,800	22,300
	From SR 49 (South Junction) to Jackson City Limits	2,060	4,240	8,880	11,040	17,840

Road	Segment	Level of Service A	B	C	D	E
	West of Junction Route 49 (Martell)	2,100	6,900	12,900	18,200	24,900
SR 104	West of Jct Rte 124 to Marlette Street	0	4,000	13,100	15,500	18,300
	North of SR 88	2,600	5,300	8,800	13,800	22,300

Source: Amador County Transportation Commission 2015:44.

El Dorado County does not have available current LOS threshold data. Table 3.15-4 shows the existing daily volume and LOS on roadway segments in the study area for which data is available.

Table 3.15-4. Existing Level of Service on Roadways in the Study Area

Road	Segment/Description	Daily Volume	LOS
County Collector			
Blue Lakes Road	N/A	760	A
State Highway (Rural Minor Arterial)			
SR 89	Jct. Rte. 50 to Bridge Road	4,970	ND
	Bridge Road to Alpine/El Dorado Co Line; Luther Pass	3,380	ND
	Alpine/El Dorado Co Line; Luther Pass to Picketts, Jct. Rte. 88	3,100	C
SR 88	Nevada State Line	4,350	C
	East Junction with SR 89	4,000	C
	West Junction with SR 89	3,800	C
	Picketts, West Jct. Rte. 89	2,950	C
	Carson Pass Summit	2,450	B
	Between Caples Lake and Carson Pass Summit	3,750	C
	At Amador County Line	3,600	C
	West of Kirkwood Meadows Drive	4,200	B
	From Shake Ridge Road to Panther Creek Road	2,600	B
	From Panther Creek Road to Bear River Road	2,300	B
	West of Mormon Emigrant Trail	3,250	B
	From SR 25 to Shake Ridge Road	3,250	B
	West of Inspiration Drive	5,500	C
	From SR 26 to Shake Ridge Road	6,800	C
	West of Tiger Creek Road	6,300	C
	From Ridge Road to SR 26	11,400	D
	East of Ridge Road (Pine Grove)	22,200	F
	From Jackson City Limits to Ridge Road	15,000	E
	From SR 49 (South Junction) to Jackson City Limits	11,000	D
	West of Junction Route 49 (Martell)	16,500	D

Road	Segment/Description	Daily Volume	LOS
SR 104	West of Jct Rte 124 South	11,700	C
	From Main Street to Marlette Street	7,000	C
	North of SR 88	7,900	C
Federal Highway			
US 50	South Lake Tahoe, Jct. Rte. 89 North to H Street	14,600	ND
	H Street to Sawmill Road	12,700	ND
	Sawmill Road to Myers, Pioneer Trail Road	14,600	ND
	Myers, Pioneer Trail Road to Jct. Rte. 89 South	13,600	ND

Source: Alpine County 2017:121; Amador County Transportation Commission 2015:44; California Department of Transportation 2022a, 2022b.
LOS = level of service; SR = State Route; N/A = not applicable; ND = no data available

3.15.3 Regulatory Setting

The following sections summarize key state and local regulations, laws, and policies relevant to transportation in the study area.

3.15.3.1 State

California Department of Transportation

Caltrans has authority over the state highway system, including freeways, interchanges, and arterial routes. Caltrans operates and maintains state highways in Alpine and Amador Counties.

California Department of Transportation District 10 State Route 88 Transportation Concept Report

Each Caltrans district publishes transportation concept reports (TCRs) for the state highways within its jurisdiction. The purpose of a TCR is to determine how a highway will be developed and managed so that it delivers the targeted LOS and quality of operations that are feasible to attain over a 20-year period. A TCR establishes the "concept"—or desired—LOS for specific corridor segments. TCRs also provide current and forecasted LOS information for highway segments. The TCR for SR 88 in Alpine and Amador Counties published by Caltrans District 10 in 2013 ultimately envisions SR 88 as a four-lane expressway and sets the concept LOS for SR 88 as LOS C, the standard LOS for rural highways (California Department of Transportation, District 10 2013).

Senate Bill 375

SB 375 provides guidance regarding curbing emissions from cars and light trucks to help the State comply with AB 32. There are four major components to SB 375. First, SB 375 requires regional GHG emissions targets. CARB's Regional Targets Advisory Committee guides the adoption of targets to be met by 2020 and 2035 for each metropolitan planning organization (MPO) in the state. Second, MPOs are required to create a sustainable communities strategy (SCS) that provides a plan for meeting regional targets. The SCS and the regional transportation plan (RTP) must be consistent, including action items and financing decisions. Third, SB 375 requires regional housing elements and transportation plans to be synchronized on 8-year schedules. Finally, MPOs must use transportation and air emissions modeling techniques that are consistent with the guidelines prepared by the California Transportation Commission.

CEQA Section 21099(b)(1) (Senate Bill 743)

CEQA Section 21099(b)(1) requires the OPR to develop revisions to the CEQA Guidelines, thereby establishing criteria for determining the significance of transportation impacts from projects that "promote the reduction of GHG emissions, the development of multimodal transportation networks, and a diversity of land uses." CEQA Section 21099(b)(2) states that, upon certification of the revised guidelines for determining transportation impacts, pursuant to Section 21099(b)(1), automobile delay, as described solely by LOS or similar measures of vehicular capacity, or vehicular traffic congestion shall not be considered a significant impact on the environment under CEQA.

Previously, LOS measured the average amount of delay experienced by vehicle drivers at an intersection during the most congested time of day, while the new metric—VMT—measures the total number of daily miles traveled by vehicles on the roadway network and thereby the impacts on the environment from those miles traveled. SB 743 changes the focus of transportation impact analysis in CEQA from measuring impacts on drivers to measuring the impact of driving.

In January 2016, OPR published for public review and comment its Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA, Implementing Senate Bill 743, recommending that project transportation impacts be measured using a VMT metric (Office of Planning and Research 2016). OPR later developed the Technical Advisory on Evaluating Transportation Impacts in CEQA (Technical Advisory), which contains OPR's technical recommendations regarding assessment of VMT, thresholds of significance, and mitigation measures. This Technical Advisory provides screening criteria for certain project types, including a daily trip threshold to define "small projects" with respect to their potential to result in significant transportation effects. The Technical Advisory states that "absent substantial evidence indicating that a project would generate a potentially significant level of VMT, or inconsistency with an SCS or general plan, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact" (Office of Planning and Research 2019).

The Technical Advisory outlines VMT significance thresholds for different project types not meeting the screening criteria. For example, it would be reasonable to conclude that residential and office projects demonstrating a VMT level that is 15 percent less than existing (2015 through 2018 average) conditions are consistent with statewide VMT reduction targets. The VMT level is commonly assessed on a per capita or per service population basis. With respect to retail land uses, any net increase of VMT may indicate a significant transportation impact.

In January 2019, changes to the CEQA statutes and guidelines went into effect, including a new Section 15064.3 that states that VMT is the most appropriate measure of transportation impacts, and includes updated criteria for analyzing transportation impacts. This shift in transportation impact criteria is expected to better align transportation impact analysis and mitigation outcomes with the State's goals to reduce GHG emissions, encourage infill development, and improve public health through more active transportation.

3.15.3.2 Local

Alpine County General Plan

Transportation analysis in the study area is guided by policies and standards set by local jurisdictions. Because the study area is located in Alpine County, the proposed project would be required to adhere to the adopted policies in the Alpine County General Plan. The Circulation Element of the Alpine County General Plan (Alpine County 2017) identifies goals and policies related to circulation and infrastructure needs in Alpine County. The following goals and policies are applicable to the proposed project.

Goal 29: Develop and maintain an efficient, safe, and effective road system.

- **Policy 29b**: Implement and maintain LOS C on roadways… and at intersections… to ensure travel delays and congestion do not cause impacts to drivers.

Alpine County 2020 Regional Transportation Plan

The Alpine County 2020 RTP was prepared by the Alpine County Local Transportation Commission. Its purpose is to provide a vision for the region, supported by transportation goals, for 10-year (2020–2030) and 20-year (2031–2040) planning horizons. The RTP documents the policy direction, actions, and funding strategies designed to maintain and improve the regional transportation system. The Policy element of the RTP supports the transition from LOS to VMT as a metric for roadway effectiveness and emphasizes methods to reduce vehicle use and increase active transportation and transit use to reduce GHG emissions (Green Dot Transportation Solutions 2021:36).

Alpine County Active Transportation Plan

The Alpine County Active Transportation Plan was adopted by the Alpine County Local Transportation Commission on March 20, 2018. Its purpose is to identify existing and future infrastructure and programs related to active transportation, specifically, those that encourage people to walk and bike, and the features that keep pedestrians and bicyclists safe. The plan does not contain any goals, objectives, or proposed programs in the study area.

Amador County General Plan

Transportation analysis in the study area is guided by policies and standards set by local jurisdictions. Because the study area involves Amador County due to hauling from Ione, the proposed project would be required to adhere to the adopted policies in the Amador County General Plan. The Circulation Element of the Amador County General Plan (Amador County 2016) identifies goals and policies related to circulation and infrastructure needs in Amador County. The following goal and policy are applicable to the proposed project.

Goal CM-1: Maintain adequate regional and local transportation facilities.

- **Policy CM-1.1**: The County's Level of Service (LOS) standard is LOS C for rural roadways, and LOS D for roadways in urban and developing areas. For Caltrans facilities, the LOS standard shall be that established by Caltrans.

Amador County 2020 Regional Transportation Plan

The Amador County 2020 RTP was prepared by the Amador County Transportation Commission (2020). Its purpose is to provide a vision for the region by identifying and prioritizing the transportation improvement projects and programs that are needed by the region, based on technical analysis, and input from the cities, county, and public. The following goal and objective are applicable to the proposed project.

Goal 2A: Maintain Level of Service conditions “D”, or better, within incorporated cities and developed communities and LOS “C”, or better, for the remainder of the Region to the greatest extent feasible.

- **Policy 2E**: ACTC [Amador County Transportation Commission] recommends that the cities and county maintain LOS conditions “D”, or better, within incorporated cities and other developed communities and LOS “C”, or better, for the remainder of the Region a their “Threshold of Significance” for traffic impact analysis required by CEQA.

El Dorado County

On October 6, 2020, the El Dorado County Board of Supervisors adopted Resolution 141-2020, which determines that the County will no longer utilize LOS as the metric by which to measure traffic’s impact on the environment for CEQA, and that the County shall use the countywide VMT average as a measure of transportation impacts for CEQA compliance. The resolution also establishes that there is an assumption of less-than-significant impacts for projects that generate or attract fewer than 100 trips per day (consistent with OPR’s determination of projects that generate or attract fewer than 110 trips per day and further reduced to 100 to remain consistent with El Dorado County General Plan policies) (El Dorado County Board of Supervisors 2020).

3.15.4 Environmental Effects

Potential impacts of the proposed project related to transportation are discussed in the context of the CEQA Guidelines Appendix G checklist. Checklist Section XVII, *Transportation*, asks whether the project would result in any of the following conditions.

a. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

The CEQA statute now provides: “[A]utomobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion, shall not be considered a significant impact on the environment pursuant to [CEQA] ….” (California Public Resources Code § 21099(b)(2)). However, the current guidelines still require an analysis of “conflicts with a program, plan, ordinance or policy addressing the circulation system…” Based on a review of local policies and the most current programs, plans, ordinances, or policies addressing the circulation systems identified in the project area, LOS is still used to identify system performance (Alpine County 2017:114; Amador County 2016:CM-11). In light of the continued relevance of LOS metrics to local planning, an analysis of LOS metrics is included in this IS to be transparent and informative. During construction, the movements of crew, equipment, and material would result in temporary increases in traffic. The vehicles associated with project implementation are anticipated to travel on Blue Lakes Road, SR 88, and SR 104. Additionally, worker trips are expected to originate in the South Lake Tahoe area and travel along SR 89 to SR 88 and Blue Lakes Road.

Based on the *Alpine County General Plan, Amador County General Plan, Amador County 2020 Regional Transportation Plan,* and the *Caltrans District 10 State Route 88 Transportation Concept Report,* this analysis assumes a project's traffic effect would not be consistent with adopted policies if the project would:

- Cause the existing LOS to deteriorate from LOS C or better to LOS D or worse.
- Increase the traffic volume by 10 percent or more at a location already operating at LOS D or worse.

During construction, the movements of crew, equipment, and material would result in temporary increases in traffic within the transportation study area. The highest number of project-related vehicle trips is anticipated to occur when the "Mobilization and Laydown Area Setup" phase overlaps with the "Fill Delivery and Backhaul" phase. During this time, haul trucks and vendor vehicles could make up to 40 one-way trips per day on SR 104, SR 88, and Blue Lakes Road to the project site from either Ione, CA or Carson City, NV, and construction workers are anticipated to make up to 14 one-way trips per day in personal vehicles on US 50, SR 89, SR 88, and Blue Lakes Road to the project site from the South Lake Tahoe area. This would result in increases to the daily volumes on roadways in the transportation study area as shown in Table 3.15-5.

Table 3.15-5. Daily Volume Increases on Roadway Segments in the Transportation Study Area

Roadway	Road Segment	Daily Volume Increase (One-Way Trips per Day)
Blue Lakes Road	Intersection with SR 88 to project site	54
SR 88	Intersection with SR 104 to intersection with Blue Lakes Road	40
	Intersection with Blue Lakes Road to intersection with SR 89 (Picketts Junction)	54
	Intersection with SR 89 (Picketts Junction) to CA/NV border	40
SR 104	Ione, CA to intersection with SR 88	40
US 50	South Lake Tahoe to intersection with SR 89	14
SR 89	Intersection with US 50 to intersection with SR 88	14

Note: Haul truck and vendor deliveries would come from either Ione, CA or Carson City, NV, or a combination of both. In any scenario, the total one-way haul truck and vendor delivery trips per day would be 40. This table shows the worst-case scenario for each road segment within the transportation study area. For example, it is possible that all haul truck and vendor delivery trips would originate in Ione, CA; therefore, the daily volume increase for the segment of SR 88 between SR 104 and the intersection with Blue Lakes Road is shown as 40. However, if that were to occur, the daily volume increase for the segment of SR 88 from the intersection of SR 89 to the CA/NV border would be 0. Similarly, it is possible that all haul truck and vendor delivery trips would originate in Carson City, NV; therefore, the daily volume increase for the segment of SR 88 between the intersection of SR 89 to the CA/NV border is shown as 40. However, if that were to occur, the daily volume increase for the segment of SR 88 from SR 104 to the intersection with Blue Lakes Road would be 0.

As shown in Table 3.15-4, Blue Lakes Road, SR 104, the segments of SR 88 from the California/Nevada border to Ridge Road (in Amador County), and the segments of SR 89 for which LOS data are available all currently function at a LOS C or better. The temporary daily volume increases generated by the relatively small amount of construction would not change the current LOS on any of these road segments. Some of the segments of SR 88 currently function at LOS D or worse (Table 3.15-4). However, the temporary daily volume increases generated by the project would not increase traffic volume by 10 percent or more on any of these road segments, nor on any road segments for which no LOS data were available. Therefore, the proposed project would not conflict with any programs, plans, ordinances, or policies addressing the circulation system. This impact would be less than significant.

b. Conflict or be inconsistent with State CEQA Guidelines section 15064.3, subdivision (b)?

As described under checklist item "a" above, the proposed project would generate a small number of haul truck, vendor, and worker vehicle trips during construction activities. During the most intensive period of construction activities, the maximum amount of vehicle trips generated by the project would be 54 one-way vehicle trips per day (30 one-way haul-truck trips, 10 one-way vendor trips, and 14 one-way worker trips). Therefore, the number of project-related vehicle trips would not exceed the 110 per day screening level (Office of Planning and Research 2019) or El Dorado County's 100 per day screening level (El Dorado County Board of Supervisors 2020). For this reason, potential VMT impacts related to project construction would be less than significant.

c. Substantially increase hazards because of a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The proposed project does not involve the alteration or design of any roadways, intersections, or incompatible uses that would result in hazardous traffic conditions. Design features would not increase hazards for motorists, bicyclists, or pedestrians. There would be no impact.

d. Result in inadequate emergency access?

There would be no lane closures involved with the proposed project that would constrict emergency access. Haul trucks accessing the project area would have the potential to briefly slow traffic during construction hours. However, the maximum number of haul truck round trips per day would be only 15 during the busiest period of construction, and a high volume of truck traffic already traverses SR 88 daily. As discussed under checklist item "a," the addition of all project-related vehicle trips to roadways in the study area would not be substantial enough to alter LOS levels on the roadways within the study area. Additionally, PG&E will implement BMP-4: *Implement Traffic Control Plan* to ensure traffic conflicts are avoided (see Section 2.5.4, *BMP-4: Implement Traffic Control Plan*, for more information). Therefore, emergency access would be maintained during construction of the project. This impact would be less than significant.

3.16 Wildfire

3.16.1 Introduction

This section analyzes the proposed project's potential impacts related to wildfire. It describes existing conditions in the project area and summarizes the overall regulatory framework for wildfire, and it analyzes the potential for the proposed project to affect these resources.

3.16.2 Existing Conditions

CAL FIRE identifies FHSZs within both SRAs and LRAs and maps these severity zones based on modeling of expected fire behavior over a 30- to 50-year period. The categories of FHSZ are "very high," "high," and "moderate." The project area falls within an SRA categorized as a moderate FHSZ (California Department of Forestry and Fire Protection 2007).

Most of the project area consists of relatively flat terrain where Lower Blue Lake reservoir is located and the land rises on all sides of the lake toward the nearby hills and mountains. Elevations generally range from approximately 8,040 feet at the lake to 9,374 feet in the surrounding mountains. The climate is temperate, with cold, snowy winters and warm summers. Precipitation occurs year-round, but most heavily between September and May.

Wildfires generally burn up a slope faster and more intensely than on flat surfaces. Therefore, steeply sloped terrain can represent more of a wildfire risk depending on the type of vegetation and hydrologic conditions present.

3.16.3 Regulatory Setting

3.16.3.1 State

Fire Hazard Severity Zones

Government Code Section 51178 requires CAL FIRE to identify FHSZs in the state. Government Code Section 51179 requires local agencies to designate, by ordinance, FHSZs in its jurisdiction. Specifically, the CAL FIRE is required to designate Very High Fire Hazard Severity Zones (VHFHSZs) in LRAs. LRAs consist of areas where local agencies are responsible for fire suppression rather than the State of California. As described in Section 3.11, *Hazards and Hazardous Materials,* the project area is located on lands owned by PG&E and responsibility for fire protection is delegated to the USFS.

3.16.3.2 Local

3.16.3.3 Alpine County General Plan

Alpine County has adopted goals and objectives related to wildland fire. The *Alpine County General Plan* Safety Element addresses the threat of wildland fire. The following relevant goal and objective address wildfire threats (Alpine County 2017).

Goal 20: Minimize the threat to lives and property posed by the possibility of wildland and structural fires within the wildland urban interface in the county.

- **Objective 20a:** Reduce fuel loading to a low risk level within wildland urban interface.

3.16.3.4 Alpine County Community Wildfire Protection Plan

The Alpine Fire Safe Council in 2018 published the Community Wildfire Protection Plan, which presents a coordinated planning effort to address the hazards of fire in the wildland-urban interface. The plan covers all of the communities in Alpine County, which the plan divides into four planning areas: Woodfords, Markleeville, Bear Valley, and Kirkwood. The plan identifies the wildland-urban interface zones within each planning area. The project area is not in any of the identified wildland-urban interface zones in Alpine County, nor is the area covered in any of the county's adopted or proposed community evacuation plans (Alpine Fire Safe Council 2018).

3.16.4 Environmental Effects

Potential impacts of the proposed project related to wildfire are discussed in the context of State CEQA Guidelines Appendix G checklist. Checklist Section XX, *Wildfire*, asks whether the project would result in any of the following conditions.

a. Substantially impair an adopted emergency response plan or emergency evacuation plan?

As described above and in Section 3.11, the project site is not in any of the identified wildland-urban interface zones in Alpine County, nor is the area covered in any of the county's adopted or proposed community evacuation plans. Further, the project is not near established evacuation routes and due to the rural nature of the area it is unlikely the project would impair emergency responses or evacuations.

Construction access roads would be available to construction workers during construction and would not impair an emergency response plan or emergency evacuation plan. In addition, BMP-4: *Implement Traffic Control Plan*, would allow emergency access, if needed, during construction. During operations and maintenance, the project would not impair or interfere with any adopted emergency response or evacuation plans. This impact would be less than significant.

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

As described in Section 3.16.2, *Existing Conditions*, the project area is relatively flat. Steep hills and mountains, however, are nearby. Construction would not occur within an area zoned as VHFHSZ. There are no residents in or near the project site and therefore residents would not be exposed to wildfire risk or pollutants generated by potential wildfires during construction. Construction would include using various pieces of heavy equipment. Ignition sources in the area during construction could include equipment striking a rock or vegetation touching hot equipment or vehicles.

Project activities would be short term and temporary in nature. Additionally, BMP-3: *Implement Fire Hazard Prevention Measures* includes various measures that construction crews would take to eliminate the potential for fire such as requiring the use of fire-suppression equipment and tools; equipping project vehicles with fire response/suppression equipment; establishing procedures and policies for controlling any onsite fires; and daily inspections. In the unlikely event of an accidental fire, workers on site would have adequate preparation, equipment, and plans to reduce the possibility of exacerbating wildfire risks. Construction workers would not be exposed to a substantial increase in pollutant concentrations.

The project would not have permanent occupants; therefore, operations would not expose occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. This impact would be less than significant.

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 on the environment?

Construction of the project could result in short-term, temporary impacts related to fire risk and impacts on the environment as a result of rerouting the existing underground electrical conduit. However, construction activities would not result in, or introduce, development that would substantially alter land use patterns and attract residents or jobs to the project area thereby requiring further infrastructure beyond what is proposed. In addition, activities would be required to comply with all relevant policies related to safety and fire prevention, including BMP-3: *Implement Fire Hazard Prevention Measures*, in order to prevent fire risk and impacts on the environment. Furthermore, maintenance of the dam and weir infrastructure and facilities would reduce the risk of wildfire and ensure that all facilities and infrastructure are properly maintained and managed. This impact would be less than significant.

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 only people who could be potentially exposed to risks such as downstream flooding or landslides due to post-fire conditions are recreation area visitors. In the event of a wildland fire in the project area, no one would be displaced from their residences because none are present. Recreational visitors and facility maintenance staff would not be permanent occupants. People and structures would not be subjected to increased risk of flooding or landslide because people would not be located downslope of topography changes or areas vulnerable to wildland fire.

BMP-3: *Implement Fire Hazard Prevention Measures* would ensure that appropriate measures are taken to prevent wildland fires as a result of construction. Therefore, the possibility of significant runoff, post-fire slope instability, or drainage changes resulting from a wildfire would be greatly reduced and would not expose the construction workers, operations staff, or recreational visitors to a significant risk involving wildland fire. This impact would be less than significant.

Chapter 4
Cumulative Impacts

4.1 Cumulative Projects

State CEQA Guidelines Section 15355 defines cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." Pursuant to CEQA Guidelines Section 15130(b)(1)(A), the following projects have been identified as those past, present, and probable future projects that could produce related or cumulative impacts, including those projects outside the control of the lead agency. These projects (cumulative projects) are listed below.

- **Upper Blue Lake Dam Seismic Retrofit Project.** PG&E undertook the Upper Blue Lake Dam Seismic Retrofit Project to improve the seismic stability of Upper Blue Lake Dam, approximately 1.5 miles northwest of Lower Blue Lake Dam. The project consisted of placement of a 50-foot-wide by 175-foot-long rock fill buttress on the upstream side of the dam, extension of two LLO pipes by approximately 50 feet, and reconfiguration of the intake structure and trash rack. Construction of the improvements to Upper Blue Lake Dam was completed in 2019 (ICF International 2019).
- **Caples Spillway Channel Stabilization.** The Caples Spillway takes water released from the Caples Lake Auxiliary Dam, approximately 10 miles northwest of Lower Blue Lake Dam, down to Caples Creek, which is a tributary to the American River. As a condition of its FERC license for the El Dorado Hydroelectric Project (FERC Project No. 184), the El Dorado Irrigation District (EID) was required to stabilize the spillway to accommodate flows of up to 60 cfs. The 3,000-foot-long Caples Spillway Channel is a natural channel consisting of an upper cascading segment comprised of cobbles and boulders and a lower pool-riffle segment. The channel is used from May through July, when inflow to Caples Lake exceeds the capacity of the Caples Lake Dam outlet or EID flushes a build-up of pollen and debris from the Caples Lake Auxiliary Dam. Through this project, EID restored and stabilized two channel areas using rock-and-log stabilization measures and vegetative treatments. Construction of the Caples Spillway Channel Stabilization project was completed in 2020 (State Water Resources Control Board 2020).
- **Tiger Creek Regulator Dam Spillway Replacement Project.** PG&E has determined that the current spillway configuration at the Tiger Creek Regulator Dam only has the capacity to pass approximately 50 percent of the predicted maximum flood. PG&E plans to implement the Tiger Creek Regulator Dam Spillway Replacement Project to repair, rehabilitate, and/or retrofit the dam's spillway to successfully pass design flood flows. The Tiger Creek Regulator Dam, constructed between 1928 and 1931, is a 110-foot-high slab and buttress structure that impounds water as part of the Mokelumne hydroelectric project approximately 3 miles upstream of Tiger Creek's confluence with the Mokelumne River. It is operated under the same FERC license as the Lower Blue Lake Dam (FERC Project No. 137) and is approximately 30 miles east-southeast of the Lower Blue Lake Dam. The project schedule is not known at this time, but construction may occur sometime between fall 2024 and spring 2027. As of February 2023, no environmental analyses had yet been prepared for this project.

- **Eldorado National Forest Roadside Hazard Tree Mitigation Project.** The Eldorado National Forest is proposing a comprehensive roadside hazard tree mitigation project to address the threats to safety and property posed by damaged or dead trees adjacent to NFS roads. The project would include felling and removal of hazard trees on NFS lands outside of Wilderness Areas within 200 feet of the edge of Eldorado National Forest roads and along state, county, local, and private roads through NFS lands. Over 2,400 miles of roads are identified as eligible for the project, including the Deer Valley OHV Trail, Forest Service Road 9N01, which connects Lower Blue Lake to Meadow Lake, and portions of Blue Lakes Road (Eldorado National Forest 2022a). Project implementation may start as early as spring 2023, with treatment of approximately 25 to 40 miles of roadside per year (Eldorado National Forest 2022b).
- **Mountain Counties Bridge Rails.** Caltrans plans to make improvements to three bridges in Alpine County, one of which is located on SR 88 within the Lower Blue Lake traffic study area between the intersection with Blue Lakes Road and the California-Nevada border, at West Fork Carson River crossing at the head of Woodfords Canyon. These upgrades include bridge rail upgrades, minor changes to the deck overlays, and shoulder widening. Construction of these improvements is anticipated to be completed by July 20, 2023 (California Department of Transportation 2020).
- **SR 88 Pine Grove Corridor Improvement Project.** Caltrans, Amador County, and the Amador County Transportation Commission propose to construct intersection modifications, lane reconfiguration, pedestrian and bicycle improvements, and general highway improvements along SR 88 to improve safety through the town of Pine Grove. This segment of SR 88 is located within the Lower Blue Lake traffic study area between Ione and the intersection with Blue Lakes Road. Project construction is anticipated to be completed by spring 2024.

4.2 Cumulative Impacts by Resource

The following analysis focuses on the potential for impacts identified in Chapter 3, *Environmental Setting and Impacts,* to make a considerable contribution to significant cumulative impacts. The proposed project would not cause significant long-term impacts on the resources discussed in Chapter 3. However, the project has the potential to incur temporary, short-term impacts during the construction period. The potential cumulatively considerable impacts on these resources, in combination with potential impacts from the projects described in Section 4.1, *Cumulative Projects* (where applicable) are discussed below.

4.2.1 Hydrology and Water Quality

The cumulative impact context for evaluation of potential impacts on hydrology and water quality resources includes the improvements proposed under the proposed project only. There are no anticipated developments or improvements in the areas adjacent to the project area that have the potential to affect the local hydrology and water quality conditions or act in combination with the proposed project. Past projects (e.g., the Upper Blue Lake Dam Seismic Retrofit Project) and future projects (e.g., the Tiger Creek Regulator Dam Spillway Replacement Project, the Eldorado National Forest Roadside Hazard Tree Mitigation Project, and the SR 88 Pine Grove Corridor Improvement Project), each having components within the Mokelumne River watershed, have either implemented or would implement standard policy standards, BMPs, and required environmental commitments to not adversely affect surface water or groundwater quantity or quality.

The proposed project would comply with DSOD and FERC seismic safety policy standards, as well as state and federal water quality regulations and, therefore, the proposed project's effect on local hydrology and water quality conditions would be minimized. All long-term project impacts would be reduced to a less-than-significant level through adherence to permit requirements, and with BMP-1: *Implement Water Quality Protection Measures and Erosion and Sediment Control Plans*, BMP-2: *Implement Hazardous Materials Control Measures*, and BMP-6: *Implement Fugitive Dust Abatement Measures*.

A principal purpose of the project is to improve the seismic stability of Lower Blue Lake Dam and to reduce to an acceptable level the risk of internal erosion/piping and embankment instability related to an elevated phreatic condition during normal maximum reservoir operations and flood conditions. By greatly improving the safety conditions at the dam, the proposed project would decrease the overall exposure of people or structures to a significant risk of loss, injury, or death involving flooding in the area. With BMP-1, BMP-2, and BMP-6, all impacts are expected to be short-lived with no adverse impacts on local hydrologic or water quality conditions.

For these reasons, the proposed project is not anticipated to contribute to any cumulatively considerable impacts related to hydrologic or water quality conditions.

4.2.2 Geology and Soils

There are no anticipated development projects or improvements in the areas adjacent to the project area that have the potential to adversely affect the local geologic, soils, seismic, and paleontological conditions or to act in combination with the proposed project. The Upper Blue Lake Dam Seismic Retrofit Project was completed in 2019 approximately 1.5 miles north of the proposed project; however, this project resulted in an overall reduction in risks associated with seismic activity in the region and no paleontological resources were encountered during construction.

A primary purpose of the project is to improve the seismic stability of the Lower Blue Lake Dam. By greatly improving the safety conditions at the dam, the proposed project would decrease the exposure of people or structures to a significant risk of loss, injury, or death from strong ground shaking and region-wide seismic stability risk would be improved. All impacts would be reduced to a less-than-significant level through compliance with DSOD and FERC seismic safety policy standards, adherence to permit requirements and BMPs, and implementation of GEO-MM-1: *Educate Construction Personnel in Recognizing Fossil Material* and GEO-MM-2: *Stop Work if Substantial Fossil Remains are Encountered during Construction*. For these reasons, and because there are no other projects in the area with the potential to cause related adverse impacts, the proposed project is not anticipated to contribute to cumulatively considerable impacts on local geologic, soils, seismic, and paleontological conditions.

4.2.3 Biological Resources

Of the projects identified above, the Caples Spillway Channel Stabilization, Tiger Creek Regulator Dam Spillway Replacement, Mountain Counties Bridge Rails, and SR 88 Pine Grove Corridor Improvement projects, when considered with the proposed project, would have no cumulative impacts on biological resources. The Caples Spillway Channel Stabilization is a habitat restoration project that benefits biological resources and would have no adverse effects on waters of the U.S., Yosemite toad, or SNYLF. The Tiger Creek Regulator Dam Spillway Replacement is located approximately 30 miles from the project area and is at an elevation of 3,600 feet. The SR 88 Pine

Grove Corridor Improvement is even further away and at approximately 2,500 feet. Because of the spatial distances and elevational differences, these projects would affect different biological resources than those in the Lower Blue Lake Dam Seepage Mitigation and Weir Replacement project area and would not cumulatively contribute to the same impacts on biological resources as the proposed project. Lahontan cutthroat trout do not occur west of the Sierra Crest, with the exception of those in the upper Mokelumne River drainage (e.g., Lower Blue Lake, Middle Creek); therefore, these projects do not overlap with the range of Lahontan cutthroat trout. The Mountain Counties Bridge Rails project had no impacts on Lahontan cutthroat trout and only minimal impacts on riparian habitat, which would not be affected by the proposed project. The two remaining projects, Upper Blue Lake Seismic Retrofit Project and Eldorado National Forest Roadside Hazard Tree Mitigation Project, are discussed below for plants and waters of the U.S./waters of the State, fish, and wildlife.

4.2.3.1 Special-Status Plants, Sensitive Natural Communities, and Waters of the U.S./Waters of the State

For the Upper Blue Lake Seismic Retrofit Project, botanical surveys were conducted in accordance with mitigation required by the IS/MND and no special-status plants were found in the study area. The project, therefore, had no impacts on special-status plants. The project had temporary construction impacts on Lemmon’s willow thicket, a riparian habitat, but mitigation required monitoring to ensure that effects would remain less than significant. The project also caused permanent loss of non-wetland waters of the U.S./waters of the State in the reservoir and temporary impacts on Middle Creek. The permanent impacts were mitigated to a less-than-significant level through compensation to ensure no net loss of habitat functions and values, and temporary impacts were mitigated by post-construction restoration. The proposed project would have no impacts on riparian habitat, and, when considered with the Upper Blue Lake Seismic Retrofit Project, would not contribute to cumulatively considerable impacts on waters of the U.S./waters of the State.

The Eldorado National Forest Roadside Hazard Tree Mitigation Project would not have impacts on special-status plants, riparian or other sensitive natural communities, or waters of the U.S./waters of the State. Therefore, the proposed project, when considered with the Eldorado National Forest Roadside Hazard Tree Mitigation Project, would not contribute to cumulatively considerable impacts on special-status plants, sensitive natural communities, or waters of the U.S./waters of the State.

4.2.3.2 Special-Status Fish

The cumulative geographic scope for Lahontan cutthroat trout includes Lower Blue Lake and Middle Creek from Lower Blue Lake Dam to just below the IFR weir.

The Upper Blue Lake Seismic Retrofit Project had short-term impacts on Lahontan cutthroat trout in Upper Blue Lake and in Middle Creek in the reach that flows from Upper Blue Lake to Lower Blue Lake. Protective measures implemented during project construction avoided and reduced the severity of impacts on Lahontan cutthroat trout. There were no long-term impacts on either the lake or creek populations of Lahontan cutthroat trout from the project. Because the population of Lahontan cutthroat trout in Upper Blue Lake is isolated from the population in Lower Blue Lake and Middle Creek between the two lakes, the Lower Blue Lake Dam Seepage Mitigation and Weir Replacement project would have no impacts on fish that inhabit Upper Blue Lake. Although the Lower Blue Lake Dam Seepage Mitigation and Weir Replacement project would not affect the reach of Middle Creek that flows between the two lakes, Lahontan cutthroat trout in Middle Creek may move between Lower Blue Lake and Middle Creek. Therefore, it is possible that Lahontan cutthroat trout in Middle Creek affected by the Upper Blue Lake Seismic Retrofit Project could be present in Lower Blue Lake and affected by construction of the proposed project. However, as previously mentioned, no long-term impacts on Lahontan cutthroat trout occurred as a result of the Upper Blue Lake Seismic Retrofit Project. The proposed project would result in a temporary reduction in the volume and surface area of Lower Blue Lake. However, the temporary lowering of the lake is not expected to result in significant impacts on Lahontan cutthroat trout in the lake because the reservoir would continue to provide sufficient living space, forage, and suitable environmental conditions (temperature and DO) for Lahontan cutthroat trout after the lake has been drawn down. Therefore, the proposed project would not result in an incremental contribution to cumulative impacts on Lahontan cutthroat trout.

The Eldorado National Forest Roadside Hazard Tree Mitigation Project could result in water quality degradation from construction equipment and soil erosion and the transport and delivery of sediment to streams or Lower Blue Lake and Middle Creek in the study area. This project would include BMPs and/or mitigation measures (e.g., erosion protection, restrictions on timing of activities and equipment operation) that would avoid and/or minimize temporary construction-related impacts to protect water quality during construction. The proposed project would incorporate similar BMPs and mitigation measures to avoid and/or minimize temporary construction-related impacts to protect water quality during construction. Therefore, the proposed project would not result in an incremental contribution to cumulative impacts on Lahontan cutthroat trout.

4.2.3.3 Special-Status Wildlife

The Upper Blue Lake Seismic Retrofit Project had impacts on the Yosemite toad population that breeds at Upper Blue Lake. Monitoring of the Yosemite toad population was conducted in 2020, 2021, and 2022 per a condition of the USFWS's Amended Biological Opinion for Pacific Gas and Electric Company's Mokelumne River Project (Commission #P-137), Upper Blue Lake Dam Seismic Retrofit (08FBD700-2019-FE-0116). Successful and substantial Yosemite toad breeding has been documented during each year of monitoring (Pacific Gas and Electric Company and ICF 2020, 2021, 2022). This suggests that the seismic retrofit project had little or no impact on the Yosemite toad population. Construction was monitored by qualified biologists and no Yosemite toads, SNYLF, or other special-status wildlife were found in the construction area or harmed by construction. Mitigation measures will be implemented as part of the proposed project to ensure effects on Yosemite toad, SNYLF, and other special-status wildlife species are minimized, and that the project does not result in long-term adverse impacts on these species. The proposed project, when considered with the Upper Blue Lake Seismic Retrofit Project, would not contribute to cumulatively considerable impacts on special-status wildlife.

The Eldorado National Forest Roadside Hazard Tree Mitigation Project would remove damaged or dead trees that could provide nesting habitat for special-status birds and roosting habitat for special-status bats. Both projects could affect habitat for nesting birds and roosting bats. However, the removal of five trees as a result of the proposed project would not be cumulatively considerable because of the few trees being removed and the substantial number of remaining trees in the project vicinity.

4.2.3.4 Biological Resources Impact Conclusion

The impacts on biological resources of these past and future projects and the proposed project would not be cumulatively considerable for the reasons discussed above. No mitigation is required.

4.2.4 Air Quality

The evaluation of air quality impacts is an inherently cumulative approach and does not consider individual planned projects in the vicinity of the project. Rather, it uses the same air district thresholds as the project-level analysis, which consider levels at which project emissions would be cumulatively considerable. The project-level thresholds were developed to prevent deterioration of ambient air quality, which is influenced by emissions generated by past, present, and reasonably foreseeable future projects. Therefore, exceedances of the project-level thresholds, as identified in Section 3.6.4, *Environmental Effects*, would be cumulatively considerable.

Alpine County and the South Lake Tahoe portion of El Dorado County are in nonattainment for the state PM10 standard. Amador County, through which construction materials would be hauled, does not attain the state and federal ozone standards. Therefore, a significant cumulative impact for air quality exists in the study area. Construction and operations of future projects, including the proposed project, could further contribute to nonattainment of the state and federal air quality standards in the air quality study area. However, as shown in Table 3.6-4, neither construction activities nor inter-district material hauling or employee commuting would generate ozone precursors (ROG and NO_X) or PM emissions above the analysis thresholds. Accordingly, the proposed project's contribution to the existing cumulative impact would not be cumulatively considerable.

The combined effects of air pollution in the GBVAB, MCAB, and LTAB from existing and future sources represent the emissions paradigm to which receptors would be exposed. The contribution of project-generated emissions to potential adverse health effects induced by exposure to regional criteria pollutant emissions (i.e., ozone precursors and PM) depends on numerous interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, the number and character of exposed individuals [e.g., age, gender]). Moreover, emissions of ozone precursors (ROG and NO_X) generated in one area may not equate to an ozone concentration in that same area. Similarly, some types of particulate pollutants may be transported over long distances or formed through atmospheric reactions. As such, the magnitudes and locations of specific health effects from exposure to increased ozone or regional PM concentrations are the product of emissions generated by numerous sources throughout a region, as opposed to a single individual project. Project-specific correlations of regional criteria pollutant emissions to specific health endpoints (e.g., increased cases of asthma) are not commonly performed because models that quantify changes in ambient pollution and resultant health effects were developed to support regional planning and policy analysis and generally have limited sensitivity to changes in criteria pollutant concentrations induced by individual projects. This is particularly pronounced for projects with relatively small contributions of emissions (i.e., emissions that would be below regional thresholds), such as the proposed project.

In general, community health conditions near the proposed project, as measured by CalEnviroScreen indicators, are slightly better when compared to conditions across the state (Office of Environmental Health Hazard Assessment 2022). Regardless, Alpine County does not currently attain the state PM10 standard. Certain individuals residing in areas that do not meet the ambient air quality standards could be exposed to pollutant concentrations that cause or aggravate acute and/or chronic health conditions, regardless of implementation of the proposed project. Compliance with GBUAPCD rules (401, 402, and 404-A) and BMP-6: *Implement Fugitive Dust Abatement Measures*, would minimize project-generated PM10 emissions by minimizing dusty conditions. Moreover, as shown in Table 3.6-4, the highest predicted daily PM10 emissions during construction would not contribute to the significant cumulative regional PM10 pollution impact.

Localized pollutants and odors generated by a project are deposited near the emissions source and can have the potential to affect the population near that emissions source. While construction of the proposed project would result in localized pollutant emissions (i.e., fugitive dust, DPM, and CO) and minor odors from diesel fuel combustion and paving, construction activities would be short-term (4 months). Because localized pollutant concentrations and odor emissions regularly decline as a function of distance from the emission source, the proposed project, in combination with other existing and future projects, would not expose receptors to substantial cumulative localized pollutant concentrations or substantial odors.

4.2.5 Greenhouse Gas Emissions

Global GHG emissions due to population growth and economic growth continue to increase and are worsening the effects of global climate change. While there are myriad efforts at local, state, national, and international levels to promote the reduction of GHG emissions overall, current projections are that these emissions will still increase for the following decades and add to the current GHG concentrations in the atmosphere.

Environmental impacts associated with project-generated GHG emissions are exclusively cumulative in nature in accordance with the contemporary scientific knowledge of their effects on climate change. GHG emissions, once emitted, mix into the atmosphere and affect a larger area than any individual project site. Thus, the GHG analysis does not consider individual planned projects in the vicinity of the proposed project and project alternatives. Rather, it uses the same thresholds and conditions as the project-level analysis.

As discussed in Section 3.6.4, *Environmental Effects*, total emissions generated by construction of the proposed project are estimated to be 383 metric tons CO_2e. The 383 metric tons CO_2e expected during construction of the proposed project are well below screening thresholds adopted by various air quality management districts. However, the proposed project would result in a permanent loss of stored carbon and sequestration capacity. PG&E would implement GHG-MM-1: *Implement Best Management Practices to Mitigate Tree Loss and Reduce Construction Generated Greenhouse Gas Emissions* to replace removed trees at a 1:1 ratio. The measure also requires BMPs to further reduce construction-generated GHGs. GHG-MM-1 ensures emissions generated by the proposed project would not result in a significant cumulative contribution to impacts on global climate change.

4.2.6 Energy

Potential cumulative energy impacts include contributing to the wasteful, inefficient, or unnecessary consumption of energy resources, or conflicting with or obstructing a state or local plan for renewable energy or energy efficiency.

As discussed under Impact “a”, construction activities would be short-term and would not result in wasteful, inefficient, or unnecessary consumption of energy resources. The project would therefore not contribute to a cumulatively considerable impact related to the wasteful, inefficient, or unnecessary consumption of energy resources.

As discussed under Impact "b", the proposed project would not construct any new buildings and is only buttressing a dam and replacing a weir with no change to existing operations. As a result, the measures in the applicable state or local plans are not applicable to this project and the project would not contribute to any cumulative impacts related to conflicts with or obstruction of state or local plans for renewable energy or energy efficiency.

4.2.7 Noise

Cumulative noise or vibration impacts can occur when two or more projects are under construction simultaneously or generate operational noise or vibration at the same time. Because noise and vibration are localized effects that decrease with distance from the source, significant cumulative impacts do not typically occur unless two or more projects are close to a single receptor. The presence of any natural or manmade barriers (e.g., hills, topography, walls, buildings) between a project site and a receptor will increase the rate of noise reduction over distance and will further reduce any cumulative noise levels.

Related projects in the vicinity of the noise- and vibration-sensitive receptors considered in this analysis include construction activities that could occur simultaneously with construction of the project, depending on project timing. For the reasons discussed above, construction noise and vibration levels at any single receptor are typically dominated by the closest construction activity. As a result, the chances of construction noise from more distant related project sites making a substantial contribution to overall noise levels at the same receptor is generally low. Nonetheless, incremental increases in total construction noise levels could occur. Based on the related projects list provided in Section 4.1, *Cumulative Projects*, the nearest related project to the project site would be the proposed Eldorado National Forest Roadside Hazard Tree Mitigation Project, which could be adjacent to the southern boundary of the project site. To be cumulatively considerable, construction of both projects would have to occur simultaneously; however, it is anticipated that these projects would not occur in conjunction with each other. The surrounding environment also contains natural barriers, such as topography, which would help reduce any cumulative noise associated with related projects. Tree removal would also utilize less noise-intensive equipment than project construction. Due to this, future development would result in a less than cumulatively considerable contribution in terms of construction noise impacts.

With respect to operational noise, onsite noise levels associated with the project and other projects within the vicinity of the proposed project site would be subject to the applicable county noise standard (e.g., Alpine County Code Section 18.68.090) to ensure that their noise levels would not adversely affect adjacent land uses. While the nearest related project to the project site would be Eldorado National Forest Roadside Hazard Tree Mitigation Project, compliance with the county code would prohibit tree removal from exceeding noise ordinances for adjacent land uses. The nearest permanent project establishment would be the Upper Blue Lake Dam Seismic Retrofit Project. This completed project, however, is located approximately 1.5 miles north of Lower Blue Lake and did not involve any changes to existing operations and maintenance activities or the installation of new noise-generating operational equipment. Therefore, because neither the Upper Blue Lake Dam Seismic Retrofit Project nor the proposed project involve the installation of any new stationary equipment, future development would result in a less-than-significant cumulative impact with respect to operational noise.

Because vibration impacts are assessed based on instantaneous maximum peak levels (PPV), worst-case groundborne vibration levels from construction are generally determined by whichever individual piece of equipment generates the highest vibration levels. As a result, the vibration from multiple construction sites, even if the sites are near each other, does not generally combine to raise the maximum PPV, and the cumulative effect is no more severe than the effect from the largest individual contribution. The felling of trees associated with the Eldorado National Forest Roadside Hazard Tree Mitigation Project would occur further away from sensitive land uses than any project related construction. Additionally, it is anticipated that construction would not occur within conjunction of each other. Therefore, future development would result in a less than cumulatively considerable contribution in terms of groundborne vibration impacts.

4.2.8 Recreation

The proposed project does not include the construction of recreational facilities or require the expansion of recreational facilities, though the proposed project could result in temporary displacement of some users from either the Lower Blue Lake Boat Launch or Lower Blue Lake Dam Day Use Area to other regional recreation facilities during the 2023 construction season. This impact was found to be less than significant based on the temporary nature of the closures and the abundance of recreational opportunities in the region. A review of the past, present, and probable future projects listed in Section 4.1 shows that there are no known projects that would result in recreational facility closures in the region during the same timeframe as the proposed project. The proposed project would therefore not be expected to contribute to any cumulatively considerable recreation impacts.

4.2.9 Hazards and Hazardous Materials

The cumulative context for hazards and hazardous materials is the project vicinity. In general, a project's potential impacts related to hazards are individual and localized, depending on activities occurring at the project site and proximity to hazardous facilities. Hazardous materials used during construction as a result of project implementation would be of low toxicity and would consist of fuels, oils, and lubricants. Because these materials are required for operation of construction vehicles and equipment, measures from the SWPPP and BMPs would be implemented to reduce the potential for or exposure to accidental spills or fires involving the use of hazardous materials. While foreseeable projects have the potential to cause similar impacts, it is assumed these projects would also implement similar BMPs and follow all regulations regarding the transport, disposal, and handling of hazardous wastes during construction.

As a result of the regulatory scheme described in Section 3.11.3, there would be no cumulative significant effect from hazardous materials. The project's impact is less than significant, and its contribution would not create a new cumulative impact.

4.2.10 Cultural Resources

Cumulative impacts on cultural resources could result when the impacts of the proposed project, in conjunction with other projects and development in the region, result in multiple or cumulative impacts on cultural resources. Because there are no present or reasonably foreseeable projects in the vicinity of Lower Blue Lake or the Mokelumne Rock-Faced Dams Discontiguous Historic District, the only impacts would result from the proposed project. The proposed mitigation measures for the project would reduce the potential adverse effects on cultural resources that may occur in the project area to a less-than-significant level and the project would not contribute to a cumulatively considerable impact on cultural resources.

4.2.11 Tribal Cultural Resources

Cumulative impacts on tribal cultural resources could result when the impacts of the proposed project, in conjunction with other projects and developments in the region, result in multiple or cumulative impacts on tribal cultural resources in the area. Because there are no known tribal cultural resources in the project area, the proposed project is unlikely to contribute to cumulatively considerable impacts on tribal cultural resources.

4.2.12 Aesthetics

The cumulative analysis for aesthetics resources considers actions associated with the projects identified in Section 4.1, *Cumulative Projects*. Refer to Section 3.14, *Aesthetics*, for a more detailed description of the existing aesthetics setting of the study area. The landscapes surrounding the lakes in the cumulative study area are characterized by mixed conifer forest-covered ridges and peaks, interspersed with slopes with little vegetation, and mixed conifer forests and rock outcrops at lower elevations immediately surrounding the lakes.

Past actions include construction of the Upper Blue Lake Dam Seismic Retrofit Project that constructed a rock buttress that slightly widened the dam, most of which is submerged, and the placed rock fill is visually similar to existing conditions. The Caples Spillway Channel Stabilization Project restored and stabilized two channel areas using rock-and-log stabilization measures and vegetative treatments. This resulted in negligible visual changes because the changes are natural looking.

In the near future, the Eldorado National Forest Roadside Hazard Tree Mitigation Project would remove damaged or dead trees adjacent to over 2,400 miles of NFS roads, including near the project area. Individual or small groupings of hazard tree removals spread out along miles of roadway would result in changes that mimic small forest canopy openings and would not greatly alter the visual landscape. The future Tiger Creek Regulator Dam Spillway Replacement Project that may involve either repair, rehabilitate, and/or retrofit the dam's spillway. It is anticipated that the project would minimize the impact footprint so that visual impacts from project features and vegetation removal are minimal. The Mountain Counties Bridge Rails project on SR 88 would result in minor visual changes from upgrades to the bridge rail and deck overlay and from shoulder widening. These changes would be minor, in keeping with the existing visual character of the bridge, and would not greatly alter the visual landscape. Similarly, the intersection modifications, lane reconfiguration, pedestrian and bicycle improvements, and highway improvements along SR 88 through the town of Pine Grove would be also result in minor visual changes that would not greatly alter the visual landscape.

As discussed under aesthetics checklist item "a", the proposed project would result in negligible visual changes when seen in scenic vista views available from the PCT. Similarly, as discussed under aesthetics checklist item "b", the project would not affect scenic roadways. Therefore, the contribution of the proposed project to significant cumulative impacts related to changes to scenic vista views and scenic roadways would not be cumulatively considerable.

As discussed under aesthetics checklist item "c", during construction, the area would retain the same visual quality for the following reasons: the majority of affected viewers recognize that the lake is a human-made feature with a primary function of managing water and downstream water flows, with associated habitat goals, and a secondary function of providing recreation; the existing natural character of the recreation areas generally would be maintained; the views to the surrounding forests, ridges, and peaks would be retained; there would be very little vegetation removal; public access to Lower Blue Lake camping facilities during construction would be retained so that visual access to most of the lake and day use areas upstream of the Lower Blue Lake campground would be retained; the proposed features are relatively small and in keeping with the existing visual character of features associated with the dam; and major construction activities would be temporary. In addition, none of the work areas are expected to be visible in publicly accessible scenic vista views available from the PCT. Once in operation, the proposed structures that are visible aboveground would not detract from views of the project area. Therefore, the contribution of the proposed project to significant cumulative impacts related to changes in visual character and the quality of views would not be cumulatively considerable.

As discussed under aesthetics checklist item "d", the proposed project would be constructed during daylight hours. The proposed project changes are not expected to increase daytime glare because removal of trees that provide shade would be minimal. In addition, the concrete, new embankment fill, and railings would weather in a short period of time and blend with the surroundings. The resulting increase in glare reflecting off of the structures would be negligible. Therefore, the contribution of the proposed project to significant cumulative impacts related to daytime or nighttime views would not be cumulatively considerable.

Construction and operation of the proposed project would not cause an incremental impact related to aesthetics resources that would be significant when added to the impacts from other past, present, and reasonably foreseeable future actions.

4.2.13 Transportation

Because all project-related transportation impacts would be temporary in nature, this cumulative impact analysis focuses on other construction projects that could occur concurrently with the proposed project and within the project's transportation study area. Caltrans plans to complete its Mountain Counties Bridge Rails Project during summer 2023, which may overlap with construction of the proposed project. However, the IS/MND for the Mountain Counties Bridge Rails Project found that it would have no effect on transportation and traffic (California Department of Transportation 2020) and is therefore not considered further in this analysis. Caltrans may be implementing the SR 88 Pine Grove Corridor Improvement Project within the proposed project's transportation study area during the 2023 construction season. Although the proposed project and the SR 88 Pine Grove Corridor Improvement Project could have similar transportation effects, these would be temporary and would not cause any long-term changes in LOS, VMT, or emergency access. Therefore, the proposed project is not anticipated to contribute to any cumulatively considerable transportation impacts.

4.2.14 Wildfire

The geographic scope of the cumulative impacts on wildfire is the areas surrounding the project. Typically, when structures or people are added to an area, the risk of wildfire increases. As evident in recent years, wildfires throughout the state of California can be far reaching and cause widespread damage. The severity and damage done by a wildfire is dependent on the amount of rain the area has received at that point in time, fuel availability, and whether certain fire management techniques have been implemented, among many other factors. Development of other future projects in areas surrounding the project would be required to adhere to any state and federal environmental regulations, including those related to wildfire risk, associated with construction, demolition, and/or remediation, consequently improving overall environmental quality and reducing the cumulative impact related to wildfire. The project area is remote and in a wilderness area so there is not a high degree of development or activity occurring in the areas surrounding the project, which keeps the cumulative impact with respect to wildfire lower.

The contribution of the project to a cumulative impact would not be cumulatively considerable. The project itself would not cumulatively increase the risk of wildfire because it would not involve the addition of a significant amount of structures or people to an undeveloped area, and any construction or operation activities associated with the project would be conducted in accordance with BMP-3: *Implement Fire Hazard Prevention Measures* pertaining to fire hazard safety. Therefore, the proposed project's contribution to any significant cumulative impact would not be cumulatively considerable due to the limited amount of activity or development that would occur as a result of the proposed project, and the measures that would be implemented or incorporated to prevent risk of wildfire, or the spread of wildfire.

Chapter 5
Mandatory Findings of Significance

State CEQA Guidelines Section 15065 requires that a lead agency prepare an environmental impact report if any of the following conditions may result from a proposed project.

1. The project has the potential to substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; substantially reduce the number or restrict the range of an endangered, rare, or threatened species; or eliminate important examples of the major periods of California history or prehistory.
2. The project has the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.
3. The project has possible environmental effects that are individually limited but cumulatively considerable.
4. The environmental effects of a project will cause substantial adverse effects on human beings, either directly or indirectly.

If the project proponent agrees to mitigation measures that would avoid any significant effects on the environment, or would mitigate significant effects to a point where clearly no significant effect on the environment would result from project implementation, an environmental impact report need not be prepared.

The proposed project would not result in any mandatory findings of significance. The proposed project would not result in significant effects on the environment; fish, wildlife, or plant species; endangered species; or cultural resources. Neither would the project cause long-term adverse environmental effects, cumulatively considerable effects, or adverse effects on humans. With the mitigation measures described in Chapter 3, Environmental Setting and Impacts, all environmental impacts would be reduced to a less-than-significant level. Please refer to individual resource sections in Chapter 3 for a complete discussion of the environmental impacts and associated mitigation.

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6.5 Chapter 5, Mandatory Findings of Significance

No references were cited in this chapter.

Chapter 7
List of Preparers

7.1 Pacific Gas & Electric Company

Name, Title	Project Role
Connor Foad, Project Manager	Project Manager
Trevor McGuckin, Project Engineer	Responsible Engineer
Mike Farmer, Land Planner	Environmental Review and Permitting Lead

7.2 ICF

Name	Project Role
Jennifer Hale	Project Director and Biological Resources—Wildlife
Sara Martin	Project Manager
Alex Angier	GIS Analysis
Christine Cruiess	Cultural Resources—Built Environment
Nicole Felicetti	Cultural Resources—Built Environment
Teresa Giffen	Graphic Design
Peter Hardie	Noise
Christiaan Havelaar	Cultural Resources—Archaeology
Jeff Kozlowski	Biological Resources—Fisheries
Jacqueline Mansoor	Energy and Transportation
Christine McCrory	Editor
Jenelle Mountain-Castro	Publications Specialist
Jeff Peters	Hydrology, Water Quality, Geology, Seismicity, and Soils
Noah Schumaker	Noise
Tina Sorvari	Hazards and Hazardous Materials and Wildfire
Jennifer Stock	Aesthetics
Ellen Unsworth	Paleontological Resources
Lisa Webber	Biological Resources—Botany
Laura Yoon	Air Quality and Greenhouse Gas Emissions

Appendix A

Environmental Checklist

Appendix A
Environmental Checklist

1.	**Project Title:**	Lower Blue Lake Dam Seepage Mitigation and Weir Replacement Project
2.	**Lead Agency Name and Address:**	Central Valley Regional Water Quality Control Board 11020 Sun Center Drive, #200 Rancho Cordova, CA 95670
3.	**Contact Person and Phone Number:**	Sara Gevorgyan 916-464-4710
4.	**Project Location:**	Lower Blue Lake, Alpine County
5.	**Project Sponsor's Name and Address:**	Pacific Gas and Electric Company Attn: Mike Farmer 5555 Florin Perkins Road Sacramento, CA 95826
6.	**General Plan Designation:**	Open Space
7.	**Zoning:**	Agriculture

8. **Description of Project:**

Pacific Gas and Electric Company (PG&E) is proposing to construct the Lower Blue Lake Dam Seepage Mitigation and Weir Replacement Project at Lower Blue Lake reservoir in Alpine County. In summer 2018, PG&E observed evidence of adverse seepage conditions developing on the downstream embankment face of the Lower Blue Lake Dam. In response, PG&E performed subsurface investigations of the dam embankment and foundation, which suggested that there are likely two sources of the observed seepage issues: (1) through the embankment fill itself during times of elevated water levels in the reservoir, and (2) through the native alluvium/glacial deposits left in place below the dam and spillway, which appear to be affected less by reservoir levels and more by groundwater conditions. One purpose of the proposed project is to reduce the risk of instability and internal erosion/piping associated with seepage through the installation of a seepage collection system, filter, and rock fill buttress along the downstream earthen embankment of the dam. As part of the project, PG&E would also raise the dam crest by approximately 2 feet to increase the available freeboard above the maximum water surface elevation, replace the existing reservoir staff gauge, and install a public safety railing along the steeper portion of the dam. The Lower Blue Lake Dam is operated by PG&E as part of the Mokelumne River FERC No. 137 Project, which is licensed by the Federal Energy Regulatory Commission.

An instream flow release (IFR) weir built of concrete that has degraded over time is located downstream of the Lower Blue Lake Dam. The gauging station at the IFR weir has remote telemetry that alerts PG&E in the event of a sudden flow increase or decrease. In order to maintain calibration of the weir, the degraded concrete would be replaced as part of the proposed project.

9. **Surrounding Land Uses and Setting:**

In general, the Blue Lakes area (including Lower Blue Lake and Upper Blue Lake) is characteristic of high-elevation granite basins in the Sierra Nevada. Granite outcrops are a prominent feature of the area, and there are numerous outcrops, ridges, and peaks of younger volcanic rock. The dominant vegetation type is Sierra Nevada mixed conifer forest. Recreation uses of the area primarily consist of camping, hunting, fishing, hiking, swimming, off-highway vehicle use, and boating. Developed campgrounds, day use areas, and boat ramps owned and operated by PG&E are located at both lakes, as are trailheads to the adjacent Mokelumne Wilderness. The land surrounding PG&E's Lower Blue Lake and Upper Blue Lake parcels consists of both private property and national forest system lands managed by the Eldorado National Forest.

10. **Other Public Agencies Whose Approval is Required:**

U.S. Fish and Wildlife Service

U.S. Army Corps of Engineers

11. **Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code Section 21080.3.1? If so, has consultation begun?**

No tribes have requested consultation with the lead agency for projects in Alpine County pursuant to Public Resources Code section 21080.3.1.

Environmental Factors Potentially Affected

The environmental factors checked below would potentially be affected by this project (i.e., the project would involve at least one impact that is a "Potentially Significant Impact"), as indicated by the checklist on the following pages.

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

A.1 Aesthetics

I. Aesthetics	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Except as provided in Public Resources Code Section 21099, would the project:				
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a 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 that would adversely affect daytime or nighttime views in the area?	☐	☐	☒	☐

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.2 Agricultural and Forestry Resources

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

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.3 Air Quality

III. Air Quality	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for 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?	☐	☐	☒	☐

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.4 Biological Resources

IV. Biological Resources	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and 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, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f. Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.5 Cultural Resources

V. Cultural Resources	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☐	☒	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c. Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.6 Energy

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

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.7 Geology, Soils, and Paleontological Resources

VII. Geology, Soils, and Paleontological Resources	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
1. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
2. Strong seismic ground shaking?	☐	☐	☒	☐
3. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
4. 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 an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☒
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☒
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.8 Greenhouse Gas Emissions

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

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.9 Hazards and Hazardous Materials

IX. Hazards and Hazardous Materials	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c. Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e. Be located within an airport land use plan area or, where such a plan has not been adopted, be within two miles of a public airport or public use airport, and 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?	☐	☐	☒	☐

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.10 Hydrology and Water Quality

X. Hydrology and Water Quality	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater 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 that would:				
1. Result in substantial erosion or siltation on or off site;	☐	☐	☒	☐
2. Substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site;	☐	☐	☒	☐
3. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☐	☒
4. 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?	☐	☐	☐	☒

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.11 Land Use and Planning

XI. Land Use and Planning	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Physically divide an established community?	☐	☐	☐	☒
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.12 Mineral Resources

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

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.13 Noise

XIII. Noise	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?	☐	☐	☒	☐
b. Generate excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c. Be 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 and expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.14 Population and Housing

XIV. Population and Housing	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	☐	☒
b. Displace a substantial number of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.15 Public Services

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

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.16 Recreation

XVI. Recreation	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b. Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.17 Transportation

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

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.18 Tribal Cultural Resources

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

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.19 Utilities and Service Systems

XIX. Utilities and Service Systems	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment, stormwater 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 that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d. Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☒
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

A.20 Wildfire

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks of, 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 on 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?	☐	☐	☒	☐

Please refer to Chapter 3 for a complete discussion of the environmental impacts.

Appendix B

Species Lists

Appendix B-1

USFWS List of Threatened or Endangered Species

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: November 30, 2022
Project Code: 2023-0020173
Project Name: Lower Blue Lake Dam Seepage Mitigation Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

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

Project Summary

Project Code: 2023-0020173
Project Name: Lower Blue Lake Dam Seepage Mitigation Project
Project Type: Dam - Maintenance/Modification
Project Description: Repair seepage on the downstream side of the dam at Lower Blue Lake. Scheduled for summer/fall 2023.
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.612803400000004,-119.93078190540714,14z

Counties: Alpine County, California

Endangered Species Act Species

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Sierra Nevada Red Fox *Vulpes vulpes necator* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4252	Endangered

Amphibians

NAME	STATUS
Sierra Nevada Yellow-legged Frog *Rana sierrae* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9529	Endangered
Yosemite Toad *Anaxyrus canorus* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7255	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

There are 2 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Sierra Nevada Yellow-legged Frog *Rana sierrae* https://ecos.fws.gov/ecp/species/9529#crithab	Final
Yosemite Toad *Anaxyrus canorus* https://ecos.fws.gov/ecp/species/7255#crithab	Final

IPaC User Contact Information

Agency: ICF
Name: Jennifer Hale
Address: 980 9th Street, Suite 1200
City: Sacramento
State: CA
Zip: 95814
Email jennifer.hale@icf.com
Phone: 9162319575

Lead Agency Contact Information

Lead Agency: Federal Energy Regulatory Commission

Appendix B-2

CNDDB Records Search for Plants and Natural Communities

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Pacific Valley (3811958) OR Caples Lake (3812061) OR Carson Pass (3811968) OR Markleeville (3811967) OR Mokelumne Peak (3812051) OR Ebbetts Pass (3811957))
 AND Taxonomic Group IS (Dune OR Scrub OR Herbaceous OR Marsh OR Riparian OR Woodland OR Forest OR Alpine OR Inland Waters OR Marine OR Estuarine OR Riverine OR Palustrine OR Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes OR Fungi)

Lower Blue Lake Dam Seepage Mitigation Project

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Agrostis humilis mountain bent grass	PMPOA040P0	None	None	G4Q	S2	2B.3
Allium tribracteatum three-bracted onion	PMLIL022D0	None	None	G2	S2	1B.2
Botrychium ascendens upswept moonwort	PPOPH010S0	None	None	G3	S2	2B.3
Botrychium minganense Mingan moonwort	PPOPH010R0	None	None	G5	S3	2B.2
Carex davyi Davy's sedge	PMCYP033H0	None	None	G3	S3	1B.3
Carex hystericina porcupine sedge	PMCYP036D0	None	None	G5	S2	2B.1
Carex scirpoidea ssp. pseudoscirpoidea western single-spiked sedge	PMCYP03C85	None	None	G5T5	S2	2B.2
Chaenactis douglasii var. alpina alpine dusty maidens	PDAST20065	None	None	G5T5	S2	2B.3
Claytonia megarhiza fell-fields claytonia	PDPOR030A0	None	None	G5	S2	2B.3
Crepis runcinata fiddleleaf hawksbeard	PDAST2R0K0	None	None	G5	S3	2B.2
Cryptantha crymophila subalpine cryptantha	PDBOR0A0R0	None	None	G3	S3	1B.3
Draba asterophora var. asterophora Tahoe draba	PDBRA110D1	None	None	G2T2?	S2?	1B.2
Draba praealta tall draba	PDBRA11210	None	None	G5	S3	2B.3
Elymus scribneri Scribner's wheat grass	PMPOA2H170	None	None	G5	S3	2B.3
Epilobium howellii subalpine fireweed	PDONA06180	None	None	G4	S4	4.3
Potamogeton praelongus white-stemmed pondweed	PMPOT030V0	None	None	G5	S2	2B.3
Potamogeton robbinsii Robbins' pondweed	PMPOT030Z0	None	None	G5	S3	2B.3
Viola purpurea ssp. aurea golden violet	PDVIO04420	None	None	G5T2	S2	2B.2

Record Count: 18

Appendix B-3

CNDDB Records Search for Wildlife

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Pacific Valley (3811958) OR Caples Lake (3812061) OR Carson Pass (3811968) OR Markleeville (3811967) OR Mokelumne Peak (3812051) OR Ebbetts Pass (3811957))
 AND Taxonomic Group IS (Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects)

Lower Blue Lake Dam Seepage Mitigation Project

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
black-backed woodpecker *Picoides arcticus*	ABNYF07090	None	None	G5	S2	
Fisher *Pekania pennanti*	AMAJF01020	None	None	G5	S2S3	SSC
fringed myotis *Myotis thysanodes*	AMACC01090	None	None	G4	S3	
gray-headed pika *Ochotona princeps schisticeps*	AMAEA0102L	None	None	G5T4	S2S4	
great gray owl *Strix nebulosa*	ABNSB12040	None	Endangered	G5	S1	
Lahontan cutthroat trout *Oncorhynchus clarkii henshawi*	AFCHA02081	Threatened	None	G5T3	S2	
Lahontan mountain sucker *Catostomus lahontan*	AFCJC02330	None	None	GNR	S2	SSC
long-legged myotis *Myotis volans*	AMACC01110	None	None	G4G5	S3	
Mono checkerspot butterfly *Euphydryas editha monoensis*	IILEPK405G	None	None	G5T2	S1S2	
Morrison bumble bee *Bombus morrisoni*	IIHYM24460	None	None	G3	S1S2	
mountain whitefish *Prosopium williamsoni*	AFCHA03060	None	None	G5	S3	SSC
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
Sierra marten *Martes caurina sierrae*	AMAJF01014	None	None	G4G5T3	S3	
Sierra Nevada mountain beaver *Aplodontia rufa californica*	AMAFA01013	None	None	G5T3T4	S2S3	SSC
Sierra Nevada red fox - Sierra Nevada DPS *Vulpes vulpes necator pop. 2*	AMAJA03017	Endangered	Threatened	G5TNR	S1	
Sierra Nevada yellow-legged frog *Rana sierrae*	AAABH01340	Endangered	Threatened	G1	S1	WL
silver-haired bat *Lasionycteris noctivagans*	AMACC02010	None	None	G3G4	S3S4	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
southern long-toed salamander *Ambystoma macrodactylum sigillatum*	AAAAA01085	None	None	G5T4	S3	SSC
western bumble bee *Bombus occidentalis*	IIHYM24250	None	Candidate Endangered	G2G3	S1	
western white-tailed jackrabbit *Lepus townsendii townsendii*	AMAEB03041	None	None	G5T5	S3?	SSC
willow flycatcher *Empidonax traillii*	ABPAE33040	None	Endangered	G5	S1S2	
wolverine *Gulo gulo*	AMAJF03010	None	Threatened	G4	S1	FP
Yosemite toad *Anaxyrus canorus*	AAABB01040	Threatened	None	G2G3	S2	SSC

Record Count: 24

Appendix B-4

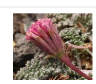
CNPS Inventory of Rare and Endangered Plants Records Search

Search Results

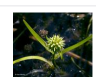
28 matches found. Click on scientific name for details

Search Criteria: Quad is one of [3811958:3811968:3811967:3811957:3812061:3812051]

▲ SCIENTIFIC NAME	COMMON NAME	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	CA RARE PLANT RANK	GENERAL HABITATS	MICRO HABITATS	LOWEST ELEVATION (M)	HIGHEST ELEVATION (M)	PHOTO
Agrostis humilis	mountain bent grass	perennial herb	Jul-Sep	None	None	2B.3	Alpine boulder and rock field, Meadows and seeps, Subalpine coniferous forest	Carbonate (sometimes)	2670	3200	 © 2004 Steve Matson
Allium tribracteatum	three-bracted onion	perennial bulbiferous herb	Apr-Aug	None	None	1B.2	Chaparral, Lower montane coniferous forest, Upper montane coniferous forest	Volcanic	1100	3000	 © 2018 Sierra Pacific Industries
Astragalus austiniae	Austin's astragalus	perennial herb	(May)Jul-Sep	None	None	1B.3	Alpine boulder and rock field, Subalpine coniferous forest	Rocky	2440	2970	No Photo Available
Astragalus whitneyi var. lenophyllus	woolly-leaved milk-vetch	perennial herb	Jul-Aug	None	None	4.3	Alpine boulder and rock field, Subalpine coniferous forest		2135	3050	No Photo Available
Boechera microphylla	small-leaved rockcress	perennial herb	Jul	None	None	3	Pinyon and juniper woodland		1700	3265	 © 2016 John Doyen

Botrychium ascendens	upswept moonwort	perennial rhizomatous herb	(Jun)Jul-Aug	None	None	2B.3	Lower montane coniferous forest, Meadows and seeps	Mesic	1115	3045	 © 2005 Steve Matson
Botrychium minganense	Mingan moonwort	perennial rhizomatous herb	Jul-Sep(Oct)	None	None	2B.2	Bogs and fens, Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest	Mesic	1455	2180	 © 2011 Aaron E. Sims
Carex davyi	Davy's sedge	perennial herb	May-Aug	None	None	1B.3	Subalpine coniferous forest, Upper montane coniferous forest		1500	3200	No Photo Available
Carex hystericina	porcupine sedge	perennial rhizomatous herb	May-Jun	None	None	2B.1	Marshes and swamps		610	2400	 ©2014 Robert E. Preston, Ph.D.
Carex scirpoidea ssp. pseudoscirpoidea	western single-spiked sedge	perennial rhizomatous herb	Jul-Sep	None	None	2B.2	Alpine boulder and rock field, Meadows and seeps, Subalpine coniferous forest	Carbonate (often), Mesic	2990	3700	No Photo Available
Chaenactis douglasii var. alpina	alpine dusty maidens	perennial herb	Jul-Sep	None	None	2B.3	Alpine boulder and rock field		2865	3400	 © 2008 Steve Matson
Claytonia megarhiza	fell-fields claytonia	perennial herb	Jul-Sep	None	None	2B.3	Alpine boulder and rock field, Subalpine coniferous forest		2600	3532	No Photo Available

Crepis runcinata	fiddleleaf hawksbeard	perennial herb	May-Aug	None	None	2B.2	Mojavean desert scrub, Pinyon and juniper woodland	Alkaline, Mesic	1250	1975	No Photo Available
Cryptantha glomeriflora	clustered-flower cryptantha	annual herb	Jun-Sep	None	None	4.3	Great Basin scrub, Meadows and seeps, Subalpine coniferous forest, Upper montane coniferous forest	Granitic (sometimes), Sandy, Volcanic (sometimes)	1800	3750	No Photo Available
Draba asterophora var. *asterophora*	Tahoe draba	perennial herb	Jul-Aug(Sep)	None	None	1B.2	Alpine boulder and rock field, Subalpine coniferous forest		2500	3505	No Photo Available
Draba praealta	tall draba	perennial herb	Jul-Aug	None	None	2B.3	Meadows and seeps		2500	3415	No Photo Available
Elymus scribneri	Scribner's wheat grass	perennial herb	Jul-Aug	None	None	2B.3	Alpine boulder and rock field		2900	4200	No Photo Available
Epilobium howellii	subalpine fireweed	perennial stoloniferous herb	Jul-Aug	None	None	4.3	Meadows and seeps, Subalpine coniferous forest	Mesic	2000	3120	No Photo Available
Eriogonum microthecum var. *alpinum*	alpine slender buckwheat	perennial herb	Jul-Sep	None	None	4.3	Alpine dwarf scrub, Great Basin scrub	Gravelly (sometimes), Rocky (sometimes)	2500	3300	No Photo Available
Hackelia amethystina	amethyst stickseed	perennial herb	Jun-Jul(Aug)	None	None	4.3	Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest	Disturbed areas, Openings	1500	2315	 © 2018 John Doyen

Lewisia kelloggii ssp. hutchisonii	Hutchison's lewisia	perennial herb	(Apr)May-Aug	None	None	3.2	Upper montane coniferous forest	Openings	765	2365	 Dean Wm. Taylor 2006
Lewisia kelloggii ssp. kelloggii	Kellogg's lewisia	perennial herb	(Apr)May-Aug	None	None	3.2	Upper montane coniferous forest	Openings	1465	2365	 © 2019 Barry Breckling
Meesia triquetra	three-ranked hump moss	moss	Jul	None	None	4.2	Bogs and fens, Meadows and seeps, Subalpine coniferous forest, Upper montane coniferous forest		1300	2953	 Steve Matson 2008
Oreocarya crymophila	subalpine cryptantha	perennial herb	Jul-Aug	None	None	1B.3	Subalpine coniferous forest		2600	3200	No Photo Available
Potamogeton praelongus	white-stemmed pondweed	perennial rhizomatous herb (aquatic)	Jul-Aug	None	None	2B.3	Marshes and swamps		1800	3000	 ©2011 Sierra Pacific Industries
Potamogeton robbinsii	Robbins' pondweed	perennial rhizomatous herb (aquatic)	Jul-Aug	None	None	2B.3	Marshes and swamps		1530	3300	 ©2014 Dana York
Sparganium natans	small bur-reed	perennial rhizomatous herb (emergent)	Jun-Sep	None	None	4.3	Bogs and fens, Marshes and swamps, Meadows and seeps		1625	2500	 © 2009 Keir Morse
Viola purpurea ssp. aurea	golden violet	perennial herb	Apr-Jun	None	None	2B.2	Great Basin scrub, Pinyon and juniper woodland	Sandy	1000	2500	No Photo Available

Showing 1 to 28 of 28 entries

Suggested Citation:
California Native Plant Society, Rare Plant Program. 2022. Rare Plant Inventory (online edition, v9-01 1.5). Website https://www.rareplants.cnps.org [accessed 9 December 2022].

Appendix C
Plants and Animals Observed in the Lower Blue Lake Dam Seepage Mitigation and Weir Replacement Project Area

Table C-1. Plants Observed in the Lower Blue Lake Dam Seepage Mitigation and Weir Replacement Project Area

Scientific Name	Common name
Abies grandis	Grand fir
Achillea millefolium	Yarrow
Acmispon americanus	Spanish lotus
Agrostis variabilis	Mountain redtop
Aira caryophylla	European hairgrass
Artemisia douglasiana	Mugwort
Calyptridium monospermum	One-seeded pussypaws
Carex lenticularis	Lakeshore sedge
Carex vesicaria	Blister sedge
Deschampsia danthonioides	Annual hairgrass
Diplacus nanus	Dwarf monkey flower
Eleocharis macrostachya	Common spikerush
Elymus elymoides var. *californicus*	Squirrel tail grass
Elymus glaucus	Blue wildrye
Epilobium sp.	Willow herb
Eriogonum nudum var. *oblongifolium*	Harford's wild buckwheat
Gayophytum diffusum ssp. *parviflorum*	Small flowered groundsmoke
Gnaphalium palustre	Lowland cudweed
Hackelia micrantha	Jessica's sticktight
Heracleum maximum	Common cow parsnip
Isolepis setacea	Bristle-leaf bulrush
Juncus balticus ssp. *ater*	Baltic rush
Juncus bufonius var. *occidentalis*	Western toad rush
Juncus macrandrus	Long-anthered rush
Lepidium nitidum	Shining peppergrass
Lupinus breweri var. *breweri*	Brewer's lupine
Luzula subcongesta	Donner woodrush
Nasturtium officinale	Water cress
Penstemon heterodoxus var. *heterodoxus*	Sierra beardtongue
Pinus contorta ssp. *murrayana*	Lodgepole pine
Ranunculus occidentalis	Western buttercup

Scientific Name	Common name
Ribes montigenum	Western prickly gooseberry
*Rumex acetosella**	Sheep sorrel
Rumex californicus	California dock
Salix lemmonii	Lemmon's willow
Salix orestera	Sierra gray willow
Scirpus diffusus	Diffuse rush
Sidalcea glaucescens	Glaucous checker mallow
Spergularia rubra	Red sand spurry
Tsuga mertensiana	Mountain hemlock
Veratrum californicum var. *californicum*	California corn lily
Veronica anagallis-aquatica	Water speedwell
Viola bakeri	Baker's violet

Sources: Baldwin et al. 2012, Calflora 2022

* Invasive species

Table C-2. Animals Observed in or Near the Observed in the Lower Blue Lake Dam Seepage Mitigation and Weir Replacement Project Area

Common Name	Scientific Name
brook trout	*Salvelinus fontinalis*
Sierran treefrog	*Pseudacris sierra*
Yosemite toad	*Anaxyrus canorus*
Canada goose	*Branta canadensis*
Common merganser	*Mergus merganser*
Steller's jay	*Cyanocitta stelleri*
Common raven	*Corvus corax*
Mountain chickadee	*Poecile gambeli*
Mountain pocket gopher (sign)	*Thomomys monticola*
Golden-mantled ground squirrel	*Callospermophilus lateralis*

Appendix D

Air Quality Calculations and Assumptions

Lower Blue Lake Dam Seepage Custom Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Lower Blue Lake Dam Seepage
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	66.2
Location	38.608792, -119.926878
County	Alpine
City	Unincorporated
Air District	Great Basin UAPCD
Air Basin	Great Basin Valleys
TAZ	3000
EDFZ	4
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Industrial	16.0	User Defined Unit	16.0	0.00	0.00	0.00	—	—

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	26.9	26.6	18.9	46.9	0.03	0.82	19.2	19.5	0.73	4.14	4.86	—	4,041	4,041	0.11	0.28	3.69	4,124
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	18.0	17.7	6.52	31.2	0.01	0.54	12.3	12.8	0.44	1.26	1.71	—	1,340	1,340	0.05	0.08	0.07	1,354
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.47	2.43	1.73	4.84	< 0.005	0.10	2.76	2.86	0.08	0.34	0.42	—	552	552	0.01	0.05	0.25	568
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.45	0.44	0.32	0.88	< 0.005	0.02	0.50	0.52	0.02	0.06	0.08	—	91.4	91.4	< 0.005	0.01	0.04	94.0

2.2. Construction Emissions by Year, Unmitigated

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

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	26.9	26.6	18.9	46.9	0.03	0.82	19.2	19.5	0.73	4.14	4.86	—	4,041	4,041	0.11	0.28	3.69	4,124
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2023	18.0	17.7	6.52	31.2	0.01	0.54	12.3	12.8	0.44	1.26	1.71	—	1,340	1,340	0.05	0.08	0.07	1,354
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	2.47	2.43	1.73	4.84	< 0.005	0.10	2.76	2.86	0.08	0.34	0.42	—	552	552	0.01	0.05	0.25	568
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.45	0.44	0.32	0.88	< 0.005	0.02	0.50	0.52	0.02	0.06	0.08	—	91.4	91.4	< 0.005	0.01	0.04	94.0

3. Construction Emissions Details

3.1. Site Preparation (2023) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.11	1.35	0.00	0.00	0.02	0.02	0.00	0.00	0.00	—	259	259	0.01	0.01	1.27	263
Vendor	0.03	0.03	0.76	0.32	< 0.005	0.01	0.02	0.03	0.01	0.01	0.01	—	446	446	< 0.005	0.05	1.09	463
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	7.05	7.05	< 0.005	< 0.005	0.02	7.15
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.2	12.2	< 0.005	< 0.005	0.01	12.7
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	1.17	1.17	< 0.005	< 0.005	< 0.005	1.18
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.03	2.03	< 0.005	< 0.005	< 0.005	2.10
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Site Preparation (2023) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.02	1.70	16.6	15.7	0.02	0.76	—	0.76	0.70	—	0.70	—	2,357	2,357	0.10	0.02	—	2,365
Dust From Material Movement	—	—	—	—	—	—	6.56	6.56	—	3.37	3.37	—	—	—	—	—	—	—
Demolition	—	—	—	—	—	—	0.12	0.12	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.04	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	19.6	19.6	< 0.005	< 0.005	0.02	20.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.27	0.26	< 0.005	0.01	—	0.01	0.01	—	0.01	—	38.7	38.7	< 0.005	< 0.005	—	38.9
Dust From Material Movement	—	—	—	—	—	—	0.11	0.11	—	0.06	0.06	—	—	—	—	—	—	—
Demolition	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.32	0.32	< 0.005	< 0.005	< 0.005	0.34
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.41	6.41	< 0.005	< 0.005	—	6.44

Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	0.01	0.01	—	—	—	—	—	—	—
Demolition	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.05	0.05	< 0.005	< 0.005	< 0.005	0.06
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.08	0.97	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	185	185	0.01	0.01	0.91	188
Vendor	0.01	0.01	0.15	0.06	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	89.3	89.3	< 0.005	0.01	0.22	92.7
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	3.02	3.02	< 0.005	< 0.005	0.01	3.06
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.47	1.47	< 0.005	< 0.005	< 0.005	1.52
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	0.50	0.50	< 0.005	< 0.005	< 0.005	0.51
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.24	0.24	< 0.005	< 0.005	< 0.005	0.25
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Grading (2023) - Unmitigated

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

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

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.05	0.05	2.04	0.47	0.01	0.03	0.10	0.13	0.03	0.03	0.06	—	1,391	1,391	< 0.005	0.22	1.33	1,458

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	0.01	0.39	0.09	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	259	259	< 0.005	0.04	0.11	272
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.07	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	42.9	42.9	< 0.005	0.01	0.02	45.0

3.7. Building Construction (2023) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.80	0.67	6.08	6.31	0.01	0.31	—	0.31	0.29	—	0.29	—	996	996	0.04	0.01	—	999
Dust From Material Movement	—	—	—	—	—	—	0.54	0.54	—	0.06	0.06	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.11	0.04	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	58.7	58.7	< 0.005	0.01	0.05	61.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.27	0.28	< 0.005	0.01	—	0.01	0.01	—	0.01	—	43.7	43.7	< 0.005	< 0.005	—	43.8
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.57	2.57	< 0.005	< 0.005	< 0.005	2.70
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.23	7.23	< 0.005	< 0.005	—	7.25
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.43	0.43	< 0.005	< 0.005	< 0.005	0.45
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.08	0.97	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	185	185	0.01	0.01	0.91	188
Vendor	0.01	0.01	0.15	0.06	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	89.3	89.3	< 0.005	0.01	0.22	92.7
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	8.06	8.06	< 0.005	< 0.005	0.02	8.17
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.91	3.91	< 0.005	< 0.005	< 0.005	4.06

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	1.33	1.33	< 0.005	< 0.005	< 0.005	1.35
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.65	0.65	< 0.005	< 0.005	< 0.005	0.67
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Building Construction (2023) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	26.4	26.1	6.52	43.0	0.01	0.70	—	0.70	0.57	—	0.57	—	1,130	1,130	0.05	0.01	—	1,134
Onsite truck	< 0.005	< 0.005	0.11	0.04	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	58.7	58.7	< 0.005	0.01	0.05	61.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.88	1.86	0.46	3.06	< 0.005	0.05	—	0.05	0.04	—	0.04	—	80.5	80.5	< 0.005	< 0.005	—	80.8
Onsite truck	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.18	4.18	< 0.005	< 0.005	< 0.005	4.38
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.34	0.34	0.08	0.56	< 0.005	0.01	—	0.01	0.01	—	0.01	—	13.3	13.3	< 0.005	< 0.005	—	13.4
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.69	0.69	< 0.005	< 0.005	< 0.005	0.73

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.08	0.97	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	185	185	0.01	0.01	0.91	188
Vendor	0.01	0.01	0.15	0.06	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	89.3	89.3	< 0.005	0.01	0.22	92.7
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.07	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	13.1	13.1	< 0.005	< 0.005	0.03	13.3
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.36	6.36	< 0.005	< 0.005	0.01	6.59
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	2.17	2.17	< 0.005	< 0.005	< 0.005	2.20
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.05	1.05	< 0.005	< 0.005	< 0.005	1.09
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Building Construction (2023) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.09	0.86	1.05	< 0.005	0.05	—	0.05	0.05	—	0.05	—	152	152	0.01	< 0.005	—	153

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.92	2.92	< 0.005	< 0.005	—	2.93
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.48	0.48	< 0.005	< 0.005	—	0.49
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.01	0.01	0.15	0.06	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	89.3	89.3	< 0.005	0.01	0.22	92.7
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.71	1.71	< 0.005	< 0.005	< 0.005	1.78
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.28	0.28	< 0.005	< 0.005	< 0.005	0.29
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Building Construction (2023) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.41	0.34	2.37	2.29	< 0.005	0.10	—	0.10	0.09	—	0.09	—	323	323	0.01	< 0.005	—	324
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.41	0.34	2.37	2.29	< 0.005	0.10	—	0.10	0.09	—	0.09	—	323	323	0.01	< 0.005	—	324
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.10	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	14.1	14.1	< 0.005	< 0.005	—	14.2
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.34	2.34	< 0.005	< 0.005	—	2.35

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.01	0.01	0.15	0.06	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	89.3	89.3	< 0.005	0.01	0.22	92.7
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.01	0.01	0.16	0.07	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	89.3	89.3	< 0.005	0.01	0.01	92.5
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.91	3.91	< 0.005	< 0.005	< 0.005	4.06
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.65	0.65	< 0.005	< 0.005	< 0.005	0.67
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.15. Building Construction (2023) - Unmitigated

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

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

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.12	1.36	0.00	0.00	0.02	0.02	0.00	0.00	0.00	—	258	258	0.01	0.01	0.03	261
Vendor	0.04	0.04	1.09	0.46	< 0.005	0.01	0.03	0.04	0.01	0.01	0.02	—	625	625	< 0.005	0.07	0.04	647
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	5.64	5.64	< 0.005	< 0.005	0.01	5.72
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.7	13.7	< 0.005	< 0.005	0.01	14.2
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	0.93	0.93	< 0.005	< 0.005	< 0.005	0.95

Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.27	2.27	< 0.005	< 0.005	< 0.005	2.35
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.17. Paving (2023) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	17.5	17.3	3.68	27.7	0.01	0.44	—	0.44	0.35	—	0.35	—	616	616	0.03	0.01	—	618
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.07	0.03	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	39.1	39.1	< 0.005	0.01	0.03	41.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	17.5	17.3	3.68	27.7	0.01	0.44	—	0.44	0.35	—	0.35	—	616	616	0.03	0.01	—	618
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.08	0.03	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	39.2	39.2	< 0.005	0.01	< 0.005	41.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.48	0.47	0.10	0.76	< 0.005	0.01	—	0.01	0.01	—	0.01	—	16.9	16.9	< 0.005	< 0.005	—	16.9
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.07	1.07	< 0.005	< 0.005	< 0.005	1.12
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.09	0.09	0.02	0.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.79	2.79	< 0.005	< 0.005	—	2.80
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.18	0.18	< 0.005	< 0.005	< 0.005	0.19
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.08	0.97	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	185	185	0.01	0.01	0.91	188
Vendor	0.01	0.01	0.15	0.06	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	89.3	89.3	< 0.005	0.01	0.22	92.7
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.08	0.97	0.00	0.00	0.01	0.01	0.00	0.00	0.00	—	184	184	0.01	0.01	0.02	187
Vendor	0.01	0.01	0.16	0.07	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	89.3	89.3	< 0.005	0.01	0.01	92.5
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	5.03	5.03	< 0.005	< 0.005	0.01	5.11
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.45	2.45	< 0.005	< 0.005	< 0.005	2.54
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	0.83	0.83	< 0.005	< 0.005	< 0.005	0.85
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.41	0.41	< 0.005	< 0.005	< 0.005	0.42
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Mobilization	Site Preparation	7/17/2023	7/28/2023	5.00	10.0	—
Site Prep and Demo	Site Preparation	7/31/2023	8/07/2023	5.00	6.00	—
Fill Delivery and Backhaul	Grading	7/17/2023	9/22/2023	7.00	68.0	—
Crest Raise R/S of Dam	Building Construction	8/8/2023	8/23/2023	7.00	16.0	—
Filter and Buttress	Building Construction	8/28/2023	9/22/2023	7.00	26.0	—
Staff Gauge	Building Construction	8/28/2023	9/5/2023	5.00	7.00	—
IFR Weir	Building Construction	9/18/2023	10/3/2023	7.00	16.0	—
Demobolization	Building Construction	10/5/2023	10/11/2023	7.00	8.00	—
Crest Raise L/S of Dam	Paving	9/25/2023	10/4/2023	7.00	10.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Prep and Demo	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Site Prep and Demo	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
IFR Weir	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Site Prep and Demo	Forklifts	Diesel	Average	1.00	8.00	82.0	0.20
Staff Gauge	Forklifts	Diesel	Average	1.00	8.00	82.0	0.20
Site Prep and Demo	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Site Prep and Demo	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Crest Raise R/S of Dam	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Crest Raise R/S of Dam	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37

Crest Raise R/S of Dam	Plate Compactors	Diesel	Average	2.00	4.00	8.00	0.43
Crest Raise R/S of Dam	Graders	Diesel	Average	1.00	8.00	148	0.41
Filter and Buttress	Generator Sets	Diesel	Average	2.00	8.00	14.0	0.74
Filter and Buttress	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Filter and Buttress	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Filter and Buttress	Crushing/Proc. Equipment	Gasoline	Average	1.00	6.00	12.0	0.85
IFR Weir	Pumps	Diesel	Average	1.00	4.00	11.0	0.74
IFR Weir	Air Compressors	Diesel	Average	1.00	8.00	37.0	0.48
Crest Raise L/S of Dam	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Crest Raise L/S of Dam	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Crest Raise L/S of Dam	Crushing/Proc. Equipment	Gasoline	Average	1.00	4.00	12.0	0.85
Crest Raise L/S of Dam	Pumps	Diesel	Average	1.00	4.00	11.0	0.74
Crest Raise L/S of Dam	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Mobilization	—	—	—	—
Mobilization	Worker	14.0	26.0	LDA,LDT1,LDT2
Mobilization	Vendor	10.0	12.8	HHDT,MHDT
Mobilization	Hauling	0.00	0.00	HHDT
Mobilization	Onsite truck	0.00	0.00	HHDT
Site Prep and Demo	—	—	—	—
Site Prep and Demo	Worker	10.0	26.0	LDA,LDT1,LDT2

Site Prep and Demo	Vendor	2.00	12.8	HHDT,MHDT
Site Prep and Demo	Hauling	0.00	0.00	HHDT
Site Prep and Demo	Onsite truck	1.00	5.00	HHDT
Crest Raise R/S of Dam	—	—	—	—
Crest Raise R/S of Dam	Worker	10.0	26.0	LDA,LDT1,LDT2
Crest Raise R/S of Dam	Vendor	2.00	12.8	HHDT,MHDT
Crest Raise R/S of Dam	Hauling	0.00	0.00	HHDT
Crest Raise R/S of Dam	Onsite truck	3.00	5.00	HHDT
Fill Delivery and Backhaul	—	—	—	—
Fill Delivery and Backhaul	Worker	0.00	0.00	LDA,LDT1,LDT2
Fill Delivery and Backhaul	Vendor	0.00	0.00	HHDT,MHDT
Fill Delivery and Backhaul	Hauling	30.0	12.8	HHDT
Fill Delivery and Backhaul	Onsite truck	0.00	0.00	HHDT
Crest Raise L/S of Dam	—	—	—	—
Crest Raise L/S of Dam	Worker	10.0	26.0	LDA,LDT1,LDT2
Crest Raise L/S of Dam	Vendor	2.00	12.8	HHDT,MHDT
Crest Raise L/S of Dam	Hauling	0.00	0.00	HHDT
Crest Raise L/S of Dam	Onsite truck	2.00	5.00	HHDT
Filter and Buttress	—	—	—	—
Filter and Buttress	Worker	10.0	26.0	LDA,LDT1,LDT2
Filter and Buttress	Vendor	2.00	12.8	HHDT,MHDT
Filter and Buttress	Hauling	0.00	0.00	HHDT
Filter and Buttress	Onsite truck	3.00	5.00	HHDT
Staff Gauge	—	—	—	—
Staff Gauge	Worker	0.00	0.00	LDA,LDT1,LDT2
Staff Gauge	Vendor	2.00	12.8	HHDT,MHDT
Staff Gauge	Hauling	0.00	0.00	HHDT

Staff Gauge	Onsite truck	0.00	0.00	HHDT
IFR Weir	—	—	—	—
IFR Weir	Worker	0.00	0.00	LDA,LDT1,LDT2
IFR Weir	Vendor	2.00	12.8	HHDT,MHDT
IFR Weir	Hauling	0.00	0.00	HHDT
IFR Weir	Onsite truck	0.00	0.00	HHDT
Demobolization	—	—	—	—
Demobolization	Worker	14.0	26.0	LDA,LDT1,LDT2
Demobolization	Vendor	14.0	12.8	HHDT,MHDT
Demobolization	Hauling	0.00	0.00	HHDT
Demobolization	Onsite truck	0.00	0.00	HHDT

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)
Mobilization	0.00	0.00	0.00	0.00	—
Site Prep and Demo	800	16.0	0.00	32.0	—
Fill Delivery and Backhaul	5,000	5,000	0.00	0.00	—
Crest Raise R/S of Dam	1,700	0.00	0.00	0.00	—
Crest Raise L/S of Dam	0.00	0.00	0.00	0.00	0.34

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
User Defined Industrial	0.34	0%

5.18. Vegetation

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)
Misc	-5.00	0.00	0.00

8. User Changes to Default Data

Screen	Justification
Characteristics: Project Details	No change in O&M
Land Use	Modeling user defined.
Construction: Construction Phases	Schedule and phases from PG&E
Construction: Off-Road Equipment	Equipment inventory from PG&E
Construction: Dust From Material Movement	Material movement from PG&E. No grading.
Construction: Demolition	Helipad and M2 weir
Construction: Trips and VMT	Vehicle inventory from PG&E. Vendor/Haul miles are only those in GBUAPCD. Max daily hauling modeling during fill/delivery. Employee miles are only those in GBUPACD (some phases show zero employee trips due to phase overlap and single crews coming to the construction site).
Construction: Paving	Data from PG&E

Lower Blue Lake Dam Seepage ACAPCD Custom Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Lower Blue Lake Dam Seepage ACAPCD
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	36.2
Location	Ione, CA, USA
County	Amador
City	Ione
Air District	Amador County APCD
Air Basin	Mountain Counties
TAZ	3004
EDFZ	4
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Industrial	16.0	User Defined Unit	16.0	0.00	0.00	0.00	—	—

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.31	0.26	19.9	1.40	0.10	0.17	2.27	2.43	0.17	0.62	0.78	—	9,909	9,909	0.01	1.56	17.9	10,392
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.06	0.05	2.49	0.35	0.01	0.02	0.32	0.34	0.02	0.09	0.11	—	1,259	1,259	0.01	0.19	0.08	1,316
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.05	0.04	3.49	0.21	0.02	0.03	0.36	0.39	0.03	0.10	0.12	—	1,624	1,624	< 0.005	0.26	1.20	1,702
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.01	0.01	0.64	0.04	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	269	269	< 0.005	0.04	0.20	282

2.2. Construction Emissions by Year, Unmitigated

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

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.31	0.26	19.9	1.40	0.10	0.17	2.27	2.43	0.17	0.62	0.78	—	9,909	9,909	0.01	1.56	17.9	10,392
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2023	0.06	0.05	2.49	0.35	0.01	0.02	0.32	0.34	0.02	0.09	0.11	—	1,259	1,259	0.01	0.19	0.08	1,316
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.05	0.04	3.49	0.21	0.02	0.03	0.36	0.39	0.03	0.10	0.12	—	1,624	1,624	< 0.005	0.26	1.20	1,702
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.01	0.01	0.64	0.04	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	269	269	< 0.005	0.04	0.20	282

3. Construction Emissions Details

3.1. Site Preparation (2023) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.09	0.07	3.81	0.52	0.01	0.04	0.12	0.16	0.04	0.04	0.08	—	2,120	2,120	0.01	0.32	5.34	2,220
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	0.11	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	58.1	58.1	< 0.005	0.01	0.06	60.7
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	9.61	9.61	< 0.005	< 0.005	0.01	10.1
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Site Preparation (2023) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Vendor	0.02	0.01	0.76	0.10	< 0.005	0.01	0.02	0.03	0.01	0.01	0.02	—	424	424	< 0.005	0.06	1.07	444
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.97	6.97	< 0.005	< 0.005	0.01	7.29
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.15	1.15	< 0.005	< 0.005	< 0.005	1.21
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Grading (2023) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.23	0.18	16.1	0.89	0.08	0.12	0.49	0.62	0.12	0.16	0.29	—	7,790	7,790	< 0.005	1.24	12.6	8,172
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.04	0.03	3.16	0.17	0.02	0.02	0.09	0.12	0.02	0.03	0.05	—	1,451	1,451	< 0.005	0.23	1.01	1,521
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.01	0.01	0.58	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	240	240	< 0.005	0.04	0.17	252

3.7. Building Construction (2023) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.02	0.01	0.76	0.10	< 0.005	0.01	0.02	0.03	0.01	0.01	0.02	—	424	424	< 0.005	0.06	1.07	444
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	0.04	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	18.6	18.6	< 0.005	< 0.005	0.02	19.4
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.08	3.08	< 0.005	< 0.005	< 0.005	3.22
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Building Construction (2023) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.02	0.01	0.76	0.10	< 0.005	0.01	0.02	0.03	0.01	0.01	0.02	—	424	424	< 0.005	0.06	1.07	444
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	0.06	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	30.2	30.2	< 0.005	< 0.005	0.03	31.6
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.00	5.00	< 0.005	< 0.005	0.01	5.23
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Building Construction (2023) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.02	0.01	0.76	0.10	< 0.005	0.01	0.02	0.03	0.01	0.01	0.02	—	424	424	< 0.005	0.06	1.07	444
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.13	8.13	< 0.005	< 0.005	0.01	8.50
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.35	1.35	< 0.005	< 0.005	< 0.005	1.41
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Building Construction (2023) - Unmitigated

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

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

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.02	0.01	0.76	0.10	< 0.005	0.01	0.02	0.03	0.01	0.01	0.02	—	424	424	< 0.005	0.06	1.07	444
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.02	0.01	0.81	0.10	< 0.005	0.01	0.02	0.03	0.01	0.01	0.02	—	424	424	< 0.005	0.06	0.03	443
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	0.04	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	18.6	18.6	< 0.005	< 0.005	0.02	19.4
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.08	3.08	< 0.005	< 0.005	< 0.005	3.22
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.15. Building Construction (2023) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.06	0.05	2.49	0.35	0.01	0.02	0.07	0.10	0.02	0.02	0.05	—	1,259	1,259	0.01	0.19	0.08	1,316
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	0.05	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	27.6	27.6	< 0.005	< 0.005	0.03	28.9
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.57	4.57	< 0.005	< 0.005	< 0.005	4.78
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.17. Paving (2023) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.01	0.01	0.34	0.05	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.01	—	180	180	< 0.005	0.03	0.45	188
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.01	0.01	0.36	0.05	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.01	—	180	180	< 0.005	0.03	0.01	188
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.93	4.93	< 0.005	< 0.005	0.01	5.16
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.82	0.82	< 0.005	< 0.005	< 0.005	0.85
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Mobilization	Site Preparation	7/17/2023	7/28/2023	5.00	10.0	—
Site Prep and Demo	Site Preparation	7/31/2023	8/07/2023	5.00	6.00	—
Fill Delivery and Backhaul	Grading	7/17/2023	9/22/2023	7.00	68.0	—
Crest Raise R/S of Dam	Building Construction	8/8/2023	8/23/2023	7.00	16.0	—
Filter and Buttress	Building Construction	8/28/2023	9/22/2023	7.00	26.0	—
Staff Gauge	Building Construction	8/28/2023	9/5/2023	5.00	7.00	—
IFR Weir	Building Construction	9/18/2023	10/3/2023	7.00	16.0	—
Demobolization	Building Construction	10/5/2023	10/11/2023	7.00	8.00	—
Crest Raise L/S of Dam	Paving	9/25/2023	10/4/2023	7.00	10.0	—

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Mobilization	—	—	—	—
Mobilization	Worker	0.00	0.00	LDA,LDT1,LDT2
Mobilization	Vendor	10.0	62.3	HHDT,MHDT
Mobilization	Hauling	0.00	0.00	HHDT
Mobilization	Onsite truck	0.00	0.00	HHDT
Site Prep and Demo	—	—	—	—
Site Prep and Demo	Worker	0.00	0.00	LDA,LDT1,LDT2
Site Prep and Demo	Vendor	2.00	62.3	HHDT,MHDT
Site Prep and Demo	Hauling	0.00	0.00	HHDT

Site Prep and Demo	Onsite truck	0.00	0.00	HHDT
Crest Raise R/S of Dam	—	—	—	—
Crest Raise R/S of Dam	Worker	0.00	0.00	LDA,LDT1,LDT2
Crest Raise R/S of Dam	Vendor	2.00	62.3	HHDT,MHDT
Crest Raise R/S of Dam	Hauling	0.00	0.00	HHDT
Crest Raise R/S of Dam	Onsite truck	0.00	0.00	HHDT
Fill Delivery and Backhaul	—	—	—	—
Fill Delivery and Backhaul	Worker	0.00	0.00	LDA,LDT1,LDT2
Fill Delivery and Backhaul	Vendor	0.00	0.00	HHDT,MHDT
Fill Delivery and Backhaul	Hauling	30.0	62.3	HHDT
Fill Delivery and Backhaul	Onsite truck	0.00	0.00	HHDT
Crest Raise L/S of Dam	—	—	—	—
Crest Raise L/S of Dam	Worker	0.00	0.00	LDA,LDT1,LDT2
Crest Raise L/S of Dam	Vendor	2.00	26.3	HHDT,MHDT
Crest Raise L/S of Dam	Hauling	0.00	0.00	HHDT
Crest Raise L/S of Dam	Onsite truck	0.00	0.00	HHDT
Filter and Buttress	—	—	—	—
Filter and Buttress	Worker	0.00	0.00	LDA,LDT1,LDT2
Filter and Buttress	Vendor	2.00	62.3	HHDT,MHDT
Filter and Buttress	Hauling	0.00	0.00	HHDT
Filter and Buttress	Onsite truck	0.00	0.00	HHDT
Staff Gauge	—	—	—	—
Staff Gauge	Worker	0.00	0.00	LDA,LDT1,LDT2
Staff Gauge	Vendor	2.00	62.3	HHDT,MHDT
Staff Gauge	Hauling	0.00	0.00	HHDT
Staff Gauge	Onsite truck	0.00	0.00	HHDT
IFR Weir	—	—	—	—

IFR Weir	Worker	0.00	0.00	LDA,LDT1,LDT2
IFR Weir	Vendor	2.00	62.3	HHDT,MHDT
IFR Weir	Hauling	0.00	0.00	HHDT
IFR Weir	Onsite truck	0.00	0.00	HHDT
Demobolization	—	—	—	—
Demobolization	Worker	0.00	0.00	LDA,LDT1,LDT2
Demobolization	Vendor	14.0	26.3	HHDT,MHDT
Demobolization	Hauling	0.00	0.00	HHDT
Demobolization	Onsite truck	0.00	0.00	HHDT

8. User Changes to Default Data

Screen	Justification
Characteristics: Project Details	No change in O&M
Land Use	Modeling user defined.
Construction: Construction Phases	Schedule and phases from PG&E
Construction: Off-Road Equipment	No equipment
Construction: Dust From Material Movement	None
Construction: Demolition	Helipad and M2 weir
Construction: Trips and VMT	Vehicle inventory from PG&E. Vendor/Haul miles are only those in ACAQMD. Max daily hauling modeling during fill/delivery.
Construction: Paving	No paving

Lower Blue Lake Dam Seepage EDCAQMD Custom Report

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5.3.1. Unmitigated

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Lower Blue Lake Dam Seepage EDCAQMD
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	44.8
Location	South Lake Tahoe, CA 96150, USA
County	El Dorado-Lake Tahoe
City	South Lake Tahoe
Air District	El Dorado County AQMD
Air Basin	Lake Tahoe
TAZ	418
EDFZ	0-A
Electric Utility	Liberty Utilities
Gas Utility	—

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Industrial	16.0	User Defined Unit	16.0	0.00	0.00	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.08	0.07	0.05	0.60	0.00	0.00	3.74	3.74	0.00	0.38	0.38	—	70.3	70.3	0.01	< 0.005	0.37	71.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.09	0.08	0.06	0.72	0.00	0.00	3.74	3.74	0.00	0.38	0.38	—	70.5	70.5	0.01	< 0.005	0.01	71.8
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.01	0.01	0.01	0.10	0.00	0.00	0.53	0.53	0.00	0.05	0.05	—	9.96	9.96	< 0.005	< 0.005	0.02	10.2
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.10	0.10	0.00	0.01	0.01	—	1.65	1.65	< 0.005	< 0.005	< 0.005	1.68

2.2. Construction Emissions by Year, Unmitigated

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

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

2023	0.08	0.07	0.05	0.60	0.00	0.00	3.74	3.74	0.00	0.38	0.38	—	70.3	70.3	0.01	< 0.005	0.37	71.9
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.09	0.08	0.06	0.72	0.00	0.00	3.74	3.74	0.00	0.38	0.38	—	70.5	70.5	0.01	< 0.005	0.01	71.8
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.01	0.01	0.01	0.10	0.00	0.00	0.53	0.53	0.00	0.05	0.05	—	9.96	9.96	< 0.005	< 0.005	0.02	10.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	0.10	0.10	0.00	0.01	0.01	—	1.65	1.65	< 0.005	< 0.005	< 0.005	1.68

3. Construction Emissions Details

3.1. Site Preparation (2023) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.05	0.60	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	70.3	70.3	0.01	< 0.005	0.37	71.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	1.93	1.93	< 0.005	< 0.005	< 0.005	1.97
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	0.32	0.32	< 0.005	< 0.005	< 0.005	0.33
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Site Preparation (2023) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.04	0.43	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	50.2	50.2	< 0.005	< 0.005	0.26	51.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.06	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	6.49	6.49	< 0.005	< 0.005	0.01	6.62
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	1.07	1.07	< 0.005	< 0.005	< 0.005	1.10
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Building Construction (2023) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.06	0.72	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	70.5	70.5	0.01	< 0.005	0.01	71.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	1.55	1.55	< 0.005	< 0.005	< 0.005	1.58
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	0.00	0.00	—	0.26	0.26	< 0.005	< 0.005	< 0.005	0.26
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Mobilization	Site Preparation	7/17/2023	7/28/2023	5.00	10.0	—
All other phases	Site Preparation	7/31/2023	9/15/2023	7.00	47.0	—
Demobolization	Building Construction	10/5/2023	10/11/2023	7.00	8.00	—

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Mobilization	—	—	—	—
Mobilization	Worker	14.0	7.00	LDA,LDT1,LDT2
Mobilization	Vendor	0.00	0.00	HHDT,MHDT
Mobilization	Hauling	0.00	0.00	HHDT
Mobilization	Onsite truck	0.00	0.00	HHDT
All other phases	—	—	—	—
All other phases	Worker	10.0	7.00	LDA,LDT1,LDT2
All other phases	Vendor	0.00	0.00	HHDT,MHDT
All other phases	Hauling	0.00	0.00	HHDT
All other phases	Onsite truck	0.00	0.00	HHDT
Demobolization	—	—	—	—
Demobolization	Worker	14.0	7.00	LDA,LDT1,LDT2
Demobolization	Vendor	0.00	0.00	HHDT,MHDT
Demobolization	Hauling	0.00	0.00	HHDT
Demobolization	Onsite truck	0.00	0.00	HHDT

8. User Changes to Default Data

Screen	Justification
Characteristics: Project Details	No change in O&M
Land Use	Modeling user defined.
Construction: Construction Phases	Collapsed non-mob/demob phases into a single phase since employee trips are constant
Construction: Off-Road Equipment	Equipment inventory from PG&E
Construction: Dust From Material Movement	None.
Construction: Demolition	None.
Construction: Trips and VMT	Vehicle inventory from PG&E. Employee miles are only those in EDCAQMD.
Construction: Paving	None

Project Report - i-Tree Planting Calculator

Location: Markleeville, California 96120
Electricity Emissions Factor: 252.40 kilograms CO2 equivalent/MWh
Fuel Emissions Factor: 52.00 kilograms CO2 equivalent/MMBtu
Lifetime: 40 years
Tree Mortality: 10%

All amounts in the tables are for the full lifetime of the project.

Location		**CO_2 (Carbon Dioxide) Benefits**			
Group Identifier	**Tree Group Characteristics**	**CO_2 (Carbon Dioxide) Avoided (pounds)**	**CO_2 Avoided ($)**	**CO_2 Sequestered (pounds)**	**CO_2 Sequestered ($)**
1	• (5.0) Oak (Quercus species) at 20.0 inches DBH (Diameter at Breast Height). • Planted >60 feet and north (0°) of buildings that were built post-1980 with heating and cooling. • Trees are in excellent condition and planted in full sun.	0.0	$0.00	33,462.5	$778.24

Location		**Energy Benefits**			
Group Identifier	**Tree Group Characteristics**	**Electricity Saved (kWh) (Kilowatt-Hours)**	**Electricity Saved ($)**	**Fuel Saved (MMBtu) (Millions of British Thermal Units)**	**Fuel Saved ($)**
1	• (5.0) Oak (Quercus species) at 20.0 inches DBH (Diameter at Breast Height). • Planted >60 feet and north (0°) of buildings that were built post-1980 with heating and cooling. • Trees are in excellent condition and planted in full sun.	0.0	$0.00	0.0	$0.00

Location		Ecosystem Services			
Group Identifier	Tree Group Characteristics	Tree Biomass (short ton)	Rainfall Interception (gallons)	Runoff Avoided (gallons)	Runoff Avoided ($)
1	• (5.0) Oak (Quercus species) at 20.0 inches DBH (Diameter at Breast Height). • Planted >60 feet and north (0°) of buildings that were built post-1980 with heating and cooling. • Trees are in excellent condition and planted in full sun.	16.2	266,180.2	403.5	$3.61

Location		Air Benefits							
Group Identifier	Tree Group Characteristics	O_3 (Ozone) Removed (pounds)	NO_2 (Nitrogen Dioxide) Avoided (pounds)	NO_2 (Nitrogen Dioxide) Removed (pounds)	SO_2 (Sulfur Dioxide) Avoided (pounds)	SO_2 (Sulfur Dioxide) Removed (pounds)	VOC (Volatile Organic Compound) Avoided (pounds)	$PM_{2.5}$ (Particulate matter smaller than 2.5 micrometers in diameter) Avoided (pounds)	$PM_{2.5}$ (Particulate matter smaller than 2.5 micrometers in diameter) Removed (pounds)
1	• (5.0) Oak (Quercus species) at 20.0 inches DBH (Diameter at Breast Height). • Planted >60 feet and north (0°) of buildings that were built post-1980 with heating and cooling. • Trees are in excellent condition and planted in full sun.	126.4	0.0	16.0	0.0	1.5	0.0	0.0	180.2

Sequestration and biomass are gross values that exclude losses to mortality.

Application v2.2.0, powered by engine v0.8.1 (APIv2) and database v12.0.28.

Helicopters

Emission Factors

	LTO Factors									Cruising Factors									GHG Factors**		
	Fuel*	Nox*	HC*	ROG	CO*	PM*	PM10	PM2.5	SO2	Fuel*	Nox*	HC*	ROG	CO*	PM*	PM10	PM2.5	SO2	CO2	CH4	N2O
Helicopter	kg/LTO	g/LTO	g/LTO	g/LTO	g/LTO	g/LTO	g/LTO	g/LTO	g/gal	kg/hr.	g/hr.	g/hr.	g/hr.	g/hr.	g/hr.	g/hr.	g/hr.	g/gal	kg/gal	kg/gal	kg/gal
Bell 407	23.6	130.5	286.5	316.5	365.5	4.2	4.1	4.1	0.5	149.4	1110.0	660.0	729.0	820.0	32.0	31.2	30.9	0.5	9.75	0.00	0.00

*Source: FOCA 2015 (Bell 407)

**Source: Climate Registry 2021 (Tables 1.1 abd 2.7)

Analysis

Alternative	Days	LTO/day	Hrs./day	Pounds per Day								
				ROG	NOX	CO	PM10	PM2.5	SO2	CO2	CH4	N2O
IFR Weir (mobe)	1	2	4	7.82	10.36	8.84	0.29	0.29	0.19	3661	0.00	0.11
IFR Weir (concrete)	1	2	4	7.82	10.36	8.84	0.29	0.29	0.19	3661	0.00	0.11
IFR Weir (de-mobe)	1	2	4	7.82	10.36	8.84	0.29	0.29	0.19	3661	0.00	0.11

Tons/MT per Year									
ROG	NOX	CO	PM10	PM2.5	SO2	CO2	CH4	N2O	CO2e
0.00	0.01	0.00	0.00	0.00	0.00	2	0.00	0.00	2
0.00	0.01	0.00	0.00	0.00	0.00	2	0.00	0.00	2
0.00	0.01	0.00	0.00	0.00	0.00	2	0.00	0.00	2

Fuel (gal per Year)		
LTO	Cruise	Total
12	158	170
12	158	170
12	158	170

Conversions

gal per kg	0.264	
kg per gram	0.001	
PM2.5 Fraction of Total PM (jet)	0.967	SCAQMD 2006
PM10 Fraction of Total PM (jet)	0.976	SCAQMD 2006
VOC to HC (jet)	1.1046	USDA 2010
Sulfur content of jet fuel A (ppm)	800	Gilmore et al 2011
Jet fuel density	0.32	kg/gal
lb per kg	2.20462	
lbs per gram	0.002	
ton per lb	0.001	
mt per lb	0.0005	

Appendix E

Short-Term Noise Measurement Data

Summary

File Name on Meter	831_Data.062.s
File Name on PC	831_0003785-20221021 111701-831_Data.062.ldbin
Serial Number	0003785
Model	Model 831
Firmware Version	2.403
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2022-10-21 11:17:01
Stop	2022-10-21 11:32:01
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2022-10-21 11:12:47
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamplifier	PRM831			
Microphone Correction	Off			
Integration Method	Linear			
OBA Range	Normal			
OBA Bandwidth	1/1 and 1/3			
OBA Frequency Weighting	A Weighting			
OBA Max Spectrum	Bin Max			
Gain	0.0 dB			
Overload	144.3 dB			
	A	**C**	**Z**	
Under Range Peak	**76.7**	73.7	78.7	dB
Under Range Limit	**26.5**	26.9	32.7	dB
Noise Floor	17.4	17.8	23.2	dB
	First	**Second**	**Third**	
Instrument Identification				

Results

LAeq	38.7 dB		
LAE	68.2 dB		
EA	0.741 µPa²h		
LApeak (max)	2022-10-21 11:17:36	78.5	dB
LASmax	2022-10-21 11:20:19	54.4	dB
LASmin	2022-10-21 11:24:12	25.9	dB
SEA	-99.9 dB		

	Exceedance Counts	Duration
LAS > 65.0 dB	0	0.0 s
LAS > 85.0 dB	0	0.0 s
LApeak > 135.0 dB	0	0.0 s
LApeak > 137.0 dB	0	0.0 s
LApeak > 140.0 dB	0	0.0 s

Community Noise	Ldn	LDay 07:00-22:00	LNight 22:00-07:00	Lden	LDay 07:00-19:00	LEvening 19:00-22:00
	38.7	38.7	-99.9	38.7	38.7	-99.9

LCeq	54.8 dB
LAeq	38.7 dB
LCeq - LAeq	16.1 dB
LAIeq	40.9 dB
LAeq	38.7 dB
LAIeq - LAeq	2.2 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	38.7		54.8		60.1	
LS(max)	54.4	2022/10/21 11:20:19	71.5	2022/10/21 11:20:19	76.0	2022/10/21 11:22:18
LF(max)	56.4	2022/10/21 11:20:18	73.3	2022/10/21 11:20:18	82.0	2022/10/21 11:22:17
LI(max)	58.2	2022/10/21 11:20:18	75.1	2022/10/21 11:20:18	85.0	2022/10/21 11:22:17
LS(min)	25.9	2022/10/21 11:24:12	38.2	2022/10/21 11:28:02	44.4	2022/10/21 11:29:49
LF(min)	25.4	2022/10/21 11:24:12	36.2	2022/10/21 11:28:05	41.3	2022/10/21 11:30:25
LI(min)	25.8	2022/10/21 11:24:12	39.0	2022/10/21 11:28:01	45.1	2022/10/21 11:29:49
LPeak(max)	78.5	2022/10/21 11:17:36	83.3	2022/10/21 11:20:18	87.1	2022/10/21 11:22:17

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Statistics

LA 1.00	51.6 dB
LA 10.00	40.8 dB
LA 25.00	35.7 dB
LA 50.00	31.7 dB
LA 90.00	27.9 dB
LA 99.00	26.3 dB

Calibration History

Preamp	Date	dB re. 1V/Pa
PRM831	2022-10-21 11:12:47	-26.77
PRM831	2022-10-21 11:05:29	-26.90
PRM831	2022-10-06 11:29:41	-27.32
PRM831	2022-10-06 11:03:40	-27.13
PRM831	2022-10-06 10:10:43	-27.18
PRM831	2022-10-06 09:45:12	-27.20
PRM831	2022-10-05 12:46:16	-27.18
PRM831	2022-10-05 12:17:19	-27.01
PRM831	2022-10-05 12:08:44	-27.07
PRM831	2022-10-05 11:40:26	-27.10
PRM831	2022-10-05 11:02:35	-27.16

Summary

File Name on Meter	831_Data.064.s
File Name on PC	831_0003785-20221021 122700-831_Data.064.ldbin
Serial Number	0003785
Model	Model 831
Firmware Version	2.403
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2022-10-21 12:27:00
Stop	2022-10-21 12:42:00
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre-Calibration	2022-10-21 12:26:08
Post-Calibration	2022-10-21 12:44:25
Calibration Deviation	0.00 dB

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRM831
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Frequency Weighting	A Weighting
OBA Max Spectrum	Bin Max
Gain	0.0 dB
Overload	144.4 dB

	A	**C**	**Z**
Under Range Peak	**76.9**	73.9	78.9 dB
Under Range Limit	**26.6**	27.0	32.9 dB
Noise Floor	17.4	17.9	23.3 dB

	First	**Second**	**Third**
Instrument Identification			

Results

LA_{eq}	38.4 dB	
LAE	67.9 dB	
EA	0.692 µPa²h	
$LA_{peak (max)}$	2022-10-21 12:27:51	77.2 dB
LAS_{max}	2022-10-21 12:35:24	49.5 dB
LAS_{min}	2022-10-21 12:31:30	27.0 dB
SEA	-99.9 dB	

	Exceedance Counts	Duration
LAS > 65.0 dB	0	0.0 s
LAS > 85.0 dB	0	0.0 s
LApeak > 135.0 dB	0	0.0 s
LApeak > 137.0 dB	0	0.0 s
LApeak > 140.0 dB	0	0.0 s

Community Noise	Ldn	LDay 07:00-22:00	LNight 22:00-07:00	Lden	LDay 07:00-19:00	LEvening 19:00-22:00
	38.4	38.4	-99.9	38.4	38.4	-99.9

LCeq	52.1 dB
LAeq	38.4 dB
LCeq - LAeq	13.7 dB
LAIeq	42.2 dB
LAeq	38.4 dB
LAIeq - LAeq	3.8 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	38.4		52.1		70.6	
LS(max)	49.5	2022/10/21 12:35:24	66.4	2022/10/21 12:27:17	84.8	2022/10/21 12:27:17
LF(max)	52.7	2022/10/21 12:35:24	71.5	2022/10/21 12:27:17	91.0	2022/10/21 12:27:17
LI(max)	57.0	2022/10/21 12:33:57	73.7	2022/10/21 12:27:17	93.8	2022/10/21 12:27:17
LS(min)	27.0	2022/10/21 12:31:30	38.7	2022/10/21 12:31:42	45.9	2022/10/21 12:31:24
LF(min)	26.5	2022/10/21 12:31:30	37.3	2022/10/21 12:31:44	43.2	2022/10/21 12:31:12
LI(min)	26.8	2022/10/21 12:31:30	39.6	2022/10/21 12:31:44	48.5	2022/10/21 12:31:24
LPeak(max)	77.2	2022/10/21 12:27:51	78.3	2022/10/21 12:27:17	95.4	2022/10/21 12:27:17

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Statistics

LA 1.00	45.5 dB
LA 10.00	42.3 dB
LA 25.00	39.5 dB
LA 50.00	35.7 dB
LA 90.00	30.6 dB
LA 99.00	27.6 dB

Calibration History

Preamp	Date	dB re. 1V/Pa
PRM831	2022-10-21 12:44:14	-26.92
PRM831	2022-10-21 12:25:57	-26.91
PRM831	2022-10-21 12:13:44	-26.88
PRM831	2022-10-21 11:55:57	-26.98
PRM831	2022-10-21 11:45:31	-26.87
PRM831	2022-10-21 11:33:11	-27.01
PRM831	2022-10-21 11:12:47	-26.77
PRM831	2022-10-21 11:05:29	-26.90
PRM831	2022-10-06 11:29:41	-27.32
PRM831	2022-10-06 11:03:40	-27.13
PRM831	2022-10-06 10:10:43	-27.18

Summary

File Name on Meter	831_Data.063.s
File Name on PC	831_0003785-20221021 115800-831_Data.063.ldbin
Serial Number	0003785
Model	Model 831
Firmware Version	2.403
User	
Location	
Job Description	
Note	

Measurement

Description		
Start	2022-10-21 11:58:00	
Stop	2022-10-21 12:13:00	
Duration	00:15:00.0	
Run Time	00:15:00.0	
Pause	00:00:00.0	
Pre-Calibration	2022-10-21 11:56:03	
Post-Calibration	2022-10-21 12:13:49	
Calibration Deviation	0.09	dB

Overall Settings

RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamplifier	PRM831			
Microphone Correction	Off			
Integration Method	Linear			
OBA Range	Normal			
OBA Bandwidth	1/1 and 1/3			
OBA Frequency Weighting	A Weighting			
OBA Max Spectrum	Bin Max			
Gain	0.0 dB			
Overload	144.4 dB			
	A	**C**	**Z**	
Under Range Peak	**76.9**	73.9	78.9	dB
Under Range Limit	**26.6**	27.0	32.9	dB
Noise Floor	17.4	17.9	23.3	dB
	First	**Second**	**Third**	
Instrument Identification				

Results

LAeq	37.7 dB		
LAE	67.2 dB		
EA	0.589 µPa²h		
LApeak (max)	2022-10-21 12:02:27	70.1	dB
LASmax	2022-10-21 12:03:17	54.8	dB
LASmin	2022-10-21 12:09:41	24.4	dB
SEA	-99.9 dB		

	Exceedance Counts	Duration
LAS > 65.0 dB	0	0.0 s
LAS > 85.0 dB	0	0.0 s
LApeak > 135.0 dB	0	0.0 s
LApeak > 137.0 dB	0	0.0 s
LApeak > 140.0 dB	0	0.0 s

Community Noise	Ldn	LDay 07:00-22:00	LNight 22:00-07:00	Lden	LDay 07:00-19:00	LEvening 19:00-22:00
	37.7	37.7	-99.9	37.7	37.7	-99.9

LCeq	51.6 dB
LAeq	37.7 dB
LCeq - LAeq	13.9 dB
LAIeq	39.4 dB
LAeq	37.7 dB
LAIeq - LAeq	1.7 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	37.7		51.6		65.6	
LS(max)	54.8	2022/10/21 12:03:17	68.1	2022/10/21 12:03:17	80.2	2022/10/21 12:03:09
LF(max)	55.9	2022/10/21 12:03:17	69.1	2022/10/21 12:03:17	83.6	2022/10/21 12:03:09
LI(max)	56.7	2022/10/21 12:03:16	69.9	2022/10/21 12:03:16	85.8	2022/10/21 12:03:09
LS(min)	24.4	2022/10/21 12:09:41	36.5	2022/10/21 12:09:18	43.7	2022/10/21 12:09:05
LF(min)	23.7	2022/10/21 12:09:48	34.7	2022/10/21 12:09:47	40.7	2022/10/21 12:09:14
LI(min)	24.2	2022/10/21 12:09:41	36.8	2022/10/21 12:09:18	44.9	2022/10/21 12:09:05
LPeak(max)	70.1	2022/10/21 12:02:27	78.7	2022/10/21 12:03:16	88.1	2022/10/21 12:03:09

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Statistics

LA 1.00	47.6 dB
LA 10.00	39.7 dB
LA 25.00	36.4 dB
LA 50.00	33.1 dB
LA 90.00	27.7 dB
LA 99.00	25.2 dB

Calibration History

Preamp	Date	dB re. 1V/Pa
PRM831	2022-10-21 12:13:44	-26.88
PRM831	2022-10-21 11:55:57	-26.98
PRM831	2022-10-21 11:45:31	-26.87
PRM831	2022-10-21 11:33:11	-27.01
PRM831	2022-10-21 11:12:47	-26.77
PRM831	2022-10-21 11:05:29	-26.90
PRM831	2022-10-06 11:29:41	-27.32
PRM831	2022-10-06 11:03:40	-27.13
PRM831	2022-10-06 10:10:43	-27.18
PRM831	2022-10-06 09:45:12	-27.20
PRM831	2022-10-05 12:46:16	-27.18

Record #	Record Type	Date	Time	LAeq	LApeak	LASmax	LASmin	OBA OVLD	Marker	Comments
1	Run	2022-10-21	11:17:01							
2		2022-10-21	11:17:01	41.8	69.2	44.4	40.1	No		
3		2022-10-21	11:17:11	37.4	64.2	41.7	29.8	No		
4		2022-10-21	11:17:21	32.7	63.4	38.3	28.7	No		
5		2022-10-21	11:17:31	39.0	78.5	45.1	31.1	No		
6		2022-10-21	11:17:41	42.1	67.5	44.3	34.8	No		
7		2022-10-21	11:17:51	37.1	59.0	42.4	34.2	No		
8		2022-10-21	11:18:01	41.7	64.5	44.2	35.7	No		
9		2022-10-21	11:18:11	39.7	60.0	44.3	36.2	No		
10		2022-10-21	11:18:21	36.7	53.0	38.0	35.0	No		
11		2022-10-21	11:18:31	31.7	53.0	34.9	31.1	No		
12		2022-10-21	11:18:41	31.9	53.0	33.3	30.9	No		
13		2022-10-21	11:18:51	31.7	53.0	32.3	31.4	No		
14		2022-10-21	11:19:01	33.4	53.0	35.3	31.8	No		
15		2022-10-21	11:19:11	33.5	53.0	37.5	31.8	No		
16		2022-10-21	11:19:21	34.1	56.0	39.1	32.0	No		
17		2022-10-21	11:19:31	32.3	57.8	33.8	31.7	No		
18		2022-10-21	11:19:41	33.6	53.0	35.4	32.7	No		
19		2022-10-21	11:19:51	38.4	61.5	39.4	34.6	No		
20		2022-10-21	11:20:01	47.0	66.8	52.4	39.4	No		
21		2022-10-21	11:20:11	53.0	67.5	54.4	49.4	No		
22		2022-10-21	11:20:21	49.1	64.5	50.9	45.5	No		
23		2022-10-21	11:20:31	42.9	56.0	45.5	41.3	No		
24		2022-10-21	11:20:41	37.0	53.0	42.3	36.2	No		
25		2022-10-21	11:20:51	35.7	53.0	36.4	35.4	No		
26		2022-10-21	11:21:01	33.8	53.0	36.0	31.9	No		
27		2022-10-21	11:21:11	32.6	56.0	34.1	31.8	No		
28		2022-10-21	11:21:21	31.9	63.0	34.9	30.8	No		
29		2022-10-21	11:21:31	32.8	53.0	34.0	31.5	No		
30		2022-10-21	11:21:41	33.4	53.0	34.8	31.7	No		
31		2022-10-21	11:21:51	34.6	53.0	35.4	33.9	No		
32		2022-10-21	11:22:01	36.0	53.0	36.5	34.8	No		
33		2022-10-21	11:22:11	36.4	53.0	37.5	35.0	No		
34		2022-10-21	11:22:21	34.3	53.0	35.8	33.2	No		
35		2022-10-21	11:22:31	36.0	53.0	36.9	34.8	No		
36		2022-10-21	11:22:41	34.0	53.0	36.2	32.6	No		
37		2022-10-21	11:22:51	30.5	53.0	32.6	29.6	No		
38		2022-10-21	11:23:01	28.5	53.0	29.7	27.7	No		
39		2022-10-21	11:23:11	28.0	53.0	28.4	27.6	No		
40		2022-10-21	11:23:21	27.6	53.0	28.4	27.0	No		
41		2022-10-21	11:23:31	27.0	53.0	27.4	26.6	No		
42		2022-10-21	11:23:41	30.5	67.0	37.6	26.5	No		
43		2022-10-21	11:23:51	26.4	53.0	26.7	26.2	No		
44		2022-10-21	11:24:01	26.2	53.0	26.6	26.0	No		
45		2022-10-21	11:24:11	26.5	53.0	27.8	25.9	No		
46		2022-10-21	11:24:21	27.6	53.0	29.1	26.5	No		
47		2022-10-21	11:24:31	38.8	53.0	42.8	29.0	No		
48		2022-10-21	11:24:41	41.4	56.0	44.8	36.0	No		
49		2022-10-21	11:24:51	34.1	53.0	38.2	32.0	No		
50		2022-10-21	11:25:01	30.4	53.0	32.5	29.2	No		
51		2022-10-21	11:25:11	29.8	53.0	30.6	29.2	No		
52		2022-10-21	11:25:21	32.9	59.0	34.4	30.6	No		
53		2022-10-21	11:25:31	34.4	57.8	36.3	31.7	No		
54		2022-10-21	11:25:41	33.4	56.0	34.2	32.2	No		
55		2022-10-21	11:25:51	41.2	60.0	43.8	33.7	No		
56		2022-10-21	11:26:01	48.4	63.8	50.4	39.4	No		
57		2022-10-21	11:26:11	42.5	66.4	48.7	37.1	No		
58		2022-10-21	11:26:21	36.4	53.0	38.6	34.8	No		

59		2022-10-21	11:26:31	36.4	53.0	37.3	35.5	No
60		2022-10-21	11:26:41	34.0	59.0	35.5	33.3	No
61		2022-10-21	11:26:51	32.1	56.0	34.2	30.4	No
62		2022-10-21	11:27:01	29.1	53.0	32.0	28.6	No
63		2022-10-21	11:27:11	29.7	56.0	31.4	27.8	No
64		2022-10-21	11:27:21	27.4	53.0	27.9	27.0	No
65		2022-10-21	11:27:31	28.4	53.0	29.2	27.4	No
66		2022-10-21	11:27:41	27.9	53.0	28.3	27.5	No
67		2022-10-21	11:27:51	28.5	53.0	29.7	27.9	No
68		2022-10-21	11:28:01	27.8	53.0	28.2	27.4	No
69		2022-10-21	11:28:11	29.3	53.0	33.2	27.7	No
70		2022-10-21	11:28:21	28.5	53.0	29.6	28.2	No
71		2022-10-21	11:28:31	28.6	56.0	30.0	27.8	No
72		2022-10-21	11:28:41	28.3	53.0	29.3	27.9	No
73		2022-10-21	11:28:51	28.8	53.0	29.3	28.1	No
74		2022-10-21	11:29:01	28.9	53.0	29.1	28.7	No
75		2022-10-21	11:29:11	29.2	53.0	29.4	28.8	No
76		2022-10-21	11:29:21	30.3	56.0	31.7	29.4	No
77		2022-10-21	11:29:31	31.0	53.0	31.8	30.2	No
78		2022-10-21	11:29:41	31.2	53.0	31.7	30.8	No
79		2022-10-21	11:29:51	30.7	53.0	31.0	30.5	No
80		2022-10-21	11:30:01	31.8	63.8	35.3	30.5	No
81		2022-10-21	11:30:11	30.3	53.0	31.2	29.7	No
82		2022-10-21	11:30:21	30.0	53.0	30.7	29.6	No
83		2022-10-21	11:30:31	30.1	53.0	31.1	29.7	No
84		2022-10-21	11:30:41	29.6	53.0	29.8	29.4	No
85		2022-10-21	11:30:51	29.7	53.0	30.1	29.4	No
86		2022-10-21	11:31:01	30.2	53.0	30.7	29.6	No
87		2022-10-21	11:31:11	30.8	53.0	31.5	30.2	No
88		2022-10-21	11:31:21	30.5	53.0	31.2	30.0	No
89		2022-10-21	11:31:31	30.0	53.0	30.3	29.8	No
90		2022-10-21	11:31:41	29.9	53.0	30.3	29.5	No
91		2022-10-21	11:31:51	31.3	53.0	32.9	29.8	No
92	Stop	2022-10-21	11:32:01					

Record #	Record Type	Date	Time	LAeq	LApeak	LASmax	LASmin	OBA OVLD	Marker	Comments
1	alibration Chang	2022-10-21	12:26:08							
2	Run	2022-10-21	12:27:00							
3		2022-10-21	12:27:00	41.9	65.5	43.0	40.6	No		
4		2022-10-21	12:27:10	40.1	62.7	40.9	39.5	No		
5		2022-10-21	12:27:20	37.9	59.2	39.9	36.6	No		
6		2022-10-21	12:27:30	37.1	68.8	40.9	35.2	No		
7		2022-10-21	12:27:40	40.5	72.0	42.6	35.7	No		
8		2022-10-21	12:27:50	42.0	77.2	44.4	41.2	No		
9		2022-10-21	12:28:00	39.4	72.9	43.7	35.8	No		
10		2022-10-21	12:28:10	35.5	66.4	37.1	34.4	No		
11		2022-10-21	12:28:20	37.5	72.1	44.4	33.0	No		
12		2022-10-21	12:28:30	32.9	53.2	35.3	32.0	No		
13		2022-10-21	12:28:40	33.5	60.1	35.0	32.1	No		
14		2022-10-21	12:28:50	31.4	53.2	33.5	30.9	No		
15		2022-10-21	12:29:00	32.3	65.9	35.9	30.5	No		
16		2022-10-21	12:29:10	30.7	53.2	33.1	30.2	No		
17		2022-10-21	12:29:20	32.9	53.2	34.5	30.4	No		
18		2022-10-21	12:29:30	36.3	68.7	39.1	33.8	No		
19		2022-10-21	12:29:40	37.2	67.0	38.2	36.3	No		
20		2022-10-21	12:29:50	37.1	68.6	38.5	36.0	No		
21		2022-10-21	12:30:00	36.7	53.2	37.8	35.8	No		
22		2022-10-21	12:30:10	39.7	53.2	40.5	37.9	No		
23		2022-10-21	12:30:20	36.4	53.2	39.7	33.2	No		
24		2022-10-21	12:30:30	33.2	53.2	38.1	30.9	No		
25		2022-10-21	12:30:40	34.6	60.1	36.5	32.4	No		
26		2022-10-21	12:30:50	36.8	53.2	40.1	33.2	No		
27		2022-10-21	12:31:00	31.4	53.2	33.5	29.0	No		
28		2022-10-21	12:31:10	28.7	53.2	29.3	28.2	No		
29		2022-10-21	12:31:20	27.6	53.2	29.2	27.0	No		
30		2022-10-21	12:31:30	27.8	53.2	28.6	27.0	No		
31		2022-10-21	12:31:40	29.4	53.2	30.0	27.8	No		
32		2022-10-21	12:31:50	28.5	53.2	29.5	27.8	No		
33		2022-10-21	12:32:00	28.4	53.2	28.9	27.8	No		
34		2022-10-21	12:32:10	31.5	53.2	32.2	28.9	No		
35		2022-10-21	12:32:20	37.3	72.7	41.9	32.0	No		
36		2022-10-21	12:32:30	44.0	71.8	45.7	39.3	No		
37		2022-10-21	12:32:40	43.0	56.2	44.9	41.4	No		
38		2022-10-21	12:32:50	38.4	56.2	41.4	35.8	No		
39		2022-10-21	12:33:00	36.2	63.6	37.2	35.3	No		
40		2022-10-21	12:33:10	36.6	53.2	37.0	35.4	No		
41		2022-10-21	12:33:20	35.2	65.2	36.8	33.8	No		
42		2022-10-21	12:33:30	33.3	65.9	37.5	30.9	No		
43		2022-10-21	12:33:40	31.9	57.9	33.6	30.9	No		
44		2022-10-21	12:33:50	36.5	76.0	43.7	30.0	No		
45		2022-10-21	12:34:00	30.7	53.2	34.9	29.5	No		
46		2022-10-21	12:34:10	31.8	53.2	34.3	29.7	No		
47		2022-10-21	12:34:20	32.3	53.2	34.4	31.6	No		
48		2022-10-21	12:34:30	32.2	53.2	33.0	31.7	No		
49		2022-10-21	12:34:40	32.7	53.2	34.2	31.8	No		
50		2022-10-21	12:34:50	34.5	53.2	35.2	33.0	No		
51		2022-10-21	12:35:00	37.5	57.9	42.1	35.0	No		
52		2022-10-21	12:35:10	44.1	59.2	46.1	41.4	No		
53		2022-10-21	12:35:20	45.2	73.0	49.5	40.8	No		
54		2022-10-21	12:35:30	42.3	68.2	44.0	40.2	No		
55		2022-10-21	12:35:40	44.9	63.9	45.9	43.6	No		
56		2022-10-21	12:35:50	43.4	61.6	46.1	41.3	No		
57		2022-10-21	12:36:00	44.5	59.2	45.9	41.4	No		
58		2022-10-21	12:36:10	40.5	63.6	43.7	38.6	No		

59		2022-10-21	12:36:20	40.9	53.2	42.1	39.1	No
60		2022-10-21	12:36:30	40.6	53.2	42.0	39.9	No
61		2022-10-21	12:36:40	39.1	53.2	40.0	38.3	No
62		2022-10-21	12:36:50	41.5	60.1	42.5	39.2	No
63		2022-10-21	12:37:00	42.3	62.2	44.1	40.4	No
64		2022-10-21	12:37:10	42.9	68.5	45.2	38.8	No
65		2022-10-21	12:37:20	36.8	70.4	40.3	34.8	No
66		2022-10-21	12:37:30	36.3	53.2	37.8	35.2	No
67		2022-10-21	12:37:40	36.1	63.9	37.5	35.2	No
68		2022-10-21	12:37:50	34.6	53.2	35.3	33.9	No
69		2022-10-21	12:38:00	36.8	60.1	38.3	34.6	No
70		2022-10-21	12:38:10	39.2	71.1	41.8	37.2	No
71		2022-10-21	12:38:20	43.1	70.8	43.7	41.1	No
72		2022-10-21	12:38:30	41.8	53.2	43.6	39.8	No
73		2022-10-21	12:38:40	37.5	53.2	39.8	36.2	No
74		2022-10-21	12:38:50	34.4	53.2	36.6	32.9	No
75		2022-10-21	12:39:00	33.3	63.6	36.1	33.0	No
76		2022-10-21	12:39:10	34.3	59.2	36.0	33.1	No
77		2022-10-21	12:39:20	38.5	53.2	40.1	34.2	No
78		2022-10-21	12:39:30	39.3	53.2	40.0	38.9	No
79		2022-10-21	12:39:40	37.8	53.2	39.4	36.7	No
80		2022-10-21	12:39:50	35.4	60.1	37.4	33.9	No
81		2022-10-21	12:40:00	37.5	70.9	40.6	34.6	No
82		2022-10-21	12:40:10	36.0	70.2	42.3	33.2	No
83		2022-10-21	12:40:20	33.3	63.6	37.9	32.9	No
84		2022-10-21	12:40:30	34.4	53.2	35.3	33.1	No
85		2022-10-21	12:40:40	34.2	53.2	35.3	33.1	No
86		2022-10-21	12:40:50	32.9	61.6	36.3	31.5	No
87		2022-10-21	12:41:00	32.4	60.1	34.1	31.3	No
88		2022-10-21	12:41:10	32.4	53.2	33.1	31.5	No
89		2022-10-21	12:41:20	31.6	53.2	33.1	30.7	No
90		2022-10-21	12:41:30	31.8	53.2	33.4	30.2	No
91		2022-10-21	12:41:40	33.5	61.6	38.8	31.3	No
92		2022-10-21	12:41:50	31.0	60.1	33.2	29.9	No
93	Stop	2022-10-21	12:42:00					
94	alibration Chang	2022-10-21	12:44:25					

Record #	Record Type	Date	Time	LAeq	LApeak	LASmax	LASmin	OBA OVLD	Marker	Comments
1	alibration Chang	2022-10-21	11:56:03							
2	Run	2022-10-21	11:58:00							
3		2022-10-21	11:58:00	35.6	53.2	36.7	34.3	No		
4		2022-10-21	11:58:10	32.1	53.2	35.2	31.0	No		
5		2022-10-21	11:58:20	30.0	53.2	31.0	29.3	No		
6		2022-10-21	11:58:30	30.9	62.8	34.6	28.5	No		
7		2022-10-21	11:58:40	33.8	69.5	38.6	31.3	No		
8		2022-10-21	11:58:50	28.6	53.2	32.9	28.2	No		
9		2022-10-21	11:59:00	29.1	53.2	31.7	27.6	No		
10		2022-10-21	11:59:10	32.5	60.2	38.6	29.1	No		
11		2022-10-21	11:59:20	32.0	53.2	38.2	29.1	No		
12		2022-10-21	11:59:30	40.7	53.2	43.0	34.3	No		
13		2022-10-21	11:59:40	40.8	56.2	44.4	35.4	No		
14		2022-10-21	11:59:50	38.6	61.0	41.7	36.9	No		
15		2022-10-21	12:00:00	35.9	62.8	37.0	35.4	No		
16		2022-10-21	12:00:10	35.7	58.0	36.7	35.2	No		
17		2022-10-21	12:00:20	34.8	53.2	36.2	33.8	No		
18		2022-10-21	12:00:30	32.7	53.2	33.9	32.2	No		
19		2022-10-21	12:00:40	32.5	53.2	33.4	31.6	No		
20		2022-10-21	12:00:50	33.0	53.2	33.9	31.8	No		
21		2022-10-21	12:01:00	33.7	53.2	34.6	33.0	No		
22		2022-10-21	12:01:10	32.3	60.2	33.3	31.1	No		
23		2022-10-21	12:01:20	30.3	53.2	31.1	29.7	No		
24		2022-10-21	12:01:30	29.9	53.2	30.8	29.2	No		
25		2022-10-21	12:01:40	29.2	53.2	29.9	28.8	No		
26		2022-10-21	12:01:50	30.2	53.2	31.0	28.8	No		
27		2022-10-21	12:02:00	31.8	58.0	33.6	30.2	No		
28		2022-10-21	12:02:10	33.4	53.2	34.8	31.9	No		
29		2022-10-21	12:02:20	38.9	70.1	41.3	34.8	No		
30		2022-10-21	12:02:30	39.2	67.0	42.0	35.5	No		
31		2022-10-21	12:02:40	30.1	53.2	35.5	27.8	No		
32		2022-10-21	12:02:50	33.4	53.2	35.3	29.1	No		
33		2022-10-21	12:03:00	39.2	53.2	42.9	34.6	No		
34		2022-10-21	12:03:10	52.5	67.4	54.8	43.0	No		
35		2022-10-21	12:03:20	42.1	65.0	51.6	37.8	No		
36		2022-10-21	12:03:30	38.9	58.0	39.9	38.1	No		
37		2022-10-21	12:03:40	38.7	61.7	39.6	37.9	No		
38		2022-10-21	12:03:50	35.0	61.7	39.3	32.9	No		
39		2022-10-21	12:04:00	31.0	53.2	33.1	30.5	No		
40		2022-10-21	12:04:10	32.6	53.2	34.6	30.7	No		
41		2022-10-21	12:04:20	32.3	53.2	33.9	31.5	No		
42		2022-10-21	12:04:30	33.6	58.0	34.8	32.4	No		
43		2022-10-21	12:04:40	33.7	58.0	34.9	32.5	No		
44		2022-10-21	12:04:50	34.3	56.2	35.4	33.5	No		
45		2022-10-21	12:05:00	33.1	60.2	34.3	32.5	No		
46		2022-10-21	12:05:10	35.9	53.2	37.1	33.5	No		
47		2022-10-21	12:05:20	35.7	53.2	37.3	34.9	No		
48		2022-10-21	12:05:30	35.3	56.2	36.5	33.9	No		
49		2022-10-21	12:05:40	32.6	53.2	34.6	31.6	No		
50		2022-10-21	12:05:50	31.9	53.2	32.8	31.3	No		
51		2022-10-21	12:06:00	32.4	53.2	32.7	32.0	No		
52		2022-10-21	12:06:10	33.9	59.2	34.3	33.3	No		
53		2022-10-21	12:06:20	32.6	53.2	34.4	31.4	No		
54		2022-10-21	12:06:30	31.4	53.2	32.4	30.6	No		
55		2022-10-21	12:06:40	32.1	53.2	33.3	31.2	No		
56		2022-10-21	12:06:50	33.0	53.2	34.0	31.3	No		
57		2022-10-21	12:07:00	34.8	53.2	36.5	32.9	No		
58		2022-10-21	12:07:10	36.3	53.2	38.8	35.1	No		

59		2022-10-21	12:07:20	35.2	56.2	38.0	33.2	No
60		2022-10-21	12:07:30	39.8	58.0	41.3	36.7	No
61		2022-10-21	12:07:40	45.8	59.2	47.1	40.9	No
62		2022-10-21	12:07:50	42.6	56.2	45.3	40.5	No
63		2022-10-21	12:08:00	41.5	56.2	44.3	38.1	No
64		2022-10-21	12:08:10	40.4	56.2	45.0	36.0	No
65		2022-10-21	12:08:20	34.5	56.2	36.8	32.6	No
66		2022-10-21	12:08:30	31.8	53.2	33.6	30.1	No
67		2022-10-21	12:08:40	28.8	53.2	31.3	26.3	No
68		2022-10-21	12:08:50	27.3	53.2	30.8	25.1	No
69		2022-10-21	12:09:00	26.4	53.2	29.7	25.3	No
70		2022-10-21	12:09:10	26.8	53.2	31.8	24.5	No
71		2022-10-21	12:09:20	30.0	56.2	32.2	26.5	No
72		2022-10-21	12:09:30	26.7	53.2	30.3	24.8	No
73		2022-10-21	12:09:40	27.3	53.2	30.7	24.4	No
74		2022-10-21	12:09:50	26.6	53.2	29.1	25.3	No
75		2022-10-21	12:10:00	26.2	53.2	27.8	25.2	No
76		2022-10-21	12:10:10	26.7	53.2	28.0	26.1	No
77		2022-10-21	12:10:20	27.8	53.2	29.0	26.6	No
78		2022-10-21	12:10:30	27.8	53.2	29.0	27.3	No
79		2022-10-21	12:10:40	27.7	53.2	29.0	26.9	No
80		2022-10-21	12:10:50	29.4	53.2	33.6	27.0	No
81		2022-10-21	12:11:00	28.1	53.2	32.3	27.3	No
82		2022-10-21	12:11:10	31.0	53.2	31.7	29.0	No
83		2022-10-21	12:11:20	31.9	53.2	32.5	31.1	No
84		2022-10-21	12:11:30	34.0	53.2	34.8	32.5	No
85		2022-10-21	12:11:40	36.7	53.2	38.6	34.8	No
86		2022-10-21	12:11:50	36.9	56.2	37.4	36.2	No
87		2022-10-21	12:12:00	37.2	53.2	38.3	36.4	No
88		2022-10-21	12:12:10	39.5	56.2	40.1	38.3	No
89		2022-10-21	12:12:20	40.1	58.0	40.6	39.4	No
90		2022-10-21	12:12:30	38.9	53.2	39.8	38.7	No
91		2022-10-21	12:12:40	39.3	53.2	39.8	38.7	No
92		2022-10-21	12:12:50	37.5	56.2	38.7	36.7	No
93	Stop	2022-10-21	12:13:00					
94	alibration Chang	2022-10-21	12:13:49					

Noise Appendix

Field Sheets

NOISE MEASUREMENT SITE INFORMATION SHEET

Jones & Stokes

PROJECT NAME: Lower Blue Lake Dam

PROJECT #: –

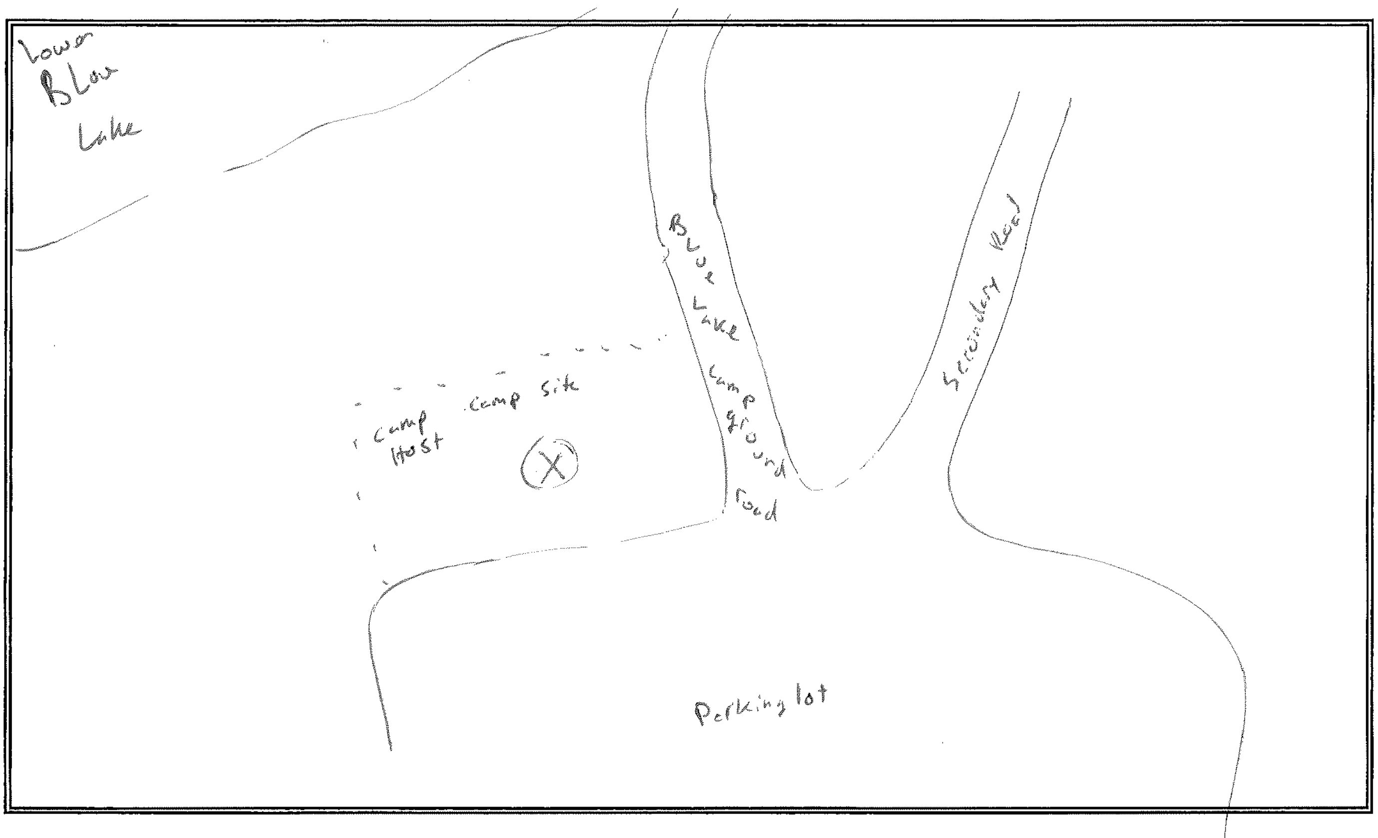
SITE NUMBER: ST-1

DATE/TIME: 2022 10 21

LOCATION/ADDRESS: Camp Host site

ENGINEERS: Schumaker

SITE SKETCH: Show microphone location, nearby residences/buildings, potential reflective surfaces, project roadways, local roadways, driveways, ground type, trees. Indicate reference distances between objects, arrows showing wind direction, North, and camera locations/directions. Describe the line-of-sight and topography/elevation changes relative to noise sources.



WEATHER DATA: (temperature, wind speed/direction, sky conditions, relative humidity)

56.4 | 1.7 | Blue | 32%

EQUIPMENT DATA: (sound level meter, microphone, preamp, calibrator, factory cal. date)

LD 831 Pre cal: +0.13dB Post cal: -0.24dB 831_Data.062

ESTIMATED CONSTRUCTION DATE OF RESIDENCES: (Pre-1978, or new construction)

POSTED SPEED: 20 mph. COMMENTS:

TRAFFIC COUNTS:

Roadway/Direction	Autos	Medium	Heavy	Speed	Start Time	Duration

NOISE MEASUREMENT LOG SHEET (20)

Jones & Stokes

PROJECT NAME: Lower Blue Lake Dam.

PROJECT #:

SITE NUMBER: ST-1

DATE/TIME: 20221021 11:17

LOCATION/ADDRESS: Camphost site

ENGINEERS: Schumacher

#	Minute Starting	Measured Leq (dBA)	O or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources/Comments (include SLM equipment, Calibration Data)
1	11:17						highlander Leaving Lower Blue Lake highlander comes Back...
2	11:18						Small Truck drives up. towards boat ramp
3	11:19						clanking at gate (boat ramp) 'Bear Box?
4	11:20						ORV pass by. Plane overhead. ORV in Distance
5	11:21						
6	11:22						ORV in distance.
7	11:23						
8	11:24						Vehicle approaching. boat ramp.
9	11:25						Truck driving by boat ramp. Truck leaving Blue Lake going on road Right of camp ground.
10	11:26						
11	11:27						
12	11:28						
13	11:29						
14	11:30						Leq 38.7
15	11:31						Lmax 54.4
16							Lmin 25.9
17							L10 40.8
18							L~~30~~ 25 35.7
19							L50 31.7
20							L90 27.9

Overall Leq (Include "O" minutes, Exclude "X" minutes) = [ ] dBA 831_Data.062

Subset Leq (Exclude "O" and "X" minutes) = [ ] dBA

"O" = other characteristic sources that contributed to the Leq

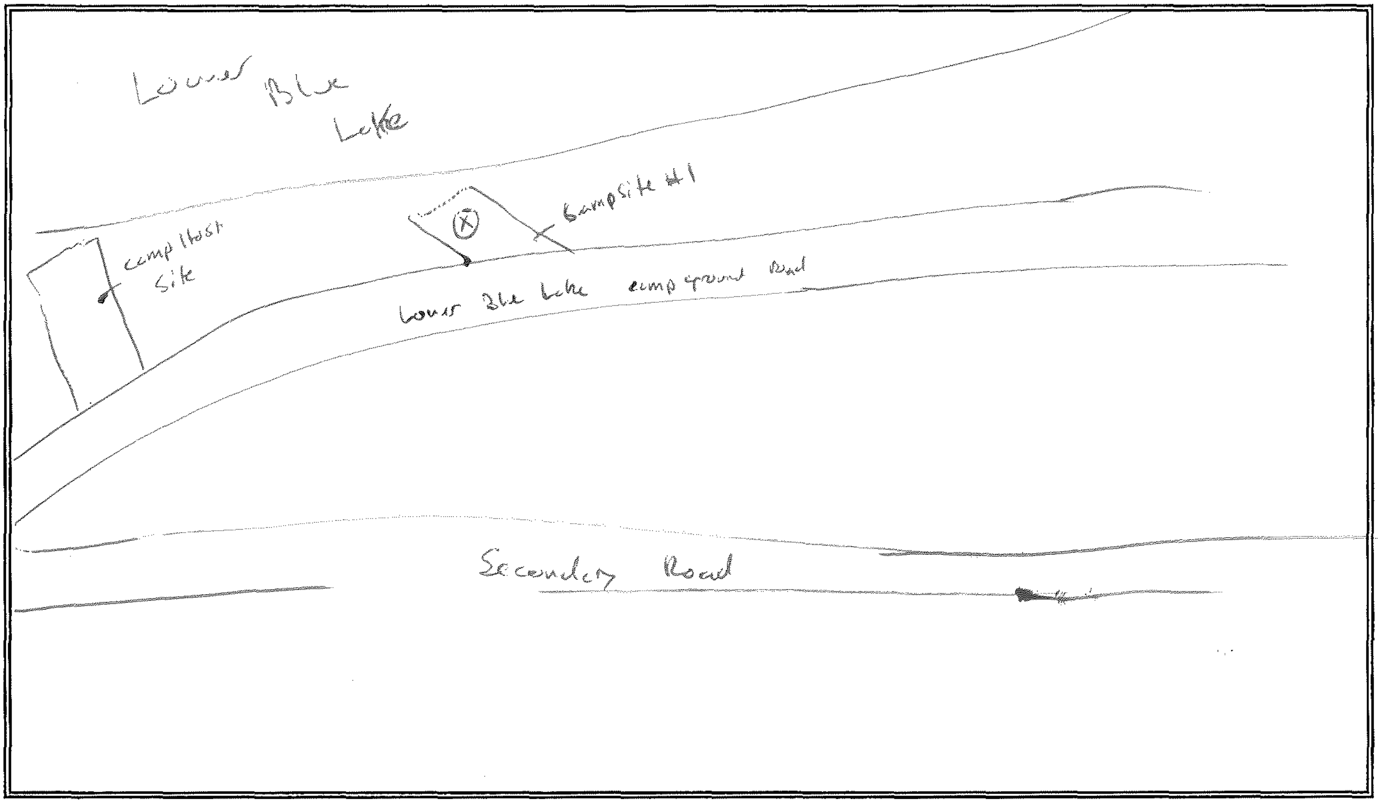
"X" = exclude from Leq calculation; a non-typical source contaminated the measurement

NOISE MEASUREMENT SITE INFORMATION SHEET

Jones & Stokes

PROJECT NAME: Lower Blue Lake Dam
PROJECT #:
SITE NUMBER: ST-2
DATE/TIME: 2022 1021
LOCATION/ADDRESS: Campsite #1
ENGINEERS: Schumacher

SITE SKETCH: Show microphone location, nearby residences/buildings, potential reflective surfaces, project roadways, local roadways, driveways, ground type, trees. Indicate reference distances between objects, arrows showing wind direction, North, and camera locations/directions. Describe the line-of-sight and topography/elevation changes relative to noise sources.



WEATHER DATA: (temperature, wind speed/direction, sky conditions, relative humidity)

52.9 | 3.4 | Blue | 32.8%

EQUIPMENT DATA: (sound level meter, microphone, preamp, calibrator, factory cal. date)

831 | Pre cal: -0.02 dB | Post cal: -0.01 dB | 831_Data.064

ESTIMATED CONSTRUCTION DATE OF RESIDENCES: (Pre-1978, or new construction)

POSTED SPEED: 5mph COMMENTS:

TRAFFIC COUNTS:

Roadway/Direction	Autos	Medium	Heavy	Speed	Start Time	Duration

NOISE MEASUREMENT LOG SHEET (20)

Jones & Stokes

PROJECT NAME: Lower Blue Lake Dam.

PROJECT #:

SITE NUMBER: ST-2

DATE/TIME: 20221021 12:27

LOCATION/ADDRESS: camp site #1

ENGINEERS: Schumacher

#	Minute Starting	Measured Leq (dBA)	O or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources/Comments (include SLM equipment, Calibration Data)	
1	12:27						wind	
2	12:28							
3	12:29						wind pick up	
4	12:30						vehicle on Secondary Road	
5	12:31							
6	12:32						wind picks up.	
7	12:33						kayakers talking on Lake	
8	12:34							
9	12:35						wind picks up Jet overhead	
10	12:36						sustained wind	
11	12:37						wind dies down.	
12	12:38						wind	
13	12:39							
14	12:40							Leq 38.4
15	12:41						distant Jet.	Lmax 49.5
16								Lmin 27.0
17								L10 42.3
18								L33 L25 39.5
19								L50 35.7
20								L90 30.6

Overall Leq (Include "O" minutes, Exclude "X" minutes) = ______ **dBA**

Subset Leq (Exclude "O" and "X" minutes) = ______ **dBA**

"O" = other characteristic sources that contributed to the Leq

"X" = exclude from Leq calculation; a non-typical source contaminated the measurement

NOISE MEASUREMENT SITE INFORMATION SHEET

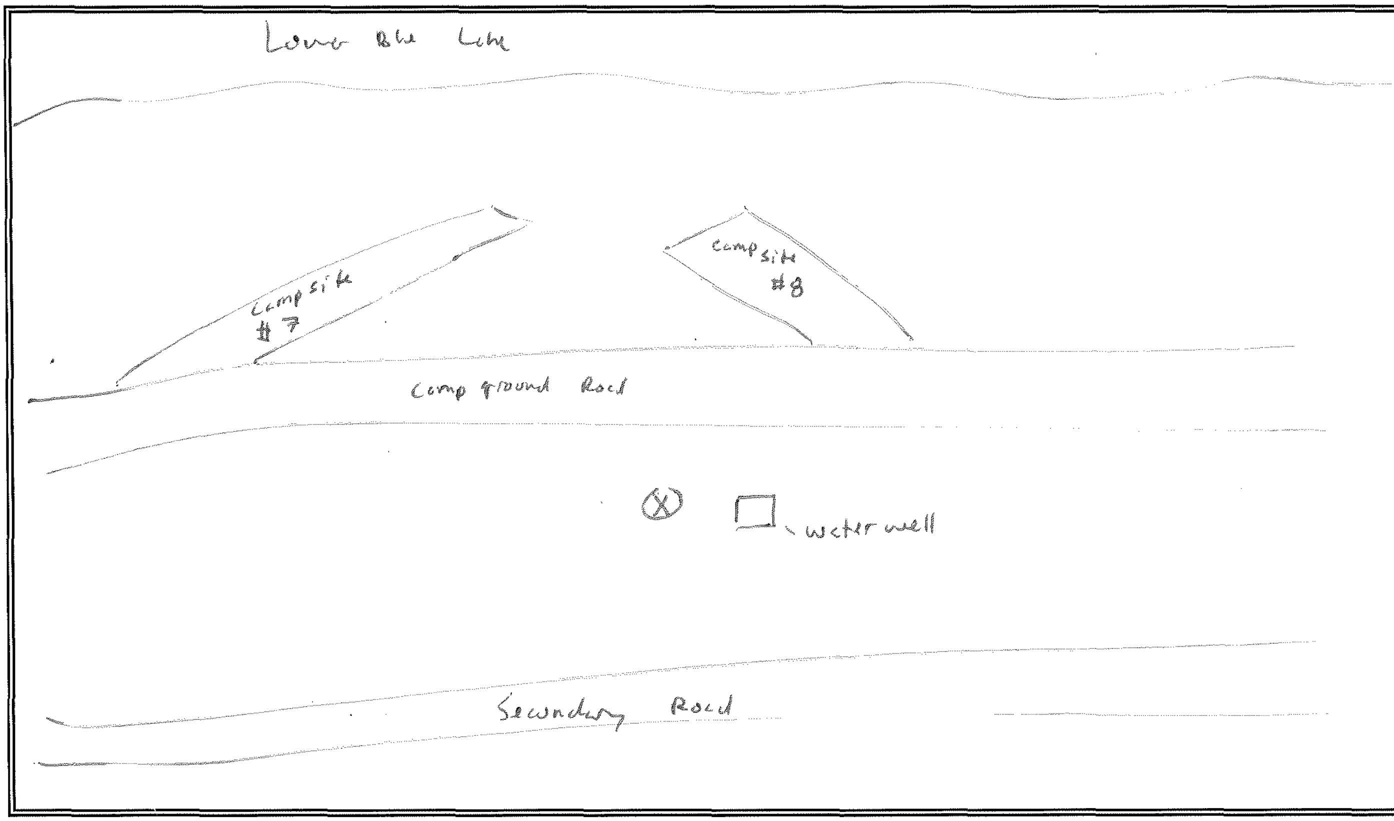
ICF

PROJECT NAME: Lower Blue Lake Dam PROJECT #:

SITE NUMBER: ST-3 DATE/TIME: 2022 1021

LOCATION/ADDRESS: water well, near campsite 7 & 8 ENGINEERS: Schumaker

SITE SKETCH: Show microphone location, nearby residences/buildings, potential reflective surfaces, project roadways, local roadways, driveways, ground type, trees. Indicate reference distances between objects, arrows showing wind direction, North, and camera locations/directions. Describe the line-of-sight and topography/elevation changes relative to noise sources.



WEATHER DATA: (temperature, wind speed/direction, sky conditions, relative humidity)

53.2 2.9 Pcloudy 34.0

EQUIPMENT DATA: (sound level meter, microphone, preamp, calibrator, factory cal. date)

Pre Cal: -0.11 dB

831 Post Cal: +0.09 dB

ESTIMATED CONSTRUCTION DATE OF RESIDENCES: (Pre-1978, or new construction)

POSTED SPEED: 5 mph COMMENTS:

TRAFFIC COUNTS:

Roadway/Direction	Autos	Medium	Heavy		Speed	Start Time	Duration

NOISE MEASUREMENT LOG SHEET (20)

ICF

PROJECT NAME: Lower Ble Lk Dam

PROJECT #:

SITE NUMBER: ST-3

DATE/TIME: 2022 10 21 11:58

LOCATION/ADDRESS: water well near campsites # 7 4 8

ENGINEERS: Schumaker

#	Minute Starting	Measured Leq (dBA)	O or X	Autos	Medium Trucks	Heavy Trucks	Other Noise Sources/Comments (include SLM equipment, Data)	Calibration
1	11:58							
2	11:59						Truck on Secondary Road. Stop and accelerate	
3	12:00						vehicle in Distance	
4	12:01							
5	12:02						SUV on Secondary Road people on shoreline? distant	
6	12:03						ORV pass by Sustained wind.	
7	12:04						ORV in distance	
8	12:05						wind noise	
9	12:06						Plane in distance	
10	12:07						plane closer Jeep on Secondary Road	
11	12:08						Plane still present moving away	
12	12:09						people on shore?	
13	12:10							
14	12:11						wind picks up	Leq 37.7
15	12:12							Lmax 54.8
16								Lmin 24.4
17								L10 39.7
18								L~~33~~ 25 36.4
19								L50 33.1
20								L90 27.7

Overall Leq (Include "O" minutes, Exclude "X" minutes) = [ ] dBA 831_Data.063

Subset Leq (Exclude "O" and "X" minutes) = [ ] dBA

"O" = other characteristic sources that contributed to the Leq

"X" = exclude from Leq calculation; a non-typical source contaminated the measurement +0.04dB

Noise Appendix

Field Pictures

Noise Measurement Photographs

ST-1 Looking North

ST-1 Looking West

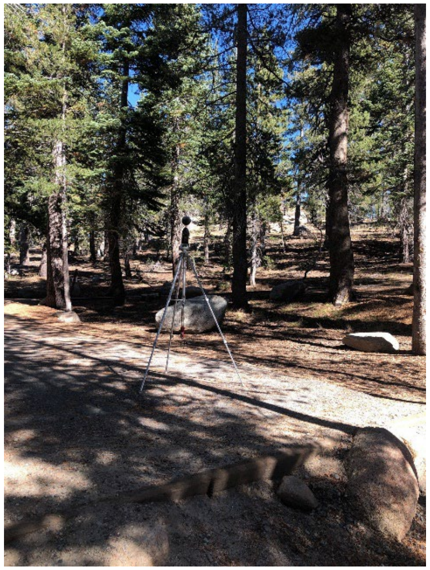
ST-1 Looking South

ST-1 Looking East

Noise Measurement Photographs

ST-2 Looking Southwest

ST-2 Looking Northwest



ST-2 Looking northeast

ST-2 Looking Southeast

Noise Measurement Photographs


ST-3 Looking West


ST-3 Looking North


ST-3 Looking Southwest


ST-3 Looking East