

Draft Environmental Impact Report
El Dorado Forebay Dam Modification Project

Prepared for:



El Dorado Irrigation District

AECOM

October 2013

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Prepared for:



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ACRONYMS AND OTHER ABBREVIATIONS

µin/sec	microinches per second
AB	Assembly Bill
ACHP	Advisory Council on Historic Preservation
ADA	Americans with Disabilities Act
af	acre-feet
Alquist-Priolo Act	Alquist-Priolo Earthquake Fault Zoning Act
APE	area of potential effects
AQAP	air quality attainment plan
ARB	California Air Resources Board
Basin Plan	Water Quality Control Plan for the Sacramento River and San Joaquin River Basins
BGEPA	Bald and Golden Eagle Protection Act
BIOS	Biographical Information and Observation System
BMP	best management practice
Cal EMA	California Emergency Management Agency
CalEEMod	California Emission Estimator Model
Cal/EPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
Cal-OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CESA	California Endangered Species Act
CH ₄	methane
CHP	California Highway Patrol
CLG	Certified Local Government
CMCE	Controlling Maximum Considered Earthquake
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CTR	California Toxics Rule
CUPA	Certified Unified Program Agency
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
dB	decibel(s)
DEIR	draft environmental impact report

DO	dissolved oxygen
DPR	California Department of Parks and Recreation
DSOD	Division of Safety of Dams
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EDCAQMD	El Dorado County Air Quality Management District
EIR	environmental impact report
EM	Engineering Manual
EPA	U.S. Environmental Protection Agency
ESA	federal Endangered Species Act
Farmland	Farmland of Statewide Importance
FERC	Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
FMMP	Farmland Mapping and Monitoring Program
Forebay	El Dorado Forebay
FPA	Federal Power Act
GEI	GEI Consultants
GHG	greenhouse gas
gpm	gallons per minute
GWP	global warming potential
HABS	Historic American Building Survey
HCP	Habitat Conservation Plan
HDCD	Historic Design Control District
ICF	ICF International
in/sec	inches per second
INRMP	Integrated Natural Resource Management Plan
IS	initial study
LDL	Larson-Davis Laboratories
L_{eq}	equivalent sound level
LHCP	Lead Hazard Control Plan
L_{max}	maximum sound level
LOS	level of service
LTS	less than significant
MBTA	Migratory Bird Treaty Act
MCE	Maximum Considered Earthquake
mg/kg	milligrams per kilogram
mg/l	milligrams per liter
MJHMP	Multi-Jurisdiction Hazard Mitigation Plan
MMRP	mitigation monitoring and reporting program
msl	mean sea level
MT	metric ton(s)
N_2O	nitrous oxide

NAHC	Native American Heritage Commission
NEHRP	National Earthquake Hazards Reduction Program
NEHRPA	National Earthquake Hazards Reduction Program Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NI	no impact
NMFS	National Marine Fisheries Service
NOP	notice of preparation
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	U.S. Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTR	National Toxics Rule
OES	Office of Emergency Services
OHWM	ordinary high-water mark
OSHA	Occupational Safety and Health Administration
OWMP	Oak Woodland Management Plan
PCE	passenger car equivalent
PG&E	Pacific Gas and Electric Company
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
PPV	peak particle velocity
PRC	Public Resources Code
Project	El Dorado Forebay Dam Modification Project
RCRA	Resources Conservation and Recovery Act
RPF	Registered Professional Forester
RTP	regional transportation plan
RWQCB	regional water quality control board
S	significant
SACOG	Sacramento Area Council of Governments
SARA	Superfund Amendments and Reauthorization Act of 1986
SB	Senate Bill
SCADA	Supervisory Control and Data Acquisition
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMARA	Surface Mining and Reclamation Act
SMUD	Sacramento Municipal Utility District
STU	surface transect unit
SU	significant and unavoidable
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
THP	Timber Harvest Plan
TMDL	total maximum daily load

TPZ	Timberland Production Zone
UBC	Uniform Building Code
Unified Program	unified hazardous waste and hazardous materials management regulatory program
U.S. 50	U.S. Highway 50
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
V/C	volume-to-capacity
VdB	vibration decibels
WEAP	Worker Environmental Awareness Program
WTP	water treatment plant

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EXECUTIVE SUMMARY

ES.1 INTRODUCTION

This executive summary presents the findings and conclusions identified in the draft environmental impact report (DEIR) for the proposed El Dorado Forebay Dam Modification Project (Project). As required by Section 15123(a) of the State CEQA Guidelines, “[a]n EIR shall contain a brief summary of the proposed action and its consequences,” including (1) a summary description of the proposed project, (2) a synopsis of environmental impacts and recommended mitigation measures (Table ES-1, at the end of this summary), and (3) identification of the alternatives evaluated, and (4) a discussion of the areas of controversy associated with the proposed project.

This DEIR presents a project-level analysis of actions that are proposed to be implemented in the near-term period and would not be subject to further environmental impact analysis. This DEIR documents the potential impacts for actions that would be undertaken as part of the Project and identifies mitigation measures for those impacts found to be potentially significant or significant.

ES.2 PROJECT OBJECTIVES

The Project is designed to meet the following objectives:

- ▶ Protect public safety by protecting residents, life, and property below the dam
- ▶ Comply with dam safety requirements of the California Department of Water Resources’ Division of Safety of Dams (DSOD) and the Federal Energy Regulatory Commission (FERC)
- ▶ Regain and optimize full reservoir operational use to improve the reliability of the drinking water system and optimize renewable hydroelectric power generation revenue

ES.3 OVERVIEW OF THE PROJECT

The El Dorado Forebay (Forebay) is an offstream reservoir, created by an earthen embankment dam, in El Dorado County, California, within Pollock Pines on the north side of U.S. Highway 50 (U.S. 50). The Forebay, constructed in 1922, is a component of the El Dorado Hydroelectric Project, which is owned and operated by EID and licensed by FERC as FERC Project No. 184. EID operates Project No. 184 facilities to provide water for drinking water supply and renewable hydroelectric power generation.

The Project would remediate the El Dorado Forebay Dam and its associated facilities to meet current dam safety requirements, as required by the California DSOD and FERC. The Project is designed to satisfy these specific regulatory mandates while also improving the reliability of the drinking water system and minimizing impacts on EID ratepayers through increased hydroelectric revenue. The Project involves constructing an earthen stability buttress on the dry side of the dam, raising the dam 10 vertical feet, and upgrading appurtenant facilities. Construction is anticipated to occur over a 2-year period beginning in spring 2015 with completion in fall 2016.

The Project site is located in Pollock Pines, California, in the Pollock Pines U.S. Geological Survey quadrangle map, Sections 25 and 30, Township 11 North, Range 12 East, and Range 13 East (Exhibit 1-1). The Project site is

on land owned by either EID or private parties; no construction, staging, or access would occur on or through federal lands. Portions of the Project site are within the existing FERC Project No. 184 boundary.

The total Project footprint is approximately 158 acres. Of this total area, the primary and secondary borrow areas would occupy up to approximately 78 acres, the construction areas around the reservoir, including staging areas, would occupy up to approximately 54 acres, and the existing Forebay reservoir and new inundation area would occupy approximately 26 acres.

Existing facilities on the Project site include the Forebay Dam, reservoir, and appurtenant facilities (e.g., spillway, penstock, drinking water intake); the El Dorado Canal, which supplies water to the Forebay; the Main Ditch, which supplies water to EID's drinking water system; and two recreational day use areas. The Project is composed of the following elements:

- ▶ Constructing an earthen stability buttress and raise the Forebay Dam to meet DSOD and FERC dam safety stability/freeboard requirements and improve emergency water storage and hydroelectric generation efficiency
- ▶ Remediating the emergency spillway structure and outfall and stabilizing the unstable slope along the spillway channel to prevent continued erosion
- ▶ Repairing the existing unstable reservoir inlet to prevent further erosion and improve public safety
- ▶ Relocating the drinking water valve house to accommodate the stability buttress
- ▶ Relocating the dam seepage pump-back station to accommodate the stability buttress
- ▶ Abandoning the two unused penstocks within the dam and installing a control valve on the active penstock within the reservoir
- ▶ Armoring the reservoir side of the dam with ripap and repairing the wave-induced erosion
- ▶ Replacing the drinking water intake structure, installing a new control valve, and clearing accumulated sediments in front of the drinking water intake

Embankment material for the earthen stability buttress and raising the Forebay Dam would be obtained from a borrow area developed on EID property located northwest of the dam.

Additional information regarding these Project elements, including the anticipated work schedule, access and staging areas, and construction equipment required to perform the work, is provided in Chapter 2, "Project Description."

ES.4 SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Sections 3.1 through 3.14 in Chapter 3, "Environmental Setting, Impacts, and Mitigation Measures," of this DEIR evaluate in detail the environmental impacts that would result from implementing the Project and set forth mitigation measures required to avoid or reduce environmental impacts, where feasible. Chapter 5 presents an evaluation of potential cumulative impacts. Table ES-1 (at the end of this summary) lists each of the environmental impacts of the Project. It also identifies the level of significance of each impact before mitigation,

mitigation measures for significant and potentially significant impacts, and the level of significance of each impact after mitigation.

As shown in Table ES-1, implementing the Project could significantly affect several environmental resources and issue areas, but mitigation is included to reduce these impacts to a less-than-significant level, where feasible. Significant and unavoidable impacts are discussed in Chapter 6, “Other CEQA-Required Sections,” of this DEIR.

ES.5 ALTERNATIVES

The State CEQA Guidelines (Section 15126.6) require that an EIR describe a range of reasonable alternatives to the project that could feasibly attain the basic objectives of the project and avoid and/or lessen the significant environmental effects of the project. Chapter 4 of this DEIR provides a comparative analysis between the Project and three alternatives, including the No-Project Alternative, as required under CEQA.

The following four alternative projects were evaluated for this DEIR:

- ▶ Project as proposed by EID
- ▶ No-Project Alternative
- ▶ Dam Retrofit with No Raise of Dam Elevation
- ▶ Dam Retrofit with 3-Foot Dam Raise

The text below briefly summarizes the three alternatives to the Project.

ES.5.1 ALTERNATIVE 1: NO-PROJECT ALTERNATIVE

DSOD and FERC require that the Forebay Dam be structurally strengthened to meet dam safety requirements for the protection of life and property. Implementing the No-Project Alternative would prevent EID from undertaking the Forebay Dam modifications to comply with DSOD and FERC safety requirements. Adoption of this alternative would violate DSOD and FERC dam safety requirements. It would be expected that, to correct public safety risks associated with dam failure, DSOD and FERC would impose further operational restrictions, fines, and potentially decommissioning of the dam, reservoir, penstock, and powerhouse if this alternative were to be implemented. Further, such actions would create substantial constraints on EID’s ability to use its consumptive water supplies. EID is not willing to violate state and federal requirements and jeopardize water supplies for its customers.

Because no physical modifications to the Forebay Dam would be undertaken with this alternative, implementing the No-Project Alternative would not result in physical changes to the environment that would be associated with construction of dam remediation and embankment installation and operation of the Forebay. However, several substantial changes could become necessary if DSOD or FERC mandates restrictions on the operations of the Forebay beyond the current limits to water surface elevation that are in place until the Forebay Dam is modified. These changes could include substantial or complete reduction in reservoir water surface levels, installation of a gravity pipeline bypass around the reservoir footprint to provide water supplies to the EID service area, decreased community water reliability, reduction or elimination of hydroelectric power generation revenue, and high capital costs associated with powerhouse and penstock decommissioning construction activities.

Although DSOD and FERC dam safety requirements would be satisfied, further changes resulting from implementing the No-Project Alternative could eliminate the functional capability of the Forebay. As a result, other EID Project objectives would not be met, and other significant unintended adverse effects would occur to the EID public water supply and utility system.

ES.5.2 ALTERNATIVE 2: DAM RETROFIT WITH NO RAISE OF DAM ELEVATION

Alternative 2 would involve implementing dam modifications to comply with DSOD and FERC dam safety requirements, but the dam crest would not be raised. Although EID found that this alternative would achieve the safety objectives of the Project, implementing this alternative would not achieve the Project's water supply reliability and financial objectives.

Implementing Alternative 2 would require that an earthen stability berm be installed at the toe of the existing dam. Additionally, sediment would need to be removed from the reservoir basin to regain a portion of the storage capacity lost by sedimentation. Approximately 100,000 cubic yards of sediment would be removed to restore lost storage capacity of the Forebay and protect water quality of supplies being delivered for municipal water supply. In addition, EID might need to remove approximately 3,300 cubic yards of sediment each year. Dredging activities would be required to be conducted with the reservoir dewatered for an extended period. The loss of water supply and hydropower generation during the dredging period would adversely affect EID's water supply and revenue generation, as well as the renewable energy supply for California consumers.

Under this alternative, the capacity of the Forebay would continue to be limited because of minimum freeboard requirements. Implementing this alternative would not restore water supply reliability to conditions that existed before restricted water storage limits were mandated by DSOD and FERC. Other elements of this alternative would be similar to those of the Project, including improving the spillway chute, lining and backfilling the inlet canal, abandoning the two unused penstocks, armoring the reservoir side of the dam, and relocating the seepage pump-back station. The construction activities associated with these modifications would be similar to those of the Project.

Only one of EID's three Project objectives would be achieved with implementation of this alternative.

ES.5.3 ALTERNATIVE 3: DAM RETROFIT WITH 3-FOOT DAM RAISE

Implementing Alternative 3 would involve constructing dam modifications to comply with DSOD and FERC dam safety requirements and raising the dam crest 3 feet. In addition, this alternative could include seasonal and/or year-round use of 3- to 5-foot-tall flashboards, subject to DSOD and FERC approval. EID found that this alternative would achieve the safety objectives of the Project but would not achieve the water supply reliability and financial objectives.

Implementing Alternative 3 would require installation of an earthen stability berm at the toe of the existing dam extending up to 3 feet above the existing dam crest. Approximately 100,000 cubic yards of sediment would be removed to restore lost storage capacity of the Forebay. In addition, EID might need to remove approximately 3,300 cubic yards of sediment each year. Dredging activities would be required to be conducted with the reservoir dewatered for an extended period. The loss of water supply and hydropower generation during the dredging

period would adversely affect EID's water supply and revenue generation, as well as the renewable energy supply for California consumers.

Under this alternative, the capacity of the Forebay would restore water supply reliability to preresstriction conditions. Other elements of this alternative would be similar to those of the Project, including improving the spillway chute, lining and backfilling the inlet canal, abandoning the two unused penstocks, armoring the reservoir side of the dam, relocating the seepage pump-back station, and relocating the drinking water valve house. The construction activities associated with these modifications would be similar to those of the Project.

This alternative achieves EID's Project objective for safety. While this alternative would eliminate the current storage restriction required by FERC and DSOD, it does not improve the reliability of the drinking water system and optimize renewable hydroelectric power generation revenue.

ES.5.4 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The State CEQA Guidelines require identification of an environmentally superior alternative (see Section 15126.6[e][2]). If the No-Project Alternative is environmentally superior, CEQA requires identification of the "environmentally superior alternative other than the no project alternative" from among the alternatives evaluated.

Based on the data and analysis presented in this DEIR, the Project is considered the environmentally superior alternative. This conclusion is based on the finding that the Project would achieve all the specified objectives with similar environmental impacts as Alternatives 2 and 3, both of which do not achieve all the specified objectives. The No-Project Alternative is not considered the environmentally superior alternative because implementing that alternative would not achieve any of the Project objectives and would potentially jeopardize EID's water supply and hydroelectric power generation utilities. The disruption of these services could result in secondary impacts on air quality and domestic water supplies through the need to generate alternative energy supplies for the statewide grid (likely natural gas) and decreased reliability and utilization of alternate water supplies for customer and ratepayers typically supplied from the Forebay.

ES.6 KNOWN AREAS OF CONTROVERSY

Section 15123 of the State CEQA Guidelines requires that a summary of an EIR identify areas of controversy known to the lead agency, including issues raised by agencies and the public. There are no known areas of controversy associated with the Project that need to be resolved.

ES.7 EIR PUBLIC REVIEW PROCESS

EID filed a notice of preparation (NOP) of an EIR with the State Clearinghouse and released the NOP publicly on March 13, 2013. During the public comment period for the NOP, various comment letters were received regarding the Project. Comments received addressed the following topics:

- ▶ Emergency access during construction
- ▶ Use of trails and across dam during construction
- ▶ Timing and scheduling of traffic control to avoid impacts with school bus routes
- ▶ Minimizing noise associated with construction at night

- ▶ Consider installing trails as described in the El Dorado Forebay Master Plan
- ▶ Consider enhancing the aesthetics at the inlet by making a water cascade
- ▶ Ensure that riprap will not block access for fishermen when the project is complete
- ▶ Concern that the riprap may have an impact on the aesthetics
- ▶ Limit construction vehicles on U.S. 50 to off-peak times

These issues were considered during the preparation of this DEIR. Where appropriate, they are addressed in the environmental impact analysis presented in Chapter 3.

Table ES-2 Summary of Project Impacts and Mitigation Measures			
Impact	Impact Significance Before Mitigation¹	Mitigation Measure(s)	Impact Significance After Mitigation¹
Section 3.1, “Aesthetic Resources”			
3.1-1: Substantial Adverse Effect on a Scenic Vista	Construction-Related Effect: NI Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	No impact
3.1-2: Substantial Damage to Scenic Resources within a State Scenic Highway	Construction-Related Effect: NI Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	No impact
3.1-3: Adverse Effect on Day or Nighttime Views in the Area Resulting from New Source of Substantial Light or Glare	Construction-Related Effect: LTS Post-Project Operations Related Effect: LTS Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: LTS Cumulative Effects: No considerable contribution to a cumulative effect.
3.1-4: Degradation of the Existing Visual Character or Quality of the Site and Its Surroundings	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
Section 3.2, “Agricultural and Forestry Resources”			
3.2-1: Loss and/or Conversion of Forestland	Construction-Related Effect: S Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No feasible mitigation is available.	Construction-Related Effect: SU Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
Section 3.3, “Air Quality”			
3.3-1: Potential for Conflict with or Obstruction of Implementation of the Applicable Air Quality Plan	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.

Table ES-2 Summary of Project Impacts and Mitigation Measures			
Impact	Impact Significance Before Mitigation¹	Mitigation Measure(s)	Impact Significance After Mitigation¹
3.3-2: Potential for Violation of an Air Quality Standard or Substantial Contribution to an Existing or Projected Air Quality Violation	Construction-Related Effect: PS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.3-2: Reduce Construction-Related Emissions of Fugitive Dust.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.3-3: Cumulatively Considerable Net Increase of a Criteria Pollutant for Which the Project Region is Classified as Nonattainment under a Federal or State Ambient Air Quality Standard	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.3-4: Exposure of Sensitive Receptors to Substantial Pollutant Concentrations	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.3-5: Creation of Objectionable Odors That Would Affect a Substantial Amount of People	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
Section 3.4, "Biological Resources"			
3.4-1: Potential Direct Effects on Wetlands and Riparian Habitat as a Result of Vegetation Removal	Construction-Related Effect: S Post-Project Operations Related Effect: LTS Cumulative Effects: No considerable contribution to a cumulative effect.	3.4-1: Implement Measures to Avoid, Restore, and Compensate for the Loss of Wetlands and Riparian Vegetation.	Construction-Related Effect: LTS Post-Project Operations Related Effect: LTS Cumulative Effects: No considerable contribution to a cumulative effect.
3.4-2: Potential Indirect Effects on Wetlands as a Result of Erosion, Sedimentation, and/or Contamination	Construction-Related Effect: S Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.4-2: Implement Mitigation Measures 3.9-1a and 3.9-1b.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.4-3: Direct Effects from Removal of Terrestrial Vegetation and Removal of Common Terrestrial Wildlife Habitat	Construction-Related Effect: S Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.4-3a: Minimize Impacts on Nesting Birds on the Project Site during Construction Activities. 3.4-3b: Develop Worker Environmental Awareness Program.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.

Table ES-2 Summary of Project Impacts and Mitigation Measures			
Impact	Impact Significance Before Mitigation¹	Mitigation Measure(s)	Impact Significance After Mitigation¹
3.4-4: Potential Direct Effects on Special-Status Plant Species	Construction-Related Effect: S Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.4-4a: Implement Mitigation Measure 3.4-3b, Develop Worker Environmental Awareness Program. 3.4-4b: Conduct Surveys for Pleasant Valley Mariposa Lily and Stebbins' phacelia, and Establish Avoidance Zones.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.4-5: Removal of Habitat, Disturbance, or Direct Mortality of Western Pond Turtle, Special-Status Bats, and Ringtail	Construction-Related Effect: S Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.4-5a: Implement Mitigation Measure 3.4-3b, Develop Worker Environmental Awareness Program. 3.4-5b: Initiate Western Pond Turtle Relocation. 3.4-5c: Conduct Habitat Assessment and Implement Other Protective Measures for Special-Status Bat Species. 3.4-5d: Conduct Preconstruction Surveys for Ringtail in Riparian Zones and Areas of Rocky Outcrops.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.4-6: Fishery Impacts	Construction-Related Effect: S Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.4-6a: Implement Mitigation Measures for Fishery Management at Forebay. 3.4-6b. Implement Mitigation Measures Requiring the Use of Best Management Practices for Erosion/Sedimentation, Management of Hazardous Substances, and Implementation of Hydrology and Water Quality Measures.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
Section 3.5, "Cultural Resources"			
3.5-1: Possible Destruction of or Damage to As-Yet-Undiscovered Archaeological Resources	Construction-Related Effect: PS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.5-1: Cease Work If Cultural Resources Are Encountered during Project-Related Ground-Disturbing Activities, Assess the Significance of the Resource, and Implement Appropriate Avoidance or Treatment Measures.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: LTS
3.5-2: Possible Discovery of Human Remains during Construction	Construction-Related Effect: PS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.5-2: Stop Potentially Damaging Work If Human Remains Are Uncovered during Construction, Assess the Significance of the Find, and Pursue Appropriate Management.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: LTS
Section 3.6, "Geology, Soils, and Seismicity"			
3.6-1: Possible Risks to People and Structures Caused by Surface Fault Rupture	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.

Table ES-2 Summary of Project Impacts and Mitigation Measures			
Impact	Impact Significance Before Mitigation¹	Mitigation Measure(s)	Impact Significance After Mitigation¹
3.6-2: Possible Risks to People and Structures Caused by Strong Seismic Ground Shaking	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.6-3: Seismically Induced Risks to People and Structures Caused by Liquefaction	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.6-4: Seismically Induced Risks to People and Structures Caused by Landslides	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.6-5: Potential for Substantial Soil Erosion or Loss of Topsoil	Construction-Related Effect: S Post-Project Operations Related Effect: LTS Cumulative Effects: No considerable contribution to a cumulative effect.	3.6-5: Prepare and Implement a Storm Water Pollution Prevention Plan and Best Management Practices.	Construction-Related Effect: LTS Post-Project Operations Related Effect: LTS Cumulative Effects: No considerable contribution to a cumulative effect.
3.6-6: Potential Geologic Hazards Related to Construction in Unstable Soils	Construction-Related Effect: PS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
Section 3.7, "Greenhouse Gas Emissions"			
3.7-1: Direct or Indirect Generation of GHG Emissions That May Have a Significant Impact on the Environment	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.7-2: Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing the Emissions of GHGs	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.

**Table ES-2
Summary of Project Impacts and Mitigation Measures**

Impact	Impact Significance Before Mitigation ¹	Mitigation Measure(s)	Impact Significance After Mitigation ¹
Section 3.8, “Hazards and Hazardous Materials”			
3.8-1: Potential Hazards from the Routine Transport, Use, or Disposal of Hazardous Materials or through Possible Accident Conditions Involving the Release of Hazardous Materials into the Environment	Construction-Related Effect: PS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	Mitigation Measure 3.8-1: Reduce Exposure Risk from Lead-Based Paint Exposure.	Construction-Related Effect: LTS Post-Project Operations Related Effect: LTS Cumulative Effects: No considerable contribution to a cumulative effect.
3.8-2: Potential Emission or Handling of Hazardous Materials within 0.25 Mile of a School	Construction-Related Effect: PS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.8-2: Store and Handle Hazardous Materials More Than 0.25 Mile from Pinewood Elementary School Whenever Feasible, and Prepare and Implement an Emergency Response Plan.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.8-3: Potential Interference with Emergency Evacuation Routes and Emergency Vehicle Access during Project Construction and Operation	Construction-Related Effect: PS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.8-3: Implement Mitigation Measure 3.13-2, Prepare and Implement a Traffic Control Plan.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.8-4: Potential to Expose People or Structures to a Significant Risk of Loss, Injury, or Death Involving Wildland Fires	Construction-Related Effect: LTS Post-Project Operations Related Effect: LTS Cumulative Effects: No considerable contribution to a cumulative effect.	3.8-4a: Implement Mitigation Measure 3.13-2, Prepare and Implement a Traffic Control Plan. 3.8-4b: Prepare a Fire Protection and Prevention Plan.	Construction-Related Effect: LTS Post-Project Operations Related Effect: LTS Cumulative Effects: No considerable contribution to a cumulative effect.
Section 3.9, “Hydrology and Water Quality”			
3.9-1: Violate Water Quality Standards or Waste Discharge Requirements	Construction-Related Effect: PS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.9-1a: Implement Water Diversion and Control Plan. 3.9-1b: Implement NPDES General Permit and SWPPP.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.

Table ES-2 Summary of Project Impacts and Mitigation Measures			
Impact	Impact Significance Before Mitigation¹	Mitigation Measure(s)	Impact Significance After Mitigation¹
3.9-2: Substantial Depleting Groundwater Supplies or Interference with Groundwater Recharge Such That There Would Be a Net Deficit in Aquifer Volume or a Lowering of the Local Groundwater Table Level	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.9-3: Substantial Alter the Existing Drainage Pattern of the Site or Area, Including Through the Alteration of the Course of a Stream or River, in a Manner That Would Result in Substantial Erosion or Siltation On- or Off-Site	Construction-Related Effect: PS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.9-3: Implement Mitigation Measure 3.9-1b.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.9-4: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site	Construction-Related Effect: S Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.9-4: Implement Mitigation Measure 3.9-1b.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.9-5: Creating or Contribute Runoff Water That Would Exceed the Capacity of Existing or Planned Storm Water Drainage Systems or Provide Substantial Additional Sources of Polluted Runoff	Construction-Related Effect: PS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.9-5: Implement Mitigation Measures 3.9-1a and 3.9-1b.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.

Table ES-2 Summary of Project Impacts and Mitigation Measures			
Impact	Impact Significance Before Mitigation¹	Mitigation Measure(s)	Impact Significance After Mitigation¹
3.9-6: Otherwise Substantially Degrade Water Quality	Construction-Related Effect: PS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.9-6: Implement Mitigation Measures 3.9-1a and 3.9-1b.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
Section 3.10, “Noise and Vibration”			
3.10-1: Construction Noise Levels Exceeding Jurisdictional Standards	Construction-Related Effect: NI Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: NI Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.10-2: Potential Exposure to Excessive Groundborne Vibration during Construction	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.10-3: Long-Term Increase in Noise Levels during post-Project Operation	Construction-Related Effect: NI Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: NI Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.10-4: Construction Noise Levels Exceeding Ambient Conditions	Construction-Related Effect: S Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.10-4: Implement Measures to Reduce Construction Noise Levels.	Construction-Related Effect: SU Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
Section 3.11, “Public Services”			
3.11-1: Impact on Emergency Access Routes Used by Fire and Police Protection Services.	Construction-Related Effect: PS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.11-1: Implement Mitigation Measure 3.13-2, Prepare and Implement a Traffic Control Plan.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.11-2: Increased Demand for Fire Protection Services	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.

Table ES-2 Summary of Project Impacts and Mitigation Measures			
Impact	Impact Significance Before Mitigation¹	Mitigation Measure(s)	Impact Significance After Mitigation¹
3.11-3: Increased Demand for Police Protection Services	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.11-4: Impact on School Bus Routes.	Construction-Related Effect: PS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.11-4: Implement Mitigation Measure 3.13-2, Prepare and Implement a Traffic Control Plan.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.11-5: Impact on Access to Parks and Recreation Areas	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
Section 3.12, "Recreation"			
3.12-1: Increase in Use of Existing Neighborhood and Regional Parks or Other Recreational Facilities Such That Substantial Physical Deterioration of the Facility Would Occur or Be Accelerated	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.12-2: Potential for Substantial Degradation of Recreation Experiences	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
Section 3.13, "Transportation/Traffic"			
3.13-1: Reduction in LOS for Designated Roads or Highways	Construction-Related Effect: LTS Post-Project Operations Related Effect: LTS Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: LTS Cumulative Effects: No considerable contribution to a cumulative effect.
3.13-2: Increased Traffic Hazards on Local Roadways	Construction-Related Effect: PS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.13-2: Prepare and Implement a Traffic Control Plan.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.

**Table ES-2
Summary of Project Impacts and Mitigation Measures**

Impact	Impact Significance Before Mitigation ¹	Mitigation Measure(s)	Impact Significance After Mitigation ¹
3.13-3: Decreased Performance of Alternative Modes of Transportation	Construction-Related Effect: S Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	3.13-3: Implement Mitigation Measure 3.13-2, Prepare and Implement a Traffic Control Plan.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
Section 3.14, "Utilities and Service Systems"			
3.14-1: Potential to Exceed Wastewater Treatment Requirements of the Applicable Regional Water Quality Control Board	Construction-Related Effect: NI Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: NI Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.14-2: Potential Need for a New Water or Wastewater Treatment Facility, the Construction of Which Could Cause Significant Environmental Effects	Construction-Related Effect: NI Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: NI Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.14-3: Potential Need for New Stormwater Drainage Facility, the Construction of Which Could Cause Significant Environmental Effects	Construction-Related Effect: NI Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: NI Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.14-4: Potential for Insufficient Permitted Landfill Capacity to Accommodate the Project's Solid Waste Disposal Needs	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
3.14-5: Relocation of Utility Service Infrastructure	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.	No mitigation required.	Construction-Related Effect: LTS Post-Project Operations Related Effect: NI Cumulative Effects: No considerable contribution to a cumulative effect.
<p>Notes:</p> <p>¹ NI = no impact, LTS = less than significant, S = significant, SU = significant and unavoidable.</p> <p>Source: Data compiled by AECOM in 2013</p>			

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1 INTRODUCTION

This draft environmental impact report (DEIR) has been prepared on behalf of El Dorado Irrigation District (EID) to evaluate the potential environmental effects of the El Dorado Forebay Dam Modification Project (Project). It has been prepared in accordance with the requirements of the California Environmental Quality Act (CEQA) (Public Resources Code [PRC], Section 21000 et seq.) and the State CEQA Guidelines (Title 14, Section 15000 et seq. of the California Code of Regulations [CCR]).

1.1 PROJECT PURPOSE AND OBJECTIVES

The Project is designed to meet the following objectives:

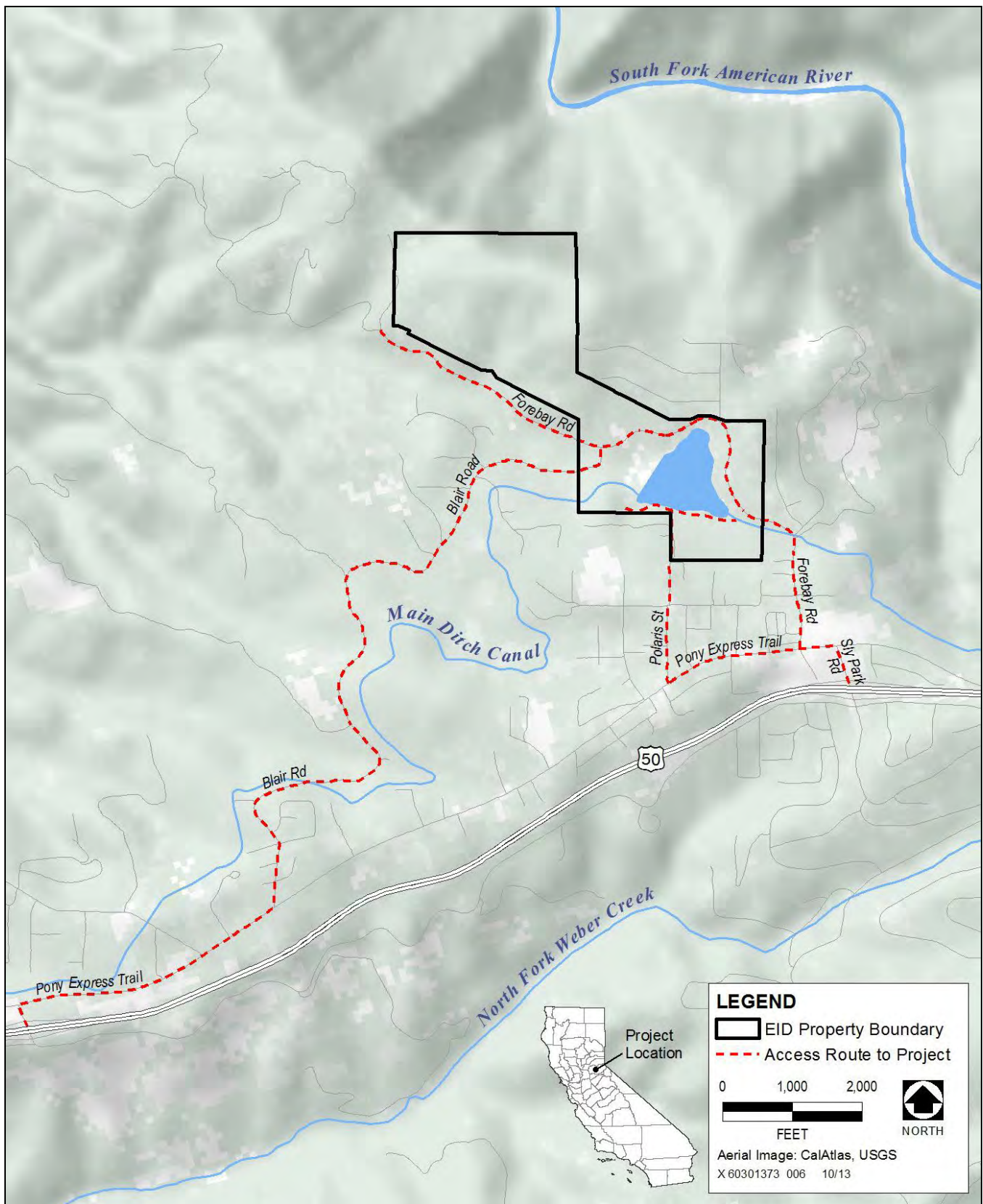
- ▶ Protect public safety by protecting residents, life, and property below the dam
- ▶ Comply with dam safety requirements of the California Department of Water Resources' Division of Safety of Dams (DSOD) and the Federal Energy Regulatory Commission (FERC)
- ▶ Regain and optimize full reservoir operational use to improve the reliability of the drinking water system and optimize renewable hydroelectric power generation revenue

DSOD and FERC have ordered EID to restrict El Dorado Forebay (Forebay) below the normal operational level to protect residents and property below El Dorado Forebay Dam because deficiencies exist in the dam's stability and freeboard (DSOD 2009; FERC 2009). The Project would increase stability and provide sufficient freeboard (i.e., space between the maximum water level and top of the dam) to relieve the regulatory restriction on reservoir operating levels and meet DSOD's and FERC's dam safety requirements, thereby protecting public safety. The Project would also effectively recover reservoir capacity that has been lost because sediments have accumulated in the reservoir since its construction.

In addition, the Project would improve EID's ability to effectively manage water distribution for both drinking water supply and generation of renewable hydroelectric power. The Project would not affect or increase EID's diversion capacity, canal conveyance capacity, water rights, or hydropower generation capacity. The modified Forebay would continue to serve water for drinking water and hydroelectric demands with a maximum operating storage capacity of approximately 554 acre-feet (af) as compared to the existing storage capacity of approximately 314 af. This capacity does not reflect the current operational restriction imposed by DSOD and FERC, which limits storage to approximately 300 af.

1.2 PROJECT LOCATION

The Project is located in El Dorado County, California, on the north side of U.S. Highway 50 (U.S. 50) near Pollock Pines, on the Pollock Pines U.S. Geological Survey Quadrangle map, Sections 25 and 30, Township 11 North, Ranges 12E and 13E (Exhibit 1-1). The Project site is located on land owned by either EID or private parties; no construction, staging, or access would occur on or through federal lands. Portions of the Project site are within the boundary of FERC Project No. 184. The total Project site is approximately 158 acres.



Source: EID 2013

Exhibit 1-1

Project Vicinity Map

1.3 SCOPE AND FOCUS OF THE EIR

To preliminarily determine which impacts may be potentially significant, EID prepared and filed a notice of preparation (NOP) of an environmental impact report (EIR) with the State Clearinghouse and various state and federal responsible agencies and interested parties. The NOP was released public comment on March 13, 2013. A public scoping meeting was also held on April 1, 2013. The issues addressed in this draft EIR (DEIR) were established based on reviews of the Project, preliminary analysis in the initial study (IS), input from public agencies, and verbal and written comments received during the NOP review period, including those received during the public scoping meeting (Appendix A).

The IS concluded that several environmental resource topics would not be adversely affected if the Project were implemented: land use and planning, mineral resources, and population and housing. Based on this prior analysis and conclusion, these resource topics are not considered further in this document. The IS also concluded that recreation resources would not be adversely affected if the Project were implemented; however, based on additional information received during the IS/NOP public scoping period, the potential impacts on recreation resources is analyzed further in this document.

Therefore, this DEIR presents a discussion and assessment of the following environmental resource topics:

- ▶ Aesthetics
- ▶ Agricultural and forestry resources
- ▶ Air quality
- ▶ Biological resources
- ▶ Cultural resources
- ▶ Geology, soils, and seismicity
- ▶ Greenhouse gas emissions
- ▶ Hazards and hazardous materials
- ▶ Hydrology and water quality
- ▶ Noise
- ▶ Public services
- ▶ Recreation
- ▶ Transportation/traffic
- ▶ Utilities and service systems

The DEIR also analyzes the potential cumulative impacts of the Project in conjunction with other past, present, and reasonably foreseeable related projects, as relevant to each of the environmental resource topics. Furthermore, the DEIR evaluates the potential for the Project to induce additional growth on adjacent lands and in the region.

1.4 PURPOSE OF THIS EIR

CEQA requires that state and local government agencies consider the environmental effects of projects over which they have discretionary authority before taking action on those projects. As the lead agency under CEQA, EID has determined that implementing the Project may have significant effects on the environment and has directed that this DEIR analyze these potentially significant effects.

1.4.1 INTENDED USES OF THE EIR

The State CEQA Guidelines state that an EIR is an informational document used to inform public agency decision makers and the general public of the significant environmental effects of a project; identify possible ways to mitigate or avoid the significant effects; and describe a range of reasonable alternatives to the project that could feasibly attain most of the basic objectives of the project, while substantially lessening or avoiding any of the significant environmental impacts. Public agencies are required to consider the information presented in the EIR when determining whether to approve a project.

The State CEQA Guidelines require that each public agency avoid or mitigate to less-than-significant levels, wherever feasible, the significant environmental effects of projects it approves or implements. A project can still be approved if the project would result in significant and unavoidable environmental impacts that cannot be feasibly mitigated to less-than-significant levels. However, the lead agency's decision makers must issue a "statement of overriding considerations" explaining in writing the specific economic, social, or other considerations that they believe, based on substantial evidence, make those significant effects acceptable.

The State CEQA Guidelines identify several types of EIRs, each applicable to different project circumstances. CEQA also allows for variations in EIRs and tailoring of documents for different situations and intended uses. Lead agencies may use variations consistent with the State CEQA Guidelines to address a variety of project circumstances (State CEQA Guidelines, Section 15160). This EIR is a project EIR, which examines the environmental impacts of a specific development project, and the analysis focuses primarily on the changes in the environment that would result from implementing the project. That type of EIR examines all phases of the project: planning, construction, and operation (State CEQA Guidelines, Section 15161).

1.4.2 AGENCY ROLES AND RESPONSIBILITIES

LEAD AGENCY

As the lead agency under CEQA, EID has the principal responsibility for implementing the Project, which involves Project planning, design, and construction.

TRUSTEE AND RESPONSIBLE AGENCIES

A CEQA trustee agency is a state agency that has legal jurisdiction over natural resources that are held in trust for the people of the State of California. Of the various state agencies with responsibilities over natural resources, only the California Department of Fish and Wildlife (CDFW) has jurisdiction over fish and wildlife resources on the Project site.

A CEQA responsible agency is a state agency, board, or commission or any local or regional agency other than the lead agency that has a legal responsibility for reviewing, carrying out, or approving aspects of a project. Responsible agencies must actively participate in the lead agency's CEQA process and review its CEQA document to ensure that CEQA requirements have been met as part of their approval of project elements for which they have authority so that the CEQA document may be used by the responsible agency during project approval.

Federal agencies are not responsible agencies under CEQA; federal agencies are required to comply with the National Environmental Policy Act (NEPA) in their decision making. However, they often use CEQA documents as the basis for their NEPA analyses.

The following agencies have been identified as either trustee or responsible agencies that have a statutory or regulatory interest in the Project:

Regional and Local Agencies

- ▶ *El Dorado County Air Quality Management District*: Review of effects on air quality; authority to construct and permit to operate
- ▶ *El Dorado County Department of Transportation*: Encroachment permit
- ▶ *El Dorado County Fire Protection District*: Burn Permit

State Agencies

- ▶ *California Department of Fish and Wildlife (Region 2)*: Compliance with the California Endangered Species Act and Section 1602 or 1611 of the California Fish and Game Code (streambed alteration agreement)
- ▶ *California Department of Forestry and Fire Protection*: Compliance with the California Forest Practice Act and rules for the harvest, protection, and management of commercial timber resources and approval of timber harvest plans and timberland conversion permits
- ▶ *Central Valley Regional Water Quality Control Board (Region 5)*: National Pollutant Discharge Elimination System (NPDES) permitting pursuant to Section 402 of the Clean Water Act (CWA), including NPDES waste discharge permit, NPDES construction stormwater permit, and general order for dewatering
- ▶ *State Water Resources Control Board*: CWA Section 401 water quality certification when permitting under CWA Section 404 or the Federal Power Act is required
- ▶ *California State Office of Historic Preservation*: Compliance with Section 106 of the National Historic Preservation Act for projects with federal involvement, such as when permitting under CWA Section 404 is required

FEDERAL AGENCIES WITH POTENTIAL PERMITTING/APPROVAL AUTHORITY

- ▶ *Federal Energy Regulatory Commission*: Licensing authority of hydroelectric facilities under the Federal Power Act
- ▶ *U.S. Fish and Wildlife Service*: Federal Endangered Species Act consultation, Fish and Wildlife Coordination Act, and incidental take authorization
- ▶ *U.S. Army Corps of Engineers*: Permitting under CWA Section 404

OTHER PERMITS AND APPROVALS

The Project is exempt from provisions of the California Surface Mining and Reclamation Act (SMARA) based on Public Resources Code Chapter 9, Division 2, Section 2714 (b), which states that SMARA does not apply to the following activities:

- (b) Onsite excavation and onsite earthmoving activities that are an integral and necessary part of a construction project and that are undertaken to prepare a site for construction of structures, landscaping, or other land improvements associated with those structures, including the related excavation, grading, compaction, or the creation of fills, road cuts, and embankments, whether or not surplus materials are exported from the site, subject to all of the following conditions:
 - (1) All required permits for the construction, landscaping, or related land improvements have been approved by a public agency in accordance with applicable provisions of state law and locally adopted plans and ordinances, including, but not limited to, Division 13 (commencing with Section 21000).
 - (2) The lead agency's approval of the construction project included consideration of the onsite excavation and onsite earthmoving activities pursuant to Division 13 (commencing with Section 21000).
 - (3) The approved construction project is consistent with the general plan or zoning of the site.
 - (4) Surplus materials shall not be exported from the site unless and until actual construction work has commenced and shall cease if it is determined that construction activities have terminated, have been indefinitely suspended, or are no longer being actively pursued.

Additionally, the Project would be consistent with SMARA Public Resources Code Chapter 9, Division 2, Section 2712, which states that the intent of SMARA is to assure that:

- (a) Adverse environmental effects are prevented or minimized and that mined lands are reclaimed to a usable condition which is readily adaptable for alternative land uses.
- (b) The production and conservation of minerals are encouraged, while giving consideration to values relating to recreation, watershed, wildlife, range and forage, and aesthetic enjoyment.
- (c) Residual hazards to the public health and safety are eliminated.

The Project will be reviewed and considered in a manner consistent with these requirements and, therefore, would not be subject to further review or be subject to additional requirements of SMARA.

1.5 PUBLIC REVIEW PROCESS FOR THE EIR

On March 13, 2013, EID issued an NOP for this EIR and filed it with the State Clearinghouse. The 30-day public comment period on the NOP ended on April 11, 2013. A scoping meeting was held on April 1, 2013, at the Pollock Pines–Camino Community Center located at 2675 Sanders Drive, Pollock Pines, California, to solicit input on the scope of the EIR from public agencies and interested parties. The NOP and comments received on the NOP/IS are included in this document as Appendix A.

In accordance with CEQA requirements, this DEIR is being distributed for public and agency review and comment for a 60-day period, which ends at 5 p.m. on December 3, 2013. This document is available for review by the public on the EID Web site (<http://www.eid.org>) and during normal business hours at the following locations:

- ▶ Placerville Main Public Library, 345 Fair Lane, Placerville
- ▶ Pollock Pines Public Library, 6210 Pony Express Trail, Pollock Pines
- ▶ EID Customer Service Building, 2890 Mosquito Road, Placerville

Comments should be directed to Brian Deason, Hydroelectric Compliance Analyst, El Dorado Irrigation District at 2890 Mosquito Road, Placerville, CA 95667, or bdeason@eid.org.

All comments should include the commenter's full name and address. If comments are provided via e-mail, please include the Project title in the subject line and include the commenter's U.S. Postal Service mailing address.

A public hearing on the DEIR will be held on Wednesday, October 30, 2013, starting at 6:00 p.m. in the Pollock Pines–Camino Community Center, located at 2675 Sanders Drive, Pollock Pines, California, to receive oral testimony, if desired. Comments provided orally or in writing will be given the same consideration.

After the public review period closes, a second document containing comments received on the DEIR and responses to significant environmental points raised in those comments will be prepared and published. Together, the DEIR and responses to comments will constitute the final EIR.

At the time of Project approval, EID would also adopt a mitigation monitoring and reporting program (MMRP) for measures adopted and incorporated into the Project to mitigate or avoid significant effects on the environment. The MMRP would be designed to ensure compliance during implementation of the Project. After Project approval, a notice of determination documenting the decision would be filed with the State Clearinghouse.

1.6 ORGANIZATION OF THE DEIR

This DEIR is organized into the following chapters so that the reader can easily obtain information about the Project and its specific environmental issues:

- ▶ **“Executive Summary”** provides an overview of the findings and conclusions of the DEIR.
- ▶ **Chapter 1, “Introduction,”** discusses the Project purpose and objectives, describes the Project location, discusses the Project background, provides an overview of the CEQA and EIR review processes, outlines the scope and intended uses of this document, identifies agency roles and responsibilities, and summarizes the public scoping process.
- ▶ **Chapter 2, “Project Description,”** provides an overview of the Project.
- ▶ **Chapter 3, “Environmental Setting, Impacts, and Mitigation Measures,”** describes, by environmental resource area, the existing regulatory background and environmental setting; broadly discusses the potential environmental impacts associated with the improvements described in Chapter 2, “Project Description”; and

identifies feasible mitigation measures to avoid or substantially lessen significant or potentially significant environmental effects.

- ▶ **Chapter 4, “Project Alternatives,”** describes alternatives to the Project and analyzes their significant and potentially significant environmental effects in comparison to the environmental effects of the Project.
- ▶ **Chapter 5, “Cumulative Impacts,”** discusses effect of the Project combined with other past, present, and foreseeably future projects that would have a similar impact.
- ▶ **Chapter 6, “Other CEQA-Required Sections,”** discusses the Project’s growth-inducing impacts, significant irreversible environmental changes, and significant and unavoidable impacts.
- ▶ **Chapter 7, “Report Preparation,”** identifies the preparers and reviewers of this DEIR.
- ▶ **Chapter 8, “References,”** contains a comprehensive listing of the sources of information used in the preparation of the DEIR, including agencies and individuals consulted.
- ▶ **Appendix A, “Notice of Preparation, Initial Study, and Comments Received on the Notice of Preparation and Initial Study,”** contains the NOP to prepare an EIR, the IS, and the comments received on the NOP and IS during the review period.
- ▶ **Appendix B, “Aesthetic Resources Technical Report: El Dorado Forebay Dam Modification Project,”** contains more supporting detail for the discussion of aesthetics presented in Section 3.1 of this DEIR.
- ▶ **Appendix C, “Air Quality and Greenhouse Gas Technical Report: El Dorado Forebay Dam Modification Project,”** contains more supporting detail for the discussion of air quality and greenhouse gas emissions presented in Sections 3.3 and 3.7 of this DEIR.
- ▶ **Appendix D, “California Red-Legged Frog (*Rana draytonii*) Habitat Assessment for the El Dorado Forebay Dam Modification Project (El Dorado County, California),”** presents the results of a habitat assessment conducted for the California red-legged frog in the project area.
- ▶ **Appendix E, “Special-Status Species with Potential to Occur on Project Site,”** identifies all the species that could occur within 5 miles of the Project site.
- ▶ **Appendix F, “Noise and Vibration Technical Report: El Dorado Forebay Dam Modification Project,”** contains more supporting detail for the discussion of noise and vibration presented in Section 3.10 of this DEIR.
- ▶ **Appendix G, “Public Services and Transportation/Traffic Technical Report: El Dorado Forebay Dam Modification Project,”** contains more supporting detail for the discussion of public services and transportation/traffic presented in Sections 3.11 and 3.13 of this DEIR.
- ▶ **Appendix H, “El Dorado Forebay Dam Modification Project Mitigation Monitoring and Reporting Program (MMRP),”** contains a list of the mitigation measures identified in this DEIR to be implemented during Project implementation.

2 PROJECT DESCRIPTION

2.1 INTRODUCTION

The El Dorado Forebay is an offstream reservoir impoundment, created by an earthen embankment dam, in El Dorado County, California, near Pollock Pines on the north side of U.S. 50. The Forebay is a component of the El Dorado Hydroelectric Project, which is owned and operated by EID and licensed by FERC as FERC Project No. 184. EID operates Project No. 184 facilities to provide water for drinking water supply and renewable hydroelectric power generation. A portion of the water delivered to Forebay is conveyed through the Main Ditch to a water treatment plant for distribution in EID's drinking water system. The remaining portion of water delivered to Forebay is conveyed to the El Dorado Powerhouse for renewable hydroelectric power generation.

The El Dorado Forebay Dam Modification Project is required to satisfy specific regulatory mandates issued, to EID, by both the California Department of Water Resources Division of Safety of Dams (DSOD) and FERC to meet dam safety standards. Additionally, the Project would improve the reliability of the drinking water supply and minimize impacts on EID ratepayers through optimized power generation revenue. The Project involves constructing an earthen stability buttress on the dry side of the Forebay Dam, raising the Forebay Dam 10 vertical feet, and remediating associated facilities.

2.2 PROJECT OBJECTIVES

The Project is designed to meet the following objectives:

- ▶ Protect public safety by protecting residents, life, and property below the dam
- ▶ Comply with DSOD and FERC dam safety requirements
- ▶ Regain and optimize full reservoir operational use to improve the reliability of the drinking water system and optimize renewable hydroelectric power generation revenue

DSOD and FERC have ordered EID to restrict the reservoir water surface elevation to below the normal operational level as an interim measure to protect public safety until the dam is remediated (DSOD 2009; FERC 2009). The Project would increase dam stability and provide sufficient freeboard to relieve the regulatory reservoir level operating restriction and meet DSOD and FERC dam safety requirements, thereby protecting public safety. The Project would also effectively recover reservoir capacity lost because of sediments accumulated in the reservoir since the reservoir construction.

Additionally, the Project would improve EID's ability to effectively manage water distribution for both drinking water supply and renewable hydroelectric power generation. The Project would not affect or increase EID's diversion capacity, canal conveyance capacity, water rights, or hydropower generation capacity. The modified Forebay would continue to serve water for drinking water and hydroelectric demands with a normal maximum operating storage capacity of approximately 554 acre-feet (af) as compared to the existing storage capacity of approximately 381 af. This capacity does not reflect the current operational restriction imposed by DSOD and FERC, which limits storage to approximately 314 af.

2.3 PROJECT LOCATION

The Project site is located in El Dorado County, California, near Pollock Pines, on the north side of U.S. 50, in the Pollock Pines U.S. Geological Survey quadrangle map, Sections 25 and 30, Township 11 North, Range 12 East, and Range 13 East (Exhibit 1-1). The Project site is on land owned by either EID or private parties; no construction, staging, or access would occur on or through federal lands. Portions of the Project site are within the existing FERC Project No. 184 boundary.

The total Project footprint is approximately 158 acres. Of this total area, the primary and secondary borrow areas would occupy up to approximately 78 acres; the construction areas around the reservoir, including staging areas, would occupy up to approximately 54 acres; and the existing Forebay reservoir and new inundation area would occupy approximately 26 acres.

The total acreage of the land owned by EID in the Project area is approximately 232 acres. The EID-owned lands located outside the Project footprint would not be altered with implementation of the Project and would remain in their current condition.

2.4 DESCRIPTION OF PROJECT ELEMENTS

The Project is composed of the following primary elements:

- ▶ Constructing an earthen stability buttress and raising the Forebay Dam to meet DSOD and FERC dam safety stability/freeboard requirements and improve emergency water storage and hydroelectric generation efficiency
- ▶ Remediating the emergency spillway structure and outfall and stabilizing the unstable slope along the spillway channel to prevent continued erosion
- ▶ Repairing the existing unstable reservoir inlet to prevent further erosion and improve public safety
- ▶ Relocating the drinking water valve house to accommodate the stability buttress
- ▶ Relocating the dam seepage pump-back station to accommodate the stability buttress
- ▶ Abandoning the two unused penstocks within the dam and installing a control valve on the active penstock within the reservoir
- ▶ Armoring the reservoir side of the dam with riprap and repairing the wave-induced erosion
- ▶ Replacing the drinking water intake structure, installing a new control valve, and clearing accumulated sediments in front of the drinking water intake

Embankment material for the earthen stability buttress and raising the Forebay Dam would be obtained from a borrow area developed on EID property located northwest of the dam. Activities at the borrow area would include:

- ▶ Preparing the borrow site for materials excavation and removal by clearing the timber and vegetation

- ▶ Excavating and grubbing suitable soil
- ▶ Revegetating disturbed areas to control surface erosion and runoff

Additional information regarding these Project elements is provided below, and the general locations for these facility-related improvements are depicted in Exhibit 2-1.

2.4.1 CONSTRUCT EARTHEN STABILITY BUTTRESS

An earthen stability buttress would be constructed on the dry side of the Forebay Dam to meet regulatory dam safety requirements for the overall stability/freeboard of the dam. The construction of the stability buttress includes excavation to a competent foundation and placement of the buttress at the base of the dam. Preparation and treatment of the foundation under the buttress and appurtenant structures would be needed and would include the following:

- ▶ A groundwater dewatering system to maintain unsaturated subsurface conditions within the excavation limits
- ▶ An earthfill stockpile maintained near the dam during the toe excavation for dam safety purposes (FERC requires this measure to facilitate immediate remedial measures if dam instability is detected during the foundation excavation process and immediate backfilling is required)
- ▶ Clearing topsoil and vegetation prior to excavation

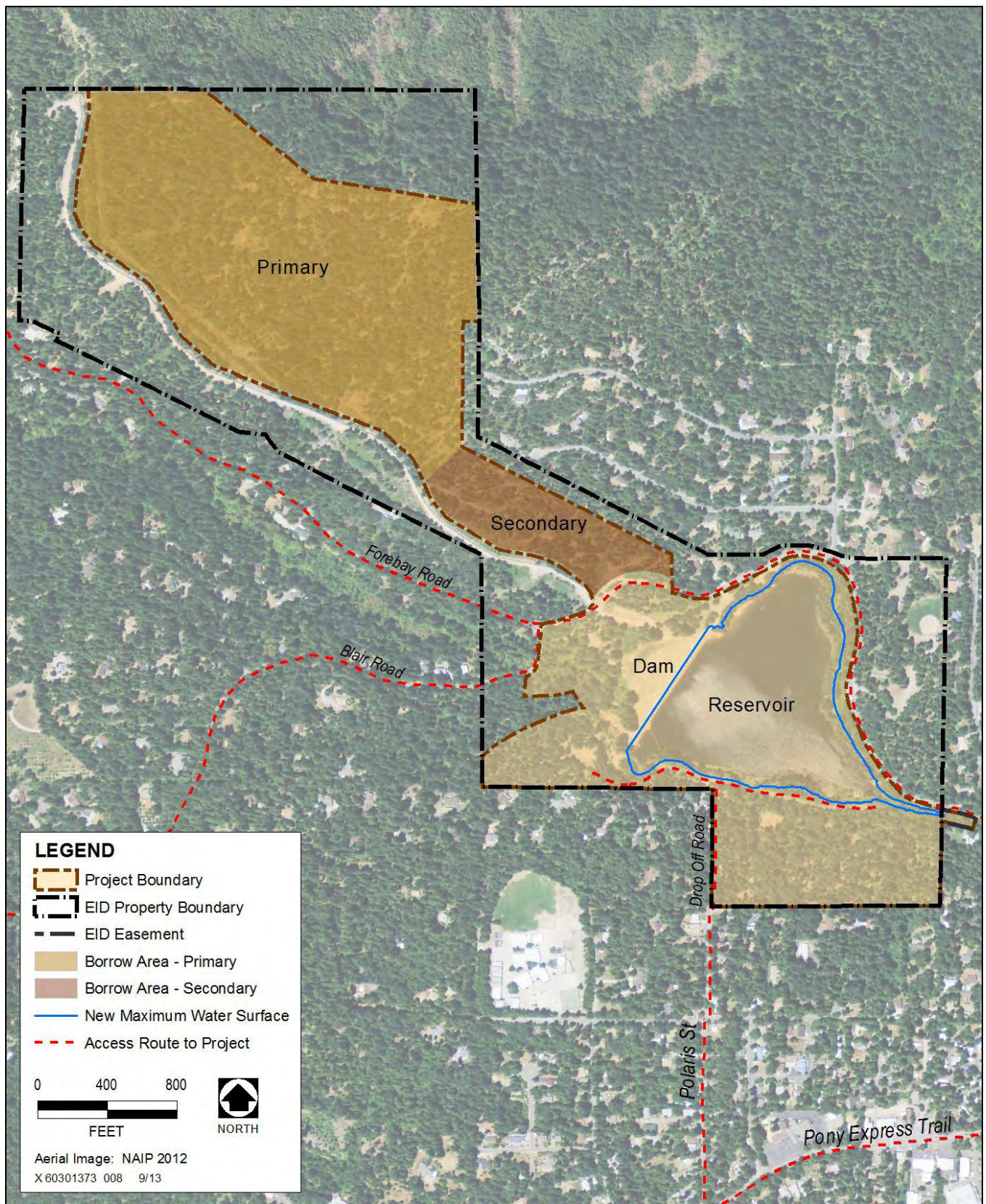
The buttress would then be constructed by placing earthfill and drain rock in thin layers and maintaining proper moisture levels and compaction. This process would be continued until the buttress is complete. The modified dam would be approximately 102 feet high and 940 feet long with a crest width of 15 feet. A conceptual drawing of the cross-section of the existing and proposed dam embankment is provided in Exhibit 2-2.

The buttress would include an internal drainage system to intercept and collect potential reservoir seepage flowing through the dam and abutments to reduce the potential for saturation of the new stability buttress. Seepage would be routed through a system of pipe underdrains to a replacement seepage pump-back station, where the water would be conveyed back into the Main Ditch, consistent with existing design. As part of the dam modifications, the existing dam safety monitoring equipment, including survey monuments, piezometers, and reservoir seepage monitoring weirs, would be removed and replaced with a new network.

2.4.2 REMEDIATE SPILLWAY STRUCTURE

Portions of the spillway would be modified along its current alignment as a U-shaped reinforced-concrete structure to accommodate the raised dam embankment. The control section of the spillway would be raised by 10 feet with a new weir wall establishing the sill. A new invert slab, higher side walls, pedestrian walkway, and flashboards would be provided. The existing log boom would be expanded and/or replaced with a new log boom sized for the modified reservoir.

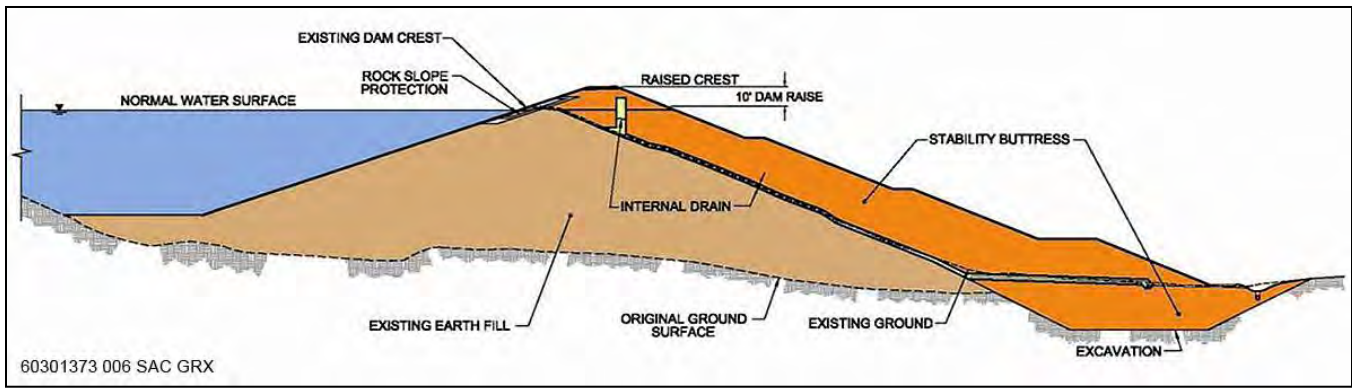
The modified control section of the spillway would join the existing 11-foot-wide, 230-foot-long, gunite-lined spillway channel. The left (west) slope above the gunite lining is eroding into the spillway. The portion of the slope excavated in rock would be scaled and protected with wire mesh anchored to the slope. The portion of the slope excavated in soil would be trimmed back to stabilize the slope and reduce erosion into the spillway.



Source: EID 2013, adapted by AECOM in 2013

Exhibit 2-1

Major Project Elements



Source: EID 2013

Exhibit 2-2

Profile View of Forebay Dam Modifications

The existing spillway channel transitions into a 6-foot-diameter steel pipe that conveys spill water over the Main Ditch. The pipe connects to a reinforced-concrete inclined apron and to the hillside below the Main Ditch. An erosion gully that has formed in the hillside below would be rock lined to reduce future erosion potential.

2.4.3 REPAIR RESERVOIR INLET

The reservoir inlet is a 600-foot-long unlined earthen canal serving as the transition of the El Dorado Canal to the Forebay originating from a tunnel under Forebay Road. The vertical canal slopes are unstable along their entire length. These conditions pose public safety concerns and are a source of sediment to the reservoir.

To stabilize this canal reach, the existing tunnel under Forebay Road would be extended to the reservoir by constructing a reinforced-concrete conduit that would be backfilled above the conduit to mitigate the steep, unstable slopes. At the transition of the conduit to the reservoir, a concrete apron would be installed, and the side slopes and base would be flattened and lined with riprap to reduce the potential for erosion. A portion of this work would occur within an EID easement on private property.

2.4.4 RELOCATE DRINKING WATER VALVE HOUSE

The existing valve house is located within the footprint of the new stability buttress and would need to be relocated. The existing 36-inch pipe through the dam would be extended approximately 65 feet along the alignment of the Main Ditch to position the new valve house outside of the footprint of the modified dam. The portion of new pipe under the buttress would be placed on rock and encased in concrete. The control system in the new valve house would be replaced and would maintain its current functions of transmitting operational data through radiotelemetry to EID's control system. The extended conduit would include an electronic flow meter, which would replace the existing flow weir in the Main Ditch. The flow weir and measuring structure would be removed.

2.4.5 RELOCATE DAM SEEPAGE PUMP-BACK STATION

The existing seepage pump-back station is within the footprint of the stability buttress and would need to be relocated. The existing house, piping and weirs would be removed. The new pump-back station would consist of a concrete wet well and vertical turbine pump enclosed in a new pump house. A pipe system would route seepage

from the new embankment filter/drain and existing clay tile drain to the wet well, where it would be pumped to the Main Ditch consistent with existing design.

2.4.6 ABANDON UNUSED PENSTOCKS AND INSTALL CONTROL VALVE ON ACTIVE PENSTOCK

The existing Forebay Dam contains three 60-inch penstocks within its embankment. Two of the three penstocks are unused and terminate in a wooden vault under the dam. These two penstocks would be backfilled with concrete for proper abandonment, and the existing wooden vault would be removed.

The concrete encasement of the active penstock would be extended to the base of the new buttress. A slide gate with a submersible hydraulic operator would be installed at the penstock intake structure so that the penstock through the dam could be isolated from the reservoir. To facilitate installation of the valve located on the penstock intake near the bottom of the reservoir, it would be necessary to completely dewater the reservoir. The reservoir would remain in a dewatered state throughout the normal maintenance outage from October through December. Accumulated sediments around the penstock intake structure may also need to be removed depending on conditions discovered upon dewatering. The portion of the penstock between the existing dam and the existing penstock control valve would be exposed and encased in concrete. The penstock section within the dam would then be inspected on its interior and exposed exterior sections and repaired as necessary.

2.4.7 ARMOR RESERVOIR SIDE OF DAM

Wave action within the reservoir has created an oversteepened slope just above the normal reservoir water surface and a flatter beach just below the water level. As part of the dam modifications, the eroded slope would be reconstructed to its original inclination, and a riprap layer would be installed to prevent erosion of the dam within the new normal reservoir fluctuation zone.

2.4.8 REPLACE WATER INTAKE STRUCTURE

The existing water intake structure would need to be replaced with a taller structure of an adequate strength to withstand the loading required by the new reservoir valve. The existing structure would be replaced with a steel structure that would be composed of a walkway, maintenance deck, valve operator platform, trash rack, and control valve. The manually operated slide gate would be installed at the intake structure so that the drinking water conduit through the dam could be isolated from the reservoir. Accumulated sediments in front of the drinking water intake structure within the reservoir affect water quality and limit operability of the intake at lower reservoir levels within the range of allowable operations. A portion of the accumulated sediments near the intake would be removed while the reservoir level is lowered during construction to improve water quality and operational reliability.

2.5 CONSTRUCTION ACTIVITIES AND SCHEDULE

The Project is under a compliance deadline from DSOD and FERC to begin construction in 2015 and be completed by 2016. To meet the requirements of EID's water and power operations, it is anticipated that the Project would be implemented in two construction seasons, starting in the spring/summer of the first season in 2015 and ending in late fall/early winter of the second season in 2016.

The division of construction activities between the two seasons is largely dependent on reservoir water supply and power operations. Activities that require a lower reservoir level and no flow in the inlet canal would need to be constructed during the annual fall maintenance period, typically conducted from October through mid-December. Activities that require no flow through the drinking water intake and pipe would need to be constructed during the maintenance shutdown and winter low water demand period (typically from October through February) so that water customers could continue to receive uninterrupted water service from other EID sources.

Construction activities would normally occur 7 days per week from 7 a.m. until one-half hour after sunset. Work through the night could be required on a limited basis, including during periods of reservoir drawdown and inlet canal shutdown. Based on the anticipated construction phasing, up to 50 construction workers may be on-site.

2.5.1 ANTICIPATED 2015 ACTIVITIES

During the maintenance shutdown, the inlet canal would not be conveying water to the reservoir, there would not be flow through the power and drinking water conveyances, and the reservoir would be lowered sufficiently to access the work areas within the reservoir. The following activities would be conducted during this maintenance shutdown time period:

- ▶ Repairing the existing unstable reservoir inlet canal
- ▶ Removing trees located within the new high-water mark of the reservoir
- ▶ Abandoning the two unused penstocks within the dam and installing a control valve on the active penstock
- ▶ Armoring a portion of the reservoir side of the dam to repair and prevent wave-induced erosion
- ▶ Replacing the water intake structure, installing a new control valve, and clearing accumulated sediments in front of the drinking water intake
- ▶ Work may continue into the winter and early spring of the second season with domestic water served from other EID supplies

In addition, first-season activities would include initiating dry side dam embankment construction. Embankment construction activities during the first season would begin before the fall shutdown and would continue until winter weather sets in. The first-season embankment construction activities would include:

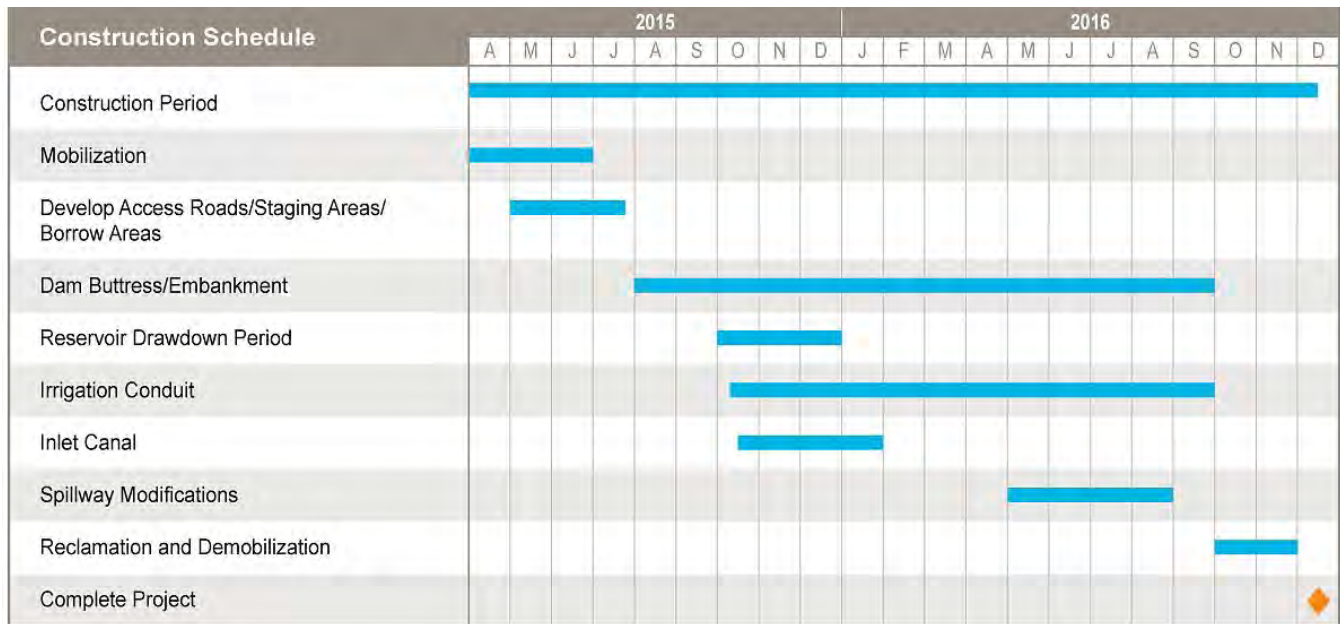
- ▶ Borrow area development
- ▶ Access road development and Forebay Road penstock crossing temporary shoring, if needed
- ▶ Foundation dewatering
- ▶ Clearing, grubbing, and stripping the stability buttress footprint, and foundation excavation
- ▶ Backfill of stability buttress excavation
- ▶ Installation of drainage manifold, weirs, and seepage pump-back station
- ▶ Embankment construction, the extent of which would be based on late-season weather conditions.

2.5.2 ANTICIPATED 2016 ACTIVITIES

The remaining construction activities would likely be conducted during the second construction season, with the reservoir, including power and drinking water conveyance facilities, remaining in operation. These activities would include:

- ▶ Completing the drinking water intake structure
- ▶ Constructing the new spillway intake structure and installing the pedestrian bridge
- ▶ Repairing the spillway channel slope and constructing the spillway outlet slope protection
- ▶ Completing embankment construction, including embankment and foundation drainage system
- ▶ Armoring the remaining portion of the reservoir side of the dam to repair and prevent wave-induced erosion

It should be noted that some of the activities might be undertaken during the first season if sufficient construction time is available in the first season and weather permits. Exhibit 2-3 presents an anticipated schedule of activities over the 2-year construction period.



60301373 007 SAC GRX

Source: Data provided by EID in 2013, adapted by AECOM in 2013

Exhibit 2-3

Project Construction Schedule

2.6 FOREBAY OPERATIONS

The El Dorado Forebay is an offstream reservoir supplied directly from the El Dorado Canal. The Forebay reservoir fluctuates to meet variable hydroelectric power and water delivery demands. The current FERC license maximum reservoir storage level is 3,801.6 feet; however, the current reservoir restriction imposed by FERC/DSOD holds the reservoir to 3,797.0 feet as an interim measure to maintain public safety until the dam is stabilized. The lowest permissible reservoir level to maintain power operations only is 3,767 feet. The lowest operational reservoir level permitted to allow drinking water and hydroelectric power production is approximately 3,791.3 feet, which constitutes the normal reservoir minimum.

Following implementation of the Project, Forebay reservoir would still fluctuate to meet variable hydroelectric power and drinking water delivery demands. The lowest reservoir level permitted to maintain these operations would remain unchanged at 3,791.3 feet. However, the FERC/DSOD reservoir restriction would be lifted and the licensed maximum reservoir level would increase to 3,807.0 feet.

2.7 CONSTRUCTION EQUIPMENT

Contractor equipment could include a construction office and equipment trailers, warehousing and equipment maintenance facilities, and fuel pumps and fuel storage tanks. Mobile construction equipment used for the Project would depend on the selected contractor's planned operations, but might include the following typical equipment:

- ▶ Excavators
- ▶ Scrapers
- ▶ Bulldozers
- ▶ Graders
- ▶ Rollers
- ▶ Compactors
- ▶ Conveyors
- ▶ Water trucks
- ▶ Highway trucks and logging trucks
- ▶ Off-road hauling trucks
- ▶ Concrete delivery trucks
- ▶ Vehicle maintenance truck
- ▶ Front-end loaders
- ▶ Cranes
- ▶ Pickup trucks
- ▶ Drill rigs
- ▶ Utility equipment to install power lines
- ▶ Air compressors
- ▶ Welding equipment
- ▶ Pumps and piping
- ▶ Generators
- ▶ Backup lighting systems
- ▶ Communications and safety equipment
- ▶ Timber-harvesting equipment
- ▶ Erosion control materials
- ▶ Chainsaws
- ▶ Miscellaneous equipment customary to the mechanical and electrical crafts, and vehicles used to deliver equipment and materials

Implementing the Project would require the use of vehicles, trucks, and off-road equipment during the 2-year construction period. Table 2-1 identifies the type of equipment anticipated to be used, preliminary schedule for use, and a preliminary estimate their duration of use.

2.8 ACCESS ROADS AND STAGING AREAS

Access to the Project site would be accomplished using established roads, which would include primarily U.S. 50, Sly Park Road, Forebay Road, Blair Road, Polaris Street, Drop-Off Road, and Pony Express Trail, although other routes may be used depending on direction of travel and destination. Exhibit 2-1 shows the planned access and travel pathways to be used as part of Project construction. Several potential staging areas have been identified and are depicted in Exhibit 2-1. Final locations would be selected and developed by the contractor.

**Table 2-1
Estimated Use of Construction Equipment**

Equipment	Time Frame						Hours per Day	Estimated Duration (hours) (assumes 22 days per month)
	April–June 2015: Mobilization	May–July 2015: Develop Roads, Staging and Borrow Areas	April 2015–September 2016: Construct Dam Buttress	September–December 2015: Reservoir Drawdown	September 2015–September 2016: Irrigation Conduit	May–August 2016: Spillway Modifications		
Excavator, small	1		1	2	1	1	2	660
Excavator, big		1	1	2	1	1	5	1,760
Bulldozer		1	1	1		1	5	1,210
Grade-all				1	1	1	5	990
Grader		1	1	1	0.5	1	5	1,430
Highway truck	1	4	4	4	1	4	10	10,340
Water truck	1	1	1	1		1	10	2,640
Concrete transit truck				2	1	0.25	5	990
Scrapers		2	2			2	10	3,520
Truck-mounted crane	1	1		5	1	1	2	1,056
Tamping compactor			1	1		1	5	990
Vibratory compactor			1	1	1	1	2	484
Lube truck		1	1	1	1	1	2	572
Other equipment (drill rig, sweeper, utility vehicle)		2	3		2	3	3	852
Subtotal major mobile equipment	4	14	17	22	10.5	19.25	--	--
Pickup trucks	3	3	6	8	6	6	2	3,564
Total mobile equipment	7	17	23	30	16.5	25.25	--	--

Source: Data provided by EID in 2013

2.9 RESERVOIR OPERATIONS AND WATER CONTROL DURING CONSTRUCTION

EID intends to operate the reservoir within the range of normal reservoir elevations during the majority of the construction of the Project. However, during the fall maintenance shutdown in the first year of construction, it would be necessary to completely dewater the reservoir to gain safe and dry access to the penstock intake and other facilities within the reservoir.

Temporary water control systems would be necessary for various Project elements. Water control systems would be required to manage reservoir storage, reservoir inflows, potential stormwater inflows, reservoir seepage, and groundwater. Water control systems may use a variety of structures, including, but not limited to, bladder dams, cofferdams, pumps/hoses, and wells. Water control systems would be designed to discharge either back into the reservoir or into the Main Ditch. Dewatering plans would be prepared before construction activities. Each dewatering plan would describe planned dewatering measures, including sequencing, dewatering methods, backup power requirements, emergency provisions, and monitoring requirements.

2.10 BORROW MATERIAL

The estimated borrow material requirements for construction of the Project are shown in Table 2-2.

Material Type	Quantity (cubic yards)	Source
Dam fill	140,000	On-site borrow area
Filter sand	13,000	Commercial quarry
Drain gravel	2,000	Commercial quarry
Aggregate base	1,400	Commercial quarry
Riprap bedding	2,100	Commercial quarry
Riprap	8,400	Commercial quarry
Aggregate subbase	4,000	Commercial quarry
Box culvert backfill	6,000	Material from construction area or on-site borrow area

Source: Data provided by EID in 2013

Sources for borrow material include the following:

- ▶ Embankment material would be obtained from a borrow area developed on EID property located northwest of the dam and adjacent to and north of the penstock.
- ▶ Aggregate and riprap materials would be obtained from commercial sources, most likely in the El Dorado County area.

The earthfill borrow area where source material for the Project would be obtained is identified in Exhibit 2-1. The borrow area is located adjacent to the Forebay Dam on EID-owned property. Geotechnical surveys of the borrow

area indicate that sufficient volumes of suitable earthfill material can be obtained from the site. The borrow area has been divided into primary and secondary borrow areas. Borrow material would be preferentially sourced from the primary borrow area. The secondary borrow area would be used only if insufficient or inadequate quality material could be obtained from the primary borrow area. The secondary borrow area has been designated as such to reduce the potential for impacts on the adjacent residents.

A timber harvest plan (THP) would be prepared before development of the borrow area and Project facility work. Marketable trees would be removed from the site. Shrubs and other nonmarketable organic materials, including tree stumps, would be cleared and either burned or buried on-site, chipped, or removed for off-site disposal. After larger vegetation is cleared, the topsoil would be stripped and stockpiled for later use in borrow area restoration. Organic soils from stripping of the borrow areas, as well as organic material obtained from the stripping of the existing dam and buttress footprint, would be used as backfill for the reservoir inlet box culvert, in the restoration of the borrow area, and in other nonengineered earthfill areas as needed for the Project.

The borrow area would be developed to form wide excavations up to 20 feet deep rather than narrow trenches. Existing drainages and drainage paths would be maintained. After completion of borrow excavation, the stripped soils would be used to partially backfill the excavations, and the borrow areas would be regraded to smoothly blend with the adjacent land and would be revegetated with an appropriate seed mix as required by the THP and storm water pollution prevention plan (SWPPP) requirements.

Haul roads would be developed within the borrow area and at the dam to reach various construction areas. A previously used log-haul road would need to be redeveloped from Forebay Road to the dam base. This haul road would be used to access the foundation excavation area, transport embankment material from the borrow area, transport excavation material to disposal areas, deliver earthfill and construction materials, and provide equipment access to other work areas at the base of the dam. This road would need to provide two-way traffic, have grades suitable for large earthmoving equipment, and have a turning radius that would allow smooth, safe operation of the equipment. A second haul road would also need to be constructed from Forebay Road to the embankment above the penstock for construction of the upper portion of embankment. This road would also need to accommodate two-way traffic. After construction is completed, the haul roads would be developed for maintenance access or, if not needed, would be reclaimed. Dust and erosion control measures would be applied to roads and work areas on a systematic basis.

2.11 CONSTRUCTION-RELATED TRAFFIC

Personnel, equipment, and imported materials (such as aggregate, riprap, concrete, and pipe) would reach the site via U.S. 50, Sly Park Road, Pony Express Trail, Forebay Road, and Blair Road, which are paved, all-weather roads suitable for the anticipated loads. The access route to the western portion of the reservoir and the dam's left abutment would be via Pony Express Trail, Polaris Street, and Drop-Off Road. The bridge crossing of Forebay Road over EID's penstock might need to be temporarily reinforced with shoring depending on the anticipated loads.

Earthmoving equipment transporting soil from the borrow area to the Forebay Dam would need to cross Forebay Road. Forebay Road would experience temporary closures during this phase of construction in compliance with El Dorado County Department of Transportation requirements. Traffic control measures would be implemented to ensure safe vehicular passage. It is expected that there would be delays for vehicles traveling on Forebay Road.

Based on the current available information, it is estimated that a total of 3,000 highway truck trips and 10,000 on-site haul trips would be required to complete the Project. The highway truck trips would be related to mobilization, delivery of commercial quarried materials, delivery of construction materials, delivery of concrete, delivery of pipe, waste disposal, and timber harvesting. Necessary aggregate and riprap materials would be obtained from a commercial sand and gravel operation. The on-site haul trips include the transport of local borrow and excavated materials.

Construction worker commuting is estimated to add approximately 100 total daily trips to area roadways based on an estimated maximum 50 workers traveling to and from the site daily. An estimated 25 pieces of construction equipment could be required daily on the site. Estimated construction traffic, crew commuting and equipment, and fuel and materials deliveries would equal about 200 total daily trips.

2.12 RELOCATION OF UTILITIES

Several utilities would need to be relocated as part of the Project. A Pacific Gas and Electric Company (PG&E) power pole located near the toe of the dam would need to be relocated because it is in the footprint of the earthfill buttress. PG&E would relocate the power pole as a part of the Project. EID also maintains an underground communication line that runs from the penstock valve house, along the crest of the existing dam, to the drinking water canal valve house. This communications line would need to be removed and relocated as part of the Project. A temporary communication line might be installed, if deemed necessary.

2.13 AVOIDANCE AREAS

Mitigation measures presented in this EIR include the need to establish avoidance zones to protect or minimize disturbance to specific biological resources that may be found on the Project site. These avoidance areas would be identified before construction activities are initiated, would be included in construction plans as appropriate, and would be protected by the installation of appropriate exclusion zone fencing.

Avoidance zones could be established to avoid disturbance to special-status species habitat or identified populations, identified nests or roosts for raptors or bats, designated wetlands, or other special features warranting avoidance. A more detailed discussion of avoidance zones is presented in Section 3.4, “Biological Resources,” of this EIR.

No avoidance zones have been identified to date. Preconstruction surveys might identify the need for boundary limits for avoidance zones on the Project site.

2.14 OTHER SPECIAL ACTIONS

EID has incorporated several measures into the specifications for developing the Project. The following specific measures to minimize effects of light and glare during Project construction are included:

- ▶ Using low-reflectance, nonpolished finishes on exterior materials to minimize glare during the daytime hours
- ▶ Painting bare metallic surfaces to minimize reflectance

- ▶ Shielding or screening lighting fixtures to direct the light downward and prevent light spill onto adjacent properties
- ▶ Placing and directing flood or area lighting needed for construction activities or for nighttime security to avoid disturbing neighboring residents
- ▶ Limiting nighttime lighting to minimum security lighting needs during periods when no construction is occurring

3 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

3.0 INTRODUCTION TO THE ENVIRONMENTAL ANALYSIS

This chapter describes the approach to the environmental analysis, relevant setting information, and the results of the analysis of environmental impacts associated with the implementation of the proposed El Dorado Forebay Dam Modification Project. This chapter provides information about the type and magnitude of the Project's individual environmental impacts, including feasible mitigation measures that could reduce or avoid such impacts.

3.0.1 APPROACH TO THE ENVIRONMENTAL ANALYSIS

The State CEQA Guidelines (14 CCR Section 15000 et seq.) require that an EIR evaluate potentially significant effects of the proposed project on the physical environment and identify feasible mitigation for those effects. A “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 (14 CCR Section 15382).

The State CEQA Guidelines (14 CCR Section 15126.2) state that:

[a]n EIR shall identify and focus on the significant environmental effects of the proposed project. In assessing the impact of a proposed project on the environment, the lead agency should normally limit its examination to changes in the existing physical conditions in the affected area as they exist at the time the notice of preparation is published.... Direct and indirect significant effects of the project on the environment shall be clearly identified and described, giving due consideration to both the short-term and long-term effects. The discussion should include relevant specifics of the area, the resources involved, physical changes, alterations to ecological systems, and changes induced in population distribution, population concentration, and human use of the land (including commercial and residential development), health and safety problems caused by the physical changes, and other aspects of the resource base such as water, historical resources, scenic quality, and public services. The EIR shall also analyze any significant environmental effects the project might cause by bringing development and people into the area affected.

An EIR also must discuss whether there are any inconsistencies between a proposed project and applicable general plans and regional plans (14 CCR Section 15125[d]). Furthermore, according to 14 CCR Section 15126.4, an EIR must describe potentially feasible measures that could avoid or minimize significant adverse impacts (14 CCR Section 15126.4[a][1]) and feasible and practicable measures that are fully enforceable through permit conditions, agreements, or another legally binding process (14 CCR Section 15126.4[a][2]). Mitigation measures are not required for effects that are found to be less than significant.

The following discussion explains the organization and general assumptions used in the environmental analysis. See the individual technical sections for discussions of the specific assumptions, methodology, and significance criteria (thresholds of significance) used in the analysis and determination of significance of impacts. Sections 3.1 through 3.14 of this DEIR also identify residual significant impacts—that is, impacts that would be significant and unavoidable despite the adoption of feasible mitigation measures. The environmental resource topics

evaluated in these sections consist of those identified in the NOP prepared for the Project as having a potential to generate either less-than-significant or potentially significant impacts. The NOP is presented in Appendix A.

3.0.2 FORMAT OF THE ENVIRONMENTAL ANALYSIS

Sections 3.1 through 3.14 of this EIR are each divided into the subsections described below.

REGULATORY BACKGROUND

“Regulatory Background” identifies the formally adopted plans, policies, regulations, laws, and ordinances that are relevant to the environmental resource topic. EID may need to obtain permits from federal agencies to implement some elements of the Project. These Project elements could be subject to several federal laws and regulations, such as the National Environmental Policy Act, the Clean Water Act, the federal Endangered Species Act, and the National Historic Preservation Act. Therefore, applicable federal laws and regulations are described in addition to state, regional, and local requirements.

According to the State CEQA Guidelines, as amended (14 CCR Section 15125[d]), an “EIR shall discuss any inconsistencies between the proposed project and applicable general plans and regional plans.” Although this EIR evaluates EID’s understanding of potential conflicts with applicable adopted plans and policies, the final authority for interpreting policy statements and determining the consistency of the Project with adopted policies rests with the governing body of the jurisdiction in question.

ENVIRONMENTAL SETTING

“Environmental Setting” describes the existing physical conditions in the Project area at the time that the NOP was published (March 13, 2013). This subsection is presented to be consistent with the State CEQA Guidelines, as amended (14 CCR Section 15125).

IMPACTS AND MITIGATION MEASURES

“Impacts and Mitigation Measures” identifies the potential impacts of the Project on the existing human and natural environment, in accordance with the State CEQA Guidelines, as amended (14 CCR Sections 15125 and 15143). The following discussions are included in this subsection.

Analysis Methodology

This subsection describes the methods, process, procedures, and/or assumptions used to formulate and conduct the impact analysis.

Thresholds of Significance

Thresholds of significance provide criteria established by lead agencies to define the level at which an impact would be considered significant in accordance with CEQA. Thresholds may be quantitative or qualitative and may be based on any of the following:

- ▶ Examples found in CEQA regulations or in the State CEQA Guidelines

- ▶ Standards or limits that are set by health-based criteria
- ▶ Scientific and factual data within the scope of the lead agency’s jurisdiction
- ▶ Legislative or regulatory performance standards set by federal, state, regional, or local agencies with jurisdictional authority over the Project
- ▶ Applicable goals, objectives, and policies set by agencies with regulatory jurisdiction (e.g., land management plans)
- ▶ Other thresholds that were adopted or recommended by other agencies or experts where supported by substantial evidence

The thresholds of significance used in this DEIR are derived from Appendix G of the State CEQA Guidelines; factual or scientific information and data; and applicable regulatory standards of federal, state, regional, and local agencies.

Findings of the Initial Study Concluding No Impact

EID prepared an IS (EID 2013) addressing the Project. The IS determined that no impact would occur on several specific environmental resource topics. After the identification of thresholds of significance, the issues eliminated from further consideration in the DEIR are identified. This discussion is provided because no substantial evidence exists that significant impacts related to these issue areas would result from implementation of the Project. For example, the IS found that no impact on paleontological resources would occur. Therefore, no further discussion of potential direct or indirect destruction of unique paleontological resources is presented in Section 3.5, “Cultural Resources.”

Additional discussion of environmental topics eliminated from further discussion in this document is presented in Section 3.0.3.

Impact Analysis

This subsection provides an assessment of the potential impacts of the Project on the existing physical environment and lists feasible mitigation measures as necessary. (Cumulative impacts are presented in Chapter 5.) This EIR evaluates the Project at a project level of detail. (See Section 1.4.1, “Intended Uses of the EIR,” for more information on project-level analysis.) Impacts are numbered sequentially in each resource section. For each impact of the Project, construction-related impacts are presented first, followed by operation-related impacts. These impacts are identified relative to specific significance criteria and include an analysis of the effects of the Project compared to the established environmental threshold.

The analysis in this section also specifies why no environmental impact would occur, or why impacts are found to be less than significant, significant or potentially significant, or significant and unavoidable. The level of impact of the Project has been determined by comparing estimated effects with baseline conditions. In accordance with CEQA, the environmental setting as it exists at the time the NOP is published represents baseline physical conditions in this EIR. The levels of impact are defined as follows:

- ▶ **No impact** indicates that the construction, operation, and maintenance of the Project, including specific Project elements, would not have any direct or indirect effects on the environment. It means “no change from existing conditions.” Impacts at this level do not need mitigation.
- ▶ A **less-than-significant impact** is one that would not result in a substantial or potentially substantial adverse change in the physical environment. Impacts at this level do not require mitigation under CEQA, even if feasible.
- ▶ A **significant impact** is defined by CEQA Section 21068 as one that would cause “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project.” Levels of significance can vary by project element, based on the change in the existing physical condition. Under CEQA, mitigation measures or alternatives to the Project must be provided, where feasible, to reduce the magnitude of significant impacts.
- ▶ A **potentially significant impact** is one that, if it were to occur, would be considered a significant impact as described above; however, the occurrence of the impact cannot be determined at this time with certainty. For CEQA purposes, a potentially significant impact is treated as if it were a significant impact.
- ▶ A **significant and unavoidable impact** is one that would result in a substantial adverse effect on the physical environment that could not be reduced to a less-than-significant level even with any feasible mitigation. Under CEQA, a project with significant and unavoidable impacts can proceed, but the lead agency is required to prepare a “statement of overriding considerations” in accordance with the State CEQA Guidelines (14 CCR Section 15093), explaining why the lead agency would proceed with the project in spite of the potential for significant impacts.

Both CEQA and the State CEQA Guidelines require that cumulative impacts also be analyzed in an EIR. A cumulative impact refers to the combined effect of a project and other past, present, and reasonably foreseeable future projects. Cumulative impacts associated with the Project are described in Chapter 5 of this EIR.

Mitigation measures to avoid, minimize, rectify, reduce, or compensate for significant and potentially significant impacts of the Project are recommended for each significant or potentially significant impact, where feasible, in accordance with the State CEQA Guidelines, as amended (14 CCR Sections 15370, 15002[a][3], 15021[a][2], and 15091[a][1]). If it approves the Project, EID, acting as lead agency under CEQA, will adopt a mitigation monitoring and reporting program at the time that it certifies the EIR, in accordance with PRC Section 21081.6(a). EID also will be required to adopt findings identifying each significant effect of the Project and the extent to which feasible mitigation measures have been adopted.

3.0.3 TOPICS ELIMINATED FROM FURTHER CONSIDERATION

EID released the IS for the Project (EID 2013) for public review and comment on March 13, 2013 (Appendix A). The IS concluded that the Project would not have an impact on several environmental topics. In addition to the findings presented in the IS regarding these topics, no public or agency comments were received to indicate disagreement with EID’s findings and conclusions in the IS. Based on the IS findings, the topics listed in Table 3.0-1 are eliminated from further consideration in this EIR.

**Table 3.0-1
Environmental Topics Eliminated from Further Consideration**

Environmental Topic	Basis for Elimination
Land use and planning	The Project must satisfy specific regulatory mandates issued by both the DWR DSOD and FERC to meet dam safety standards. Project construction activities would occur either on property owned by EID or on existing easements and rights-of-way; therefore, no division of an existing community would occur as a result of Project activities. The Project would not require a change in zoning of the Project site, and development of the borrow area site would follow Title 17 of the El Dorado County Zoning Ordinance. The Project would therefore not conflict with the <i>El Dorado County General Plan</i> (El Dorado County 2004). There are no applicable habitat conservation plans or natural community conservation plans for the area.
Mineral resources	Commercially available mineral resources are not known to exist on or immediately adjacent to the Project site. The Project site is not identified on the Mineral Resource (-MR) overlay of the <i>El Dorado County General Plan</i> land use map (El Dorado County 2004). Mineral resources are not known to exist on or immediately adjacent to the Project site. Therefore, implementing the Project would not affect known mineral resources that could be of value to the region and the residents of the state and would not result in the loss of availability of a locally important mineral resource recovery site.
Population and housing	The Project must satisfy specific regulatory mandates issued to EID by both the DWR DSOD and FERC to meet dam safety standards, while improving the reliability of the drinking water system and minimizing impacts on EID ratepayers through increased revenue from hydroelectric power generation. Implementing the Project would not directly or indirectly induce substantial population growth in the area, displace or replace existing housing, or result in the displacement of any people, necessitating the construction or replacement of housing.

Notes: DSOD = Division of Safety of Dams; DWR = California Department of Water Resources; EID = El Dorado Irrigation District; FERC = Federal Energy Regulatory Commission.

Source: EID 2013

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3.1 AESTHETIC RESOURCES

Aesthetic, or visual, resources are the physical features of the landscape that contribute to the public's enjoyment of the environment, including landform (topographic variation) and land cover (water, vegetation, and the built environment).

This section, which is based on the contents of the Aesthetic Resources Technical Report, which is included as Appendix B of this EIR, provides a qualitative evaluation of the visual changes that would occur as a result of Project implementation. The visual character of the site was analyzed using a field visit and resulting photographs, taken from key viewpoints on June 26 and July 4, 2013. Exhibits 3.1-1 through 3.1-4 present simulations of what views from key viewpoints might look like after the Project is complete. These photosimulations are included as an aid to readers and are based on engineering drawings. They are not exact representations of future conditions. Rather, these renderings provide a photorealistic interpretation of anticipated changes to the landscape. Exhibits 3.1-1 through 3.1-4 are presented at the end of this section.

The impacts of a project on the visual environment are generally defined in terms of a project's visual characteristics and potential visibility, the extent to which the project would change the perceived visual character and quality of the environment in which it would be located, and the expected level of sensitivity that the viewing public may have in areas where project facilities would alter existing views. Under CEQA, the introduction of new sources of light and glare is included in the analysis of aesthetic effects.

3.1.1 REGULATORY BACKGROUND

The regulatory setting for aesthetics is discussed in detail in the Aesthetic Resources Technical Report, which is included as Appendix B of this EIR, and is summarized below.

No federal plans, policies, regulations, or laws related to aesthetic resources apply to the Project. The only designated state scenic highway that is within the vicinity of the Project is U.S. 50, which is located approximately one-half mile from the site (Caltrans 2013), with no visual connection to the Project. The *El Dorado County General Plan* provides an objective related to aesthetic management of forest and oak woodland resources; however, Government Code Section 53091 states that building and zoning ordinances do not apply to "construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency." Therefore, as an example, EID is not subject to *El Dorado County General Plan Policy 7.4.4.4* (under Objective 7.4.4) for mitigating impacts on oak woodlands.

3.1.2 ENVIRONMENTAL SETTING

The region is characterized by mountainous terrain with steep river canyons and mixed conifer-hardwood forests. Surrounding uses include a mix of single-family residences, a baseball field and community center, and undeveloped forested lands. The Forebay Dam is constructed of local earthen materials and is similar in color tones to the surrounding areas. The borrow area is located on EID-owned property located adjacent to the dam and on the Project site that has vegetation typical of that in the surrounding landscape, including signs of past logging operations.

The primary viewers in the area of the Project are local residents and visiting recreationists.

Typical views in the Project area are of forested land surrounding the reservoir and the surrounding roads. Extended viewing distances are very limited because of dense vegetative growth. Nine viewpoints were identified to portray representative views of the Project site and surrounding area (Appendix B, Exhibits 1–10). Four of these viewpoints were used to characterize the visual change to the landscape associated with implementing the Project. Photographs from these four viewpoints and the associated photosimulations are presented in Exhibits 3.1-1 through 3.1-4 in this section.

3.1.3 IMPACTS AND MITIGATION MEASURES

ANALYSIS METHODOLOGY

The visual impact analysis is based on a field visit, a review of maps and aerial photographs, and an evaluation of the changes to the existing visual resources that would result from Project implementation. The analysis of change in visual character is aided through the use of photographs taken at key viewpoints around the Project site (see Exhibits 3.1-1 through 3.1-4) and four photosimulations of what the public might see at the Project site following construction. Because an assessment of visual quality is a subjective matter, reasonable people can disagree as to whether alteration in the visual character of the Project site would result in adverse, beneficial, or negligible effects on the visual character. However, the following thresholds are used to provide a standard from which to conduct the assessment.

THRESHOLDS OF SIGNIFICANCE

Significance criteria are based on Appendix G of the State CEQA Guidelines. The Project would have a significant impact on aesthetic resources if Project implementation would do any of the following:

- ▶ Have a substantial adverse effect on a scenic vista
- ▶ Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings, within a state scenic highway
- ▶ Substantially degrade the existing visual character or quality of the site and its surroundings
- ▶ Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area

IMPACT ANALYSIS

IMPACT 3.1-1 **Substantial Adverse Effect on a Scenic Vista.** *The Project site is not designated as a scenic vista in applicable planning or policy documents. **No impact** related to construction or post-Project operation of the Forebay would occur.*

Construction-Related Impact

The Project site is not designated as a scenic vista, and no scenic vistas are visible from the Project site. Therefore, implementation of the Project would not affect existing scenic vistas or unique views. Changes to the visual character are described in the discussion of Impact 3.1-4. **No impact** would occur as a result of Project construction.

Post-Project Operation-Related Impact

The Project site is not designated as a scenic vista, and no scenic vistas are visible from the Project site. Changes to the visual character are described in the discussion of Impact 3.1-4. **No impact** would occur as a result of post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

IMPACT 3.1-2 **Substantial Damage to Scenic Resources within a State Scenic Highway.** *The Project activities are not located on a state scenic highway. **No impact** on a state scenic highway would occur from construction or post-Project operation of the Forebay.*

Construction-Related Impact

The designated scenic highway nearest to the Project site is a segment of U.S. 50 located approximately one-half mile from the site. The Project site is not visible from U.S. 50 and is not part of the scenic corridor. **No impact** on scenic resources of a designated state scenic highway would occur with Project construction.

Post-Project Operation-Related Impact

The designated scenic highway nearest to the Project site is a segment of U.S. 50 located approximately one-half mile from the site. The Project site is not visible from U.S. 50 and is not part of the scenic corridor. **No impact** on scenic resources of a designated state scenic highway would occur with post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

IMPACT 3.1-3 **Adverse Effect on Day or Nighttime Views in the Area Resulting from New Source of Substantial Light or Glare.** *There are no public views that would be substantially affected by light or glare resulting from implementation of the Project. This impact, for both construction and post-Project operation, would be **less than significant**.*

Construction-Related Impact

Construction activities are anticipated to occur during daylight, between 7 a.m. and dusk. On limited occasions, construction might need to occur after dusk, requiring temporary construction lighting. In addition, security lighting might be used at the staging areas to reduce the risk of theft or vandalism. Because these light sources might be used, nearby viewers might be affected by off-site light spill. The spill of light not managed by shielding or directional controls onto nearby residences could expand the nighttime views of the area, obscure the nighttime sky, and alter the aesthetic quality of the nighttime environment. The addition of light and glare would be a short-term effect that would cease at the end of construction. Because this effect is a short-term change, it is expected to pose only a nuisance to local viewers and would not constitute a substantial change in the environment. There would be no construction-related sources of daytime glare. The construction-related impact on daytime or nighttime views would be **less than significant**.

Post-Project Operation-Related Impact

The Project site is located in a rural location with little to no artificial night lighting. There is currently no lighting in public areas related to operation of the reservoir and other facilities. Activities at the reservoir and dam area related to recreation or operation and maintenance are anticipated to occur during daylight.

Project activities would also include installing new or replacement appurtenances at the Forebay Dam, which would be constructed with galvanized metal or painted with a nonreflective paint to reduce the potential for glare. In addition, the maximum surface elevation of the Forebay Reservoir would increase, resulting in minor changes to glare angles from the sun. However, because the reservoir fluctuates as part of normal facility operations and the constant repositioning of the sun, this change would not be substantial. The post-Project operation-related impact on daytime or nighttime views would be **less than significant**.

Mitigation Measures: No mitigation is required.

IMPACT 3.1-4 **Degradation of the Existing Visual Character or Quality of the Site and Its Surroundings.** *Although the Project activities would alter the existing visual character or quality of the site, the construction-related impact would be **less than significant**. **No impact** would occur from post-Project operation of the Forebay.*

Construction-Related Impact

The views from Viewpoints 1, 2, and 5 are not anticipated to change with Project construction (Appendix B). The foreground trees or buildings would continue to block views of changes in the background, so there would be **no impact** on the visual character or quality at these locations.

The view from Viewpoint 3 would not be significantly altered by Project construction. Viewers at Viewpoint 3 are most likely to be local residents. Trees would be removed in portions of the primary borrow area; however, views of the primary borrow area would be limited because a 100-foot buffer of undisturbed trees and vegetation would be maintained between the borrow areas and residential properties. In addition, residential properties between the street and the buffer area would further restrict views of the primary borrow area. Eastern portions of the primary borrow area would be exposed to viewers at Viewpoint 3; however, this exposure would be limited by existing topography. Most of the primary borrow area is not visible from Viewpoint 3. The changes to views from Viewpoint 3 related to loss of trees in the middle ground would be **less than significant**.

As a result of construction, views from Viewpoint 4 would be altered; trees could be removed in the middle ground, allowing a viewer to see the secondary borrow areas past the 100-foot buffer. However, the secondary borrow area would be used only if the primary borrow area did not provide sufficient material. Viewers at Viewpoint 4 would most likely be local residents. Residents immediately adjacent to the Project site would likely see construction equipment; however, views of the secondary borrow area would be limited because a 100-foot buffer of undisturbed trees and vegetation would be maintained between the borrow area and residential properties. In addition, there is a buffer upslope of the penstock to prevent damage to EID facilities during construction. Because of this buffer, the penstock would be difficult to distinguish from the undergrowth. The changes to views from Viewpoint 4 related to loss of trees in the middle ground would be **less than significant**.

Views from Viewpoint 6 would be altered by Project construction. Viewers at Viewpoint 6 would most likely be local residents traveling on Forebay Road. During construction, the area visible from this viewpoint would be

used to stage construction equipment and materials and for construction of the dam buttress and embankment. Portions of this area would be cleared of vegetation, and dam construction activities would be visible to travelers. As shown in Exhibit 3.1-1, the dam would become more visible, and a portion of the existing vegetation and forest cover, as seen from this viewpoint, would be removed. The dam face, which is currently obscured by vegetation, would be exposed to viewers with this change. EID would plant grass seed on the dam and other affected areas as required to prevent erosion, and there would be natural recolonization of shrubs and trees in areas where woody vegetation would not be prohibited for dam safety purposes. The changes to the visual character caused by staging construction equipment would not be substantial because this would be a short-term change and the typical viewers would be in cars and would have only a few seconds of this view before moving past. The reseeded area combined with natural recolonization would lessen the change to the visual character in the long term. Changes to views from this viewpoint would not substantially alter the existing visual character or quality of the site and its surroundings. Therefore, this impact at Viewpoint 6 would be **less than significant**.

During construction, many of the views of the dam and reservoir would be unavailable because the dam and shoreline areas around the reservoir, including day-use areas, would not be open for public access. Therefore, the views from Viewpoints 7, 8, and 9 would be inaccessible during Project construction. After construction, all viewpoints would be accessible. Therefore, views of construction activities such as earthmoving, reservoir dewatering, and tree removal would be limited to passing views from Forebay Road. Visual changes to views from Viewpoints 7, 8, and 9 following Project construction activities are described in the following discussion.

The view from Viewpoint 7 would be altered by Project construction. Viewers at Viewpoint 7 are most likely to be residents and recreationists. As shown in Exhibit 3.1-2, the Forebay maximum water level would be higher, and trees would be removed from the shoreline opposite from the main day-use area. The trees at the main day-use area are anticipated to remain unaffected. Therefore, from this viewpoint, the impact on the existing visual character or quality of the site and its surroundings would be **less than significant**.

The view from Viewpoint 8 would be altered by Project construction. Viewers at Viewpoint 8 would most likely be residents and recreationists. As shown in Exhibit 3.1-3, the dam would be raised, and trees in the foreground adjacent to the existing left abutment of the dam would be removed. The floating boom would continue to be used to protect the irrigation inlet from debris.

Because the primary landscape features, distance, and context would not change with implementation of the dam modifications, the quality of the view would not be affected. Therefore, changes to the view from this viewpoint would not substantially degrade the existing visual character or quality of the site and its surroundings. Therefore, this impact would be **less than significant**. Note that the fence around the spillway was digitally removed from the existing-view photograph to allow a more accurate comparison to the photosimulated perspective. The fence would be retained or replaced as part of the Project for public safety reasons.

The view from Viewpoint 9 would be altered by Project construction. Viewers at Viewpoint 9 would most likely be residents and recreationists. As shown in Exhibit 3.1-4, the dam would be more visible following construction. Trees would be removed below the high-water mark. For this reason, more of the reservoir surface would become visible from this viewpoint. The selective removal of vegetation and increase in water surface elevation would not substantially degrade the existing visual character or quality of the site and its surroundings. Therefore, this impact would be **less than significant**.

Post-Project Operation-Related Impact

After construction, the reservoir and dam would continue to be operated as currently done; this includes regular fluctuations in water level to meet water supply and hydroelectric power generation needs. There would be no change to the way the dam and reservoir are operated; therefore, operation-related activities would not result in any impacts on the visual character or quality of the site. **No impact** would occur with post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

3.1.4 RESIDUAL SIGNIFICANT IMPACTS

Impacts on aesthetic resources would be less than significant, or no impact would occur, as described above. There would be no residual significant impacts.



Existing view from Viewpoint 6 (view from below El Dorado Forebay Dam).



Photosimulation of Project features from Viewpoint 6 (view from below El Dorado Forebay Dam).

Exhibit 3.1-1 Existing View and Photosimulation of Project Features from Photograph Viewpoint 6



Existing view from Viewpoint 7 (view from main day-use area).



Photosimulation of Project features from Viewpoint 7 (view from main day-use area).

Exhibit 3.1-2 Existing View and Photosimulation of Project Features from Photograph Viewpoint 7



Existing view from Viewpoint 8 (view from dam near Main Ditch Intake). The fence around the spillway has been digitally removed to allow a more accurate comparison to the photosimulated perspective. The fence would be retained or replaced as part of the Project.



Photosimulation of Project features from Viewpoint 8 (view from dam near Main Ditch Intake).

Exhibit 3.1-3 Existing View and Photosimulation of Project Features from Photograph Viewpoint 8



Existing view from Viewpoint 9 (view from day-use area near Main Canal).



Photosimulation of Project features from Viewpoint 9 (view from day-use area near Main Canal).

Exhibit 3.1-4 Existing View and Photosimulation of Project Features from Photograph Viewpoint 9

3.2 AGRICULTURAL AND FORESTRY RESOURCES

This section describes the agricultural and forestry resources on the Project site and discusses the relationship between the Project and existing adopted federal, state, and regional and local laws, regulations, and planning goals and policies related to these resources. In addition, this section analyzes the potential impacts of the Project on agricultural and forestry resources during construction and operation of the modified El Dorado Forebay Dam.

3.2.1 REGULATORY BACKGROUND

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

No federal plans, policies, regulations, or laws related to agricultural and forestry resources apply to the Project.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

Farmland Mapping and Monitoring Program

The Farmland Mapping and Monitoring Program (FMMP) produces maps and statistical data used to analyze impacts on California's agricultural resources. Land is rated according to soil quality and irrigation status and characterized as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, Grazing Land, Urban and Built-Up Land, or Other Land (DOC 2004). Of these categories, Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance are land designations of special concern and management.

Prime Farmland is characterized as the best combination of physical and chemical features able to sustain long-term agricultural production. The land must also have been used for irrigated agricultural production at some point during the 4 years before mapping (DOC 2004).

Farmland of Statewide Importance is similar to Prime Farmland; however, the land possesses minor shortcomings, such as greater slopes or reduced ability to store soil moisture. The land must also have been used for irrigated agricultural production at some point during the 4 years before mapping (DOC 2004).

Unique Farmland is characterized as farmland of lesser quality soils used for the production of the state's leading agricultural crops. It is usually irrigated but may include nonirrigated orchards or vineyards. The land must have been used to grow crops at some time during the 4 years before mapping (DOC 2004).

Farmland of Local Importance is determined by each county board of supervisors and a local advisory committee (DOC 2004).

Williamson Act

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with landowners to promote continued agricultural uses of the land and reduce potential for conversion to other nonagricultural uses.

Forest Practice Act

The Forest Practice Act is enforced by the California Department of Forestry and Fire Protection (CAL FIRE). The purpose of the Forest Practice Act is to ensure that logging is performed in a manner that preserves and protects fish, wildlife, forests, and streams. A Timber Conversion Permit or Exemption, and a Timber Harvest Plan (THP), as required by the Forest Practices Act to harvest timber on private or nonfederal lands, outline what timber would be harvested, how it would be harvested, and the steps that would be taken to prevent environmental damage. THPs must be prepared by a Registered Professional Forester (CAL FIRE 2013a) and after approval, timber harvest activities must be performed by a Licensed Timber Operator.

REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Government Code Section 53091 states that building and zoning ordinances do not apply to “construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency.” Public utility projects that serve the facilities described above would not be subject to local plans, policies, regulations, or ordinances. The following local regulations related to agriculture and forestry are provided for informational purposes and are provided as a basis to assist with CEQA review in evaluating the level of significance associated with impacts.

El Dorado County General Plan

The Agriculture and Forestry Element of the *El Dorado County General Plan* (El Dorado County 2004) addresses the conservation, management, and utilization of the county’s agricultural and forestry resources. The policies listed below are pertinent to the Project.

- **Policy 8.1.3.4:** A threshold of significance for loss of agricultural land shall be established by the Agriculture Department and the Planning Department, with opportunity for public comment before adoption, to be used in rezone applications requesting conversion of agricultural lands to non-agricultural lands, based on the California LESA [Land Evaluation and Site Assessment] system. For projects found to have a significant impact, mitigation shall include 1:1 replacement or conservation for loss of agricultural land in active production and/or 1:1 replacement or conservation for land identified as suitable for agricultural production. A monitoring program should be established to be overseen by the Agricultural Department.
- **Policy 8.1.4.1:** The County Agricultural Commission shall review all discretionary development applications and the location of proposed public facilities involving land zoned for or designated agriculture, or lands adjacent to such lands, and shall make recommendations to the reviewing authority. Before granting approval, a determination shall be made by the approving authority that the proposed use:
 - A. Will not intensify existing conflicts or add new conflicts between adjacent residential areas and agricultural activities; and
 - B. Will not create an island effect wherein agricultural lands located between the project site and other non-agricultural lands will be negatively affected; and

- C. Will not significantly reduce or destroy the buffering effect of existing large parcel sizes adjacent to agricultural lands.
- **Policy 8.3.3.1:** Forest lands are reserved for multiple use purposes directly related to timber production, mineral resource extraction, wildlife, grazing, and recreation.
 - **Policy 8.3.3.2:** The Natural Resource land use designation shall be applied for the purposes of conserving and protecting important forest lands and maintaining viable forest based communities. In determining whether particular lands constitute important forest lands, the Board of Supervisors shall consider the advice of the Agricultural Commission.
 - **Policy 8.4.2.1:** The County Agricultural Commission shall evaluate all discretionary development applications involving identified timber production lands which are designated Natural Resource or lands zoned Timberland Production Zone (TPZ) or lands adjacent to the same and shall make recommendations to the approving authority. Prior to granting an approval, the approving authority shall make the following findings:
 - A. The proposed use will not be detrimental to that parcel or to adjacent parcels for long-term forest resource production value or conflict with forest resource production in that general area;
 - B. The proposed use will not intensify existing conflicts or add new conflicts between adjacent proposed uses and timber production and harvesting activities;
 - C. The proposed use will not create an island effect wherein timber production lands located between the project site and other non-timber production lands are negatively affected;
 - D. The proposed use will not hinder timber production and harvesting access to water and public roads or otherwise conflict with the continuation or development of timber production harvesting; and
 - E. The proposed use will not significantly reduce or destroy the buffering effect of existing large parcel sizes adjacent to timber production lands.

El Dorado County Oak Management Plan

The *El Dorado County Oak Management Plan* is described in Section 3.4, “Biological Resources,” of this EIR.

3.2.2 ENVIRONMENTAL SETTING

The Project site is located in El Dorado County, within the community of Pollock Pines. The surrounding uses include a mix of single-family residences, a baseball field and community center on EID-owned property, and undeveloped forested lands (EID 2013).

The Project site is located on the west slope of the central Sierra Nevada, approximately 0.5 mile north of U.S. 50. Approximately 25 acres of the Project site is classified as noncommercial timberland surrounding the Forebay (Monk, pers. comm., 2013).

Lands on the Project site are not designated as TPZs. Elevations on the Project site range between 3,600 feet and 3,800 feet above sea level. The forested land on the Project site consists of a mix of conifers and hardwoods. The commercial coniferous species present on the site are Ponderosa pine, sugar pine, Douglas-fir, white fir, and incense cedar. The hardwood species present include mainly black oaks; big leaf maple, madrone, live oak, and dogwood are also present on the site (Monk, pers. comm., 2013). A more detailed description of the surrounding forest resources and habitat is presented in Section 3.4, “Biological Resources.”

3.2.3 IMPACTS AND MITIGATION MEASURES

ANALYSIS METHODOLOGY

The analysis methodology for agricultural and forestry resources consisted of a literature review of appropriate documents and review of aerial photography using Google Earth to understand the current setting for agricultural and forestry resources in the Project area. Information from the review was then used to determine impacts on agricultural and forestry resources. The IS was used to determine whether further analysis of impacts was needed in this EIR. The following documents were used in the literature review:

- ▶ *El Dorado Forebay Modification Project: Project Description/Initial Study Checklist* (EID 2013)
- ▶ Agricultural and Forestry Element of the *El Dorado County General Plan* (El Dorado County 2004)
- ▶ *El Dorado County Oak Woodland Management Plan* (El Dorado County 2008)
- ▶ *A Guideline to the Farmland Mapping and Monitoring Program* (DOC 2004)
- ▶ Personal communication with Ron Monk, Registered Professional Forester (Monk, pers. comm., 2013)

THRESHOLDS OF SIGNIFICANCE

Significance criteria are based on Appendix G of the State CEQA Guidelines. The Project would have a significant impact on agricultural and forestry resources if Project implementation would do any of the following:

- ▶ Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the FMMP of the California Resources Agency, to nonagricultural use
- ▶ Conflict with existing zoning for agricultural use or a Williamson Act contract
- ▶ Conflict with existing zoning for, or cause rezoning of, forestland, timberland, or timberland zoned Timberland Production
- ▶ Result in the loss of forestland or conversion of forestland to nonforest use
- ▶ Involve other changes in the existing environment that, because of their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forestland to nonforest use

FINDINGS OF THE INITIAL STUDY CONCLUDING NO IMPACT

The IS concluded that no impact would occur for the following thresholds of significance:

- ▶ *Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to Nonagricultural Use:* Based on the IS (Appendix A), implementing the Project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to nonagricultural use.
- ▶ *Conflict with Existing Zoning for Agricultural Use or a Williamson Act Contract:* The IS concluded that implementing the Project would not conflict with existing zoning for agricultural use or a Williamson Act contract.
- ▶ *Conflict with Existing Zoning for, or Cause Rezoning of, Forestland, Timberland, or Timberland Zoned Timberland Production:* The IS concluded that because the Project site is zoned as Public Facilities (PF) in the *El Dorado County General Plan* (El Dorado County 2004), it would not conflict with zoning for forestland, timberland, or timberland zoned Timberland Production.
- ▶ *Involve Other Changes in the Existing Environment that, Because of Their Location or Nature, Could Result in Conversion of Farmland to Nonagricultural Use:* The IS concluded that the Project would not involve other changes in the existing environment that could result in the conversion of Farmland to nonagricultural use.

These issues are not evaluated further in this EIR.

IMPACT ANALYSIS

IMPACT 3.2-1 **Loss and/or Conversion of Forestland.** *Tree removal would be required in the borrow area, below the dam, and within the new high-water mark of the reservoir. Areas harvested would be converted to non-timber-producing uses. This impact would be **significant**. Project operations would not result in the loss or conversion of additional forested land or timber resources. **No impact** would occur with post-Project operation of the Forebay.*

Construction-Related Impact

During Project construction, tree removal would be required in the borrow area, below the dam, and within the new high-water mark of the reservoir. EID has identified primary and secondary areas for obtaining the earth-fill material from the borrow area, which would potentially reduce the amount of tree removal at the site. The secondary area would be used only if the material obtained from the primary area were insufficient for completing the construction activities (EID 2013). Additionally, EID has incorporated measures within the construction contractor specifications for the Project to minimize removal of trees, including limiting the clearing, grubbing, and stripping of land within the designated borrow area to those portions that the Contractor would actually use to obtain borrow material.

The loss of forest acreage could be up to approximately 66 acres from the primary borrow area, 11 acres from the secondary borrow area, 6 acres from the area below the dam, and 5 acres to accommodate the new high-water mark of the Forebay. Disturbed areas would be reseeded after construction with nonwoody species (i.e., herbaceous

vegetation) for erosion control purposes and would not be returned to timber production. In total, up to approximately 89 acres of forestland could be removed from timber production during Project construction.

A Timberland Conversion Permit would be acquired, a THP would be completed as part of Project implementation, and EID would manage the borrow areas in accordance with the THP and the requirements of other applicable regulatory permits. A portion of the trees and brush (including marketable trees) in the borrow area would be removed to excavate earthen material for Project purposes. Affected shrubs and other nonmarketable organic materials would be cleared and disposed of off-site or burned. EID would require a buffer of trees to remain in place around the perimeter of the borrow area. The buffer area would be approximately 100 feet where the property is adjacent to residents, and 25 feet where the property is adjacent to land in federal ownership (EID 2013). The conversion of timber-producing land to non-timber-producing uses would be a **significant** impact.

This conclusion differs from the findings presented in the IS because after the NOP/IS was published, CAL FIRE informed EID that a Timberland Conversion Permit would be needed for Project implementation rather than approval of a Timber Harvest Plan alone (CAL FIRE 2013b). The State CEQA Guidelines specifically define the conversion of timberland as a significance threshold.

Post-Project Operation-Related Impact

Post-Project operation of the Forebay would not result in the loss of additional forestlands or timber resources beyond that expected from the construction of the Project. **No impact** would occur as a result of post-Project operation of the Forebay. No mitigation is required.

Mitigation Measures: No feasible mitigation is available.

Significance after Mitigation: Because up to 89 acres of forestland could be removed from timber production during Project construction and no feasible mitigation is available, the construction-related impact would be **significant and unavoidable**.

3.2.4 RESIDUAL SIGNIFICANT IMPACTS

Because Project construction would result in the permanent loss of up to 89 acres of forestland and no feasible mitigation is available to reduce the impact, Impact 3.2-1 would be a significant and unavoidable impact resulting from construction of the Project.

3.3 AIR QUALITY

This section describes existing air quality conditions in the Project area and evaluates potential impacts on air quality associated with the implementing the Project.

3.3.1 ENVIRONMENTAL SETTING

Appendix C, the Air Quality and Greenhouse Gas Technical Report, presents a description of several factors (i.e., topography, climate, and meteorology) that affect air quality in the region; current regional air quality conditions in the project area; and the federal, State, and local air quality regulatory framework. A summary of this information is provided in the following text.

The Project site is located in the Mountain Counties Air Basin (MCAB). The MCAB lies along the northern Sierra Nevada, close to or contiguous with the Nevada border, and covers an area of roughly 11,000 square miles. El Dorado County consists of hilly and mountainous terrain that affects airflow patterns throughout the county. These mountain and hill formations direct surface air flows, cause shallow vertical mixing, and create areas of high pollutant concentrations by hindering dispersion. Because of its proximity to the Sacramento Valley, the MCAB and El Dorado County are prone to receiving pollutant transport from the more populated and traffic-heavy areas.

Various air pollutants may adversely affect human or animal health, reduce visibility, damage property, and reduce the productivity or vigor of crops and natural vegetation. Criteria air pollutants have been identified by the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (ARB) as being of concern both on a nationwide and statewide level: ozone; carbon monoxide (CO); nitrogen dioxide (NO₂); sulfur dioxide (SO₂); lead; and particulate matter (PM), which is subdivided into two classes based on particle size: PM equal to or less than 10 micrometers in diameter (PM₁₀) and PM equal to or less than 2.5 micrometers in diameter (PM_{2.5}).

In addition to criteria air pollutants, EPA and ARB regulate toxic air contaminants (TACs), also known as hazardous air pollutants. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health.

Serpentine is a mineral commonly found in seismically active regions of California, usually in association with ultramafic rocks and along associated faults. Certain types of serpentine occur naturally in a fibrous form known as Naturally Occurring Asbestos (NOA). According to the Asbestos Review Area map for El Dorado County, NOA is not typically found in the geological formations present in the Project area (EDCAQMD 2013).

3.3.2 REGULATORY BACKGROUND

Federal, state, and local plans, policies, laws, and regulations provide a framework for addressing aspects of air quality that would be affected by the Project. The regulatory setting for air quality is discussed in detail in Appendix C. A summary of that information as it relates to the impact analysis is provided below.

Health-based air quality standards have been established for the criteria air pollutants by EPA at the national level and by ARB at the state level that are referred to as the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS), respectively.

The MCAB is designated as a nonattainment area for ozone and as an attainment or unclassified area for all other pollutants. With respect to the CAAQS, the MCAB is currently designated as a nonattainment area for ozone and PM₁₀, and as an attainment or unclassified area for all other pollutants.

EPA requires each state with regions that have not attained the NAAQS to prepare a State Implementation Plan (SIP) detailing how each local area will meet these standards. ARB is the lead agency for developing California's SIP and oversees the activities of local air quality management agencies. Emission reduction programs and measures are described in Air Quality Attainment Plans (AQAPs) or Air Quality Management Plans (AQMPs) that the air districts submit to ARB for review and approval. ARB incorporates the AQAPs and AQMPs from local air districts into the SIP for EPA approval.

The El Dorado County Air Quality Management District (EDCAQMD) attains and maintains air quality conditions in El Dorado County. EDCAQMD requires all projects to implement Rule 202 (Visible Emissions), Rule 205 (Nuisance), Rule 223 (Fugitive Dust—General Requirements), Rule 223-1 (Fugitive Dust—Construction, Bulk Material Handling, Blasting, Other Earthmoving Activities and Carryout and Trackout Prevention), Rule 223-2 (Fugitive Dust—Asbestos Hazard Mitigation), and Rule 300 (Open Burning). As part of EDCAQMD's Rule 300 (Open Burning), a Burn Plan and Smoke Management Plan would need to be prepared for the Project. In addition, the Project would be subject to the requirements of ARB's Title 17 of the California Code of Regulations, Smoke Management Guidelines for Agricultural and Prescribed Burning.

3.3.3 IMPACTS AND MITIGATION MEASURES

ANALYSIS METHODOLOGY

Construction-Related Impacts

Short-term construction-generated emissions of criteria air pollutants and ozone precursors were assessed in accordance with methods recommended by the EDCAQMD *Guide to Air Quality Assessment* (EDCAQMD 2002). Construction emissions associated with the Project were quantified using the California Emission Estimator Model (CalEEMod) Version 2011.1.1. CalEEMod allows the user to enter project-specific construction information, such as types, number, and horsepower of construction equipment, and number and length of off-site motor vehicle trips. Construction-related exhaust emissions for the Project were estimated for construction worker commutes, haul trucks, and the use of off-road equipment.

Emissions were estimated for each construction phase based on project-specific information when available. Heavy-duty construction equipment would be brought to the site via the network of regional highways and local streets during a period of approximately 1 month before construction. It is anticipated that the Project would be implemented in two construction seasons, starting in spring of the first season in 2015 and ending in the late fall/early winter of the second season in 2016. Construction activities would be allowed 7 days a week, from 7 a.m. until one-half hour after sunset. Nighttime work also would be allowed during periods of reservoir drawdown or inlet canal shutdown with prior written authorization from EID. The Project's construction emissions were modeled to estimate the average daily emissions that would occur over the duration of the construction period, consistent with the EDCAQMD *Guide to Air Quality Assessment* (EDCAQMD 2002).

Emission estimates for earthmoving and material delivery are based on the information presented in Table 2-1 of Chapter 2, "Project Description." Based on the current schedule, earthmoving would occur primarily in two phases: July through December 2015 and June through August 2016. The highway truck trips would include mobilization; transport of commercial quarried materials, construction materials, concrete, and pipe; waste material disposal; and timber harvesting. Off-site materials would likely be provided by quarry and commercial sand and gravel operations in El Dorado County or other nearby counties. These trips were assumed to be about 40 miles in each direction, which is consistent with default distances recommended by CalEEMod. The on-site haul trips include the transport of local borrow and excavated materials. On-site haul trips were assumed to be less than 1 mile in each direction.

Based on the anticipated construction phasing, up to 50 construction workers may be working on-site each day. Commuting by construction workers would add approximately 100 total daily one-way trips to regional roadways. Total daily construction traffic, including construction worker commute trips, equipment delivery trips, and material delivery trips, would be approximately 200 total daily trips. On-road vehicle emissions were estimated using ARB's on-road emissions inventory model EMFAC2011, which provides emission factors for various vehicle types during specific operational years. For the Project, the earliest construction year (2015) was used to develop on-road emissions factors, which would result in a conservative estimate of emissions. It is anticipated that on-road emission factors would decrease with time because of turnover in vehicle fleet and improvements in emissions technology.

Fugitive PM dust emissions are associated primarily with site preparation. These emissions vary as a function of such parameters as soil silt content, soil moisture, wind speed, acreage of the disturbance area, and miles traveled by construction vehicles on- and off-site. The analysis conservatively assumed that the entire Project site (approximately 154 acres) would be disturbed and that the daily acreage disturbed was based on the total acreage divided by days of the applicable construction phases. CalEEMod also includes a module to estimate fugitive PM dust emissions based on Project-specific parameters.

Vegetation would be cleared from the on-site borrow area. Marketable trees that need to be removed to obtain sufficient borrow material would be sold and removed from the site. Other nonmarketable trees, tree stumps, shrubs, and other nonmarketable organic materials would be cleared and primarily burned; however, some materials may be buried on-site, chipped, or removed for off-site disposal. For the purposes of this air quality analysis, it was assumed that all nonmarketable woody materials would be burned on-site. PM₁₀ emissions associated with open burning were estimated using methodology and emission factors recommended by ARB (2008). An assessment was conducted to estimate the amount (tons per acre) and types of organic materials that would be required to be burned as part of the Project.

Detailed emission calculations and model output are provided in Appendix C.

Post-Project Operation-Related Impacts

After construction of the Project, long-term operational emissions would be generated from operational and maintenance activities. During these maintenance activities, worker vehicles would visit the Project site to inspect and confirm that the structures are functioning as intended. These activities would not exceed the existing maintenance and inspection activities for current infrastructure. Therefore, implementation of the Project would not require or result in trips or activities for operations and maintenance beyond existing conditions. Because no

net change in operational activity or emissions is anticipated as a result of the Project, criteria pollutant emissions associated with Project operations and maintenance were not estimated for this analysis. The Project is assumed to not result in a net increase in operational activity that would exceed any thresholds of significance related to air quality.

THRESHOLDS OF SIGNIFICANCE

Significance criteria are based on Appendix G of the State CEQA Guidelines. The Project would have a significant impact on air quality if Project implementation would do any of the following:

- ▶ Conflict with or obstruct implementation of the applicable air quality plan
- ▶ Violate any air quality standards or contribute substantially to an existing or projected air quality violation
- ▶ Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is classified as nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)
- ▶ Expose sensitive receptors to substantial pollutant concentrations
- ▶ Create objectionable odors that would affect a substantial amount of people

IMPACT ANALYSIS

IMPACT 3.3-1 **Potential for Conflict with or Obstruction of Implementation of the Applicable Air Quality Plan.**
*Implementation of the Project would be consistent with emissions levels allowed under the current air quality plans. The construction-related impact would be **less than significant**. **No impact** would occur with post-Project operation of the Forebay.*

Construction-Related Impact

Project consistency is based on whether the Project would conflict with or obstruct implementation of the air quality plan and/or applicable portions of the SIP, which would lead to increases in the frequency or severity of existing air quality violations. The region's AQAP was developed pursuant to California Clean Air Act requirements and identifies feasible emissions control measures to provide expeditious progress in the attaining the ozone standard. Assumptions about land use development used in the AQAP are taken from local and regional planning documents, including general plan land use designations and zoning.

Consistency with the AQAP is determined by analyzing a project with the assumptions in the AQAP. The Project would involve the use of off-road equipment, haul trucks, and worker commute trips. The Project would not substantially increase mobile-source emissions that were previously included in the AQAP. Therefore, the emissions associated with implementation of the Project have been accounted for in the emissions modeling for the current AQAP and will be accounted for in future AQAPs. Accordingly, implementation of the Project would not exceed the assumptions used to develop the current plan and would not obstruct or conflict with the AQAP.

As discussed later in the emissions analysis, the Project would also not exceed the recommended thresholds of significance for emissions of ozone precursors (reactive organic gases [ROG] and oxides of nitrogen [NO_x]). Because implementing the Project would not result in a significant increase in ROG and NO_x emissions, the Project would not conflict with or obstruct implementation of the AQAP and SIP. This construction-related impact would be **less than significant**.

Post-Project Operation-Related Impact

Implementation of the Project would not require or result in additional activities for operations and maintenance beyond existing conditions. Therefore, **no impact** would occur as a result of post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

IMPACT 3.3-2 *Potential for Violation of an Air Quality Standard or Substantial Contribution to an Existing or Projected Air Quality Violation. Short-term construction-generated emissions would not exceed EDCAQMD's significance thresholds and would not contribute to pollutant concentrations that exceed the NAAQS or CAAQS for the Project. However, measures to reduce construction-related fugitive dust emissions have not been included as part of the Project. Therefore, the construction-related impact would be **potentially significant**. No impact would occur with post-Project operation of the Forebay.*

Construction-Related Impact

Construction emissions are described as “short term” or temporary; however, they have the potential to represent a significant impact with respect to air quality. Construction of the Project would temporarily generate ROG, CO, NO_x, PM₁₀, and PM_{2.5} emissions. During construction, criteria air pollutants and precursors would be temporarily and intermittently emitted by a variety of sources: off-road equipment, on-road haul trucks and worker vehicles, soil disturbance, and burning of vegetation.

As shown in Table 3.3-1, average daily construction emissions for the Project are estimated to be approximately 6 pounds of ROG, 51 pounds of NO_x, 25 pounds of CO, 365 pounds of PM₁₀, and 276 pounds of PM_{2.5}. Additional emission modeling assumptions and details are provided in Appendix C.

Construction Phase	Average Daily Emissions (pounds per day)				
	ROG	NO _x	CO	PM ₁₀	PM _{2.5}
Average daily emissions	6.36	51.42	24.72	364.75	275.58
Threshold of significance	82	82	AAQS	AAQS	NA
Significant impact?	No	No	No	No	No

Notes: AAQS = ambient air quality standards; CO = carbon monoxide; NA = not applicable; NO_x = oxides of nitrogen; PM₁₀ = particulate matter equal to or less than 10 micrometers in diameter; PM_{2.5} = particulate matter equal to or less than 2.5 micrometers in diameter; ROG = reactive organic gases.

PM₁₀ estimates include emissions associated with burning of vegetation.

Source: Modeled by AECOM in 2013

As shown in Table 3.3-1, construction-related emissions of ROG and NO_x would not exceed the thresholds of significance and would not violate any air quality standard or contribute substantially to an existing or projected air quality violation.

According to the EDCAQMD *Guide to Air Quality Assessment*, construction-related fugitive dust emissions are not considered to be significant if mitigation is part of the project or a mandatory condition of the project. To make this finding, the project must commit to implementing fugitive dust control measures sufficient to prevent visible dust beyond the project property lines. As stated above, the Project would be required to comply with EDCAQMD's Rule 202, Visible Emissions; Rule 205, Nuisance; Rule 223, Fugitive Dust – General Requirements; and Rule 223-1 Fugitive Dust – Construction, Bulk Material Handling, Blasting, Other Earthmoving Activities, and Carryout and Trackout Prevention. However, implementation of these EDCAQMD rules to minimize construction-related fugitive dust emissions has not been incorporated into or made a mandatory condition of the Project. Therefore, the generation of construction-related fugitive dust would result in an impact that would be **potentially significant**.

Post-Project Operation-Related Impact

Implementation of the Project would not require or result in additional activities for operations and maintenance beyond existing conditions. Therefore, **no impact** would occur as a result of post-Project operation of the Forebay. No mitigation is required.

Mitigation Measure 3.3-2: Reduce Construction-Related Emissions of Fugitive Dust.

EID will comply with EDCAQMD Rule 202, Visible Emissions; Rule 205, Nuisance; Rule 223, Fugitive Dust – General Requirements; and Rule 223-1 Fugitive Dust – Construction, Bulk Material Handling, Blasting, Other Earthmoving Activities, and Carryout and Trackout Prevention. In compliance with Rule 223.1, EID will require the contractor to submit a Fugitive Dust Plan that includes the following key elements:

- ▶ Apply water to dry areas during grading and earthmoving activities
- ▶ Install temporary covers over open storage piles
- ▶ Apply water to unpaved haul and access roads
- ▶ Apply water on disturbed surfaces to form a visible crust, and restrict vehicle access to maintain the crust during inactive operations

Timing: During all Project construction phases

Responsibility: EID and construction contractor

Significance after Mitigation: Implementing Mitigation Measure 3.3-2 would fulfill all requirements of EDCAQMD to reduce the potentially significant impact associated with fugitive dust (PM₁₀) emissions to a **less-than-significant** level.

**IMPACT
3.3-3**

Cumulatively Considerable Net Increase of a Criteria Pollutant for Which the Project Region is Classified as Nonattainment under a Federal or State Ambient Air Quality Standard. *The Project would not exceed any of EDCAQMD's project-level significance thresholds for air quality. Therefore, the Project's construction emissions would not be cumulatively considerable. The construction-related impact would be **less than significant. No impact** would occur with post-Project operation of the Forebay.*

The cumulative analysis focuses on whether a specific project would result in cumulatively considerable increase in emissions. By its very nature, air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development within the MCAB, and this regional impact is cumulative rather than being attributable to any one source. A project's emissions may be individually limited, but cumulatively considerable when taken in combination with past, present, and future development projects.

The EDCAQMD approach for determining whether a proposed project has a significant cumulative impact is by determining whether the project is consistent with an approved plan or mitigation program of regional application in place for the pollutants emitted by the proposed project. This applies to both the construction and operation phases of a project. With regard to ROG and NO_x emissions, the Project would be considered consistent with the AQAP and not have a significant cumulative impact if the Project:

- ▶ Does not require a change in the existing land use designation (e.g., a general plan amendment or rezone), and projected emissions of ROG and NO_x from the Project are equal to or less than the emissions anticipated for the site if developed under the existing land use designation
- ▶ Does not exceed the "project alone" significance criteria
- ▶ Includes any applicable emission reduction measures contained in and/or derived from the AQAP
- ▶ Complies with all applicable air district rules and regulations

With regard to PM₁₀ emissions, the Project would not be considered significant for cumulative impacts of PM₁₀ if the Project:

- ▶ Is not significant for "project alone" emissions of these pollutants (i.e., does not exceed CAAQS or NAAQS)
- ▶ Complies with all applicable rules and regulations of the EDCAQMD
- ▶ Is not cumulatively significant for ROG, NO_x, and CO based on the criteria set forth above

Construction-Related Impact

As discussed previously, the Project would generate construction-related emissions of criteria air pollutants, but at levels that would not exceed EDCAQMD thresholds. EDCAQMD's thresholds of significance are relevant to whether a project's individual emissions would result in a cumulatively considerable incremental contribution to the existing air quality conditions. These thresholds are designed to identify projects that would result in significant levels of air pollution on a project-level that would impede and obstruct the region in attaining and maintaining the applicable CAAQS and NAAQS. Because the emission estimates presented in Table 3.3-1 would not exceed any of EDCAQMD project-level significance thresholds for air quality, the Project would not impede or obstruct attainment and maintenance of the ambient air quality standards. Implementing Mitigation Measure

3.3-2 would ensure that all necessary construction management practices are implemented during construction to minimize PM₁₀ fugitive dust and that these emissions do not exceed the CAAQS or NAAQS, which would reduce PM₁₀ impacts to a less-than-significant level.

The Project would not exceed the EDCAQMD significance criteria, would comply with the existing AQAP, would include applicable emission reduction measures, and would comply with all applicable air district rules and regulations. Therefore, the Project's construction emissions would not be considered a cumulatively considerable contribution to regional air quality. Therefore, the construction-related impact would be **less than significant**.

Post-Project Operation-Related Impact

The Project would not require a change to the existing land use designation. Implementation of the Project would not require or result in additional activities for operations and maintenance beyond existing conditions. Therefore, **no impact** would occur as a result of post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

IMPACT 3.3-4 **Exposure of Sensitive Receptors to Substantial Pollutant Concentrations.** *Off-road equipment used during construction of the Project would generate diesel particulate matter. However, these emissions would be minor and would occur only during construction. Vegetation burning and related smoke generation would be managed consistent with EDCAQMD requirements. Therefore, sensitive receptors would not be exposed to concentrations exceeding the applicable thresholds. The construction-related impact would be less than significant. No impact would occur with post-Project operation of the Forebay.*

Some members of the population—children, older adults, and persons with pre-existing respiratory or cardiovascular illness—are especially sensitive to air pollutant emissions. Such people are given additional consideration when the impacts of projects on air quality are evaluated. Therefore, at-risk land uses sensitive to poor air quality would include residences, schools, day care centers, playgrounds, medical facilities, and nursing homes. Recreational land uses, such as parks, are also considered moderately sensitive to air pollution. The land uses surrounding the Project area are primarily forest land. However, single-family residences are located adjacent to and at varying distances from the Project area. These are considered the closest sensitive receptors that would be affected by the Project.

Construction-Related Impact

Diesel Particulate Matter

The greatest potential for TAC emissions would be related to emissions of diesel particulate matter (diesel PM) during operation of heavy-duty construction equipment. Health effects from carcinogenic TACs are usually described in terms of individual cancer risk, which is based on a 70-year lifetime exposure to TACs.

Construction of the Project is anticipated to last approximately 2 years. Heavy-duty construction equipment would operate at different locations in the approximately 154-acre Project area, and at varying distances from different sensitive receptors surrounding the Project area. In addition, use of such equipment would vary depending on the phase of construction. Therefore, it is not anticipated that individual receptors would be exposed to TAC

emissions for the entire 2-year construction period. Construction emissions would occur intermittently throughout the day, as construction equipment is required, rather than as a constant source of emissions from the site.

Because construction would last a total of approximately 2 years and heavy-duty construction equipment would operate only intermittently during that time frame, the Project would not result in long-term (i.e., 70-year lifetime exposure period) emissions of TACs in the immediate vicinity of sensitive receptors. All construction emissions would cease after completion of the Project. Thus, because the duration of potentially harmful construction activities near a sensitive receptor is anticipated to be 1 year because the location of work activity would change on the Project site, the exposure would be approximately 2% of the total exposure period required for typical health risk calculations (i.e., 70 years). Therefore, the Project would not expose sensitive receptors to substantial concentrations of diesel PM.

Naturally Occurring Asbestos

During construction of the Project, site preparation, grading, and excavation activities would disturb soil and generate dust. As discussed previously, the Project is not located in areas designated as “likely to contain asbestos.” Because the Project is not located in an area “likely to contain asbestos,” the Project would not expose nearby receptors to substantial asbestos concentrations.

Open Burning

Vegetation burning could generate PM₁₀ over a 24-hour period and expose sensitive receptors to substantial pollutant concentrations. EID is required to conduct burning in accordance with EDCAQMD’s rules and guidelines as well as ARB’s Title 17 (Smoke Management Guidelines for Agricultural and Prescribed Burning) for such activities. EDCAQMD rules require obtaining a burn permit and preparing a smoke management plan to ensure that emissions and receptors are properly accounted for. Open burning could be conducted only on designated burn days as authorized by EDCAQMD. The EDCAQMD will regulate burning or require mitigation when meteorological conditions could cause smoke to create or contribute to an exceedance of the CAAQS or NAAQS or cause a public nuisance. All burning activities would be designed and implemented in a manner that would minimize impacts on local and regional air quality. The smoke management plan would include contingency actions, such as stopping further ignitions and active fire suppression, in case an activity were to produce unacceptable impacts; mitigation measures to minimize smoke; alternatives to burning; a description of sensitive receptors; public notification; and smoke monitoring requirements. Smoke from vegetation burning cannot be eliminated, however, and short-term impacts on air quality are inevitable. However, compliance with EDCAQMD and ARB’s rules and regulations would maximize the efficiency of burning, and dispersal and dilution of smoke produced to avoid potential problems related to smoke production.

Conclusion

Given the location of the Project, the distance of the Project area to sensitive receptors, and the Project’s compliance with applicable EDCAQMD requirements, the Project would not expose nearby receptors to substantial pollutant concentrations. This construction-related impact would be **less than significant**.

Post-Project Operation-Related Impact

Implementation of the Project would not require or result in additional activities for operations and maintenance beyond existing conditions. Therefore, **no impact** would occur as a result of post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

IMPACT 3.3-5 **Creation of Objectionable Odors That Would Affect a Substantial Amount of People.** *Temporary, short-term construction of the Project would not result in the frequent exposure of sensitive receptors to objectionable odors. The construction-related impact would be **less than significant**. No impact would occur with post-Project operation of the Forebay.*

Construction-Related Impact

The occurrence and severity of odor impacts depend on numerous factors: the nature, frequency, and intensity of the source; wind speed and direction; and the presence of sensitive receptors. Although offensive odors rarely cause physical harm, they still can be very unpleasant, and can generate citizen complaints to local governments and regulatory agencies.

Exhaust from diesel construction equipment may emit odors during Project construction. However, because of the temporary nature of these emissions and the highly diffusive properties of diesel exhaust, nearby receptors would not likely be adversely affected by Project-related diesel exhaust odors. Odors from these sources would be localized and generally confined to the immediate area surrounding the Project site, and the odors would be typical of most construction sites and temporary in nature. Vegetation burning would generate the odor of burning wood and other organic materials, which could spread over a larger area according to prevailing wind patterns and current conditions. However, as discussed previously, any burning would be conducted according to EDCAQMD and ARB's rules and regulations to minimize emissions and nuisances. In addition, these construction-related effects would be short term and would not create long-term odor sources. As a result, the Project would not create objectionable odors affecting a substantial number of people. This construction-related impact would be **less than significant**.

Post-Project Operation-Related Impact

Implementation of the Project would not require or result in additional activities for operations and maintenance beyond existing conditions. Therefore, **no impact** would occur as a result of post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

3.3.4 RESIDUAL SIGNIFICANT IMPACTS

All impacts on air quality would be less than significant or less than significant with mitigation, or no impact would occur, as described above. There would be no residual significant impacts.

3.4 BIOLOGICAL RESOURCES

3.4.1 REGULATORY BACKGROUND

This section outlines the federal, state, regional and local plans, policies, regulations and laws that guide protection of biological resources on the Project within the CEQA context. The descriptions here are meant to be broadly descriptive and all-encompassing. In some cases, there will be limited application to the Project.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

Federal Endangered Species Act

The federal Endangered Species Act (ESA) protects plants and wildlife that are listed as endangered or threatened by the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). Section 9 of the federal ESA prohibits the taking of endangered wildlife, where taking is defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct” (50 CFR 17.3). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any endangered plant on federal land and removing, cutting, digging up, damaging, or destroying any endangered plant on nonfederal land in knowing violation of state law (16 USC 1538). Under Section 7 of the ESA, federal agencies are required to consult with USFWS if their actions, including permit approvals or funding, could adversely affect a listed (or proposed) species (including plants) or its critical habitat. USFWS and/or NMFS would issue an opinion addressing a project’s effect on a listed species ranging from an informal concurrence letter stating that a project may affect, but is not likely to adversely affect a listed species, to a formal biological opinion containing reasonable and prudent measures to avoid jeopardizing the continued existence of a listed species. Through consultation and the issuance of a biological opinion, USFWS may issue an incidental take statement allowing take of the species that is incidental to an otherwise authorized activity provided the activity will not jeopardize the continued existence of the species.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements international treaties between the U.S. and other nations devised to protect migratory birds, any of their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. As authorized by the MBTA, USFWS issues permits to qualified districts for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, education, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal. The regulations governing migratory bird permits can be found in 50 CFR 13, “General Permit Procedures,” and 50 CFR 21, “Migratory Bird Permits.” The State of California has incorporated the protection of birds of prey in Sections 3800, 3513, and 3503.5 of the California Fish and Game Code.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668–668c), enacted in 1940 and amended several times since then, prohibits the “taking” of bald eagles and golden eagles, including their parts, nests, or eggs. The BGEPA provides criminal penalties for persons who “take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle, alive or dead, or any part, nest, or

egg thereof.” The BGEPA defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.”

For purposes of the BGEPA’s guidelines, “disturb” means:

to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (16 USC 661–667e) of 1934 authorizes the Secretaries of Agriculture and Commerce to provide assistance to and cooperate with federal and state agencies to protect, rear, stock, and increase the supply of game and fur-bearing animals, as well as to study the effects of domestic sewage, trade wastes, and other polluting substances on wildlife.

The amendments enacted in 1946 require consultation with USFWS and the fish and wildlife agencies of states where the “waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted . . . or otherwise controlled or modified” by any agency under a federal permit or license. Consultation is to be undertaken for the purpose of “preventing loss of and damage to wildlife resources.”

The amendments also titled the law as the Fish and Wildlife Coordination Act and expanded the instances in which diversions or modifications to water bodies would require consultation with USFWS. These amendments permitted lands valuable to the Migratory Bird Management Program to be made available to the state agency exercising control over wildlife resources.

Federal Clean Water Act

The purpose of the federal Clean Water Act (CWA) is to “restore and maintain the chemical, physical, and biological integrity of the nation’s waters.” Section 404 of the CWA prohibits the discharge of dredged or fill material into “waters of the United States” without a permit from the U.S. Army Corps of Engineers (USACE). The definition of waters of the United States includes rivers, streams, estuaries, the territorial seas, ponds, lakes and wetlands. Wetlands are defined as those areas “that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3 7b). The U.S. Environmental Protection Agency (EPA) also has authority over wetlands and reviews permit actions of USACE.

Substantial impacts on wetlands may require an individual permit. Projects that only minimally affect wetlands may meet the conditions of one of the existing nationwide permits. A water quality certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions. This certification or waiver is typically issued by the appropriate regional water quality control board (RWQCB); however, for hydroelectric power licensing projects and those projects involving the diversion of water, the State Water Resources Control Board has assumed primary responsibility for certification.

Federal Power Act

The Federal Power Act of 1935 (16 USC 791 et seq.) was enacted by Congress to regulate nonfederal hydropower projects in order to support comprehensive development of rivers for energy generation and other beneficial uses, such as water supply, flood control, recreation, and fish and wildlife management. Federal Power Act regulations are administered by FERC.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

California Endangered Species Act

The California Endangered Species Act (CESA) generally parallels the main provisions of the ESA, but unlike its federal counterpart, the CESA also applies the take prohibitions to species proposed for listing (called “candidates” by the state). Section 2080 of the California Fish and Game Code prohibits the taking, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or in the regulations. “Take” is defined in Section 86 of the California Fish and Game Code as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” CESA allows for take incidental to otherwise lawful development projects. State lead agencies are required to consult with the California Department of Fish and Wildlife (CDFW) to ensure that any action they undertake is not likely to jeopardize the continued existence of any endangered, threatened, or candidate species or result in destruction or adverse modification of essential habitat.

California Fish and Game Code

Fully Protected Species

The State of California first began to designate species as “fully protected” prior to the creation of the CESA and ESA. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction, and included fish (Section 5515), amphibians and reptiles (Section 5050), birds (Section 3511), and mammals (Section 4700). Most fully protected species have since been listed as threatened or endangered under the CESA and/or ESA. The regulations that implement the Fully Protected Species Statute (California Fish and Game Code Section 4700) provide that fully protected species may not be taken or possessed at any time. Furthermore, CDFW prohibits any state agency from issuing incidental take permits for fully protected species, except for necessary scientific research.

Protected Birds

The California Fish and Game Code affords protection for birds through a variety of means:

- ▶ **Section 3503.** It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.
- ▶ **Section 3503.5.** It is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.

- ▶ **Section 3513.** It is unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA.

Native Plant Protection Act

The Native Plant Protection Act (NPPA) of 1977 (California Fish and Game Code Sections 1900–1913) was created with the intent to “preserve, protect and enhance rare and endangered plants in this State.” The NPPA is administered by CDFW. The California Fish and Game Commission has the authority to designate native plants as “endangered” or “rare” and to protect endangered and rare plants from take. Although CESA (California Fish and Game Code Sections 2050–2116) provided further protection for rare and endangered plant species, the NPPA remains part of the California Fish and Game Code.

California Streambed Alteration Notification/Agreement

Section 1602 of the California Fish and Game Code requires that a streambed alteration application be submitted to CDFW for “any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake.” CDFW reviews the proposed actions and, if necessary, submits to the project proponent a proposal for measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by CDFW and the project proponent is the streambed alteration agreement. Section 1611 of the California Fish and Game Code allows a project proponent to meet the notification required by Section 1602 if the project proponent submits a timber harvest plan in accordance with Section 4581 of the Public Resources Code, or directly to CDFW. The timber harvest plan must include specific project information as specified in Section 1611.

REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Government Code Section 53091 states that building and zoning ordinances do not apply to “construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency.” Public utility projects that serve the facilities described above would not be subject to local plans, policies, regulations, or ordinances. The following local regulations related to biological resources are provided for informational purposes and are provided as a basis to assist with CEQA review in evaluating the level of significance associated with impacts.

El Dorado County General Plan

The Conservation and Open Space Element of the *El Dorado County General Plan* contains several goals, objectives, and policies applicable to biological resources. The main purpose of the Conservation and Open Space Element is to “address the management, preservation, and conservation of natural resources and open space of El Dorado County” (El Dorado County 2004). Several goals provide provision for conservation and protection of soils, minerals, water, wildlife and fisheries, vegetation, cultural resources, and open space. The goals, objectives, and policies pertaining to the protection of biological resources from the *El Dorado County General Plan* are listed below.

Goal 7.2—Water Quality and Quantity: Conserve, enhance, and manage water resources and protect their quality from degradation.

- ▶ **Objective 7.3.3—Wetlands:** Protection of natural and man-made wetlands, vernal pools, wet meadows, and riparian areas from impacts related to development for their importance to wildlife habitat, water purification, scenic values, and unique and sensitive plant life.
 - **Policy 7.3.3.1:** For projects that would result in the discharge of material to or that may affect the function and value of river, stream, lake, pond, or wetland features, the application shall include a delineation of all such features, for wetlands, the delineation shall be conducted using the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual.

Goal 7.4—Wildlife and Vegetation Resources: Identify, conserve, and manage wildlife, wildlife habitat, fisheries, and vegetation resources of significant biological, ecological, and recreation value.

- ▶ **Objective 7.4.1—Rare, Threatened, and Endangered Species:** The County shall protect state and federally recognized rare, threatened, or endangered species and their habitats consistent with Federal and State laws.
 - **Policy 7.4.1.5:** Species, habitat, and natural community preservation/conservation strategies shall be prepared to protect special-status plant and animal species and natural communities and habitats when discretionary development is proposed on lands with such resources unless it is determined that those resources exist, and either are or can be protected on public lands or private natural resource lands.
 - **Policy 7.4.1.6:** All development projects involving discretionary review shall be designed to avoid disturbance of fragmentation of important habitats to the extent reasonably feasible. Where avoidance is not possible, the development shall be required to fully mitigate the effects of important habitat loss and fragmentation mitigation shall be defined in the Integrated Natural Resources Management Plan.
- ▶ **Objective 7.4.2—Identify and Protect Resources:** Identification and protection, where feasible, of critical fish and wildlife habitat including deer winter, summer, and fawning ranges; deer migration routes; stream and river riparian habitat; lake shore habitat; fish spawning areas; wetlands; wildlife corridors; and diverse wildlife habitat.
 - **Policy 7.4.2.2:** Where critical wildlife areas and mitigation corridors are identified during review of projects, the County shall protect the resources from degradation by requiring all portions of the project site that contain or influence said areas to be retained as non-disturbed natural areas through mandatory clustered development on suitable portions of the project site or other means such as density transfers if clustering cannot be achieved. The setback distance for designated or protected migration corridors shall be determined as part of the project’s environmental analysis.
- ▶ **Objective 7.4.4—Forest and Oak Woodland Resources:** Protect and conserve forest and woodland resources for their wildlife habitat, recreation, water production, domestic livestock grazing, production of a sustainable flow wood products, and aesthetic values.
 - **Policy 7.4.4.4:** For all new development projects that would result in soil disturbance on parcels that (1) less than or equal to one acre with at least 10 percent total oak woodland canopy cover, or (2) greater than

one acre with at least one percent oak woodland canopy cover, the county shall require one of two mitigation options: (1) the project District shall adhere to the tree canopy retention and replacement standards; or (2) the project District shall contribute to the County's Integrated Natural Resource Management Plan (INRMP) conservation fund.

El Dorado County Oak Woodland Management Plan

The purpose of the *El Dorado County Oak Woodland Management Plan* (OWMP) is to outline El Dorado County's strategy for conservation of its valuable oak woodland resources. The OWMP identifies areas where conservation easements may be acquired from willing sellers as a means to offset and mitigate the loss or fragmentation of oak woodlands, as well as guidance for voluntary conservation and management efforts (El Dorado County 2008). Objective 7.4.2, "Identify and Protect Resources," and Objective 7.4.4, "Forest and Oak Woodland Resources," (stated above under "El Dorado County General Plan") guide the goals of the OWMP.

The OWMP defines its study area as below 4,000 feet and includes the following oak areas: blue oak woodland, blue oak foothill pine, montane hardwood woodland, montane hardwood-conifer woodland, and valley oak woodland (El Dorado County 2008). The OWMP provides direction for compliance with *El Dorado County General Plan* Policy 7.4.4.4 stated above. The OWMP states that the determination of the applicability of the OWMP to a development project must be made by determining and calculating oak woodland canopy loss and comparing the amount to the stated retention standards. If the canopy loss is within the retention standards, one of the mitigation measures outlined in Section 5 of the OWMP can be performed. If the canopy loss is greater than the retention standards, one of the mitigation measures must be performed as well as the other required actions outlined in Section 5 of the OWMP (El Dorado County 2008).

The OWMP was challenged in court and was temporarily rescinded in September 2012. El Dorado County is currently reviewing and revising the sections regarding policies for mitigation of oak tree removal to finalize the OWMP. In the meantime, the county has provided interim guidelines for oak woodland mitigation.

3.4.2 ENVIRONMENTAL SETTING

The Project site is located on approximately 154 acres near Pollock Pines, in the Pollock Pines U.S. Geological Survey (USGS) Quadrangle map, Sections 25 and 30, Township 11 North, Range 12 East and Range 13 East (USGS 1973). The Project site is located on land owned by EID at an elevation of about 3,800 feet above mean sea level (msl). No construction, staging, or access would occur on federal lands. Portions of the Project site are within the existing FERC Project No. 184 boundary.

The Project site is located in the California Floristic Province in the Northern High Sierra Nevada subregion (Baldwin et al. 2012). Vegetation communities found on the Project site include Sierran mixed conifer forest, riparian forest, upland scrub, nonnative annual grassland, seasonal and emergent wetland, and open water. A description of each community type follows.

This section provides a description of the existing biological conditions for the Project site, together with a discussion of methods used for the analysis. This information was gathered from literature reviews and on-site surveys as described below.

LITERATURE SEARCH

ECORP Consulting, Inc. performed searches of CDFW California Natural Diversity Database (CNDDDB) (2013) and the California Native Plant Society (CNPS) Electronic Inventory (CNPS 2013) for the Pollock Pines 7.5-minute USGS quadrangles (USGS 1973) and a 5-mile zone around the Project site perimeter. A species list was also obtained from the USFWS Sacramento Field Office's Web site for the Pollock Pines quadrangle and eight surrounding USGS quadrangles: Old Iron Mountain, Sly Park, Camino, Robbs Peak, Riverton, Devil Peak, Tunnel Hill, and Slate Mountain (Appendix E). ECORP also reviewed the following prior biological documentation of resources associated with or located in proximity to the Project site:

- ▶ ECORP (2002), Special-Status Amphibian Surveys for EID Project 184, El Dorado County, California, dated December 6, 2002
- ▶ ECORP (2004), California Red-Legged Frog Survey – Site 145, El Dorado Irrigation District Project 184, Near Pollock Pines, California, dated June 3, 2004
- ▶ Foothill Associates, Inc. (2009), Biological Resource Analysis for the Flume Replacement Program, El Dorado County, California, dated February 25, 2009
- ▶ El Dorado Irrigation District (2013), Project Description/Initial Study Checklist for El Dorado Forebay Dam Modification Project, El Dorado Hydroelectric Project, FERC Project No. 184: Project Description/Initial Study Checklist, dated March 13, 2013
- ▶ EIP Associates (2002a), Technical Memorandum Number 8 – Habitat Maps for Wolverine, Fisher, Pine Martin, Sierra Nevada Snowshoe Hare and Sierra Nevada Red Fox, dated June 7, 2002
- ▶ EIP Associates (2002b). Technical Memorandum Number 10 – 2002 Valley Elderberry Longhorn Beetle Survey, dated June 28, 2002
- ▶ EIP Associates (2002). Technical Memorandum Number 3 – Summary of Field Surveys for Bats, dated April 2, 2002
- ▶ EN2 Resources Inc. (2012), Final Biological Resources Report for the 14-Mile Tunnel and Spillway 46 Improvements Project, dated January 18, 2012
- ▶ AECOM (2013), California Red-Legged Frog Site Assessment for Main Ditch Project, El Dorado County, dated July 2013
- ▶ ICF International (ICF) (2011), Preliminary Delineation of Waters of the United States for the El Dorado Forebay Modifications Project, dated December 2011
- ▶ El Dorado County General Plan Conservation and Open Space Element, adopted in July 2004 (El Dorado County 2004), as amended in 2009

- ▶ El Dorado County Oak Management Plan, dated February 2008 (El Dorado County 2008) and Interim Interpretive Guidelines for El Dorado County General Plan Policy 7.4.4.4, amended October 2007 (El Dorado County 2007)
- ▶ U.S. National Resources Conservation Service Web Soil Survey (NRCS 2013)

Additional data regarding the potential occurrence of special-status species were gathered from various Web sites.

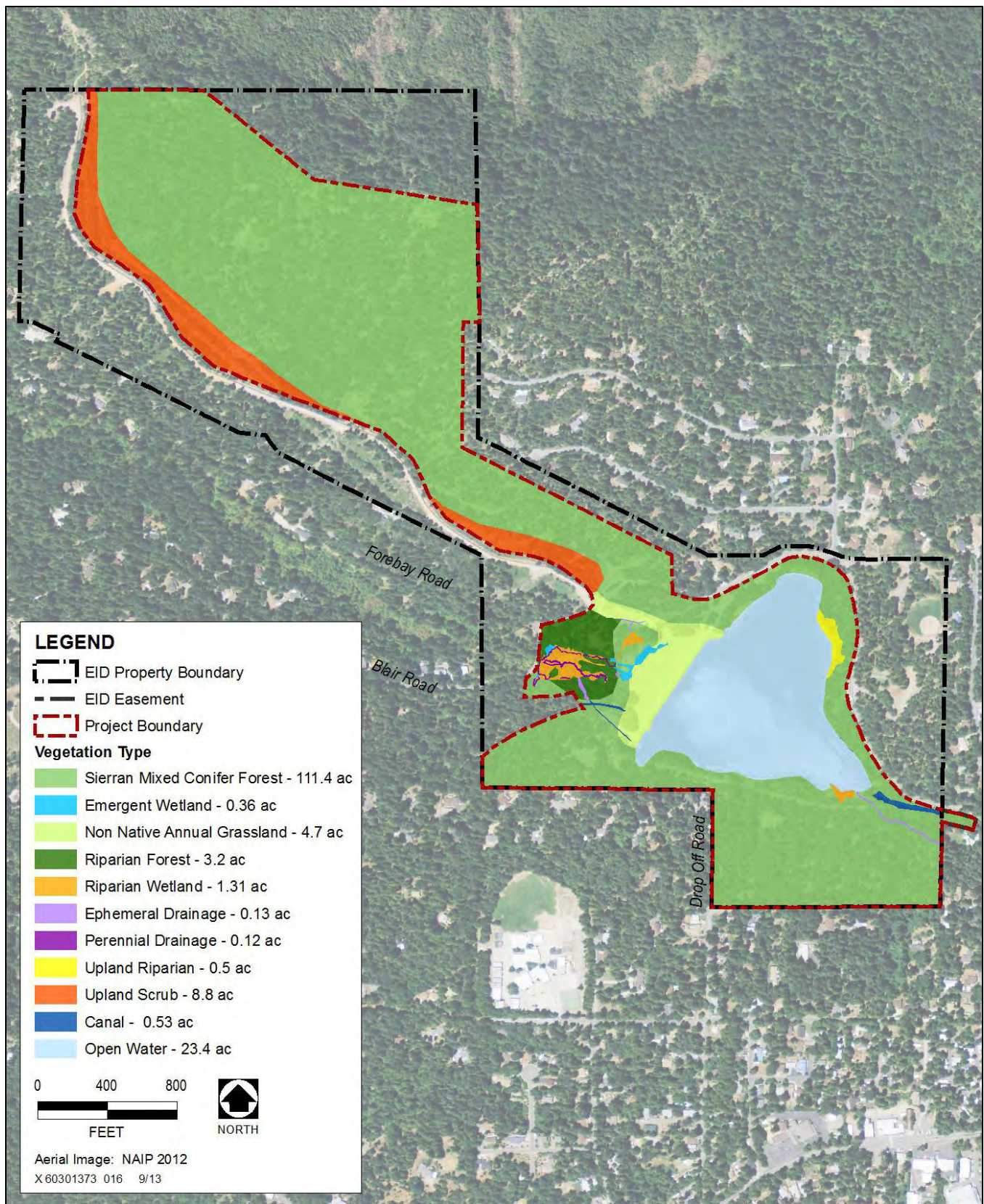
PLANT COMMUNITIES

Nomenclature for plant communities was based on *A Manual of California Vegetation, Preliminary Descriptions of the Terrestrial Natural Communities of California, and Terrestrial Vegetation of California* (Sawyer et al. 2009). Plant communities occurring on the Project site are described below, and include Sierran mixed conifer forest, riparian forest, upland scrub, nonnative annual grassland, emergent wetland, seasonal wetland, and open water (Table 3.4-1, Exhibit 3.4-1). Common plant and wildlife species observed or expected to occur in these communities are also noted.

Table 3.4-1 Acreage of Mapped Features on the Project Site¹	
Plant Community	Acreage
Sierran Mixed Conifer Forest	111.4 ²
Emergent Wetland	0.36 ³
Nonnative Annual Grassland	4.7
Riparian Forest	3.2 ²
Riparian Wetland	1.31 ³
Ephemeral Drainage	0.13 ³
Perennial Drainage	0.12 ³
Upland Riparian	0.5 ²
Upland Scrub	8.8 ²
Canal	0.53 ³
Open Water	23.4 ³
Notes:	
¹ Includes potential waters of the United States.	
² Acreages estimated from aerial imagery.	
³ Wetland acreages are cited in the preliminary jurisdictional delineation of the site (ICF 2013).	
Source: Data compiled by ECORP in 2013	

Sierran Mixed Conifer Forest

Sierran mixed conifer forest occurs along approximately 111 acres of the penstock access road and around the Forebay. Most of this plant community is located north-northeast of the penstock access road and around the Forebay. The assemblage is best described as *Pinus ponderosa*–*Calocedrus decurrens* (ponderosa pine–incense cedar) mixed coniferous forest (Sawyer et al. 2009). Woody understory vegetation surrounding the Forebay includes canyon live oak (*Quercus chrysolepis*), black oak (*Q. kelloggii*), tan-oak (*Lithocarpus densiflora*), mountain dogwood (*Cornus nuttallii*), deer brush (*Ceanothus integerrimus*), and Sierra coffeeberry (*Frangula rubra*). The understory in places is thick with small-diameter shrubs and young trees; vining Himalayan



Source: EID 2013, data compiled by ECORP in 2013

Exhibit 3.4-1

Plant Communities and Wetlands

blackberry (*Rubus armeniacus*) is dense in places. Deep shade and a thick duff layer result in sparse coverage of annual grasses (*Avena fatua*, *Cynosurus echinatus*) and herbaceous species (*Raphanus sativa*, *Convolvulus arvensis*, *Artemisia douglasiana*, *Lathyrus* sp.). Mountain misery (*Chamaebatia foliolosa*) provides dense ground cover in some areas.

Wildlife species observed in Sierran mixed conifer forest during site reconnaissance included common raven (*Corvus corax*), American robin (*Turdus migratorius*), Steller's jay (*Cyanocitta stelleri*), dark-eyed junco (*Junco hyemalis*), red-breasted nuthatch (*Sitta canadensis*), Northern flicker (*Colaptes auratus*), red-shouldered hawk (*Buteo lineatus*), spotted towhee (*Pipilo maculatus*), downy woodpecker (*Picoides pubescens*), house finch (*Carpodacus mexicanus*), and mule deer (*Odocoileus hemionus*). Western fence lizard (*Sceloporus occidentalis*) and western whiptail (*Aspidoscelis tigris*) were also observed.

Riparian Forest

Approximately 3.2 acres of riparian forest occurs in areas at the edge of the Forebay reservoir west of the Forebay Dam. These are generally mesic to hydric areas, with a white alder (*Alnus rhombifolia*), big-leaf maple (*Acer macrophyllum*), or willow (*Salix* sp.) canopy, and usually contain wetlands. Overstory was lower in height than in Sierra mixed conifer forest, and tree diameter is generally smaller. Understory is a dense mixture of mountain dogwood, hazelnut (*Corylus cornuta*), Himalayan blackberry, velvet grass (*Holcus lanatus*), sedges (*Cyperaceae*), ferns, and forbs including columbine (*Aquilegia formosa*).

Species observed in riparian forest include Steller's jay, Bewick's wren (*Thyromanes bewickii*), Northern mockingbird (*Mimus polyglottos*), and Brewer's blackbird (*Euphagus cyanocephalus*).

Upland Scrub

Approximately 8.8 acres of upland scrub occurs at the edges of the penstock access road in sunny and previously disturbed areas outside Sierran mixed conifer forest canopy. The dominant species is mountain misery, which provides nearly 100% cover in some places. Small trees and stunted manzanita (*Arctostaphylos viscida* ssp. *viscida*) are also present. Occasional forbs including soap root (*Chlorogalum pomeridianum*), mule's ears (*Wyethia angustifolia*), common gum plant (*Grindelia camporum*), cud weed (*Gnaphalium* sp.), and Indian paintbrush (*Castilleja* sp.) occur in open patches in this community. Many areas have extensive woody debris covering open ground or as duff above and below the mountain misery. California quail (*Callipepla californica*), fox sparrows (*Passerella iliaca*), California ground squirrels (*Otospermophilus beecheyi*), and western fence lizards were observed here.

Nonnative Annual Grassland

The Forebay Dam face and existing access and staging areas south of the penstock access road support approximately 4.7 acres of nonnative annual grassland dominated by introduced grasses, including hedgehog dogtail (*Cynosurus echinatus*), blue wildrye (*Elymus glaucus*), and barbed goat grass (*Aegilops trunciensis*). This community type supports a number of nonnative herbaceous species, including sweet pea (*Lathyrus* sp.), yellow salsify (*Tragopogon dubius*), Klamath weed (*Hypericum perforatum*), mustards (*Brassicaceae*), turkey mullein (*Croton setigerus*), and plantain (*Plantago* sp.). No wildlife species were observed within this habitat during site reconnaissance.

Emergent Wetland

Approximately 0.4 acre of this community occurs at the base of the Forebay Dam and occurs as the understory in parts of the riparian forest adjacent to perennial drainages. The emergent wetland, created and supported by seepage from the Forebay, has no overstory. Dominant species are velvet grass (*Holcus lanatus*), iris-leaved rush (*Juncus xiphioides*), and spike bentgrass (*Agrostis exarata*). Showy scarlet monkeyflower (*Mimulus cardinalis*) occurs here, and narrow-leaved cattails (*Typha angustifolia*) and ferns provide vertical structure. Small perennial drainages braid through the emergent wetland. Water velocity is a trickle in these drainages, with a depth of 2–3 inches maximum during the June 2013 reconnaissance surveys.

Evidence of crayfish (*Procambarus* sp.) was noted in places, but wildlife use in this area was otherwise not noted during field reconnaissance. Habitat is present in the area suitable to support species such as Sierra chorus frog (*Pseudacris sierra*), western toad (*Anaxyrus boreas*), Sierra garter snake (*Thamnophis couchii*), dark-eyed juncos, and yellow-rumped warblers (*Dendroica coronata*).

Open Water

The Forebay is an offstream reservoir and is classified as an open water aquatic feature. Shoreline and banks are gently sloped throughout most of the feature and generally lack undercutting, root balls, and other complexities. The presence of emergent or floating aquatic vegetation is limited or absent from the Forebay, and all visible reservoir substrate and banks consisted of bare soil. Three to four islands (approximately 10–20 square feet) of vegetative debris, logs, and some imbedded soil are scattered throughout the Forebay. The Forebay is shallower at the inlet and becomes deeper north and west near the base of the dam. An area of shallow water at the southwest of the Forebay is separated by buoys (log booms) to prevent large debris from entering the spillway and drinking water intake. Within this area, small floating debris that makes it through the log booms (bark, sticks, twigs, trash) tends to accumulate and is routinely removed by EID. The Forebay is popular among anglers in the area and is seasonally stocked by CDFW with hatchery-reared rainbow trout.

AQUATIC RESOURCES

Aquatic resources on the Project site include open-water, ephemeral and perennial drainages, canals, riparian wetlands, emergent wetlands, and seasonal wetlands. A complex of perennial drainages, riparian wetlands, and emergent wetlands traverses the low-lying area west of the Forebay and merges into the North Fork Long Canyon Creek on the east side of Blair Road. Two additional perennial drainages, created by seeps, originate on the slope uphill from Blair Road and also flow into North Fork Long Canyon Creek. Water depth in these areas was less than 1 inch to approximately 6 inches deep in places during the June 2013 surveys.

Three ephemeral drainages occur on the Project site. All are shallow swales (less than 4 inches deep during the June 2013 field surveys) and appear to convey seasonal rainfall and snowmelt runoff. Riparian wetlands occur in areas along the Forebay shoreline and west below the dam where there is a riparian overstory canopy of deciduous hardwoods. Three emergent wetlands occur in areas along the Forebay shoreline. Four constructed water conveyance facilities are present on the Project site: the El Dorado Canal inlet to Forebay, the Forebay, the Main Ditch outlet, and the emergency spillway channel.

The fish community residing in the Forebay is largely a recreational hatchery-reared rainbow trout fishery stocked by CDFW. Other native fish species that may be present include those that may be present in the South Fork

American River and its tributaries, including Sacramento sucker (*Catostomus occidentalis*), California roach (*Hesperoleucus symmetricus*), speckled dace (*Rhinichthys osculus*), and prickly sculpin (*Cottus asper*). In addition, nonnative species, including brown trout (*Salmo trutta*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*M. dolomieu*), spotted bass (*M. punctulatus*), bluegill (*Lepomis macrochirus*), green sunfish (*L. cyanellus*), and common carp (*Cyprinus carpio*), have the potential to be present based upon their occurrence in the watershed. Five common carp (total length approximately 18–30 inches) were observed in the reservoir during field surveys. The hardhead minnow (*Mylopharodon conocephalus*), a California Species of Special Concern and U.S. Forest Service Sensitive species, is not known or anticipated to be present in the Forebay or upstream locations.

Amphibians and Aquatic Reptiles

The Forebay has the potential (based on geographic range alone) to seasonally support a range of aquatic and semi-aquatic amphibians and reptiles for breeding, foraging, and occupation. During the Project 184 relicensing process, extensive surveys were conducted focusing on special-status species, including the Sierra Nevada (formerly mountain) yellow-legged frog (*Rana sierra*), foothill yellow-legged frog (*Rana boylei*), California red-legged frog (*Rana draytonii*), and Yosemite toad (*Anaxyrus canorus*) (EID 2002). The Forebay was not a focus of these surveys because of the offstream nature of the terminal reservoir and the presence of American bullfrogs (*Lithobates catesbeianus*), typically an indicator of the absence of most special-status amphibians. Most amphibians that have the potential to occur in the Project area breed in small, seasonal ponds or wet, nonponded environments. Typically, reservoirs like the Forebay that are stocked with potentially predatory fish do not support self-sustaining amphibian populations. The following amphibian and aquatic reptile species have the potential, based on elevation and habitat, to occur in the Forebay region:

- ▶ Long-toed salamander (*Ambystoma macrodactylum*)
- ▶ California newt (*Taricha torosa*)
- ▶ Western toad (*Anaxyrus boreas*)
- ▶ Sierran treefrog (*Pseudacris sierra*)
- ▶ California red-legged frog (*Rana draytonii*) (federally listed as threatened)
- ▶ Foothill yellow-legged frog (*Rana boylei*) (California Species of Special Concern)
- ▶ Sierra Nevada yellow-legged frog (*Rana sierra*) (federal candidate, state candidate endangered)
- ▶ Bullfrog (*Lithobates catesbeianus*)
- ▶ Western pond turtle (*Actinemys marmorata*) (California Species of Special Concern)—confirmed during surveys
- ▶ Common gartersnake (*Thamnophis sirtalis*)
- ▶ Sierra gartersnake (*Thamnophis couchi*)
- ▶ Terrestrial gartersnake (*Thamnophis elegans*)

Of the species of amphibians and aquatic reptiles potentially occurring in the Forebay vicinity, four species have special-status species status because of their listing by the federal ESA or CESA or their designation by CDFW as a Species of Special Concern. The life history, potential for occurrence based on habitat availability, and nearest occurrence of each of these species are discussed below.

Jurisdictional Waters Delineation

Jurisdictional waters of the United States include jurisdictional wetlands as well as all other waters of the United States, such as creeks, ponds, and intermittent drainages. Wetlands are defined as “those areas that are inundated

or saturated by surface or ground water at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (USACE 1987). The majority of jurisdictional wetlands in the United States meet three wetland assessment criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. Jurisdictional waters of the United States can also be defined by exhibiting a defined bed and bank and an ordinary high-water mark (OHWM).

Field investigations for a preliminary jurisdictional delineation were conducted by ICF on June 28, June 30, and July 12, 2011. The jurisdictional delineation was performed in accordance with the 1987 USACE Wetland Delineation Manual and the *Interim Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Western Mountains, Valleys, and Coast Region* (USACE 2008) and included collection of vegetation, soils, and hydrology data. The delineation effort is summarized in a report, *Preliminary Delineation of Waters of the United States for the El Dorado Forebay Modifications Project*, dated December 2011 with a revised map submitted in February 2013 based on field verification by USACE.

A total of 26.11 acres of waters of the United States, including wetlands, were determined to occur within the Project site (ICF 2013). USACE concurred with this finding in its letter responding to the preliminary jurisdictional determination on March 19, 2013 (USACE 2013):

- ▶ 23.40 acres of open water
- ▶ 1.31 acres of riparian wetland
- ▶ 0.53 acre of canal
- ▶ 0.36 acre of emergent wetland
- ▶ 0.26 acre of seasonal wetland
- ▶ 0.13 acre of ephemeral drainage
- ▶ 0.12 acre of perennial drainage

Based on the preliminary jurisdictional delineation of waters of the United States within the Project site and consultation with USACE, EID anticipates obtaining regulatory authorization for impacts on waters of the United States, including wetlands, under Nationwide Permit 3 for maintenance activities.

WILDLIFE MOVEMENT CORRIDORS

Corridors are an essential component of habitat used by wildlife for seasonal or daily migration to access food, shelter, or other resources. They generally result in trails following landscape topography including creek and streams, slopes, ridges, and sometimes, anthropogenic features such as roads and hiking trails. CDFW is concerned with the protection of deer migration corridors where urban expansion may pose a threat. Critical habitat is defined by CDFW as habitat that is essential to the long-term productivity of the herd. The deer residing in the Project vicinity are considered to be part of the Pacific Deer Herd (Hinz 1981). The Pacific Deer Herd is migratory and is found west of the Sierra Nevada crest. The boundaries of the herd are defined by the Rubicon River on the north, the South Fork of the American River on the south, and roughly a north-south line above 2,500 feet elevation, paralleling State Route 49 between Placerville and Georgetown. The Project site is located outside of the defined herd boundaries.

SPECIAL-STATUS SPECIES AND SENSITIVE HABITATS

A list of special-status species with the potential to occur on-site is presented in Appendix E. The geographic distribution of special-status species with CNDDDB records within 5 miles of the Project site is shown in Exhibit 3.4-2. ECORP reviewed habitat requirements for each species listed in Appendix E and the habitat conditions present on the Project site. A determination was then made regarding the likelihood that each species would occur on-site. Special-status species that were observed during surveys or determined to potentially occur based on presence of suitable habitat or nearby known occurrences are discussed below.

Special-Status Plants

Five special-status plant species have been recorded within a 5-mile radius of the Project site (Exhibit 3.4-2), and another three species are identified in the 2013 IS (EID 2013) as potentially occurring on the Project site. Of these eight special-status plant species, only two were subsequently determined to have a higher potential to occur on the Project site based on the presence of suitable habitat, soils, and/or occurrence records in the area: Pleasant Valley mariposa lily and Stebbins' phacelia.

Pleasant Valley Mariposa lily occurs on sunny, bare ground openings in upland scrub and Josephine Series soils. A record for this species exists within 1 mile of the Project site (Exhibit 3.4-2). Stebbins' phacelia may occur in montane coniferous forest, seeps, and riparian woodland, sometimes on Josephine series soils. A record for this species exists for approximately 4.5 miles northeast of the Project site (Exhibit 3.4-3). No individuals of these three species were observed during June 2013 reconnaissance surveys.

Special-Status Wildlife

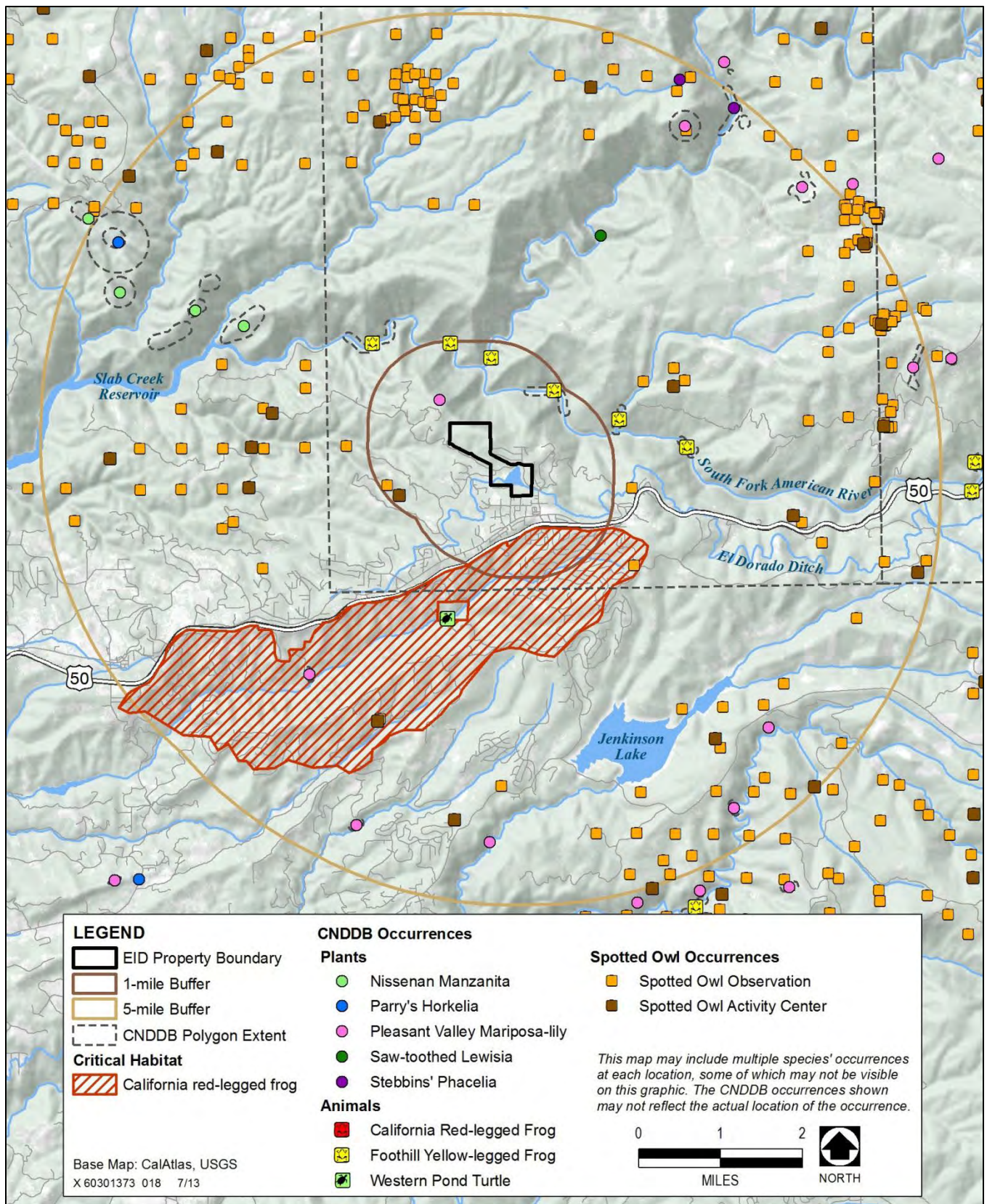
One special-status invertebrate (valley elderberry longhorn beetle), two amphibians (foothill yellow-legged frog, California red-legged frog), one reptile (western pond turtle), and one bird species (California spotted owl) have been recorded within 5 miles of the Project site (Exhibit 3.4-2). Based on the habitats present, several additional birds and mammals, including bats, have the potential to occur on-site, and are discussed below.

The valley elderberry longhorn beetle is absent from the Project site. The Project site is above the maximum elevation limit for the species and no elderberry shrubs (*Sambucus nigra caerulea*), obligate habitat for the beetle, were observed on-site. Therefore, this species is not discussed further in this document.

The foothill yellow-legged frog is a resident of middle-elevation drainages where it occurs in narrow to medium-width creeks and rivers with cobble substrates and gravel or cobble point bars (Fellers 2005a and references therein). These habitats do not occur on-site; thus, this species is not expected to occur and is not discussed further in this document.

California Red-Legged Frog

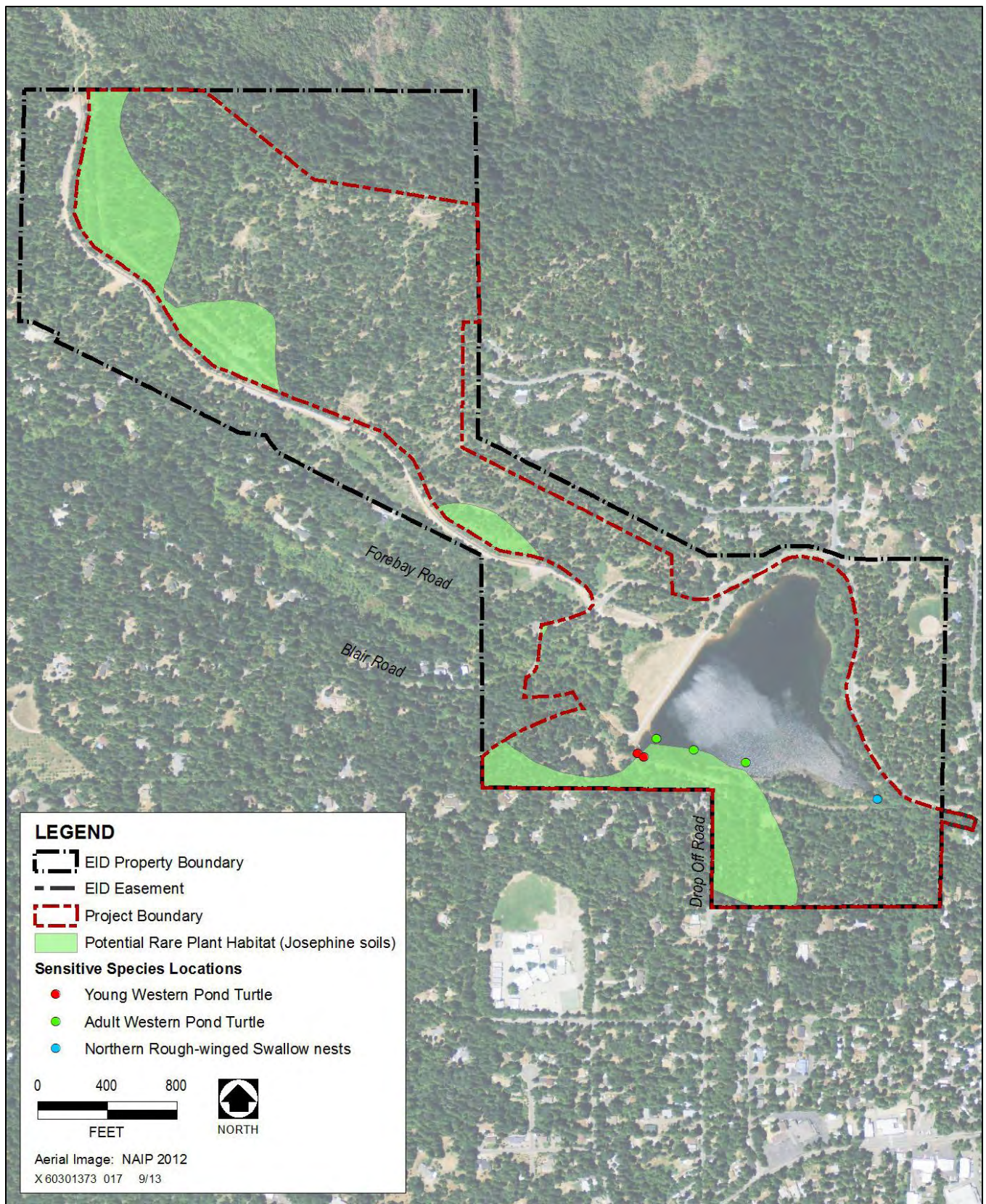
The California red-legged frog is California's largest native true frog, with females sometimes attaining a size greater than 5 inches in length. Adult California red-legged frogs are found near deeper (greater than 28 inches), still or slow-moving water in the vicinity of dense, emergent riparian vegetation (Jennings 1988). A complex stand of overhanging willows and cattails may occur, and undercut banks and exposed roots are often an indicator of this frog's presence (Jennings 1988). Eggs are laid in globular clutches and attached to emergent vegetation, usually near the water's surface. Upland areas are used for migration and foraging (Stebbins and McGinnis 2012)



Sources: EID 2013; CNDDDB 2013; 75 *Federal Register* 12884, March 17, 2010; data compiled by ECORP in 2013

Exhibit 3.4-2

CNDDDB Occurrences of Special-Status Species



Source: EID 2013; data compiled by ECORP in 2013

Exhibit 3.4-3

Sensitive Biological Resources

and the frog estivates in small mammal burrows and in deep leaf litter (Fellers 2005b). Constituent habitat elements such as bank complexity and emergent vegetation in ponded areas, needed for parts of this frog's life history, are lacking on the Project site. Additionally, the Forebay is occupied by numerous introduced predatory species, including rainbow trout (*Oncorhynchus mykiss*), American bullfrogs (*Lithobates catesbeianus*) and crayfish (*Procambarus clarki*), known to negatively affect California red-legged frog persistence (ECORP 2002, 2013).

A known population of California red-legged frog is found at Spivey Pond, which is located on the south side of U.S. 50 approximately 2 miles from the Project site and within a separate drainage. Designated critical habitat is located within 1 mile of the Project boundary (Exhibit 3.4-2). The possibility for occurrence of this species at the Project site is considered low based recent California red-legged frog habitat assessments conducted along the Main Ditch (AECOM 2013) and for the Project (ECORP 2013). These surveys, as well as previous survey efforts (ECORP 2002, 2004), conclude that conditions at Forebay provide very marginal habitat (ECORP 2013). USFWS provided concurrence with these assessments in 2004 (USFWS 2004).

Western Pond Turtle

The western pond turtle is northern California's only native freshwater turtle. It can occur in a variety of waters, and its range in California extends from the Oregon border southward along several Pacific slope drainages to the Mexican border. The elevation range for the species extends from sea level to 5,000 feet (Jennings and Hayes 1994). Western pond turtles require slack- or slow-water aquatic habitats together with basking areas that are used for thermoregulation (Jennings and Hayes 1994). Depending on elevation and latitude, western pond turtles may be active between March and November. Mating generally occurs during late April and early May, and eggs are deposited in upland nests between late April and early August (Bury et al. 2012). Hatchling turtles are thought to overwinter in nests after hatching and emerge the following spring. Adults may or may not hibernate depending on local climate. Nesting and overwintering may take place upland areas generally within 150 feet of water, but individuals have been known to travel considerable distances (up to 1,640 feet) in search of appropriate nesting or overwintering sites (Jennings and Hayes 1994; Bury et al. 2012).

During the June 27–28, 2013 site visits, five western pond turtles were observed (Exhibit 3.4-2), including two 1- to 2-year-old turtles near the drinking water intake and emergency spillway channel. This area may provide nursery habitat for juvenile turtles because it provides shallow water, refuge from aquatic predators, and floating debris for basking sites. The other three turtles were large adults, sex undetermined, found basking on in-water debris along the southern shore of the Forebay (Exhibit 3.4-2).

Special-Status Birds

Few CNDDDB records occur for nesting special-status bird species in the area (Exhibit 3.4-3). The majority of records are for California spotted owl (*Strix occidentalis occidentalis*), which is not listed under either the CESA or the federal ESA. However, it is a California species of special concern. The California spotted owl occurs on the west side of the Sierra Nevada from Shasta County south to Tehachapi Pass, and is typically nonmigratory (USFWS 2008). However, some individuals in the Sierra Nevada migrate downslope in early October through December to avoid heavy persistent snow (USFWS 2008). Breeding occurs from mid-February through September and nests are typically found in mixed conifer forests at higher elevations (USFWS 2008).

There are 281 occurrences of California spotted owl dated from June 1974 to April 2012 within 5 miles of the site. The occurrences surrounding the site are distinctly clustered into “activity centers” and “observations” in the CDFW Biographical Information and Observation System (BIOS). The activity centers include nest site, breeding season roost sites, and areas of concentrated nighttime detections. None of these activity centers are located in areas where there is development or fragmented forest. While there are many observations (as shown in Exhibit 3.4-3), a cluster of these observations may be from only a few individuals occupying a territory. Although the conifer forest on-site represents potentially suitable nesting habitat for this species, it is not likely that California spotted owls nest within the Project site due to habitat fragmentation from development, and existing on-site and adjacent disturbances including roadways, residential, and nearby commercial development.

The northern goshawk (*Accipiter gentilis*) is a California species of special concern that is not listed under either CESA or the federal ESA. They nest in many of the mountain ranges in California, including the Sierra Nevada, at middle and higher elevations. The northern goshawk nests in coniferous forest, usually on north-facing slopes near water. The Sierran mixed conifer forest on-site provides potential foraging habitat for this species. However, the only CNDDDB nesting record for this species is from 1980 and occurs approximately 7 miles southwest of the Project site near One Eye Creek on the Slate Mountain USGS topographic quadrangle. Because of the proximity of and date of the last known occurrence from the CNDDDB, lack of suitable nesting habitat (dense canopy and north-facing slopes) on-site, and the existing on-site and adjacent disturbances including roadways, residential, and nearby commercial development, there is low potential for northern goshawk to occur within the Project site.

The golden eagle (*Aquila chrysaetos*) is not listed pursuant to either the CESA or the federal ESA; however, it is fully protected according to Section 3511 of the California Fish and Game Code. Golden eagles generally nest on cliff ledges and/or large lone trees in rolling to mountainous terrain. Golden eagles nest throughout California except the Central Valley, the immediate coast, and portions of southeastern California. Foraging habitat includes open grassland and savanna. Golden eagles do not nest in the region and foraging habitat is not present on-site.

The long-eared owl is a California species of special concern that is not listed under either CESA or the federal ESA. This owl uses riparian bottomlands with tall willows and cottonwoods or stands of live oak adjacent to open lands with an abundance of rodents. The species also requires old American crow (*Corvus brachyrhynchos*), hawk (*Buteo* spp.), or magpie (*Pica nuttalli*) nests for breeding. Habitat is lacking for this species, and there are no records from El Dorado County.

Bald eagle (*Haliaeetus leucocephalus*) is no longer federally listed, but it is listed as endangered and protected pursuant to the CESA. In addition, it is considered a fully protected species according to Section 3511 of the California Fish and Game Code. Bald eagles winter throughout California but generally nest in the foothill and mountainous regions near lakes, rivers, and reservoirs in the northern one-third of the state (CNDDDB 2013). Bald eagles feed upon fish, waterfowl, and carrion. Although the bald eagle may occasionally forage at the Project site, there are no records indicating nearby nesting or wintering use.

Bank swallow (*Riparia riparia*) is listed as a threatened species under the CESA and has no federal special status. This species occurs along rivers and creeks where exposed banks are used for nesting by large colonies. Most colonies within California are located in the extreme northern portion of the state with scattered populations also occurring along the north coast, Central Valley, Mono Basin, and Crowley Lake (Mono County). Burrows are typically excavated within banks which have friable soils and nesting occurs during May through July. One CNDDDB record is present from near Placerville, approximately 6.3 miles southwest of the Project site. This

species has the potential to nest in soil banks at the El Dorado Canal section at the reservoir inlet. However, during biological surveys conducted at the site, swallows observed using the aforementioned bank were identified as northern rough-winged swallows.

Olive-sided flycatcher (*Contopus cooperi*) is a California species of special concern that is not listed under either CESA or the federal ESA. Nesting habitats for this species include mixed coniferous forest, montane-hardwood conifer forest, and Douglas-fir forests (Zeiner et al. 1990a). The species tends to be most numerous where tall trees overlook canyons, lakes, meadows, and other open areas. Although there are no records of the species from the Project site or from within the 5-mile buffer, forested areas within the Project limits provide potential nesting habitat.

Yellow warbler (*Dendroica petechia brewsteri*) is a California species of special concern that is not listed under either CESA or the federal ESA. It nests among riparian woodlands with willows, cottonwoods, aspens, sycamores, and alders (Zeiner et al. 1990a). Although no records of the species occur within the Project boundary and 5-mile buffer, the riparian habitat northwest of the dam provides potential nesting habitat.

Cooper's hawk (*Accipiter cooperii*) is not listed under either CESA or the federal ESA; however, it is tracked by CNDDDB and considered under CEQA because it is listed as a California Species of Special Concern. This is a small (14–16 inches long, 28- to 30-inch wingspan) hawk of open woodlands and forest edges (Zeiner et al. 1990a). Typical nesting and foraging habitats include riparian woodland, dense oak woodland, and other woodlands near water. There are no records of the species for the Project site or surrounding 5-mile buffer. However, potential nesting habitat occurs on-site, and potential foraging habitat is present along forest edges.

Sharp-shinned hawk (*Accipiter striatus*) is not listed under either CESA or the federal ESA; however, it is tracked by CNDDDB and considered under CEQA because it is listed as a California Species of Special Concern. This small hawk is easily confused with Cooper's hawk, although it is slightly smaller. It breeds in a wide variety of communities, including Ponderosa pine, black oak, riparian deciduous, mixed conifer, and Jeffrey pine forests (Zeiner et al. 1990a), although nesting in the Sierra Nevada is rare. Nests are usually found in dense, even-aged, single-layer forests near water (Zeiner et al. 1990a). No records of the species occur within the Project limits or 5-mile buffer, but potential nesting habitat is present.

Nesting Birds

In addition to the special-status birds listed, many additional bird species could potentially nest on the Project site. Although they do not have special-status designation, nesting birds, their nests, and eggs are protected by the MBTA and the California Fish and Game Code, as described above in Section 3.4.1, "Regulatory Background." Ground-nesting birds could use stands of mountain misery within the upland scrub or densely vegetated areas within the emergent wetland communities. Snags on-site provide potential habitat for cavity-nesting birds. As a result, there is a high potential for birds covered under MBTA to nest on the Project site.

Common Raptor Species

All raptors and their nests, including common species, are protected under Section 3503.5 of the California Fish and Game Code and by the federal MBTA. These raptor species include red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*B. lineatus*), American kestrel (*Falco sparverius*), and great horned owl (*Bubo virginianus*), among others. In general, raptor nesting occurs from February through August, depending upon the species and

various environmental conditions. Red-tailed hawks and red-shouldered hawks were observed perched and soaring overhead during the biological surveys, but no raptor nests were observed during the June 27 and 28, 2013 surveys.

Terrestrial Mammals

The Sierra Nevada red fox (*Vulpes vulpes necator*) is state listed as threatened but has no federal status. This species ranges from the Cascade Range down to the Sierra Nevada and uses a variety of forested habitats generally above 7,000 feet msl and usually interspersed with meadows, barren rocky areas, or alpine fell fields. They use dense vegetation and rocky areas for cover and den sites (Jameson and Peters 2004). There are no nearby records for Sierra Nevada red fox and the Project site is below the lower elevational limit for the species. No sign of this species was observed during the June 2013 field surveys. Therefore, the Sierra Nevada red fox does not occur on the Project site.

The marten (*Martes americana*) is a mustelid resident of coniferous forests, particularly redwood forests, but also fir, pine and hemlock-dominated forests. It tends to occur on talus slopes in rocky areas above 3,700 feet msl (Zeiner et al. 1990b). The Project site does not contain rocky, talus slopes so the marten is not likely to occur.

The Pacific fisher (*Martes pennanti*) occurs in stands of pine and Douglas-fir forests at elevations of 3,000 feet msl and above. They usually occur in deciduous riparian habitats with a dense canopy (Zeiner et al. 1990b). They generally need large areas of dense forest with abundant snags. No habitat of this type is present on the Project site, and fishers are considered not likely to occur.

The ringtail (*Bassariscus astutus*) is a wide-ranging carnivorous mammal found at elevations from sea level to 8,000 feet (Jameson and Peters 2004). They are found in bushy and overgrown riparian habitats, often with rock outcrops or snags. There is some marginal potential habitat of this type in the riparian forest below the Forebay dam; therefore, there is potential for this species to occur on the Project site.

Bats

Several bat species could potentially occur on the Project site. Bat habitat consists of foraging habitat and both day and night roosts; certain day roosts are also used as maternity and winter roosts. Bats are nocturnal mammals, leaving day roosts around dusk to forage. Day roosts are typically in enclosed areas that provide thermal protection for bats, such as caves, buildings, crevices or openings in bridges, tree cavities, and sloughing bark. Night roosts may be located in more open areas (e.g., the underside of structures) where bats can rest while digesting their food. The majority of North American bats feed on insects, which are captured on the wing using echolocation.

The Sierran mixed conifer forest and snags on the Project site provide potential habitat for tree-roosting bats, and bats could forage over the Forebay and other vegetated habitats. Bats are most susceptible to disturbance at roost sites during the breeding season (generally May through August), due to presence of pregnant females and nonflying pups, and during the winter when many bats enter a hibernation-like state. During the rest of the year, many bat species are migrating or otherwise less likely to be strongly tied to roost sites and, therefore, less susceptible to disturbance. There are no CNDDDB records for bats within 5 miles of the Project site, but the lack of records is likely due to a lack of survey effort rather than an indication of the distribution of bats in the Project

vicinity. No bats or sign of bats (e.g., urine staining, guano) were observed during site surveys, but because suitable roosting and foraging habitat is present, there is a moderate potential for bats to occur on the Project site.

3.4.3 IMPACTS AND MITIGATION MEASURES

ANALYSIS METHODOLOGY

As described above, ECORP Consulting, Inc. performed searches of CDFW's CNDDDB (2013) and the CNPS Electronic Inventory (CNPS 2013) for a 5-mile zone around the Project perimeter. A species list was also obtained from the USFWS Sacramento Field Office's Web site for the Pollock Pines USGS quadrangle and eight surrounding quadrangles. ECORP also reviewed prior biological documentation associated with the Project site and for other projects located near the Project site. Additional data regarding the potential occurrence of special-status species were gathered from various Web sites. In addition, ECORP biologists performed reconnaissance-level field surveys on June 17, 27, and 28, 2013.

The June 17, 27, and 28, 2013, surveys consisted of a general reconnaissance-level survey of the Project site. The surveys were conducted by walking meandering transects through the Project site and documenting site conditions while referencing existing maps and data sources. In addition, wildlife observed on the Project site was identified and recorded. The survey effort also consisted of the field portion of work in support of a California red-legged frog habitat assessment in accordance with the *Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog* (USFWS 2005). No determinate-level surveys for rare plants or animals were conducted during the field reconnaissance, although areas of potential habitat were systematically surveyed for any evidence of target species.

Each special-status species was assessed for its potential to occur based on the following criteria:

- ▶ **Present:** Species was observed on-site during a site visit or focused survey.
- ▶ **High:** Habitat (including soils and elevation requirements) for the species occurs on-site and a known occurrence is within 5 miles of the site.
- ▶ **Moderate:** Habitat (including soils and elevation requirements) for the species occurs on-site, but not within 5 miles of the site; or a known occurrence occurs within 5 miles of the site and marginal or limited amounts of habitat occurs on-site.
- ▶ **Low:** Limited habitat (including soils and elevation requirements) for the species occurs on-site and a known occurrence is not within 5 miles of the site.
- ▶ **Absent:** No suitable habitat (including soils and elevation requirements) occurs on-site, the site is located outside the species known geographical range, or the species was determined to be absent during focused surveys.

THRESHOLDS OF SIGNIFICANCE

Significance criteria are based on Appendix G and Section 15065 of the State CEQA Guidelines. The Project would have a significant impact on biological resources if Project implementation would do any of the following:

- ▶ 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 CDFW or USFWS
- ▶ Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by CDFW or USFWS
- ▶ Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means
- ▶ 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
- ▶ Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance
- ▶ Conflict with the provisions of an adopted habitat conservation plan (HCP), natural community conservation plan, or other approved local, regional, or state HCP

An evaluation of whether or not an impact on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local context. Substantial impacts would be those that would diminish, or result in the loss of, an important biological resource, or those that would obviously conflict with local, state, or federal resource conservation plans, goals, or regulations. Impacts may sometimes be locally important but not significant according to CEQA. The reason for this is that although the impacts would result in an adverse alteration of existing conditions, they would not substantially diminish, or result in the permanent loss of an important resource on a population-wide or regional basis.

FINDINGS OF THE INITIAL STUDY CONCLUDING NO IMPACT

The IS concluded that no impact would occur for the following threshold of significance:

- ▶ *Conflict with the Provisions of an Adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan, or Other Approved Local, Regional, or State HCP:* The Project site is not located in an area that has an adopted HCP; natural community conservation plan; or other approved local, regional, or state HCP.

This issue is not addressed further in this EIR.

IMPACT ANALYSIS

IMPACT 3.4-1 **Potential Direct Effects on Wetlands and Riparian Habitat as a Result of Vegetation Removal.** *Direct construction-related impacts on wetlands and riparian habitat would occur during Project activities, resulting in a loss of these sensitive resources. Wetlands that would be directly affected include those associated with the seepage area below the existing dam and wetland and riparian areas along the existing shorelines of the Forebay that would be affected during construction or inundated below the new high water level of Forebay reservoir following implementation of the Project. This impact would be **significant**. The replacement of the seepage pump facility would result in less seepage water reaching the North Fork Long Canyon Creek. However, the North Fork Long Canyon Creek would still receive flows from existing natural seeps that originate on the slope uphill from Blair Road. Therefore, the impact of post-Project operation of the Forebay on wetlands and riparian habitat of would be **less than significant**.*

Construction-Related Impact

A total of 26.11 acres of potential jurisdictional waters of the United States was determined to occur on the Project site (ICF 2011, 2013). Permanent loss of wetlands below the dam is necessary to achieve the Project objectives. Direct effects on wetlands and riparian habitat located below the existing dam and along the existing shorelines of the Forebay would result from construction activities. Wetlands and riparian habitat located along the shorelines of the existing Forebay would be below the new increased high-water level following Project implementation. Some of these wetlands and riparian habitat areas would be inundated to an extent that may result in loss or impacts to these features. It is anticipated that new wetlands and riparian habitat areas would establish along the shorelines of the reservoir reestablishing and potentially increasing the amount wetlands and riparian habitat areas around the reservoir. These construction-related impacts would be **significant**.

The Project includes the replacement of a seepage pump facility that captures seepage from the Forebay Dam and returns it to the Main Ditch for use in EID's drinking water system. The current facility is not functioning correctly and does not capture all the seepage from the dam as it has in the past. As a result, this water is currently conveyed into the North Fork Long Canyon Creek. Once replaced, the seepage pump facility would capture more seepage and therefore contribute less water to the North Fork Long Canyon Creek. The existing seeps that originate on the slope uphill from Blair Road and are not associated with seepage from the dam would remain following Project implementation and would still contribute water into North Fork Long Canyon Creek. The effects of this operational activity would be negligible because the replacement of the pump-back facility would reduce seepage flows only from the dam into the North Fork Long Canyon Creek and would not eliminate natural sources of flow into North Fork Long Canyon Creek. The reduction of seepage below the Forebay would have a **less-than-significant** impact on wetlands or jurisdictional waters of the United States.

Post-Project Operation-Related Impact

The Project includes the replacement of a seepage pump facility that captures seepage from the Forebay dam and returns it to the Main Ditch for use in EID's drinking water system. The current facility is not functioning correctly and does not capture all the seepage from the dam as it has in the past. As a result, this water is currently spilled into the North Fork Long Canyon Creek. After it is replaced, the seepage pump facility would capture more seepage; therefore, less water would be lost to the North Fork Long Canyon Creek. The existing natural seeps that originate on the slope uphill from Blair Road and are not associated with seepage from the dam would

remain following Project implementation and would still contribute water into North Fork Long Canyon Creek. This operational activity and impact would be **less than significant** because the replacement of the pump-back facility would reduce seepage flows only from the dam into the North Fork Long Canyon Creek and would not eliminate natural sources of flow into North Fork Long Canyon Creek. No mitigation is required.

Mitigation Measure 3.4-1: Implement Measures to Avoid, Restore, and Compensate for the Loss of Wetlands and Riparian Vegetation.

EID will avoid, minimize, and/or compensate for damage and/or loss of wetlands and riparian vegetation resulting from Project construction by implementing one or more of the following measures:

- ▶ Through regulatory authorization for fill of waters of the United States under Nationwide Permit 3 (maintenance), implement specific agency-required mitigation for direct and indirect impacts on wetlands and riparian vegetation to achieve no net loss of habitat under CWA jurisdiction. This could include, but not be limited to, developing on-site mitigation and/or paying in lieu mitigation fees to compensate for loss of wetlands and riparian areas.
- ▶ The loss of wetlands around the reservoir could be partially or wholly mitigated by creation of new inundated areas that would develop the same qualities as the existing areas that would be lost (in-kind mitigation).
- ▶ Purchase off-site mitigation credits from an appropriate mitigation bank or other available preserve.
- ▶ If wetland and riparian areas can be avoided during construction, these areas would be identified as avoidance areas and delineated with construction fencing or other methods.

Timing: Consultation with agencies will occur before construction, fencing and avoidance zones will be marked before and during construction, and new wetlands and riparian areas will be created following construction during raising of the water level of the Forebay.

Responsibility: EID and contractor.

Significance after Mitigation: Implementing Mitigation Measure 3.4-1.1 will reduce the potentially significant impact of Project construction on wetlands and riparian vegetation to a **less-than-significant** level. Some wetlands may be avoided, additional riparian areas and waters will be created though the refilling of the reservoir to the new high-water mark. Additionally, EID will implement other mitigation as needed to achieve no net loss of habitat under CWA jurisdiction.

IMPACT 3.4-2 **Potential Indirect Effects on Wetlands as a Result of Erosion, Sedimentation, and/or Contamination.** Soils exposed during Project construction activities might erode, degrading wetland habitat within and adjacent to the construction areas. This impact would be **significant**. No operational activities would indirectly affect wetlands by resulting in erosion, sedimentation, and/or contamination. Therefore, **no impact** would occur with post-Project operation of the Forebay.

Construction-Related Impact

A total of 26.11 acres of potential jurisdictional waters of the United States was determined to occur on the Project site (ICF 2011, 2013). Soils exposed during Project construction activities might erode, degrading wetland habitat within and adjacent to the construction areas through siltation, pollution, sedimentation, or increased turbidity. This construction-related impact would be **significant**.

Post-Project Operation-Related Impact

Indirect Project-related effects on wetlands caused by erosion, sedimentation, and/or contamination could occur only during the construction phase. No operational activities would indirectly affect wetlands by resulting in erosion, sedimentation, and/or contamination. Therefore, **no impact** would occur with post-Project operation of the Forebay. No mitigation is required.

Mitigation Measure 3.4-2: Implement Mitigation Measures 3.9-1a and 3.9-1b.

EID will implement Mitigation Measure 3.9-1a, "Implement Water Diversion and Control Plan," and Mitigation Measure 3.9-1b, "Implement NPDES General Permit and SWPPP," as described in Section 3.9, "Hydrology and Water Quality."

Timing: Implementation of the water diversion and control plan, the NPDES Permit, and incorporation of SWPPP measures and BMPs will occur before the start of construction, during construction, and continue until final stabilization requirements are met.

Responsibility: EID and contractor.

Significance after Mitigation: Implementing Mitigation Measure 3.4-2 will reduce the potentially significant impact associated with potential indirect effects on wetlands resulting from erosion, sedimentation, and/or contamination during construction to a **less-than-significant** level because EID will implement measures specified in the water diversion and control plan and SWPPP.

IMPACT 3.4-3

Direct Effects from Removal of Terrestrial Vegetation and Removal of Common Terrestrial Wildlife Habitat. *Project construction would result in the removal of trees and other vegetation and potentially effect plant and wildlife species that occur within the Sierran mixed conifer woodland, upland scrub, and nonnative annual grassland communities (terrestrial vegetation communities) on the Project site. Most of the species that might occur on the Project site are common and widely distributed throughout the area, and the loss of a few individuals as a result of habitat removal or flooding would have a negligible impact on overall population sizes, either locally or throughout the region. However, the take of bird nests, eggs, or chicks during vegetation removal would be a **significant** impact. Operational activities would have no direct effects on plants or wildlife species that occur within the on-site terrestrial plant communities. Therefore, **no impact** would occur with post-Project operation of the Forebay.*

Construction-Related Impact

Vegetation removal is necessary in the borrow areas, below the dam, and below the new high-water mark of the reservoir. Up to approximately 89 acres of forestland could be removed as a result of implementing the Project. Construction activities would require removal of about 5 acres of terrestrial habitat around the Forebay shoreline and approximately 9 acres of habitat below the dam. Raising the Forebay Dam by 10 feet would result in the permanent loss of terrestrial habitat directly adjacent to the reservoir. Construction activities would primarily affect Sierran mixed conifer forest, a plant community that contains trees, plants, and wildlife species common and widely distributed throughout the area. The construction of the Project would not affect a unique vegetative community or one with a limited distribution. The loss of trees as a result of habitat removal or inundation would have a negligible impact on overall vegetative community size or distribution, or the distribution and abundance of common wildlife species.

During construction of the Project, the Forebay would be dewatered, or nearly so, to rebuild and upgrade the dam, penstock outlet, spillway, canal inlet to reservoir, drinking water outlet works, and other facilities. Some removal of accumulated sediment is also expected to occur near the drinking water and penstock intakes. These activities would occur during the first year of construction from October through December during the annual El Dorado Canal maintenance outage. At this time, inflow to the Forebay from the El Dorado Canal would be stopped and the reservoir drawn down to the level needed to expose the inlet and the penstock for repair work. In mid- December, EID would resume the El Dorado Canal operations to the Forebay. The BMI community would be affected by the drawdown, and only the population supported by the residual pool, if any, would remain. However, the short life cycle of BMIs and the occurrence of the drawdown during the annual canal outage period are expected to minimize the effect of the drawdown.

The aquatic invertebrates in the Forebay are expected to recolonize rapidly during the next spring and summer (the growing season) as typically is the case because most BMI adult taxa would recolonize from other water bodies. In addition, BMI drift entering the El Dorado Canal from the South Fork American River would facilitate aquatic invertebrate recovery in the Forebay for those species adapted to Forebay conditions. The temporary impact on the aquatic invertebrates of the Forebay is not considered significant because recovery would occur naturally in a short period following Forebay rewatering.

Direct wildlife mortality might occur during construction activities and reservoir refill. Noise, dust, and visual disturbance from increased human activity could cause habitats within and adjacent to the construction zone to become temporarily unsuitable for wildlife. Construction could also affect wildlife in adjacent areas by interfering with breeding or foraging activities, altering movement patterns, or causing animals to temporarily avoid those areas. Wildlife are generally most vulnerable to construction-related disturbances during their breeding seasons, and disturbances from construction could result in nest, roost, or territory abandonment and subsequent reproductive failure if these disturbances were to occur during an affected species' breeding season. Most wildlife that would be affected by construction and operation are common, wide-ranging species that are expected to recolonize an area after construction is completed.

Burrow-dwelling animals, eggs and nestlings of bird species with small, well-hidden nests including species protected under the MBTA, and species with limited mobility are susceptible to death or injury as a result of implementing the Project. Mobile species, including nonbreeding birds and larger mammals, are expected to disperse into adjacent areas during the Project's land clearing, grading, and flooding phases. Construction

activities could temporarily disrupt movement patterns for wildlife that use the Project site for dispersal (e.g., black-tailed deer, raccoon, muskrat, bobcat, coyote, and skunks). Project-related construction activities, including tree and vegetation removal, are scheduled to begin in April 2015, within the specified nesting season (February 1 through August 15). Nesting birds would be affected if active nests are destroyed or disturbed by Project-related actions, including tree and vegetation removal or construction activities near an active nest. Project construction could result in the temporary loss of terrestrial wildlife habitat that supports special-status species. This construction-related impact would be **significant**.

Post-Project Operation-Related Impact

Operational activities would have no effect on the on-site terrestrial plant communities. Therefore, **no impact** would occur with post-Project operation of the Forebay. No mitigation is required.

Mitigation Measure 3.4-3a: Minimize Impacts on Nesting Birds on the Project Site during Construction Activities.

EID will implement one or more of the following measures, depending on consultation with CDFW and/or USFWS as appropriate, to minimize impacts on nesting birds on the Project site during construction activities. The specific measure(s) implemented will depend on the species observed, nature of nesting activities, location of nest relative to construction activities, and nature of construction activities.

When feasible, Project-related construction activities, including tree and vegetation removal, will be initiated or occur during the nonnesting season (August 16 through January 31).

If construction activities, including noise-generating activities, ground-disturbing construction, or vegetation trimming or removal, cannot be initiated prior to the avian nesting season (February 1 through August 15), the use of feasible proactive deterrence measures will be initiated prior to nesting season to discourage birds from nesting in the area. These measures could include, but would not be limited to, the use of sound deterrents (e.g., broadcast of predator or distress calls or other sounds to approximate the noise conditions during construction), physical deterrents (e.g., bird netting in strategic locations), or visual deterrents (e.g., owl decoys, reflective tape, lightweight reflective turbines), if appropriate.

If Project-related construction activities, including tree and vegetation removal, must occur during the avian nesting season (February 1 through August 15), a preconstruction survey for nesting birds shall be conducted by a qualified biologist not more than 30 days prior to the start of noise-generating activities, ground-disturbing construction, or vegetation trimming or removal activities.

Trees with raptor nests shall be evaluated by a qualified biologist to determine whether the raptor nest is active. If active raptor nests are found during preconstruction surveys, a site evaluation will be conducted by a qualified biologist to determine what avoidance zone is appropriate based on the observed sensitivity of the nesting birds in question and other site specific features (e.g., topographical characteristics that obstruct line of sight from construction activities). Requests to remove trees with active raptor nests will be reviewed in coordination with CDFW.

No additional measures will be implemented if active nests are more than the following distances from the nearest work site: (a) 500 feet for raptors or (b) 250 feet for passerine birds. Buffers shall not apply to construction-related traffic using existing roads that is not limited to Project-specific use (e.g., county roads, highways, farm roads).

Buffer Size Reduction

The specified buffer sizes for birds may be reduced on a case-by-case basis if, based on compelling biological or ecological reasoning (e.g., the biology of the bird species, concealment of the nest site by topography, land use type, vegetation, and level of Project activity) and as determined by a qualified biologist that implementation of a specified smaller buffer distance will still avoid Project-related “take” (as defined by Fish and Game Code Section 86). Requests to reduce standard buffer size will be submitted to CDFW and/or USFWS, as appropriate. Requests to reduce buffer size will identify the species, location, size, and expected duration of proposed buffer reduction, reason for the buffer reduction, and the name and contact information of the qualified biologist(s) who recommends the buffer size reduction.

Non-special-status species found building nests within the standard size buffer zone after specific Project construction activities begin shall be assumed tolerant of that specific Project activity, and such nests will be protected by an appropriately sized buffer (as determined by the qualified biologist). Such nests shall be monitored during construction activities by a qualified biologist until it is determined that the young have fledged, the young are no longer dependent on parental care, or construction within the buffer zone ceases (whichever occurs first).

If nesting birds show signs of distress within a reduced buffer zone that appears to be caused by construction activities, the qualified biologist shall reinstate the standard-sized buffers. The recommended buffers may be subsequently reduced, following the process described above, only after the qualified biologist has determined that the nesting birds are no longer exhibiting signs of stress.

Monitoring and Reporting

A monthly written monitoring report shall be submitted to CDFW and/or USFWS as appropriate. Monthly reports shall include all the information included in buffer reduction requests in addition to duration of buffer reduction and outcomes for nests, eggs, young, and adults during construction within a reduced buffer. No reporting will be required if construction activities do not occur within a reduced buffer during any calendar month. A final report shall be submitted to CDFW and USFWS at the end of each nesting season, summarizing monitoring results and outcomes observed in the prior season.

To prevent impacts on northern rough-winged swallows and/or their nests, excavation of banks along the eastern inlet canal will be performed during nonbreeding season (September 1 through February 1).

Implementing Mitigation Measure 3.4-3a will reduce the potential impact of the Project on migratory birds and raptors and northern rough-winged swallows to a **less-than-significant** level.

Mitigation Measure 3.4-3b: Develop Worker Environmental Awareness Program.

To reduce direct mortality of wildlife on the Project site during construction, EID will develop a Worker Environmental Awareness Program (WEAP). The program will identify the special-status species found on the Project site and identify the Project features and best management practices incorporated to prevent impacts to those species. The WEAP will initially be presented to the construction team and workers at Project kickoff. Printed handouts and other materials, if deemed appropriate, will be distributed and used for future reference by the construction team. Following Project kickoff, the Contractor construction foreman, or predetermined alternate

Contractor designee, will be responsible for making sure that other workers on the Project receive WEAP training as they come onto the Project. A roster of WEAP-trained construction workers will be maintained in the Project construction office and made available for review by regulatory agencies if needed. Other measures to be addressed in the WEAP training include the following:

- ▶ Remove litter and other debris that might attract animals from the Project site daily, and store it in enclosed containers.
- ▶ Exclude pets from the Project site, including access roads and staging areas.

Implementing a WEAP will help reduce the impact of the Project on special status species to a **less-than-significant** level.

Timing: Avoidance or buffer zones will be marked before construction begins. Worker training will be conducted before work begins, and new workers will be trained before initiating on-site work.

Responsibility: EID and contractor.

Significance after Mitigation: Implementing Mitigation Measures 3.4-3a and 3.4-3b will reduce impacts on nesting migratory birds and common wildlife to a **less-than-significant** level. EID will protect against direct nesting bird and wildlife mortality by conducting appropriately timed preconstruction biological surveys, mapping and flagging sensitive habitats and biological resources to be avoided during construction, monitoring activities within a reduced buffer if necessary, conducting WEAP training, and avoiding sensitive biological resources.

IMPACT 3.4-4 **Potential Direct Effects on Special-Status Plant Species.** *Construction and related activities could potentially result in direct effects on Pleasant Valley mariposa lily and Stebbins' phacelia. This impact would be **significant**. No operational activities would result in direct effects on special-status plants. Therefore, **no impact** would occur with post-Project operation of the Forebay.*

Construction-Related Impact

Construction and related activities could result in direct effects on two special-status plant species that have potential to occur on the Project site: Pleasant Valley mariposa lily and Stebbins' phacelia. No special-status plant species were observed during reconnaissance-level surveys completed in 2013 within the Project boundary. Pleasant Valley mariposa lily has been found within 1 mile of the Project site. This plant is found on sunny openings on Josephine series soils, which occur in the borrow area on the Project site (blooms May through July). Stebbins' phacelia is generally found among rocks on metamorphic rock benches and Josephine series soils in lower montane coniferous forest, cismontane woodland, meadows, seeps, and riparian woodland (blooms May through July). The potential exists for borrow activities and other construction related activities to remove plants and negatively affect site suitability for this species. This construction-related impact would be **significant**.

Post-Project Operation-Related Impact

No operational activities would result in direct effects on special-status plants. Therefore, **no impact** would occur with post-Project operation of the Forebay. No mitigation is required.

Mitigation Measure 3.4-4a: Implement Mitigation Measure 3.4-3b, Develop Worker Environmental Awareness Program.

Implementing Mitigation Measure 3.4-4a will partially mitigate impacts on Pleasant Valley mariposa lily and Stebbins' phacelia.

Mitigation Measure 3.4-4b: Conduct Surveys for Pleasant Valley Mariposa Lily and Stebbins' phacelia, and Establish Avoidance Zones.

- ▶ *Conduct Species-Specific Surveys.* Before construction, the location of special-status plant species will be determined through surveys conducted according to CNPS protocol. Surveys will be conducted on lands with appropriate microhabitat characteristics (e.g., sunny openings on Josephine-series soils) and be timed between May and July. Known reference populations for each species will be visited prior to Project surveys to confirm the species is blooming where known to occur.
- ▶ *Establish Avoidance Zones.* Qualified biologists will locate and field-mark special-status plant populations found during surveys before construction activities begin. If deemed appropriate, avoidance zones might be established around special-status plants, and orange construction fencing, pin flags, or other highly visible methods used to clearly demarcate areas for avoidance. Immediately prior to construction, biologists will inspect areas with known special-status plant populations to ensure that barrier fencing, stakes, flagging, and setback buffers (if required) are in place. Avoidance measures and buffer distances might vary between species and the specific avoidance zone distance will be determined in coordination with appropriate resource agencies.

If rare special-status plant species are found on the Project site and avoidance of the species is not possible, then additional measures such as seed collection and/or translocation might be developed in consultation with the appropriate agencies.

Timing: Surveys will be conducted during the bloom period for each species and avoidance zones marked before construction begins; WEAP training will occur before construction and as needed; biological monitoring will occur as needed in sensitive habitats; and seed collection/translocation, if needed, will occur immediately before ground clearance.

Responsibility: EID and contractor.

Significance after Mitigation: Implementing Mitigation Measures 3.4-4a and 3.4-4b will reduce Project impacts to a **less-than-significant** level. EID and its construction contractor will demarcate the locations of sensitive plants and implement steps for avoidance of protected plants.

**IMPACT
3.4-5**

Removal of Habitat, Disturbance, or Direct Mortality of Western Pond Turtle, Special-Status Bats, and Ringtail. *Construction-related activities could result in the temporary disturbance of special-status wildlife, the loss of habitat that supports special-status wildlife species, or direct mortality of special-status wildlife. This impact would be **significant**. No operational activities would affect habitat or disturb special-status wildlife species that might occur on the Project site. Therefore, **no impact** would occur with post-Project operation of the Forebay.*

Construction-Related Impact

Construction effects of the Project on special-status wildlife species and their habitats would be similar to those discussed for general wildlife and nesting birds in Impact 3.4-3. However, the Project effects on special-status wildlife species could be greater because the distribution and abundance of these species might be limited. Nonavian special-status wildlife species that could be affected include western pond turtle, bats, and ringtail. Impacts could result from direct mortality, disruption of foraging, disruption of breeding activities, loss of foraging or shelter habitat, increased exposure to predation, or a combination of all these factors. Effects could occur during vegetation clearing, grading, drawdown of the reservoir, and during refilling and raising the water level in the reservoir.

The Forebay would be drawn down in October 2015, and it would be refilled to its original water level in December 2015. In December 2016, the water level would be raised an additional 10 vertical feet. Western pond turtles, a California species of special concern, are known to occur within the Forebay and might be affected by manipulations of water level during construction, which would be outside the normal historical operating range.

Depending on whether turtles are still seasonally active at the time of drawdown, drawdown of water might cause turtles to migrate overland away from formerly ponded habitat. Such overland movements might increase the risk of predation and could lead to road mortality. Smaller turtles are much more susceptible to dehydration than larger turtles because of their increased surface area/volume ratio (Bury 1979) and might face the additional threat of dehydration while migrating.

Additionally, if western pond turtles are still seasonally active during drawdown, eliminating ponded aquatic habitat might decrease the distribution of foraging habitat, the abundance of food, and the timing and duration of foraging opportunities. Eliminating shallow-water areas near the shallow drinking water intake and emergency spillway channel might force smaller turtles into deeper water with fewer refugia, increasing the possibility of predation by predatory fish. Conversely, if western pond turtles have begun seasonal dormancy when dewatering commences, dewatering might strand dormant turtles in Forebay substrate and expose individuals of all size classes to increased predation pressure by avian and terrestrial scavengers (e.g. common raven, striped skunk [*Mephitis mephitis*], raccoon [*Procyon lotor*], coyote [*Canis latrans*]).

Female pond turtles generally deposit nests within 150 feet of shore, and neonate turtles hatch in the fall of a given year, remaining in the nest over winter and emerging the following spring. Nests might be flooded and turtles drowned when the water level is raised to its new elevation. That result would constitute a loss of the year's recruitment.

Each of the outcomes described in the preceding discussion would be a **significant** impact on western pond turtle.

Bat species might use trees with exfoliating bark, snags, or other structures on the Project site as maternity or day roosts. Drawdown of the Forebay could lead to a temporary and less-than-significant loss of foraging habitat over the large open-water reservoir. Removal of vegetation below the dam or in borrow sites might lead to a loss of roost sites, and, depending on timing, removal of vegetation could lead to direct mortality of bats or their young. Mortality of bats or the removal of important roost sites during important aspects of life history, such as early pup-rearing, would be considered **significant**.

Ringtails use large, dead snags in riparian zones or rock outcrops on hillsides near water for dens. Although rock outcrops are lacking on the Project site, removal of large snags in the riparian area below the dam or in borrow areas could affect ringtails by exposing ringtails to increased threat of predation or road mortality. Also, depending on timing, young might be abandoned and a loss of recruitment would occur. This impact would be **significant**.

Post-Project Operation-Related Impact

No operational activities would affect habitat or negatively affect special-status wildlife species that might occur on the Project site. Therefore, **no impact** would occur with post-Project operation of the Forebay. No mitigation is required.

Mitigation Measure 3.4-5a: Implement Mitigation Measure 3.4-3b, Develop Worker Environmental Awareness Program.

Implementing Mitigation Measure 3.4-5a will partially mitigate impacts on western pond turtle, bats, and ringtail before and during construction.

Mitigation Measure 3.4-5b: Initiate Western Pond Turtle Relocation.

Mitigation to reduce the impact of the Project on western pond turtle will involve consultation with CDFW, trapping of turtles and relocation off-site, and opportunistic capture during water drawdown.

Beginning in April 2015, trapping for breeding-size adult turtles will commence. Captured turtles will be relocated to a suitable nearby water body subject to CDFW prior approval. Trapping will be performed by a qualified biologist operating under an active California state Scientific Collecting Permit. This action will have the effect of removing egg-laying females from the reservoir prior to egg deposition (late April through early August) in 2015 and 2016, thus eliminating the potential for drowning of eggs or hatchlings in nests when water is raised to its new elevation in December 2016.

Although hatchling and small size-class turtles are notoriously difficult to trap and are usually underrepresented in trap efforts (Bury et al. 2012), the use of specialized traps (i.e., altered, floating minnow traps) deployed in shallow water at the drinking water intake, emergency spillway channel, and along the southern edge of the reservoir might be deployed to capture small turtles with some success. As with for breeding adults, captured small-sized turtles will be relocated to a preapproved recipient site.

Despite the aforementioned trapping efforts, smaller nonbreeding individuals will likely remain after the cessation of trapping. As a result, a qualified biological monitor will be retained and will be on-site during drawdown of the

reservoir. The monitor will collect turtles opportunistically as they are exposed by receding water and will relocate them to a preapproved recipient site.

No action will be taken to restock the Forebay with pond turtles because it is believed that colonization will take place naturally. It is anticipated that these actions will reduce the significant impact of the Project on western pond turtles to a **less-than-significant** level.

Mitigation Measure 3.4-5c: Conduct Habitat Assessment and Implement Other Protective Measures for Special-Status Bat Species.

EID will conduct a habitat assessment of the Project site to identify potential habitat for bat maternity roosts (e.g., human-made structures, large-diameter trees, snags). Removal of potential roost habitat identified during the assessment will be avoided during the bat maternity season (May through mid-August). If removal of potential roost habitat occurs outside of the maternity season, no further mitigation will be required.

If removal of potential roost habitat must be conducted during the maternity season, preconstruction inspections for bats will be conducted using appropriate methods (e.g., camera inspection, exit survey with night optics, acoustic survey) within 14 days of vegetation removal. If bats are found during inspections, removal of that roost feature will be delayed until the end of the maternity season or until a qualified bat biologist has determined that the young are capable of flight. These actions will reduce the significant impact of the Project on bats to a **less-than-significant** level.

Mitigation Measure 3.4-5d: Conduct Preconstruction Surveys for Ringtail in Riparian Zones and Areas of Rocky Outcrops.

Large snags and rocky outcrops on the Project site will be surveyed and evaluated by a qualified biologist for the presence of ringtail within 14 days of vegetation removal. Occupied dens will be flagged, and ground-disturbing activities within 200 feet will be avoided. If occupied dens could not be avoided, ringtails might be evicted by a qualified biologist with a Memorandum of Understanding from CDFW, after agency coordination and after early pup-rearing season (May through June) is past. It is anticipated that these actions will reduce the significant impact of the Project on ringtail to a **less-than-significant** level.

Timing: Breeding-size pond turtles will be captured and translocated before egg deposition. Nonbreeding turtles will be captured and removed opportunistically during reservoir drawdown (October 2015) and relocated to a recipient site. Habitat assessments and biological surveys will be performed for bats and ringtail as necessary before construction, and preconstruction surveys for bats and ringtail at identified microhabitats will be performed within 14 days before vegetation clearance. Preconstruction surveys will occur as specified above. WEAP training and consultation with agencies will occur as needed.

Responsibility: EID and contractor.

Significance after Mitigation: Implementing Mitigation Measures 3.4-5a through 3.4-5d will reduce the significant impact of Project construction on nonavian special-status wildlife species to a **less-than-significant** level.

IMPACT 3.4-6 **Fishery Impacts.** *Construction-related activities could result in direct impacts on fish species in the Forebay. This impact would be **significant**. **No impact** would occur with post-Project operation of the Forebay.*

Construction-Related Impact

Construction-related activities could result in direct impacts on fish species in the Forebay. The Forebay is an offstream reservoir; therefore, fish in this water body cannot migrate upstream beyond the confines of the reservoir. However, no fish species that are present on the Project site or that have the potential to be on the Project site are identified as special-status species, and the Forebay is seasonally stocked with hatchery-raised rainbow trout by CDFW for recreational purposes. No special-status fish are known or anticipated to occur in the Forebay. Construction-related impacts on fish species in the Forebay Reservoir could result from reservoir drawdown and the subsequent increase of turbidity and water temperatures. The construction-related impact would be **significant**.

Post-Project Operation-Related Impact

No operational activities would result in direct impacts on fish species that occur on the Project site. Therefore, **no impact** would occur with post-Project operation of the Forebay. No mitigation is required.

Mitigation Measure 3.4-6a: Implement Mitigation Measures for Fishery Management at Forebay

To reduce impacts on fish species, EID will implement the following measures, which have been developed in coordination with CDFW:

- ▶ Cessation of ongoing fish-stocking activities will take place before planned dewatering activities.
- ▶ EID will advertise and notify the public of nonrestricted fishing opportunities consistent with CDFW regulations at the Forebay to remove game and nongame fish before construction.
- ▶ Conduct visual surveys to monitor condition of fish at Forebay during and immediately following reservoir drawdown.
- ▶ Based on observations from visual surveys and if deemed appropriate, EID will develop a plan for a fish salvage operation in consultation with CDFW to further minimize fish loss.

Mitigation Measure 3.4-6b. Implement Mitigation Measures Requiring the Use of Best Management Practices for Erosion/Sedimentation, Management of Hazardous Substances, and Implementation of Hydrology and Water Quality Measures.

To reduce these impacts to a less-than-significant level, EID will implement mitigation measures requiring the use of best management practices for erosion/sedimentation, management of hazardous substances, and

implementation of hydrology and water quality measures (as discussed in Section 3.9, “Hydrology and Water Quality”). See Section 3.9 for a full discussion of those mitigation measures.

Timing: Cessation of fish stocking and advertisement of fishing opportunities will occur before water diversion and drawdown. Monitoring will occur during water drawdown, and a fish salvage plan, if needed, will be developed in consultation with CDFW during drawdown.

Responsibility: EID

Significance after Mitigation: Implementing Mitigation Measures 3.4-6a and 3.4-6b will reduce the significant impact on fisheries to a **less-than-significant** level.

3.4.4 RESIDUAL SIGNIFICANT IMPACTS

All impacts on biological resources would be reduced to a less-than-significant level after mitigation, or no impact would occur, as described above. There would be no residual significant impacts as a result of implementing the Project.

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3.5 CULTURAL RESOURCES

This section discusses the cultural resources in the Project area and the relationship between the Project and existing adopted federal, state, regional, and local laws, regulations, and planning goals and policies related to cultural resources. In addition, this section analyzes the potential impacts of the Project on cultural resources during construction and long-term operation of the modified El Dorado Forebay Dam.

3.5.1 REGULATORY BACKGROUND

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

The Project is subject to the requirements of Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR Part 800 because the El Dorado Forebay is component of a federally licensed hydroelectric project (FERC License No. 184). The NHPA is the primary legislation that outlines the federal government's responsibility to consider the effects of its actions on historic properties and affords the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment.

Section 106 of the NHPA and its implementing regulations at 36 CFR Part 800 describe the process that the federal agency shall take to identify cultural resources and assess the level of effect that the proposed undertaking would have on historic properties. An undertaking is defined as a "project, activity or program funded in whole or in part, under the direct or indirect jurisdiction of a federal agency." This includes projects that are carried out by or on behalf of the agency; those carried out with federal assistance; those requiring a federal permit, license, or approval; and those subject to state or local regulation administered pursuant to a delegation or approval by a federal agency.

A cultural resource is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. Cultural resources that are listed in or eligible for inclusion in the National Register of Historic Places (NRHP) are referred to as historic properties. The criteria for NRHP eligibility are outlined at 36 CFR Part 60 and described below.

Compliance with Section 106 follows a series of steps designed to identify and consult with interested parties, determine the area of potential effects (APE), determine whether historic properties are present in the APE, and assess the effects the undertaking would have on historic properties. Section 106 requires consultation with Native American tribes about identifying sites of religious or cultural significance, and with individuals or groups who are entitled or have requested to be consulting parties. The regulations at 36 CFR Part 800.5 require federal agencies to apply the criteria of adverse effect to the historic properties identified in the APE. The criteria of adverse effect, defined at 36 CFR Part 800.5(a)(1), state that:

An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

The regulations at 36 CFR Part 800 require that consultation occur with the State Historic Preservation Officer (SHPO) to provide the SHPO an opportunity to comment and concur with the lead federal agency's

determinations. If the undertaking would result in adverse effects on historic properties, these adverse effects must be resolved in consultation with the SHPO and other parties identified during the Section 106 process before the undertaking can proceed to implementation.

National Register of Historic Places Evaluation Criteria

The NRHP is the authoritative guide to be used by federal, state, and local governments and by private groups and citizens to identify cultural resources and indicate what properties should be considered for protection from destruction or impairment (36 CFR Part 60.2). Maintained by the U.S. Secretary of the Interior, the NRHP identifies buildings, structures, sites, districts, and objects of significance in American history, architecture, archaeology, engineering, and culture. A property may be listed if it meets one of the four evaluation criteria defined in 36 CFR 60.4:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association and

- A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. That are associated with the lives of persons significant in our past; or
- C. That embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. That have yielded, or may be likely to yield, information important in prehistory or history.

Under Section 106 of the NHPA, only cultural resources that have been listed in the NRHP or determined to be eligible for listing need to be considered when evaluating an action’s effect on cultural resources.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

California Environmental Quality Act

CEQA broadly defines what constitutes a cultural or historical resource. Cultural resources can include traces of prehistoric habitation and activities, historic sites and materials, and places used for traditional Native American observances, or places with special cultural significance. In general, any trace of human activity more than 50 years old must be treated as a potential cultural resource.

According to the State CEQA Guidelines (14 CCR Section 15064.5[a][3]), a resource is generally considered historically significant if it meets the criteria for listing in the California Register of Historical Resources (CRHR) (PRC Section 5024.1; 14 CCR Section 4852). A historical resource is defined as any site that:

- ▶ Is listed in or determined to be eligible by the State Historical Resources Commission for listing in the CRHR, or is determined to be significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, or cultural annals of California and

- ▶ Is eligible for listing in the CRHR (criteria noted below) or
- ▶ Is included in a local register of historical resources, as defined by PRC Section 5020.1(k), or is identified as significant in a historical resource survey that meets the requirements of PRC Section 5024.1(g)

The CRHR includes resources that are listed in or formally determined eligible for listing in the NRHP, as well as some California State Landmarks and Points of Historical Interest. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be significant resources for purposes of CEQA unless a preponderance of evidence indicates otherwise (PRC Section 5024.1, 14 CCR 4850). The eligibility criteria for listing in the CRHR are similar to those for NRHP listing but focus on the importance of the resources to California history and heritage. A cultural resource may be eligible for listing in the CRHR if it meets any of the following criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.
2. It is associated with the lives of persons important to local, California, or national history.
3. It embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master or possesses high artistic values.
4. It has yielded or has the potential to yield information important to the prehistory or history of the local area, California, or the nation.

The CRHR definition of integrity and its special considerations for certain properties are slightly different from those for the NRHP. Integrity is defined as “the authenticity of an historical resource’s physical identity evidenced by the survival of characteristics that existed during the resource’s period of significance.” The CRHR regulations also state that eligible resources must “retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance,” and list the same seven aspects of integrity used for evaluating properties under the NRHP criteria. The CRHR’s special considerations for certain property types are limited to moved buildings, structures, or objects; historical resources achieving significance within the past 50 years; and reconstructed buildings.

CEQA also has a provision for “unique archaeological resources,” which are described in PRC Section 21083.2. A unique archaeological resource is defined as an archaeological artifact, object, or site about which it can clearly be demonstrated that, without merely adding to the current body of knowledge, a high probability exists that it:

- ▶ Contains information needed to answer important scientific research questions and there is 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 or
- ▶ Is directly associated with a scientifically recognized important prehistoric or historic event or person

Senate Bill 18

Senate Bill (SB) 18 was signed into law by Governor Arnold Schwarzenegger in September 2004. SB 18 requires cities and counties to consult with California Native American tribes to aid in the protection of traditional tribal culture during local land use planning. The intent of SB 18 is to give California Native American tribes an opportunity to participate in local land use decisions at an early planning stage to protect or mitigate impacts on cultural places. SB 18 requires local governments to consult with tribes before making certain planning decisions and to provide notice to tribes at certain key points during the planning process. These consultation and notice requirements apply to general plan updates and the adoption of specific plans.

The principal objective of SB 18 is to preserve and protect the cultural places of California Native Americans. SB 18 refers to PRC Sections 5097.9 and 5097.995 to define cultural places as:

- ▶ Native American sanctified cemeteries, places of worship, religious or ceremonial sites, or sacred shrines (PRC Section 5097.9) or
- ▶ Native American historic, cultural, or sacred sites that are listed or may be eligible for listing in the CRHR pursuant to Section 5024.1, including any historic or prehistoric ruins, any burial ground, and any archaeological or historic site (PRC Section 5097.995)

These definitions can encompass a variety of places. Archaeological or historic sites may be places of tribal habitation and activity, or burial grounds or cemeteries. Some examples are village sites and sites with evidence (artifacts) of economic, artistic, or other cultural activity. Religious or ceremonial sites and sacred shrines may be modern-day places of worship and places associated with creation stories or other significant spiritual history. Collection or gathering sites are specific places where California Native Americans access certain plants for food, medicine, clothing, ceremonial objects, basket making, and other crafts and uses important to ongoing cultural traditions and identities. These places may qualify as religious or ceremonial sites and may be listed or eligible for listing in the CRHR.

SB 18 uses the term “California Native American tribe,” which it defines as “a federally recognized California Native American tribe or a non–federally recognized California Native American tribe that is on the contact list maintained by the Native American Heritage Commission.” “Federal recognition” is a legal distinction that applies to a tribe’s rights to a government-to-government relationship with the federal government and eligibility for federal programs. All California Native American tribes, whether or not they are officially recognized by the federal government, are distinct, independent governmental entities with specific cultural beliefs and traditions and unique connections to their ancestral homelands. SB 18 recognizes that protecting traditional tribal cultural places is important to all tribes, whether or not they are federally recognized, and it gives all California Native American tribes the opportunity to consult with local governments for this purpose. Tribal governments control tribal assets, laws/regulations, membership, and land management decisions that affect the tribe.

REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Government Code Section 53091 states that building and zoning ordinances do not apply to “construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency.” Public utility projects that serve the facilities described above would not be subject to

local plans, policies, regulations, or ordinances. The following local regulations related to cultural resources are provided for informational purposes and are provided as a basis to assist with CEQA review in evaluating the level of significance associated with impacts.

The following cultural resources–related goal, objectives, and policies are included in the Conservation and Open Space Element of the 2004 *El Dorado County General Plan* (El Dorado County 2004):

Goal 7.5: Ensure the preservation of the County’s important cultural resources.

- ▶ **Objective 7.5.1:** Protection of Cultural Heritage—Creation of an identification and preservation program for the County’s cultural resources.
 - **Policy 7.5.1.1:** The County shall establish a Cultural Resources Ordinance. This ordinance shall provide a broad regulatory framework for the mitigation of impacts on cultural resources (including historic, prehistoric and paleontological resources) by discretionary projects. This Ordinance should include (but not be limited to) and provide for the following:
 - A. Appropriate (as per guidance from the Native American Heritage Commission) Native American monitors to be notified regarding projects involving significant ground-disturbing activities that could affect significant resources.
 - B. A 100-foot development setback in sensitive areas as a study threshold when deemed appropriate.
 - C. Identification of appropriate buffers, given the nature of the resources within which ground-disturbing activities should be limited.
 - D. A definition of cultural resources that are significant to the County. This definition shall conform to (but not necessarily be limited to) the significance criteria used for the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR) and Society of Vertebrate Paleontology.
 - E. Formulation of project review guidelines for all development projects.
 - F. Development of a cultural resources sensitivity map of the County.
 - **Policy 7.5.1.2:** Reports and/or maps identifying specific locations of archaeological or historical sites shall be kept confidential in the Planning Department but shall be disclosed where applicable.
 - **Policy 7.5.1.3:** Cultural resource studies (historic, prehistoric, and paleontological resources) shall be conducted prior to approval of discretionary projects. Studies may include, but are not limited to, record searches through the North Central Information Center at California State University, Sacramento, the Museum of Paleontology, University of California, Berkeley, field surveys, subsurface testing, and/or salvage excavations. The avoidance and protection of sites shall be encouraged.

- **Policy 7.5.1.4:** Promote the registration of historic districts, sites, buildings, structures, and objects in the National Register of Historic Places and inclusion in the California State Office of Historic Preservation’s California Points of Historic Interest and California Inventory of Historic Resources.
- **Policy 7.5.1.5:** A Cultural Resources Preservation Commission shall be formed to aid in the protection and preservation of the County’s important cultural resources. The Commission’s duties shall include, but are not limited to:
 - A. Assisting in the formulation of policies for the identification, treatment, and protection of cultural resources (including historic cemeteries) and the curation of any artifacts collected during field collection/excavation;
 - B. Assisting in preparation of a cultural resources inventory (to include prehistoric sites and historic sites and structures of local importance);
 - C. Reviewing all projects with identified cultural resources and making recommendations on appropriate forms of protection and mitigation; and
 - D. Reviewing sites for possible inclusion in the National Register of Historic Places, California Register, and other State and local lists of cultural properties.

The County shall request to become a Certified Local Government (CLG) through the State Office of Historic Preservation. Certification would qualify the County for grants to aid in historic preservation projects. The Cultural Resources Preservation Commission could serve as the Commission required for the CLG program.

- **Policy 7.5.1.6:** The County shall treat any significant cultural resources (i.e., those determined California Register of Historical Resources/National Register of Historic Places eligible and unique paleontological resources), documented as a result of a conformity review for ministerial development, in accordance with CEQA standards.
- ▶ **Objective 7.5.2:** Visual Integrity—Maintenance of the visual integrity of historic resources.
 - **Policy 7.5.2.1:** Create Historic Design Control Districts for areas, places, sites, structures, or uses which have special historic significance.
 - **Policy 7.5.2.2:** The County shall define Historic Design Control Districts (HDCDs). HDCD inclusions and boundaries shall be determined in a manner consistent with National Historic Preservation Act (NHPA) Historic District standards.
 - A. The County shall develop design guidelines for each HDCD. These guidelines shall be compatible with NHPA standards.
 - B. New buildings and structures and reconstruction/restoration of historic (historic as per National Register of Historic Places [NRHP] and California Register of Historical Resources [CRHR] criteria)

buildings and structures shall generally conform to styles of architecture prevalent during the latter half of the 19th century into the first decade of the 20th century.

- C. Any historic building or structure located within a designated HDCD, or any building or structure located elsewhere in the county that is listed on the NRHP or CRHR, is designated a California Building of Historic Interest, or a California State Historic Landmark, or is designated as significant as per NRHP/CRHR criteria, shall not be destroyed, significantly altered, removed, or otherwise changed in exterior appearance without a design review.
 - D. In cases where the County permits the significant alteration of a historic building or structure exterior, such alteration shall be required to maintain the historic integrity and appearance of the building or structure and shall be subject to a design review.
 - E. In cases where new building construction is placed next to a historic building or structure in a designated HDCD or listed on the CRHR/NRHP, the architectural design of the new construction shall generally conform to the historic period of significance of the HDCD or listed property.
 - F. In cases where the County permits the destruction of a historic building or tearing down a structure, the building or structure shall first be recorded in a manner consistent with the standards of the NHPA Historic American Building Survey (HABS) by a qualified professional architectural historian.
 - G. The County shall mandate building and structure design controls within the viewshed of the Marshall Gold Discovery State Historic Park. These design controls shall be consistent with those mandated for designated Historic Design Control Districts.
- **Policy 7.5.2.3:** New buildings and reconstruction in historic communities shall generally conform to the types of architecture prevalent in the gold mining areas of California during the period 1850 to 1910.
 - **Policy 7.5.2.4:** The County shall prohibit the modification of all National Register of Historic Places (NRHP)/California Register of Historical Resources (CRHR) listed properties that would alter their integrity, historic setting, and appearance to a degree that would preclude their continued listing on these registers. If avoidance of such modifications on privately owned listed properties is deemed infeasible, mitigation measures commensurate with NRHP/CRHR standards shall be formulated in cooperation with the property owner.
 - **Policy 7.5.2.5:** In cases where the County permits the demolition or alteration of an historic building, such alteration or new construction (subsequent to demolition) shall be required to maintain the character of the historic building or replicate its historic features.
 - **Policy 7.5.2.6:** The County, in cooperation with the State, shall identify the viewshed of Coloma State Park and establish guidelines to be used for development within the viewshed. In addition, the County shall continue to support the relocation of State Route 49 to bypass the Park in order to protect its visual and physical integrity.

- ▶ **Objective 7.5.3:** Recognition of Prehistoric/Historic Resources—Recognition of the value of the County’s prehistoric and historic resources to residents, tourists, and the economy of the County, and promotion of public access and enjoyment of prehistoric and historic resources where appropriate.
- ▶ **Objective 7.5.4:** Protection of Cemeteries—Preservation and Protection of existing cemeteries including access and parking.
 - **Policy 7.5.4.1:** Protect access routes and parking at existing cemeteries. Development proposals will be evaluated to ensure that they do not interfere with cemeteries or their access and parking.

3.5.2 ENVIRONMENTAL SETTING

ETHNOGRAPHIC CONTEXT

The Project site is ethnographically associated with three Native American groups: the Nisenan (Southern Maidu), the Northern Sierra Miwok, and the Washoe. The exact geographic boundaries of each group are uncertain; all three groups likely used resources on the Project site and their territories likely overlapped. Permanent habitation sites were situated on high ground located as close as possible to a water source. There is no evidence of any ancestral villages of these three groups on the Project site or in the Project area (ASM Affiliates 2013:20).

PREHISTORIC CONTEXT

As described in *Cultural Resources Study for the El Dorado Forebay Dam Modifications Project, El Dorado County, California*, prepared by ASM Affiliates (2013), the Tahoe Reach culture chronology was first analyzed by Heizer and Elsasser (1953) and later refined by Elston (1971), Elston et al. (1977), and Elston et al. (1994). This chronology provides an overview of the prehistory of the north-central Sierra Nevada. The Pre-, Early, Middle, and Late Archaic periods are described in detail in ASM Affiliates’ cultural resources report.

HISTORIC CONTEXT

The Project site is located in the Sierra Nevada foothills region of El Dorado County near Pollock Pines. El Dorado County was one of California’s original 27 counties. The area around Pollock Pines was largely undeveloped until 1848, when gold was discovered in Coloma. This discovery brought miners to the region. To support early mining efforts, Pollock Pines became an early lumber community supplying lumber for the construction of sluices and flumes. Several ranches were located in the area surrounding Pollock Pines, and remained in operation until the 1920s (ASM Affiliates 2013:21).

El Dorado Canal and Western States Gas and Electric Company

Construction of the El Dorado Canal began in the 1850s with the creation of the South Fork Canal, a mining ditch system that eventually extended more than 155 miles along the South and Silver Forks of the American River. The purpose of the system was to provide water for mining and to divert water from the river so that the riverbed itself could be prospected for gold. The water system was sold to the El Dorado Water and Deep Gravel Mining Company (El Dorado Company) in 1873. The El Dorado Company constructed most of the dams, tunnels, earthen ditch, and flume system associated with the El Dorado Canal between 1873 and 1876. The El Dorado Canal was one of the highest capacity canal systems in the state and was the most expensive to construct (ASM Affiliates 2013:21–22).

Hydraulic mining all but ceased in California during the last decades of the 19th century. For this reason, coupled with the area's economic depression and the limited agricultural options of the Sierra Nevada foothills, the El Dorado Company began investigating how its water could be used to generate hydroelectric power. The mining/irrigation water systems already contained most of the features needed for power generation, and water companies were beginning to merge and incorporate in hopes of developing electricity for sale to an eager market. In 1916, after several unsuccessful starts and changes in canal ownership, Western States Gas and Electric Company (Western States) acquired the canal system, which was renamed the El Dorado Hydroelectric Project, for power generation (ASM Affiliates 2013:22).

Between 1922 and 1924, Western States began actively redeveloping the canal system to generate hydroelectric power. A powerhouse, new tunnels, and siphons were constructed; reservoir capacity was increased; and existing ditches and flumes were expanded. The canal system, completed in 1926, more than doubled the size of the system. The expanded system was essentially a new structure; only rock walls, some portions of earth- or rock-lined ditches, and some enlarged and relined diversion tunnels remained from the original system (ASM Affiliates 2013:23).

Pacific Gas and Electric Company

In 1927, Western States merged with Pacific Gas and Electric Company (PG&E), and PG&E took control of the El Dorado Hydroelectric Project. Throughout its ownership, PG&E maintained the system and made continuous repairs, including flume repairs and additional lining. PG&E also constructed two new tunnels, and after World War II, it installed high-/low-water alarms and remote-controlled spillgates. The automation improvements made by PG&E not only modernized the system, but also reduced labor costs. Because less labor was needed to maintain the system, PG&E eliminated some of the canal maintenance camps that were once heavily used by its staff members (ASM Affiliates 2013:23–24).

EID acquired the El Dorado Hydroelectric Project from PG&E in 1999. EID continues to own and operate the system, using it to supply water and power to El Dorado County and its various municipalities (ASM Affiliates 2013:24).

3.5.3 IMPACTS AND MITIGATION MEASURES

ANALYSIS METHODOLOGY

Information and analysis in this section is drawn from the cultural resources technical report, *Cultural Resources Study for the El Dorado Forebay Dam Modifications Project, El Dorado County, California*, prepared by ASM Affiliates in February 2013; and from the *El Dorado Forebay Dam Modification Project, El Dorado Hydroelectric Project FERC Project No. 184 Project Description and Initial Study Checklist*, prepared in March 2013. As part of its documentation, ASM Affiliates conducted prefield research, consultation with Native Americans and other interested parties, and a field survey for the Project. The results of this investigation are described below. Additional details about the methodology and analysis are provided in ASM Affiliates' cultural resources technical report.

Prefield Research

ASM Affiliates conducted a records and literature search at the North Central Information Center of the California Historical Resources Information Center at California State University, Sacramento. The search encompassed the

Project site and a 0.25-mile radius of the surrounding area. State listings and databases of historic resources consulted include the CRHR, *State Historical Landmarks*, *Points of Historical Interest*, and the Inventory of Historic Resources. The NRHP and the SHPO's historic property data file and archaeological determinations of eligibility were also reviewed.

Based on the records search, no properties previously determined eligible for inclusion in the NRHP or CRHR are located on the Project site or within a 0.25-mile radius. No prehistoric sites have been recorded on the Project site or within the search radius; the nearest known prehistoric site is a bedrock mortar outcrop located more than 0.5 mile northeast of the Project site.

The following previously recorded sites are located in the current APE and/or within the 0.25-mile search radius:

- ▶ *El Dorado Forebay Dam, penstock, and associated features.* These were previously determined by the SHPO to be not eligible for the NRHP (EID 2013:32).
- ▶ *Western States Camp B site.* This site was originally recorded in 2002 and the site record was updated in 2003, 2004, 2006, and 2011. The site has seven archaeological features. ASM Affiliates evaluated the site in 2013, concluding that it does not meet the criteria for the NRHP or CRHR
- ▶ *El Dorado Canal (Main Ditch) segment.* This 650-foot (198-meter) canal segment extends downstream from El Dorado Forebay Dam. It was first recorded in 2003 and evaluated in 2012 by Cardno ENTRIX, which concluded that it was not eligible for listing in the NRHP or the CRHR (ASM Affiliates 2013:9).
- ▶ *Sierra Ditch segment.* This ditch segment was initially recorded in 2002 and 2003, and the site record was updated in 2004, but the site was not evaluated for its historical significance. As part of the technical report prepared for this Project, this site was evaluated by ASM Affiliates and found to be not eligible for the NRHP or the CRHR because it did not meet the criteria and lacked integrity.

Native American Consultation

ASM Affiliates contacted the Native American Heritage Commission (NAHC) requesting a search of the Sacred Lands File and a list of Native American groups or individuals potentially interested in, or knowledgeable about, cultural resources on the Project site. The NAHC's resulting search did not identify any known Native American cultural resources or ancestral properties near the APE. A detailed list of Native Americans contacted for the Project site can be found in the technical report.

Survey

In May 2013, ICF International archaeologists conducted a survey of the borrow area, which is included in the APE for this undertaking. The survey was conducted by walking transects spaced 15 meters between the archaeologists across their study area. At the time of the survey, much of the ground was covered in a thick layer of pine needle duff and mountain misery. Rakes were used every 50 meters to clear a 1-meter by 1-meter square so that the ground surface could be examined for cultural resources. Resources were recorded on California Department of Parks and Recreation (DPR) 523 form sets, and the site boundaries of CA-ELD-2400/H were remapped. Existing documentation was used to determine the then-current site boundaries. Then the area was surveyed out from that boundary in 5-meter intervals, using visible artifacts, features, vegetation, and topography

to determine whether additional archaeological material was present. Newly identified cultural materials were recorded on DPR 523 forms (ICF 2011:12–13).

On October 1, 2012, historical archaeologists from ASM Affiliates who met the Secretary of the Interior’s qualifications for prehistoric and historical archaeology conducted an intensive pedestrian survey of EID property on the Project site located west and south of El Dorado Forebay. Ground visibility for the survey was extremely low because of a thick layer of decomposed forest vegetation. This vegetation was periodically scraped aside by hand so that the native soil surface could be surveyed (ASM Affiliates 2013:13).

To complete the evaluation of the Western States Camp B site, two features were investigated to determine the presence/absence of subsurface deposits and to characterize the nature of any subsurface deposits identified. A Fisher Model 1266-X metal detector was used as a remote sensing device to help locate concentrations of subsurface artifacts in which to place small (50-square-centimeter) surface transect units (STUs). Material from the STUs was screened, unit data were recorded on ASM unit level forms, and artifact data were recorded on ASM Historic Artifact Field Sheets. Digital photographs were taken of the units and artifact assemblages. After they were documented, artifacts were returned to the units, and the units were backfilled. Location data for each STU were recorded using a Global Positioning System receiver (ASM Affiliates 2013:13)

Summary of Survey Findings

Archaeology

- ▶ *Western States Camp B site*—Although previously recorded, the site was not evaluated for NRHP or CRHR eligibility. ASM Affiliates evaluated the site in 2013, concluding that it does not meet the criteria for the NRHP or CRHR and lacks archaeological research potential in accordance with the Project 184 hydroelectric construction camp’s research design. Besides lacking archaeological significance, the site lacks integrity (ASM Affiliates 2013:36).
- ▶ *Sierra Ditch (segment)*—A 209-foot segment of the ditch was recorded and evaluated by ASM Affiliates at the request of EID in 2013. The segment was evaluated and determined not to meet the criteria for listing in the NRHP or the CRHR because it lacks historical importance and sufficient integrity needed for the NRHP and the CRHR. Additionally, it does not constitute a unique archaeological resource for the purposes of CEQA (ASM Affiliates 2013:37).

Architecture

- ▶ *El Dorado Canal Main Ditch (segment)*—A segment of the El Dorado Canal Main Ditch passes through the Project site. The segment was recommended as ineligible for listing by Cardno ENTRIX in 2012 and found to be not eligible for the NRHP and CRHR because the integrity of setting, feeling, association, design, materials, and workmanship of the canal are compromised (Cardno ENTRIX 2012:v). ASM Affiliates concurred with Cardno ENTRIX’s findings (ASM Affiliates 2013:36).

THRESHOLDS OF SIGNIFICANCE

Significance criteria are based on the State CEQA Guidelines. The Project would have a significant impact on cultural resources if Project implementation would do any of the following:

- ▶ Cause a substantial adverse change in the significance of a unique archaeological resource or a historical resource as defined in Section 15064.5 of the State CEQA Guidelines or
- ▶ Disturb any human remains, including those interred outside formal cemeteries

A substantial adverse change in the significance of a resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource would be materially impaired. The significance of a historical resource is materially impaired when a project results in demolition or material alteration in an adverse manner of those physical characteristics of a resource that:

- ▶ Convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the CRHR
- ▶ Account for its inclusion in a local register of historical resources pursuant to PRC Section 5020.1(k) or its identification in a historical resources survey meeting the requirements of PRC Section 5024.1(g), unless the public agency reviewing the effects of the proposed project establishes by a preponderance of evidence that the resource is not historically or culturally significant
- ▶ Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature or
- ▶ Convey its historical significance and that justify its eligibility for inclusion in the CRHR, as determined by a lead agency for purposes of CEQA

FINDINGS OF THE INITIAL STUDY CONCLUDING NO IMPACT

The IS concluded that no impact would occur with respect to the following topics:

- ▶ *Cause a Substantial Adverse Change in the Significance of a Historical Resource:* Three cultural resources—the Western States Camp B site, a segment of the Sierra Ditch, and a segment of the El Dorado Canal Main Ditch—were analyzed in the IS for this Project. None of the resources are considered historical resources because these resources are not eligible for the CRHR. Therefore, the Project would not adversely affect any historical resources.
- ▶ *Directly or Indirectly Destroy a Unique Paleontological Resource:* No impact on paleontological resources would occur because no geologic strata that would contain paleontological resources exist at the site.

These issues are not addressed further in this EIR.

IMPACT ANALYSIS

IMPACT 3.5-1 **Possible Destruction of or Damage to As-Yet-Undiscovered Archaeological Resources.** *No NRHP- or CRHR-eligible historic properties were identified on the Project site, and implementing the Project would not adversely affect any known historic properties. Ground-disturbing construction activities could potentially unearth previously unidentified cultural resources. Therefore, the construction-related impact would be potentially significant. No impact would occur with post-Project operation of the Forebay.*

Construction-Related Impact

Although no “unique” or “historic” cultural resources, as defined by CEQA, have been documented at the Project site, the potential exists for unrecorded cultural resources to be present. No subsurface testing has been conducted on the Project site, and cultural resources may be buried and not visible on the surface. Therefore, the potential exists for buried cultural resources to be unearthed or otherwise discovered during ground-disturbing and construction activities. If such resources were determined to be unique or historic, this construction-related impact would be **potentially significant**.

Post-Project Operation-Related Impact

No operational activities could result in the discovery of as-yet-undiscovered archaeological resources. Therefore, **no impact** would occur as a result of post-Project operation of the Forebay. No mitigation is required.

Mitigation Measure 3.5-1: Cease Work If Cultural Resources Are Encountered during Project-Related Ground-Disturbing Activities, Assess the Significance of the Resource, and Implement Appropriate Avoidance or Treatment Measures.

If archaeological resources (e.g., unusual amounts of shell, midden, animal bone, bottle glass, ceramics, or structure/building remains) are encountered during Project-related ground-disturbing activities, all work within 100 feet of the find shall cease until the find can be evaluated by a qualified archaeologist. If the archaeologist determines that the resources are significant, the archaeologist shall notify EID and the resource shall be avoided if feasible. Preservation in place is the preferred manner of mitigating impacts on an archaeological site. Preservation in place may be accomplished by planning construction to avoid archaeological sites; incorporating sites within parks, green space, or other open space; covering archaeological sites; or deeding a site into a permanent conservation easement.

If avoidance is infeasible, a treatment plan that documents the research approach and methods for data recovery shall be prepared and implemented in consultation with EID and the appropriate Native American representatives (if the resources are prehistoric or Native American). Work may proceed on other parts of the Project site while treatment is being carried out.

It may be feasible to cover and preserve an archaeological site; however, if a site is discovered during construction, it is likely that the depth of excavation necessary would preclude covering and protecting a site. Further, the avoidance measures listed above are likely infeasible once construction has begun; thus, preparing a treatment plan and conducting data recovery would be the most feasible mitigation option. Given the likely infeasibility of preservation in place for discovered sites, data recovery would likely be the superior mitigation option.

Timing: During construction

Responsibility: EID

Significance after Mitigation: Implementing Mitigation Measure 3.5-1 would reduce potentially significant impacts resulting from inadvertent damage or destruction of unknown cultural resources during construction to a **less-than-significant** level.

3.6 GEOLOGY, SOILS, AND SEISMICITY

This section describes the geology, soils, and seismicity in the Project area and the relationship between the Project and relevant adopted federal, state, and regional and local laws, regulations, and planning goals, and policies. It also assesses geology, soils, and seismicity impacts associated with implementing the Project. Mitigation measures are recommended as necessary to reduce potentially significant and significant impacts.

3.6.1 REGULATORY BACKGROUND

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

Earthquake Hazards Reduction Act

In October 1977, the U.S. Congress passed the Earthquake Hazards Reduction Act to reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards reduction program. To accomplish this goal, the act established the National Earthquake Hazards Reduction Program (NEHRP). This program was substantially amended in November 1990 by the National Earthquake Hazards Reduction Program Act (NEHRPA), which refined the description of agency responsibilities, program goals, and objectives.

The mission of NEHRP includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improved building codes and land use practices; risk reduction through postearthquake investigations and education; development and improvement of design and construction techniques; improved mitigation capacity; and accelerated application of research results. The NEHRPA designates the Federal Emergency Management Agency as the lead agency of the program and assigns several planning, coordinating, and reporting responsibilities. Other NEHRPA agencies include the National Institute of Standards and Technology, National Science Foundation, and the U.S. Geological Survey.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) (PRC Sections 2621–2630) was passed in 1972 to mitigate the hazard of surface faulting to structures designed for human occupancy. The main purpose of the law is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The law addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards. The Alquist-Priolo Act requires the State Geologist to establish regulatory zones known as Earthquake Fault Zones around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and state agencies for their use in planning efforts. Before a project can be permitted in a designated Alquist-Priolo Earthquake Fault Zone, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (PRC Sections 2690–2699.6) addresses earthquake hazards from nonsurface fault rupture, including liquefaction and seismically induced landslides. The act established a mapping program for areas that have the potential for liquefaction, landslide, strong ground shaking, or other earthquake

and geologic hazards. The act also specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

California Water Code—Dam Safety Program

The California Water Code designates the regulatory Dam Safety Program to the California Department of Water Resources, Division of Safety of Dams (DSOD). The principal goal of this program is to avoid dam failure and thus prevent loss of life and destruction of property. The DSOD reviews plans and specifications for the construction of new dams and for the enlargement, alteration, repair, or removal of existing dams, and must grant written approval before the owner can proceed with construction. Professional engineers and geologists from the DSOD evaluate each project, investigate proposed sites, and review foundation conditions and proposed construction materials.

The Project’s primary objective is to strengthen the dam to withstand seismic ground shaking as mandated by DSOD and FERC. EID’s seismic stability design has been prepared by a registered geotechnical and civil engineer and has been approved at the 60% and 90% design levels by both DSOD and FERC.

REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Government Code Section 53091 states that building and zoning ordinances do not apply to “construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency.” Public utility projects that serve the facilities described above would not be subject to local plans, policies, regulations, or ordinances. The following local regulations related to geology, soils, and seismicity are provided for informational purposes and are provided as a basis to assist with CEQA review in evaluating the level of significance associated with impacts.

El Dorado County General Plan

The following policies from the *El Dorado County General Plan* (El Dorado County 2004) regarding soils are relevant to the Project.

Conservation and Open Space Element

- ▶ **Objective 7.1.2: Erosion/Sedimentation**—Minimize soil erosion and sedimentation.
 - **Policy 7.1.2.1** Development or disturbance shall be prohibited on slopes exceeding 30 percent unless necessary for access. The County may consider and allow development or disturbance on slopes 30 percent and greater when:
 - Reasonable use of the property would otherwise be denied.
 - The project is necessary for the repair of existing infrastructure to avoid and mitigate hazards to the public, as determined by a California registered civil engineer or a registered engineering geologist.
 - Replacement or repair of existing structures would occur in substantially the same footprint.

- The use is a horticultural or grazing use that utilizes “best management practices (BMPs)” recommended by the County Agricultural Commission and adopted by the Board of Supervisors.

Access corridors on slopes 30 percent and greater shall have a site-specific review of soil type, vegetation, drainage contour, and site placement to encourage proper site selection and mitigation. Septic systems may only be located on slopes under 30 percent. Roads needed to complete circulation/access and for emergency access may be constructed on such cross slopes if all other standards are met.

- **Policy 7.1.2.2:** Discretionary and ministerial projects that require earthwork and grading, including cut and fill for roads, shall be required to minimize erosion and sedimentation, conform to natural contours, maintain natural drainage patterns, minimize impervious surfaces, and maximize the retention of natural vegetation. Specific standards for minimizing erosion and sedimentation shall be incorporated into the Zoning Ordinance.
- ▶ **Objective 7.3.1: Water Resource Protection**—Preserve and protect the supply and quality of the County’s water resources including the protection of critical watersheds, riparian zones, and aquifers.
 - **Policy 7.3.1.1:** Encourage the use of Best Management Practices, as identified by the Soil Conservation Service, in watershed lands as a means to prevent erosion, siltation, and flooding.
- ▶ **Objective 7.3.2: Water Quality**—Maintenance of and, where possible, improvement of the quality of underground and surface water.
 - **Policy 7.3.2.1:** Stream and lake embankments shall be protected from erosion, and streams and lakes shall be protected from excessive turbidity.

Grading and Erosion Control Ordinance

The Grading and Erosion Control Ordinance regulates grading in the unincorporated area of El Dorado County to safeguard life and property; to avoid pollution of watercourses; and to ensure that the intended use of a graded site is consistent with the *El Dorado County General Plan*; any specific plans adopted thereto; the adopted storm water management plan; California fire safe standards; and applicable El Dorado County ordinances, including the zoning ordinance and the California Building Code. A project applicant must submit grading plans and other pieces of information required by Grading, Erosion, and Sediment Control Chapter of the Design and El Dorado County Improvement Standards Manual and obtain a permit before the start of grading activities.

3.6.2 ENVIRONMENTAL SETTING

GEOLOGY

Regional Geology

The Project site is located in the Sierra Nevada geomorphic province, which consists of a northwest-trending mountain range approximately 400 miles long and 40–100 miles wide. It is bounded on the west by the Great Valley province, on the north by the Cascade Range, and on the east by the Basin and Range Province, and on the south by the intersection of the Transverse Ranges and Mojave Desert Provinces.

Local Geology

The El Dorado Forebay is located in a narrow valley in deeply weathered metamorphic rocks, classified at infrequent exposures as micaceous and talcose phyllites and meta-sandstones. Geologic mapping at a regional scale has been provided by Wagner et al. (1987). In addition, GEI Consultants (GEI) (2011a:Figure 7) prepared a site-specific geologic map based on observations and information developed from results of exploratory borings and test pits. GEI indicated that Project-related activities associated with the reservoir, dam, and associated facilities would occur within the older Paleozoic-age metamorphic rocks of the Sierra Nevada, and Quaternary alluvium and colluvium (i.e., sand, silt, and clay with gravel). The primary and secondary borrow areas would be located in colluvium and residual soil deposits overlying highly weathered rock of the Paleozoic-age metamorphic rocks of the Sierra Nevada.

SEISMICITY AND FAULT ZONES

Fault Ground Rupture

Surface rupture is an actual cracking or breaking of the ground along a fault during an earthquake. Structures built over a fault can be torn apart if the ground ruptures. Surface ground rupture along faults is generally limited to a linear zone a few yards wide. The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) (see Section 3.6.1, “Regulatory Background,” above) was created to prohibit the location of structures designed for human occupancy across the traces of active faults, thereby reducing the loss of life and property from an earthquake. The Project site is not located in an Alquist-Priolo Earthquake Fault Zone (California Geological Survey 2012). The nearest fault zoned under the Alquist-Priolo Act is the Genoa Fault in Alpine County, approximately 40 miles east of the Project site.

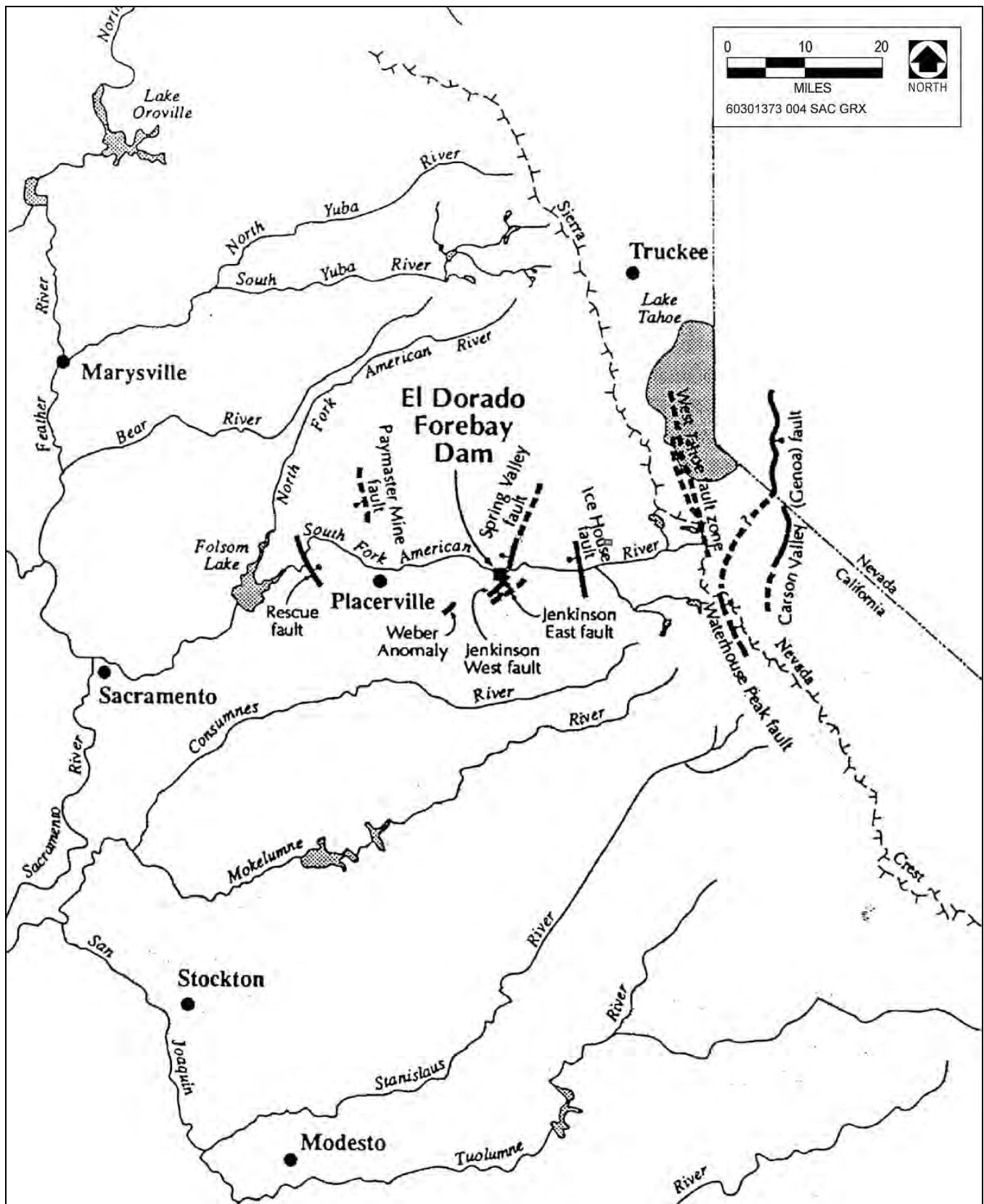
Seismic Ground Shaking

The Foothills Fault System is the dominant structural feature of the western Sierra Nevada. The steeply dipping to vertical component faults that make up this system trend northwest through an area approximately 200 miles long and 30 miles wide, from Mormon Bar (east of Merced) in the south to Lake Almanor in the north. The East and West Branches of the Bear Mountains Fault Zone are two of the largest fault zones in the Foothills Fault System.

The seismic stability analysis prepared by GEI included an analysis of the faults and associated parameters as shown in Table 3.6-1. Exhibit 3.6-1 shows the locations of these faults in relationship to the Project site.

Table 3.6-1 Seismic Sources and Associated Parameters in the Project Region				
Fault Name	Approximate Distance to Dam (miles)	Time Period of Most Recent Activity	Approximate Fault Length (miles)	Estimated Moment Magnitude (M_w)
Spring Valley	3.7	Late Quaternary	6.8 to 13.1	5.9 to 6.5
Jenkinson West	3.7	Late Quaternary	3.7	5.5 to 6.0
Jenkinson East	4.4	Late Quaternary	5.0	5.7 to 6.0
Ice House	11.8	Late Quaternary	6.2 to 9.3	5.9 to 6.3
Paymaster Mine	15	Late Quaternary	8.7	6.1 to 6.3
Rescue	20.5	Late Quaternary	6.2	5.9 to 6.2
West Tahoe Fault Zone	28.6	Holocene	22.4	6.7

Source: GEI 2011b:Appendix C-2, Table 4.1; adapted by AECOM in 2013



Source: GEI 2011b

Exhibit 3.6-1

Regional Tectonic Setting

The intensity of ground shaking depends on the distance from the earthquake epicenter to the site, the magnitude of the earthquake, site soil conditions, and the characteristics of the source. Ground motions from seismic activity can be estimated by probabilistic method at specified hazard levels and by site-specific design calculations using a computer model. The peak horizontal ground acceleration was calculated by GEI in 2011 (2011b:Appendix I, Table 1) for the two faults that were considered most critical to the Project: Spring Valley (0.32 *g*) and Jenkinson West (0.27 *g*) (where *g* is the percentage of gravity). GEI's calculations indicate that relatively low levels of seismic ground shaking are projected to occur at the Project site if an earthquake occurred on any of these faults. The peak horizontal ground acceleration is also used as the basis of calculations that are performed to determine the amount of settlement that may occur at the dam (discussed below), which in turn affects the resulting amount of freeboard (discussed further in Section 3.9, "Hydrology and Water Quality").

Ground Failure/Liquefaction

Soil liquefaction occurs when ground shaking from an earthquake causes a sediment layer saturated with groundwater to lose strength and take on the characteristics of a fluid, thus becoming similar to quicksand. Factors determining the liquefaction potential are soil type, the level and duration of seismic ground motions, the type and consistency of soils, and the depth to groundwater. Loose sands and peat deposits, along with recent Holocene-age deposits, are more susceptible to liquefaction, while older deposits of clayey silts, silty clays, and clays deposited in freshwater environments are generally stable under the influence of seismic ground shaking.

Liquefaction poses a hazard to engineered structures. The loss of soil strength can result in bearing capacity insufficient to support foundation loads, increased lateral pressure on and failure of retaining walls, and slope instability.

GEI performed both simplified procedures and a two-dimensional nonlinear dynamic response analysis to estimate the potential for seismically induced liquefaction (GEI 2011b:30–31) of the Forebay Dam strengthened by the implementation of the Project. It was concluded that the dam is capable of safely withstanding the Controlling Maximum Considered Earthquake (CMCE). The U.S. Society on Dams defines the CMCE as the most severe Maximum Considered Earthquakes (MCEs) to be capable of affecting a dam. The MCE is the largest reasonably conceivable earthquake that appears to be possible along either a recognized fault zone or in a geographically defined tectonic province under the presently known or presumed tectonic framework. Thus, sudden loss of strength or liquefaction is unlikely to occur as a result of earthquake shaking.

SETTLEMENT, SEEPAGE, AND STABILITY

A settlement analysis of the dam was performed using the guidance in the U.S. Army Corps of Engineers (USACE) Engineering Manual (EM) 1110-1-1904, *Settlement Analysis*. The total settlement at the existing ground surface (the crest and downstream slope of the existing dam) from embankment loading imposed by the proposed dam raise was estimated. The analysis determined that up to 3 inches of settling could occur under the crest of the raised dam at the maximum section.

GEI calculated the seepage potential using the guidance in USACE EM 1110-2-1901, *Seepage Analysis and Control for Dams*. Both the existing and proposed raised dam sections were analyzed. The seepage flow into the filter/drain blanket that would be placed over the downstream face of the existing dam was estimated to be

approximately 1 gallon per minute (gpm) as calculated assuming steady state seepage under maximum normal reservoir conditions (GEI 2011b:42).

Groundwater was encountered during the foundation excavation for the original dam construction project. As-built plans and site topographic maps indicate that springs existed on both abutments to the dam. Saturated conditions currently persist on the right abutment and below the downstream toe of the dam. Seepage from the dam, spring flows, and surface runoff are monitored at four V-notch weirs located on the downstream groins and toe of the dam. GEI estimated that the flow rate from abutment seepage that may need to be captured by the pipe underdrains in the seepage collection system is in the range of 100–150 gpm (GEI 2011b:42).

A detailed discussion of the site data and parameters used in the dam stability analysis is provided on pages 43–46 of the *Draft Design Basis Memorandum* (GEI 2011b). The results of the analyses indicate that the proposed cross-section geometry of the dam meets the minimum required factors of safety for stability.

SOILS

Soil Types and Characteristics

As shown in Exhibit 3.6-2, the reservoir and borrow areas and the areas of proposed road improvements consist of three soil types with the following characteristics:

- ▶ **Josephine very rocky loam, 15–50% slopes (JsE).** The Josephine series soils classify as low plasticity silty sands and gravels and clays with a liquid limit range of 25–45% and a plasticity index of nonplastic to 20%. The Josephine very rocky loam soil type consists of well-drained soils on gently rolling to very steep mountainous areas. The erosion hazard is severe (GEI 2011b:19–20; NRCS 2013).
- ▶ **Mariposa-Josephine very rocky loams, 15–50% slopes (McE).** Parental rock is residuum weathered from metamorphic rock, schist, or slate, and a typical depth to weathered bedrock is 50–54 inches. The Mariposa-Josephine very rocky loams soil type consists of well-drained, very rocky loam soils that occur on hilly to steep mountainous uplands. Mariposa very rocky loam comprises about 60% of the complex and occurs on ridges, sharp breaks, and most south- and west-facing slopes. The erosion hazard is severe (GEI 2011b:19–20; EID 2013:34; NRCS 2013).
- ▶ **McCarthy cobbly loam, 9–50% slopes (MhE).** The McCarthy Series soils classify as nonplastic conglomerate with a liquid limit range of 25–35% and a plasticity index range of nonplastic to 5%. This soil type has a very low shrink-swell potential. Parental rock is andesitic volcanic residuum weathered from conglomerate, and a typical depth to weathered bedrock is 38–42 inches. The McCarthy cobbly loam soil type consists of well-drained soils on the side slopes of andesitic ridges. The erosion hazard is severe (GEI 2011b:19–20; NRCS 2013).

Landslides, Topography, and Erosion

No recent landslides have been reported along the margins of the El Dorado Forebay Reservoir. However, there are areas of steep slopes where shallow raveling, sloughing, and erosion gullies have been observed. These areas are discussed in detail below.

The El Dorado Canal section connecting the 14-mile tunnel to the reservoir is an approximately 600-foot-long unlined earthen canal that is subject to erosion and transport of sediments. Erosion and sediment transport are creating stability problems at the tunnel outfall and along the canal banks and are contributing to sedimentation of the reservoir (GEI 2011b:57–58). Slopes along the Forebay inlet canal typically range in height from 20 to 30 feet, and in steepness from somewhat steeper than 1:1 to vertical. The slopes present indications of active lateral erosion, including localized raveling, slumping, vertical sections, and overhangs. In addition, some gullying has occurred at localized areas where surface waters discharge over the slope. Currently, the canal slopes are above the reservoir level.

Most of the north shoreline of the reservoir has a slope flatter than 4:1. Approximately 50% of the south shoreline of the reservoir has slopes ranging between 4:1 and 2:1; the remainder of the south shoreline has a slope flatter than 4:1. Except for the dam surface, which supports only annual forbs and grasses, the shoreline around the Forebay is vegetated by mixed coniferous forest with scattered black oak. Cover varies from open (zero canopy coverage) to 100% canopy coverage, depending on location.

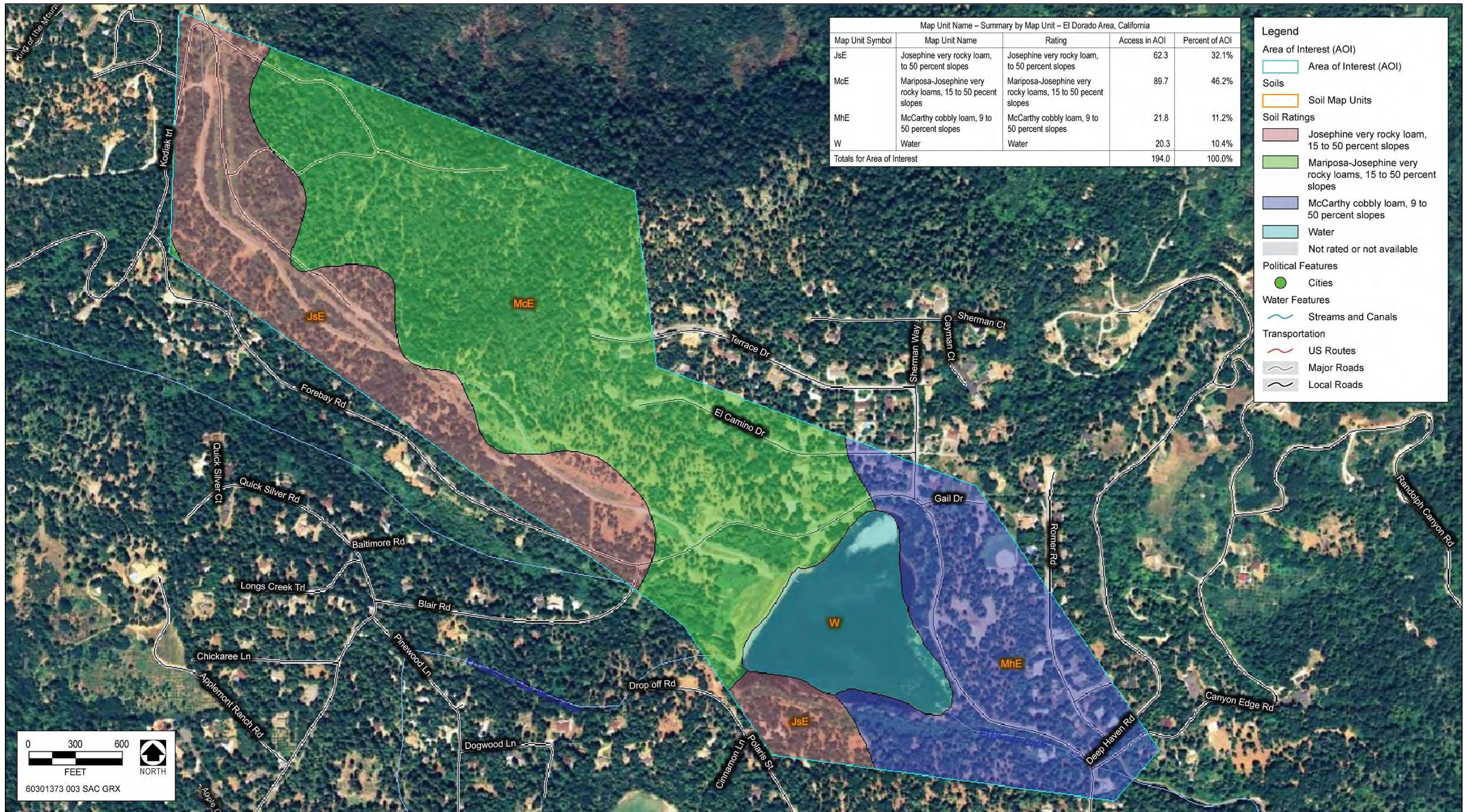
The intake structure to the emergency spillway discharges into an existing 11-foot-wide, 230-foot-long, gunite-lined channel. The left slope above the gunite lining has experienced some deterioration over the years. The existing channel transitions into a 6-foot-diameter steel pipe that conveys water over the El Dorado Main Ditch. The pipe discharges to a reinforced-concrete inclined apron and to the natural hillside well downstream of the dam. Unintended reservoir releases have resulted in the development of an erosion gully in the hillside downstream of the apron with depth of erosion up to about 10 feet. If erosion controls are not constructed, the hillside downstream of the outlet structure could experience additional erosion in the event of substantial emergency spillway flows (GEI 2011b:53).

The borrow area is located on a moderately sloped, forested hillside area on property immediately adjacent to the dam. The soils are shallow, composed of red silt of low plasticity with sand and gravel increasing with proximity to bedrock. Given the moderate slopes and generally stable nature of the soil, the landslide potential in the borrow area is considered low (EID 2013:36).

3.6.3 IMPACTS AND MITIGATION MEASURES

ANALYSIS METHODOLOGY

The Forebay Dam currently does not meet minimum DSOD and FERC dam safety seismic stability standards. The Project's primary objective is to correct this deficiency. EID's seismic stability design has been prepared by a registered geotechnical and civil engineer and has been approved at the 60% and 90% design levels by both DSOD and FERC. The GEI August 2011 *Draft Geotechnical Data Report* summarizes the results of five phases of geologic and geotechnical investigation at the dam site, including geologic reconnaissance, drilling and logging of 23 borings, excavation and logging of 22 test pits, a geophysical seismic refraction survey, installation of 17 open standpipe piezometers, and pump tests at two temporary piezometers. The tectonic setting, seismic design criteria, and seepage, slope, and stability analysis are summarized in the October 2011 *Draft Design Basis Memorandum*. These two documents, in addition to soil survey data from the U.S. Natural Resources Conservation Service (NRCS) (2013), were the primary sources used to prepare this analysis.



Source: GEI 2011b

Exhibit 3.6-2

Soil Types at the Project Site

The information obtained from these sources was reviewed and summarized to present the existing conditions and to identify potential environmental impacts, based on the thresholds of significance presented in this section. Impacts associated with geology, soils, and seismicity that could result from Project construction and operational activities were evaluated qualitatively based on site conditions; expected construction practices; and materials, locations, and duration of Project construction and related activities.

THRESHOLDS OF SIGNIFICANCE

Significance criteria are based on Appendix G of the State CEQA Guidelines. The Project would have a significant impact on geology, soils, and seismicity if Project implementation would do any of the following:

- ▶ Expose people, property, or structures to potential substantial adverse impacts, including the risk of loss, injury, or death involving:
 - 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
 - Strong seismic ground shaking
 - Seismic-related ground failure, including liquefaction
 - Landslides
- ▶ Result in substantial soil erosion or the loss of topsoil
- ▶ Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse
- ▶ Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (UBC) (1994), creating substantial risks to life or property
- ▶ Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water

FINDINGS OF THE INITIAL STUDY CONCLUDING NO IMPACT

The initial study concluded that no impact would occur with respect to the following topics:

Be Located on Expansive Soil, as Defined in Table 18-1-B of the UBC (1994), Creating Substantial Risks to Life or Property: The Project site is located on residual soils formed from the breakdown of metamorphic rock, schist, slate, or conglomerate, primarily consisting of silt with a low plasticity. The existing Forebay Dam embankment is constructed with locally derived silty soils. The soils in the borrow area also consist of silty soils of low plasticity. The soils at the Project site have low linear extensibility ratings, indicating that the shrink-swell potential is low. Thus, there would be no impact.

Have Soils Incapable of Adequately Supporting the Use of Septic Tanks or Alternative Waste Water Disposal Systems Where Sewers Are Not Available for the Disposal of Waste Water: The Project entails modifications to a dam, water storage reservoir, and associated structures. It does not require or entail the provision of on-site

wastewater disposal services. The existing restroom facility uses a pump-out vault waste disposal system. Because Project soils would not be used for septic systems or alternative means of wastewater disposal, there would be no impact.

These issues are not addressed further in this EIR.

IMPACT ANALYSIS

IMPACT 3.6-1 **Possible Risks to People and Structures Caused by Surface Fault Rupture.** *Because the Project site is not located in an Alquist-Priolo Earthquake Fault Zone or in the vicinity of a known active fault, the construction-related impact would be **less than significant**. There would be **no impact** from post-Project operation of the Forebay.*

Construction-Related Impact

Surface fault rupture is most likely to occur on active faults (i.e., faults showing evidence of displacement within the last 11,700 years). Damage from surface fault rupture is generally limited to a linear zone a few yards wide. The Project is not located in or near an Alquist-Priolo Earthquake Fault Zone or a known active fault. The nearest fault zoned under the Alquist-Priolo Act is the Genoa Fault in Alpine County, approximately 40 miles east of the Project site. Therefore, the construction-related impact would be **less than significant**.

Post-Project Operation-Related Impact

Post-Project operation of the Forebay would be subject to reduced risk of damage from surface fault rupture as a result of Project construction. Therefore, there would be **no impact** from post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

IMPACT 3.6-2 **Possible Risks to People and Structures Caused by Strong Seismic Ground Shaking.** *Peak horizontal ground acceleration calculations indicate that the Project site would be subject to relatively low levels of seismic ground shaking in the event of an earthquake. Therefore, the construction-related impact would be **less than significant**. There would be **no impact** from post-Project operation of the Forebay.*

Construction-Related Impact

The Project's primary objective is to strengthen the dam to withstand seismic ground shaking as mandated by DSOD and FERC. EID's seismic stability design has been prepared by a registered geotechnical and civil engineer and has been approved at the 60% and 90% design levels by both DSOD and FERC. As shown in Table 3.6-1, the proposed facility and road improvements would be constructed within 3.7 miles of the Spring Valley and Jenkinson West Faults, and approximately 20 miles from the Rescue lineament of the East Bear Mountains Fault Zone. Geologic data indicate that the most recent evidence of displacement on all three of these faults is Late Quaternary (i.e., 500,000 to 1 million years before present). Therefore, these faults are not considered to be active by the California Geological Survey; the probability that strong seismic shaking will occur at any given location is greater if that location is closer to an active fault. As discussed above in Section 3.6.2, "Environmental Setting," the peak horizontal ground acceleration calculated for the Spring Valley (0.32 g) and Jenkinson West (0.27 g) faults, and the Rescue lineament (0.19 g), indicate that a relatively low level of ground

shaking is calculated to occur from an earthquake on these three seismic sources. Finally, EID must meet the design safety standards required by DSOD and FERC, which are specifically intended to ensure the safe, long-term performance of the dam and associated structures. Therefore, this impact would be **less than significant**.

Post-Project Operation-Related Impact

Post-Project operation of the Forebay would be subject to reduced risk of damage from strong seismic ground shaking as a result of Project construction. The Forebay Dam would be modified to withstand potential seismic shaking as required by DSOD and the FERC. Therefore, there would be **no impact** from post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

IMPACT 3.6-3 **Seismically Induced Risks to People and Structures Caused by Liquefaction.** *Calculations of liquefaction potential for the proposed facility modifications indicate that the Project would meet DSOD and FERC safety requirements related to liquefaction. Therefore, the construction-related impact would be **less than significant**. There would be **no impact** from post-Project operation of the Forebay.*

Construction-Related Impact

The Project's primary objective is to strengthen the dam to withstand seismic ground shaking as mandated by DSOD and FERC. EID's seismic stability design has been prepared by a registered geotechnical and civil engineer and has been approved at the 60% and 90% design levels by both DSOD and FERC. GEI performed both simplified procedures and a two-dimensional nonlinear dynamic response analysis to estimate the potential for seismically induced liquefaction (GEI 2011b:30–31) of the Forebay Dam strengthened by the implementation of the Project. The results indicate that the dam is capable of safely withstanding the CMCE and that sudden loss of strength or liquefaction is unlikely to occur as a result of earthquake shaking. Therefore, the Project would meet DSOD and FERC safety requirements related to liquefaction, and the construction-related impact would be **less than significant**.

Post-Project Operation-Related Impact

Post-Project operation of the Forebay would be subject to a reduced risk of as a result of Project construction. The Forebay Dam would be modified to withstand potential soil liquefaction, as required by DSOD and FERC. Therefore, there would be **no impact** from post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

IMPACT 3.6-4 **Seismically Induced Risks to People and Structures Caused by Landslides.** *There is no evidence of recent landslides at the Project site, and the Project includes design features such as grading to flatten steep slopes where evidence of shallow raveling and sloughing is present. Therefore, the construction-related impact would be **less than significant**. There would be **no impact** from post-Project operation of the Forebay.*

Construction-Related Impact

As indicated by GEI (2011b:32), no recent landslides have been reported along the margins of the Forebay Reservoir. Several areas of shallow raveling and sloughing have been observed in very steep cuts and slopes along the inlet canal above the reservoir. However, the Project includes features that have been designed by licensed geotechnical engineers to correct these unstable areas, including grading to flatten steep slopes. The borrow area is located on a moderately sloped, forested hillside area on property immediately adjacent to the dam. The soils are shallow, composed of red silt of low plasticity with sand and gravel increasing with proximity to bedrock.

Given the moderate slopes and generally stable nature of the soil, the landslide potential in the borrow area is considered low. GEI anticipates that the reservoir raise could result in localized shallow sloughing of steep slopes, but no substantial slope instability is anticipated along the reservoir shoreline (GEI 2011b:50–51). Therefore, the potential for landslides does not represent a substantial hazard at the Project site, and the construction-related impact would be **less than significant**.

Post-Project Operation-Related Impact

Post-Project operation of the Forebay would be subject to reduced risk of damage from landslides as a result of Project construction. Therefore, there would be **no impact** from post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

IMPACT 3.6-5 **Potential for Substantial Soil Erosion or Loss of Topsoil.** *The Project includes design features to appropriately address areas where substantial erosion is presently occurring or is projected to occur. However, additional erosion could occur during construction given the slopes and nature of activities. Therefore, this impact would be **significant**. Because the Project has been designed to incorporate appropriate measures to reduce erosion during the operational phase, the impact would be **less than significant** with post-Project operation of the Forebay.*

Construction-Related Impact

Construction activities such as excavation, grading, and hauling of soil would occur in soils that are rated by NRCS (2013) with a severe erosion hazard. Conducting these activities would result in the temporary disturbance of soil and would expose disturbed areas to storm events. Rain of sufficient intensity could dislodge soil particles from the soil surface. If the storm is large enough to generate runoff, localized erosion could occur. Because steep slopes are present in certain areas of the Project site, access roads, and borrow area, severe erosion could occur as a result of some of the proposed activities. In addition, soil disturbance as a result of construction activities could result in soil loss because of wind erosion. Therefore, the construction-related impact would be **significant**.

Post-Project Operation-Related Impact

The Project incorporates features that have been specifically designed by licensed geotechnical engineers to reduce existing and future operation-related erosion issues. For example, riprap would be installed in various locations throughout the Project site; a new riprap-lined discharge channel would be constructed at the lower end of the emergency spillway; the sides of slopes adjacent to several existing and proposed facilities would be graded

to reduce the amount of slope; the unlined, earthen intake canal would be replaced with concrete pipe; and certain areas of steep slopes would be covered with wire mesh. In addition, to reduce erosion potential on the slopes of the dam, vegetation consisting of a mix of native grasses would be planted. Therefore, because the Project has been designed to incorporate appropriate measures to reduce erosion during the operational phase, the impact would be **less than significant** with post-Project operation of the Forebay. No mitigation is required.

Mitigation Measure 3.6-5: Prepare and Implement a Storm Water Pollution Prevention Plan (SWPPP) and Best Management Practices (BMPs).

EID will implement measures specified the State Water Resources Control Board National Pollutant Discharge Elimination System stormwater permit for general construction activity (Order 2012-0006-DWQ), including preparation and implementation of a project-specific SWPPP at the time the Notice of Intent to Discharge is filed. The SWPPP and other appropriate plans shall identify and specify the following:

- ▶ The use of an effective combination of robust erosion and sediment control BMPs and construction techniques for use on the Project site at the time of construction that shall reduce the potential for runoff and the release, mobilization, and exposure of pollutants; these may include but would not be limited to temporary erosion control and soil stabilization measures, sedimentation ponds, inlet protection, perforated riser pipes, check dams, and silt fences
- ▶ The implementation of approved local plans, nonstormwater management controls, permanent postconstruction BMPs, and inspection and maintenance responsibilities
- ▶ The pollutants that are likely to be used during construction that could be present in stormwater drainage and nonstormwater discharges, including fuels, lubricants, and other types of materials used for equipment operation
- ▶ The means of waste disposal in a manner that would prevent discharges to surface waterways or groundwater
- ▶ Spill prevention and contingency measures, including measures to prevent or clean up spills of hazardous waste and of hazardous materials used for equipment operation, and emergency procedures for responding to spills
- ▶ Personnel training requirements and procedures that shall be used to ensure that workers are aware of permit requirements and proper installation methods for BMPs specified in the SWPPP and
- ▶ The appropriate personnel responsible for supervisory duties related to implementation of the SWPPP.

Where applicable, BMPs identified in the SWPPP shall be in place and functional during all site work and construction/demolition activities and shall be used in all subsequent site development activities. BMPs may include, but are not limited to, the following measures:

- ▶ Implementing temporary erosion and sediment control measures in disturbed areas to minimize discharge of sediment into nearby drainage conveyances, in compliance with state and local standards in effect at the time of construction; these measures may include silt fences, staked straw bales or wattles, sediment/silt basins and traps, geofabric, sandbag dikes, and temporary vegetation

- ▶ Establishing permanent vegetative cover to reduce erosion in areas disturbed by construction by slowing runoff velocities, trapping sediment, and enhancing filtration and transpiration
- ▶ Using drainage swales, ditches, and earth dikes to control erosion and runoff by conveying surface runoff down sloping land, intercepting and diverting runoff to a watercourse or channel, preventing sheet flow over sloped surfaces, preventing runoff accumulation at the base of a grade, and avoiding flood damage along roadways and facility infrastructure

Timing: Submittal of the State Construction General Permit NOI and SWPPP before the start of construction activities and implementation throughout Project construction

Responsibility: EID and contractor

Significance after Mitigation: Implementing Mitigation Measure 3.6-5 will reduce the significant impact associated with substantial soil erosion during construction activities to a **less-than-significant** level because a SWPPP with BMPs specifically designed to reduce erosion would be prepared and implemented.

IMPACT 3.6-6 **Potential Geologic Hazards Related to Construction in Unstable Soils.** *The Project includes design features to address construction in unstable soils. Sixty-percent and 90% plans and specifications have been submitted to and approved by DSOD and FERC. All comments provided by DSOD and FERC have been addressed in the design. However, during construction, it would be necessary to confirm that the geologic conditions at the Project site are consistent with the foundation objectives. Additional excavation might be required to obtain a satisfactory foundation and would be performed as directed in the field by the engineer with concurrence from DSOD and FERC. Therefore, because site conditions cannot be fully known before construction, the construction-related impact would be **potentially significant**. There would be **no impact** from post-Project operation of the Forebay.*

Construction-Related Impact

The Project’s primary objective is to strengthen the dam to withstand seismic ground shaking as mandated by DSOD and FERC. EID’s seismic stability design has been prepared by a registered geotechnical and civil engineer and has been approved at the 60% and 90% design levels by both DSOD and FERC. GEI has performed a detailed analysis of settlement and seepage to determine the design and construction parameters that would be necessary to ensure that the dam and associated facilities would be stable. Of particular concern are saturated shallow groundwater conditions that currently persist on the right abutment and below the downstream toe of the dam. However, the Project has been designed to incorporate drainage and catchment systems to channel the estimated maximum seepage water flow (up to 150 gpm) away from the dam.

In addition, GEI projected that up to 3 inches of soil settlement at the dam could occur over time. Therefore, 6 inches of additional material would be placed on the dam crest to protect design freeboard from possible settlement. Furthermore, survey monuments would be installed along the dam crest (to replace existing monuments that would be destroyed during construction of the Project) to facilitate long-term monitoring of crest elevations. Periodic monitoring of the monuments will continue as part of the Project’s operation and

maintenance plan. If, over the long term, areas of the embankment are detected where the crest has settled below the design elevation, fill would be added to the crest to restore the design freeboard. This would be implemented as a maintenance action. A detailed discussion of the site data and parameters used in the dam stability analysis is provided on pages 43–46 of the *Draft Design Basis Memorandum* (GEI 2011b). The results of the analyses indicate that the proposed cross-section geometry of the dam meets the minimum required DSOD and FERC factors of safety for stability.

All substantial DSOD and FERC dam safety reviews have occurred during the predesign, 60% and 90% design/specification review processes, which have been ongoing over the past several years. The final (100%) design review, which will be conducted by DSOD and FERC, will focus primarily on confirming that EID has incorporated all design review comments issued on the 90% design review process. EID anticipates submitting final Project design drawings and specifications to DSOD and FERC for review and approval in December 2013. Construction oversight would be provided by a licensed geotechnical or civil engineer during all earthmoving activities. Any necessary modifications based on DSOD and FERC inspections during the construction process would be implemented.

With implementation of this process, potential impacts associated with construction on unstable soils would be minimized. However, because site conditions cannot be fully known prior to construction, the construction-related impact would be **potentially significant**.

Post-Project Operation-Related Impact

Post-Project operation of the Forebay would be subject to reduced hazards from construction in unstable soils as a result of Project construction. Therefore, there would be **no impact** from post-Project operation of the Forebay. No mitigation is required.

Mitigation Measure 3.6-6: Inspect and Approve All Foundation Surfaces Prior to Placement of Embankment

EID and DSOD will inspect and approve all foundation surfaces prior to placement of embankment material and concrete. Additional excavation may be required to obtain a satisfactory foundation and would be performed as directed in the field by the engineer with concurrence by DSOD.

Timing: Review and approval prior to initiating construction activities on unstable soils

Responsibility: EID

Significance after Mitigation: Implementing Mitigation Measure 3.6-6 will reduce the significant impact associated with construction activities located on unstable soils to a **less-than-significant** level because appropriate engineering measures would be prepared and implemented as part of Project design.

3.6.4 RESIDUAL SIGNIFICANT IMPACTS

Potential impacts on geology, soils, and seismicity would be less than significant or would be reduced to a less-than-significant level with mitigation, or there would be no impact, as described above. There would be no residual significant impacts.

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3.7 GREENHOUSE GAS EMISSIONS

This section evaluates the environmental impacts of potential greenhouse gas (GHG) emissions associated with implementation of the Project. GHG emissions have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change. Therefore, the proper context for addressing this issue in an EIR is within an assessment of cumulative impacts, because although it is unlikely that a single project will contribute significantly to climate change, cumulative emissions from many projects could impact global GHG concentrations and the climate system.

3.7.1 ENVIRONMENTAL SETTING

Appendix C presents a description of the various factors (i.e., topography, climate, and meteorology) and scientific background for climate change and GHG emissions; current GHG emissions and sources in the Project area. A summary of that information is provided below.

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. A portion of the solar radiation that enters the atmosphere is absorbed by the earth's surface, and a smaller portion of this radiation is reflected back toward space. This infrared radiation (i.e., thermal heat) is absorbed by GHGs within the atmosphere; as a result, infrared radiation released from the earth that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the "greenhouse effect," is responsible for maintaining a habitable climate on the earth. Without the naturally occurring greenhouse effect, the earth would not be able to support life as we know it.

GHGs are present in the atmosphere naturally, are released by natural and anthropogenic (human-caused) sources, and are formed from secondary reactions taking place in the atmosphere. The following are GHGs that are widely accepted as the principal contributors to human-induced global climate change:

- ▶ Carbon dioxide (CO₂)
- ▶ Methane (CH₄)
- ▶ Nitrous oxide (N₂O)
- ▶ Hydrofluorocarbons
- ▶ Perfluorocarbons
- ▶ Sulfur hexafluoride

Global warming potential (GWP) is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to CO₂. The concept of CO₂ equivalents (CO₂e) is used to account for the different GWP potentials of GHGs to absorb infrared radiation. The GWP of a GHG is based on several factors, including the relative effectiveness of a gas in absorbing infrared radiation and the length of time (i.e., lifetime) that the gas remains in the atmosphere ("atmospheric lifetime"). The reference gas for GWP is CO₂; therefore, CO₂ has a GWP of 1. The other main GHGs that have been attributed to human activity are CH₄, which has a GWP of 21, and N₂O, which has a GWP of 310 (UNFCCC 2013). For example, 1 ton of CH₄ has the same contribution to the greenhouse effect as approximately 21 tons of CO₂. GHGs with lower emissions rates than CO₂ may still contribute to climate change because they are more effective at absorbing outgoing infrared radiation than CO₂ (i.e., high GWP).

GHG emissions associated with human activities are likely responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of the earth's atmosphere and oceans, with corresponding effects on global circulation patterns and climate (IPCC 2007). Similarly, impacts of GHGs are borne globally, as opposed to localized air quality effects of criteria air pollutants and toxic air contaminants. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; suffice it to say, the quantity is enormous, and no single project alone would measurably contribute to a noticeable incremental change in the global average temperature, or to a global, local, or micro climate. From the standpoint of CEQA, GHG-related effects to global climate change are inherently cumulative.

3.7.2 REGULATORY BACKGROUND

Federal, state, and local laws, regulations, and policies provide a regulatory framework for addressing GHG emissions. The regulatory setting for GHG emissions is discussed in detail in Appendix C. Key laws, regulations, and policies influencing the Project are summarized below.

MANDATORY GREENHOUSE GAS REPORTING RULE

On October 30, 2009, the U.S. Environmental Protection Agency (EPA) published the final version of the Mandatory Greenhouse Gas Reporting Rule in the *Federal Register*. In general, compliance with this national reporting requirement will provide EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons (MT) or more of CO₂ per year. An estimated 85% of the total U.S. GHG emissions, from approximately 10,000 facilities, are covered by this final rule. Subsequent rulings have expanded the emissions sources required to report emissions data, and now include oil and natural gas industries, industrial wastewater treatment plants, and industrial landfills.

EXECUTIVE ORDER S-3-05

The goal of this executive order, signed by Governor Arnold Schwarzenegger on June 1, 2005, is to reduce California's GHG emissions to year 2000 levels by 2010, 1990 levels by 2020, and 80% below the 1990 levels by the year 2050. In 2006, this goal was reinforced with the passage of Assembly Bill (AB) 32.

GLOBAL WARMING SOLUTIONS ACT OF 2006 AND EXECUTIVE ORDER S-20-06

The Global Warming Solutions Act of 2006 set the same overall GHG emissions reduction goals as outlined in Executive Order S-3-05. The act further requires that the California Air Resources Board (ARB) create a plan that includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06, signed on October 18, 2006, further directed state agencies to begin implementing the Act, including the recommendations made by the State of California's Climate Action Team.

SENATE BILL 97

Senate Bill 97 (Chapter 185, Statutes of 2007) required the Governor's Office of Planning and Research to develop recommended amendments to the State CEQA Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.

EL DORADO COUNTY AIR QUALITY MANAGEMENT DISTRICT

The El Dorado County Air Quality Management District (EDCAQMD) has no regulations addressing GHG emissions.

3.7.3 IMPACTS AND MITIGATION MEASURES

ANALYSIS METHODOLOGY

Construction-Related Impacts

As discussed in more detail in Section 3.3, “Air Quality,” construction-generated emissions were quantified using the California Emission Estimator Model (CalEEMod) Version 2011.1.1. CalEEMod allows the user to enter project-specific construction information, such as types, number and horsepower of construction equipment, and number and length of off-site motor vehicle trips. Construction-related exhaust emissions for the Project were estimated for construction worker commutes, haul trucks, and the use of off-road equipment.

Post-Project Operation-Related Impacts

After construction of the Project, long-term operational emissions would be generated from operational and maintenance activities. During maintenance activities, worker vehicles would visit the Project site to inspect and confirm that the structures are functioning as intended. These activities would not exceed the existing maintenance and inspections activities for current facilities. Therefore, implementing the Project would not require or result in additional operational and maintenance trips or activities above existing conditions. Because no net change is anticipated as a result of the Project, GHG emissions associated with Project operations and maintenance were not estimated for this analysis.

THRESHOLDS OF SIGNIFICANCE

Significance criteria are based on Appendix G of the State CEQA Guidelines. The Project would have a significant impact from GHG emissions and its incremental contribution to global climate change if implementation of the Project would:

- ▶ Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment or
- ▶ Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs

EDCAQMD has not established quantitative significance thresholds for evaluating GHG emissions in CEQA analyses. Each project is evaluated on a case-by-case basis using the most up-to-date calculation and analysis methods. Therefore, to establish additional context in which to consider the order of magnitude of the Project’s construction-related GHG emissions, this analysis considers the following guidelines on the levels of GHG emissions that would constitute a cumulatively considerable incremental contribution to climate change:

- ▶ The San Luis Obispo Air Pollution Control District has adopted 1,150 MT CO₂e as a project-level GHG significance threshold that would apply to annual operational and amortized construction emissions from land use development projects (SLOAPCD 2012).
- ▶ The SCAQMD GHG Working Group has proposed a significance screening level of 3,000 MT CO₂ per year for residential and commercial projects (SCAQMD 2010).

Many California air districts, such as the Sacramento Metropolitan Air Quality Management District (SMAQMD) and SCAQMD, recommend that construction emissions associated with a project be amortized over the life of the project (typically 30 years) and added to the operational emissions. EDCAQMD’s *CEQA Guide to Air Quality Assessment* includes numerous references to methodologies developed by SMAQMD and SCAQMD for criteria pollutant emissions. Therefore, in light of the lack of a specific GHG threshold or guidance from EDCAQMD, it is considered appropriate to reference methodologies and guidance from those agencies when discussing GHG emissions. However, this information is presented for informational purposes only, and EID does not specifically intend to adopt any of the above-listed emission levels as a quantitative threshold.

This analysis includes a quantification of total modeled construction-related GHG emissions. Those emissions are then amortized and evaluated as a component of the project’s operational emissions over the 30-year life of the project. The intent of this analysis is to put project-generated GHG emissions into the appropriate statewide context with regard to whether the Project’s contribution of GHG emissions would reach the level that would have a considerable incremental contribution to global climate change.

IMPACT ANALYSIS

IMPACT 3.7-1 **Direct or Indirect Generation of GHG Emissions That May Have a Significant Impact on the Environment.** *The Project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. The construction-related impact would be **less than significant**. No impact would occur with post-Project operation of the Forebay.*

Construction-Related Impact

Short-term construction of the Project would generate GHG emissions. Construction-related GHG emissions would be generated by vehicle engine exhaust from construction equipment, haul trips, and construction worker trips. GHG emissions generated by the Project would consist primarily of CO₂. Emissions of other GHGs, such as CH₄ and N₂O, are important with respect to global climate change; however, even when considering the higher GWPs of these other GHGs, their contribution to total GHG emissions is small compared with CO₂ emissions from the Project’s emission sources (i.e., construction equipment and on-road vehicles). However, where appropriate emission factors were available, emissions of CH₄ and N₂O were included in the analysis of the Project.

Construction of the Project would generate approximately 1,276 MT CO₂e over the entire construction period, which would last 21 months. These emissions include heavy-duty construction equipment, haul trucks, and construction worker vehicles. As described in Chapter 3.3, “Air Quality,” the Project would also involve burning of woody residual materials. However, emissions generated by burning the residual materials are considered biogenic emissions in that they represent previously sequestered carbon and are part of the carbon cycle.

Therefore, the emissions from burning vegetation have not been incorporated into Project's GHG emissions. To estimate amortized construction emissions, the total construction-related GHG emissions of 1,276 MT CO₂e associated with the Project are divided by 30 years (approximately 43 MT CO₂ per year).

As mentioned earlier, many air districts recommend that construction-related GHG emissions be amortized over the lifetime of the project and compared to the thresholds of significance along with operational GHG emissions. Because the Project does not include additional GHG emissions associated with operations, the amortized construction-related emissions of 43 MT CO₂e would be compared to any proposed or adopted GHG thresholds of significance. Since EID and EDCAQMD do not have adopted thresholds, the amortized construction emissions are discussed in a statewide context with regard to other proposed or adopted thresholds. The amortized construction-related GHG emissions would be less than the adopted or proposed GHG levels or thresholds identified in the "Thresholds of Significance" section. Therefore, the Project would not generate GHG emissions, either directly or indirectly, that would have a significant impact on the environment. This construction-related impact would be **less than significant**.

Post-Project Operation-Related Impact

Implementation of the Project would not require or result in additional operational and maintenance activities above existing conditions. Therefore, **no impact** would occur as a result of post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

IMPACT 3.7-2 **Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing the Emissions of GHGs.** *The Project would not conflict with any applicable plan, policy, or regulation for the purpose of reducing GHG emissions. The construction-related impact would be **less than significant**. **No impact** would occur with post-Project operation of the Forebay.*

Construction-Related Impact

None of the measures listed in the ARB *Climate Change Scoping Plan* (ARB 2008), which contains the main strategies that California will use to achieve emission reductions necessary to meet the goals of AB 32, relate directly to construction activities. The scoping plan includes some measures that would indirectly address GHG emissions levels associated with construction activity, such as the phasing in of cleaner technology for diesel engine fleets (including construction equipment) and the development of a low-carbon fuel standard. However, successful implementation of these measures depends primarily on the development of laws and policies at the state level. It is assumed that those policies formulated under the mandate of AB 32 that apply to construction-related activity, either directly or indirectly, would be implemented during construction of the Project if those policies and laws were in fact developed and adopted before the start of Project construction. Therefore, Project construction is not expected to conflict with the scoping plan.

As discussed earlier, the Project would not generate GHG emissions that would have a significant impact on the environment. Neither EID nor any other agency with jurisdiction over the Project has adopted climate change or GHG reduction measures with which the Project would conflict. The Project would not conflict with any applicable plan, policy, or regulation for the purpose of reducing GHG emissions. Therefore, this construction-related impact would be **less than significant**.

Post-Project Operation-Related Impact

Implementation of the Project would not require or result in additional operational and maintenance activities above existing conditions. Therefore, **no impact** would occur as a result of post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

3.7.4 RESIDUAL SIGNIFICANT IMPACTS

All impacts on GHG emissions would be less than significant, or there would be no impact, as described above. There would be no residual significant impacts.

3.8 HAZARDS AND HAZARDOUS MATERIALS

This section describes existing and potentially occurring hazards and hazardous materials on the Project site. It also addresses potential impacts related to public health and safety hazards, including routine transport, use, or disposal of hazardous materials; emergency response; and wildland fire protection.

Service levels of nearby fire protection personnel and the potential for impacts on emergency response plans are addressed in Section 3.11, “Public Services,” of this DEIR. Potential hazards and associated impacts related to toxic air contaminant emissions are discussed in Section 3.3, “Air Quality”; potential impacts from geologic hazards are discussed in Section 3.6, “Geology and Soils”; and potential public health impacts and hazards related to groundwater, and surface water are discussed in Section 3.9, “Hydrology and Water Quality.”

3.8.1 REGULATORY BACKGROUND

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

The following federal plans, policies, regulations, or laws regarding hazards and hazardous materials apply to the Project.

Management of Hazardous Materials

The U.S. Environmental Protection Agency (EPA) is the principal federal agency regulating the generation, transport, and disposal of hazardous substances, under the authority of the Resources Conservation and Recovery Act (RCRA). The RCRA established an all-encompassing federal regulatory program for hazardous substances that is administered by EPA. Under the RCRA, EPA regulates the generation, transportation, treatment, storage, and disposal of hazardous substances. This regulatory system includes tracking all generators of hazardous waste.

The RCRA was amended in 1984 by the Hazardous and Solid Waste Amendments of 1984, which specifically prohibit the use of certain techniques to dispose of various hazardous substances. The Federal Emergency Planning and Community Right-to-Know Act of 1986 imposes hazardous materials planning requirements to help protect local communities in the event of accidental release of hazardous substances. EPA has delegated fulfillment of many of the RCRA’s requirements to the California Department of Toxic Substances Control (DTSC).

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980, commonly known as Superfund, created a trust fund and provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that could endanger public health or the environment. This law was enlarged and reauthorized by the Superfund Amendments and Reauthorization Act of 1986 (SARA) (Public Law 99-499).

SARA requires EPA to compile a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories, known as the National Priorities List. These locations are commonly referred to as “Superfund sites.” EPA has delegated some of its regulatory authority related to prevention and cleanup of certain types of hazardous materials incidents to several state agencies, including DTSC and the State Water Resources Control Board (SWRCB).

Transport of Hazardous Materials

The U.S. Department of Transportation regulates transport of hazardous materials between states and is responsible for protecting the public from dangers associated with such transport. The federal hazardous materials transportation law, 49 USC 5101 et seq. (formerly the Hazardous Materials Transportation Act, 49 USC 1801 et seq.), is the basic statute regulating transport of hazardous materials in the United States. Hazardous materials regulations on the transport of hazardous materials are codified in 49 CFR 173, 49 CFR 177, and CCR Title 26, Division 6, and these regulations are enforced by the Federal Highway Administration, the U.S. Coast Guard, the Federal Railroad Administration, and the Federal Aviation Administration.

Worker Safety Requirements

The U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) is responsible at the federal level for ensuring worker safety in the handling and use of chemicals identified in the Occupational Safety and Health Act of 1970 (Public Law 91-596, 9 U.S. Code 651 et seq.). OSHA has adopted numerous regulations pertaining to worker safety, contained in CFR Title 29. These regulations set federal standards for implementing workplace training, exposure limits, and safety procedures for the handling of hazardous substances, as well as for other hazards. OSHA also establishes criteria by which each state can implement its own health and safety program.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

The following state plans, policies, regulations, or laws regarding hazards and hazardous materials apply to the Project.

California Environmental Protection Agency

DTSC, a division of the California Environmental Protection Agency (Cal/EPA), has primary state regulatory responsibility over hazardous materials in California, working in conjunction with the federal EPA to enforce and implement hazardous materials laws and regulations. DTSC can delegate enforcement responsibilities to local jurisdictions.

The hazardous waste management program enforced by DTSC was created by the Hazardous Waste Control Act (California Health and Safety Code Section 25100 et seq.), which is implemented by regulations described in CCR Title 26. The regulations list materials that may be hazardous and establish criteria for their identification, packaging, and disposal.

Environmental health standards for management of hazardous waste are contained in CCR Title 22, Division 4.5. As required by California Government Code Section 65962.5, DTSC also maintains a Hazardous Waste and Substances Site List for the state, commonly called the Cortese List.

California's Secretary for Environmental Protection has established a unified hazardous waste and hazardous materials management regulatory program (Unified Program) as required by Senate Bill 1082 (1993). The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities for the following environmental programs:

- ▶ Hazardous waste generator and hazardous waste on-site treatment programs
- ▶ Underground Storage Tank Program
- ▶ Hazardous materials release response plans and inventories
- ▶ California Accidental Release Prevention Program
- ▶ Aboveground Petroleum Storage Act requirements for spill prevention, control, and countermeasure plans
- ▶ California Uniform Fire Code hazardous material management plans and inventories

These six environmental programs are implemented at the local government level by Certified Unified Program Agencies (CUPAs). CUPAs provide a central permitting and regulatory agency for permits, reporting, and compliance enforcement (El Dorado County 2013).

California Accidental Release Prevention Program

The goal of the California Accidental Release Prevention Program is to reduce the likelihood and severity of consequences of any releases of extremely hazardous materials. Businesses that handle regulated substances (chemicals that pose a major threat to public health and safety or the environment because they are highly toxic, flammable, or explosive, including ammonia, chlorine gas, hydrogen, nitric acid, and propane) are required to prepare a risk management plan. A risk management plan is a detailed analysis of the potential accident factors present at a business and the measures that can be implemented to reduce accident potential. The plan must provide safety information, hazard data, operating procedures, and training and maintenance requirements.

Transport of Hazardous Materials

State agencies with primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies consist of the California Highway Patrol (CHP) and the California Department of Transportation (Caltrans). Together, these agencies determine container types used and license hazardous waste haulers for transportation of hazardous waste on public roads.

Worker Safety Requirements

The California Occupational Safety and Health Administration (Cal-OSHA) assumes primary responsibility for developing and enforcing workplace safety regulations in California. It enforces regulations pertaining to the use of hazardous materials in the workplace (CCR Title 8). These regulations include requirements for safety training, availability of safety equipment, accident and illness prevention programs, warnings about hazardous substance exposure, and preparation of emergency action and fire prevention plans.

Cal-OSHA also enforces hazard-communication program regulations that contain training and information requirements. Such requirements include procedures for identifying and labeling hazardous substances, communicating information about hazardous substances and their handling, and preparing health and safety plans to protect workers and employees at hazardous waste sites. Under the hazard-communication program, employers must make Material Safety Data Sheets available to employees and document employee information and training programs.

Public Resources Code Section 21151.4

Under PRC Section 21151.4, unless certain conditions are first met, EIRs or mitigated negative declarations that would involve constructing or altering facilities that meet any of the following criteria may not be certified or adopted for projects located within one-quarter mile of schools:

- ▶ Might reasonably be anticipated to emit hazardous air emissions
- ▶ Would handle an extremely hazardous substance or a mixture containing extremely hazardous substances in a quantity equal to or greater than the state threshold quantity specified in Section 25532(j) of the Health and Safety Code
- ▶ May pose a health or safety hazard to persons who would attend or would be employed at the school

For an EIR to be certified or mitigated negative declaration to be adopted for such a project, both of the following must have already occurred:

- ▶ The lead agency preparing the EIR must have consulted with the appropriate school district regarding the potential impact of the project on the school.
- ▶ The school district must have been notified about the project in writing at least 30 days before the proposed certification of the EIR or adoption of the mitigated negative declaration.

State Water Resources Control Board

SWRCB has primary responsibility for protecting California's water quality and supply. The Project is located within the jurisdiction of the Central Valley Regional Water Quality Control Board (CVRWQCB). As described in Section 3.9, "Hydrology and Water Quality," the CVRWQCB is authorized by the Porter-Cologne Water Quality Control Act of 1969 to protect the waters of the state. The CVRWQCB provides oversight for sites where the quality of groundwater or surface water is threatened. Extraction and disposal of groundwater occurring as part of remediation activities or dewatering during project construction would require a permit from the CVRWQCB if the water were to be discharged to storm drains, surface water, or land.

California Emergency Services Act

The California Emergency Services Act provides the basic authority for conducting emergency operations following a proclamation of emergency by the governor and/or appropriate local authorities. Local government and district emergency plans are considered to be extensions of the California Emergency Plan, established in accordance with the Emergency Services Act.

The California Emergency Management Agency (Cal EMA) is the state agency responsible for establishing emergency response and spill notification plans related to hazardous materials accidents. Cal EMA regulates businesses by requiring specific businesses to prepare an inventory of hazardous materials (CCR Title 19). Cal EMA is also the lead state agency for emergency management and is responsible for coordinating the state-level response to emergencies and disasters. The Inland Region of Cal EMA has responsibility for areas served by EID.

Wildfire Hazard Management

The California Department of Forestry and Fire Protection (CAL FIRE) implements statewide laws aimed at reducing wildfire hazards in wildland-urban interface areas. The laws are based on fire hazard assessment and zoning. The laws apply to state responsibility areas, which are defined as areas of the state in which the state has primary financial responsibility for preventing and suppressing fires, as determined by the State Board of Forestry under PRC Sections 4125 and 4102. Fire protection outside state responsibility areas is the responsibility of federal or local jurisdictions. These areas are referred to by CAL FIRE as federal responsibility areas and local responsibility areas. The Project site is located in a local responsibility area. See Section 3.11, “Public Services,” for further discussion of local fire protection services in the Project area.

REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Government Code Section 53091 states that building and zoning ordinances do not apply to “construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency.” Public utility projects that serve the facilities described above would not be subject to local plans, policies, regulations, or ordinances. The following local regulations related to hazardous materials are provided for informational purposes and are provided as a basis to assist with CEQA review in evaluating the level of significance associated with impacts.

El Dorado County General Plan

The following goals, objectives, and policies from the 2004 *El Dorado County General Plan* Public Health, Safety, and Noise Element (amended March 2009) regarding hazards and hazardous materials are pertinent to the Project (El Dorado County 2009).

Public Health, Safety, and Noise Element

Goal 6.1: Coordination—A coordinated approach to hazard and disaster response planning.

- ▶ **Objective 6.1.1:** El Dorado County Multi-Jurisdictional Local Hazard Mitigation Plan—The El Dorado County Multi-Jurisdictional Local Hazard Mitigation Plan shall serve as the implementation program for this Goal.
 - **Policy 6.1.1.1:** The El Dorado County Multi-Jurisdictional Local Hazard Mitigation Plan (LHMP) shall serve as the implementation program for the coordination of hazard planning and disaster response efforts within the County and is incorporated by reference into this Element. The County will ensure that the LHMP is updated on a regular basis to keep pace with the growing population.

Goal 6.2: Fire Hazards—Minimize fire hazards and risks in both wildland and developed areas.

- ▶ **Objective 6.2.1:** Defensible Space—All new development and structures shall meet “defensible space” requirements and adhere to fire code building requirements to minimize wildland fire hazards.
 - **Policy 6.2.1.1:** Implement Fire Safe ordinance to attain and maintain defensible space through conditioning of tentative maps and in new development at the final map and/or building permit stage.

- **Policy 6.2.1.2:** Coordinate with the local Fire Safe Councils, California Department of Forestry and Fire Protection, and federal and state agencies having land use jurisdiction in El Dorado County in the development of a countywide fuels management strategy.
- ▶ **Objective 6.2.2:** Limitations to Development—Regulate development in areas of high and very high fire hazard as designated by the California Department of Forestry and Fire Prevention Fire Hazard Severity Zone Maps.
- **Policy 6.2.2.1:** Fire Hazard Severity Zone Maps shall be consulted in the review of all projects so that standards and mitigation measures appropriate to each hazard classification can be applied. Land use densities and intensities shall be determined by mitigation measures in areas designated as high or very high fire hazard.
 - **Policy 6.2.2.2:** The County shall preclude development in areas of high and very high wildland fire hazard or in areas identified as “urban wildland interface communities within the vicinity of Federal lands that are a high risk for wildfire,” as listed in the Federal Register of August 17, 2001, unless such development can be adequately protected from wildland fire hazard, as demonstrated in a Fire Safe Plan prepared by a Registered Professional Forester (RPF) and approved by the local Fire Protection District and/or California Department of Forestry and Fire Protection.
- ▶ **Objective 6.2.3:** Adequate Fire Protection—Application of uniform fire protection standards to development projects by fire districts.
- **Policy 6.2.3.1:** As a requirement for approving new development, the County must find, based on information provided by the applicant and the responsible fire protection district that, concurrent with development, adequate emergency water flow, fire access, and fire fighting personnel and equipment will be available in accordance with applicable State and local fire district standards.
 - **Policy 6.2.3.2:** As a requirement of new development, the applicant must demonstrate that adequate access exists, or can be provided to ensure that emergency vehicles can access the site and private vehicles can evacuate the area.
 - **Policy 6.2.3.4:** All new development and public works projects shall be consistent with applicable State Wildland Fire Standards and other relevant State and federal fire requirements.
- ▶ **Objective 6.2.4:** Area-Wide Fuel Management Program—Reduce fire hazard through cooperative fuel management activities.
- **Policy 6.2.4.1:** Discretionary development within high and very high fire hazard areas shall be conditioned to designate fuel break zones that comply with fire safe requirements to benefit the new and, where possible, existing development.
 - **Policy 6.2.4.2:** The County shall cooperate with the California Department of Forestry and Fire Protection and local fire protection districts to identify opportunities for fuel breaks in zones of high and very high fire hazard either prior to or as a component of project review.

- ▶ **Objective 6.4.2: Dam Failure Inundation**—Protect life and property of County residents below dams.
 - **Policy 6.4.2.1:** Apply a zoning overlay for areas located within dam failure inundation zones as identified by the State Department of Water Resources Division of Safety of Dams.
 - **Policy 6.4.2.2:** No new critical or high occupancy structures (e.g., schools, hospitals) should be located within the inundation area resulting from failure of dams identified by the State Department of Water Resources Division of Safety of Dams.

- ▶ **Objective 6.6.1: Regulation of Hazardous Materials**—Regulate the use, storage, manufacture, transport and disposal of hazardous materials in accordance with State and Federal regulations.
 - **Policy 6.6.1.1:** The Hazardous Waste Management Plan shall serve as the implementation program for management of hazardous waste in order to protect the health, safety, property of residents and visitors, and to minimize environmental degradation while maintaining economic viability.
 - **Policy 6.6.1.2:** Prior to the approval of any subdivision of land or issuing of a permit involving ground disturbance, a site investigation, performed by a Registered Environmental Assessor or other person experienced in identifying potential hazardous wastes, shall be submitted to the County for any subdivision or parcel that is located on a known or suspected contaminated site included in a list on file with the Environmental Management Department as provided by the State of California and federal agencies. If contamination is found to exist by the site investigations, it shall be corrected and remediated in compliance with applicable laws, regulations, and standards prior to the issuance of a new land use entitlement or building permit.

El Dorado County Ordinance Code

Chapter 8.38 Hazardous Materials

Chapter 8.38 regulates the handling, storage, use, transport, processing and disposal of hazardous materials. This ordinance requires the reporting of hazardous material use, disclosure of hazardous material releases, and the prevention and mitigation of impacts related to hazardous materials.

El Dorado County Hazardous Materials Program

El Dorado County Environmental Management’s Hazardous Materials Program protects human health and the environment by ensuring that hazardous materials and hazardous waste are properly managed through permit and inspection processes and through public educational programs. The Hazardous Materials Program provides services regarding disposal options for small-quantity hazardous waste generators, emergency response and spills, hazardous materials plans, household hazardous waste collection, medical waste, site investigation and remediation, and stormwater pollution prevention.

El Dorado County Multi-Jurisdiction Hazard Mitigation Plan

Public Law 106-390, known as the Disaster Mitigation Act of 2000, requires that local governments prepare Local Hazard Mitigation Plans (LHMPs). An LHMP must be approved by the Federal Emergency Management Agency for the local government to be eligible to receive federal hazard mitigation project funding. The act also

requires that states review LHMPs as part of the state hazard mitigation planning process. The Cal EMA Hazard Mitigation Program administers the LHMP program for the state.

El Dorado County has adopted a Multi-Jurisdiction Hazard Mitigation Plan (MJHMP) to comply with the LHMP requirements. EID is a participating agency in the El Dorado County MJHMP. Each participating agency must address specific or unique hazards in its jurisdiction in an appendix to the overall MJHMP. EID hazards, addressed in Appendix 5 of the El Dorado County MJHMP, include flooding, high winds, severe thunderstorms, wildland fires, ice and snow events, landslides, avalanches, earthquakes, and drought.

3.8.2 ENVIRONMENTAL SETTING

DEFINITIONS OF TERMS

For purposes of this section, the term “hazardous materials” refers to both hazardous substances and hazardous wastes. A “hazardous material” is defined in the CFR as “a substance or material that...is capable of posing an unreasonable risk to health, safety, and property when transported in commerce” (49 CFR 171.8). California Health and Safety Code Section 25501 defines a hazardous material as follows:

“Hazardous material” means any material that, because of its quantity, concentration, or physical, or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. “Hazardous materials” include, but are not limited to, hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

“Hazardous wastes” are defined in California Health and Safety Code Section 25141(b) as wastes that:

because of their quantity, concentration, or physical, chemical, or infectious characteristics, [may either] cause, or significantly contribute to an increase in mortality or an increase in serious illness[, or] pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

SCHOOLS

The Project site is located in the area served by Pollock Pines Elementary School District (K–8). The nearest school, Pinewood Elementary, is located approximately 0.2 mile south of the site. No other schools are located within 0.25 mile of the Project site.

POTENTIAL SOURCES OF HAZARDOUS MATERIALS IN THE PROJECT VICINITY

A search was performed by AECOM in 2013 using the GeoTracker database (the underground contaminant information management system maintained by SWRCB). Data about leaking underground storage tanks and other types of soil and groundwater contamination, along with associated cleanup activities, are part of the information that SWRCB is required to maintain under Section 65962.5 of the California Government Code. The search failed to identify any open, active contamination sites located within 0.25 mile of the Project site (SWRCB 2013).

The Hazardous Waste and Substances Site List (i.e., the “EnviroStor” database) is maintained by DTSC as part of the requirements of Section 65962.5. A search of this list by AECOM in 2013 failed to identify any open cases of hazardous waste and substances sites within 0.25 mile of the Project site (DTSC 2013).

A Superfund Site Information data search of EPA’s Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) public access database (EPA 2013a) failed to identify any known hazardous material contamination sites in El Dorado County under federal jurisdiction.

EPA maintains records of small- and large-quantity generators of hazardous waste through a national program-management and inventory system pertaining to hazardous waste handling that was established under the RCRA. Small-quantity generators produce 220–2,200 pounds of hazardous waste per month; large-quantity generators produce more than 2,200 pounds of hazardous waste or more than 2.2 pounds of acutely hazardous waste per month. This information is available to the public through the EPA EnviroMapper database (EPA 2013b). According to information in the EnviroMapper database, no large- or small-quantity generators are located within 0.25 mile of Project site.

EID commissioned a lead-based paint and asbestos survey of the Project site with The Westmark Group (The Westmark Group 2013). The findings of the survey were summarized in a report dated August 21, 2013. The purpose of the survey was to “identify...the presence and location of lead-based paint and asbestos for equipment and equipment support facilities associated with the raising of the Forebay Dam” (The Westmark Group 2013). Lead-based paint was found present in several buildings, including the control building, weir building, and the valve house. Asbestos was not detected in any samples.

CERTIFIED UNIFIED PROGRAM AGENCY

The El Dorado County Environmental Management Division, Hazardous Materials Program, is the CUPA for El Dorado County (El Dorado County 2013). The Hazardous Materials Program staff works with law enforcement, fire, and allied health agency officers and staff members to facilitate hazardous materials incident response, cleanup, removal, and disposal.

EMERGENCY RESPONSE SERVICES

El Dorado County Office of Emergency Services (OES) mission is to assist El Dorado County residents and businesses in preparing for, responding to, and recovering from emergencies that threaten life, property, or the environment. The El Dorado County Sheriff’s Office is responsible for managing the county OES and is located approximately 13 miles west of the Project site. Employees of the sheriff’s office assigned to the OES work in collaboration with fire services, emergency medical services, hospitals, schools, and public and private agencies to implement preparedness programs, develop emergency response plans, and conduct training drills.

The Project site and surrounding areas are in the Western Slope service area of the El Dorado County Emergency Services Authority (or West Slope Joint Powers Authority [JPA]), which provides paramedic ambulance service to the area (El Dorado County Emergency Services Authority 2013). The northern portion of Pollock Pines, including the Project site, is served by Fire Station 17 of the El Dorado County Fire Protection District, a member of the West Slope JPA. Fire Station 17 is located at 6426 Pony Express Trail in Pollock Pines and is staffed 24 hours a day, 7 days a week by an engine company and a medic unit (El Dorado County Fire District 2013).

WILDLAND FIRE HAZARDS

CAL FIRE has developed fire hazard severity zones as a way to predict fire damage. The zones depicted in CAL FIRE maps take into account the potential fire intensity and speed, production and spread of embers, fuel loading, topography, and climate (e.g., temperature and the potential for strong winds).

Fire prevention areas considered to be under state jurisdiction are referred to as “state responsibility areas.” In state responsibility areas, CAL FIRE is required to delineate three hazard ranges: moderate, high, and very high. For “local responsibility areas,” which are under the jurisdiction of local entities (e.g., cities, counties), only very high fire hazard severity zones must be identified.

The Project site and surrounding areas are mapped as a local responsibility area. The El Dorado County Fire Protection District is responsible for providing fire protection services to these areas (CAL FIRE 2009). El Dorado County identifies moderate, high severity, and very high severity zones. The Project site and surrounding areas are located in an area mapped as a very high fire hazard severity zone (CAL FIRE 2009).

3.8.3 IMPACTS AND MITIGATION MEASURES

ANALYSIS METHODOLOGY

This analysis considers the range and nature of foreseeable hazardous materials use, storage, and disposal resulting from implementing the Project and identifies the primary pathways that these hazardous materials could expose individuals or the environment to health and safety risks. As discussed above, compliance with applicable federal, state, and local health and safety laws and regulations would generally protect the health and safety of the public. Local and state agencies would be expected to continue to enforce applicable requirements as required by law.

The following reports and databases documenting potential hazardous conditions in the Project area were reviewed for this analysis:

- ▶ Available data, including the SWRCB GeoTracker database, DTSC EnviroStor database, and the EPA CERCLIS and EnviroMapper databases
- ▶ Literature, including documents published by EID and county, state, and federal agencies
- ▶ Applicable elements from the *El Dorado County General Plan*

The information obtained from these sources was reviewed to characterize existing conditions and to evaluate the significance of potential environmental effects, based on the criteria identified below.

THRESHOLDS OF SIGNIFICANCE

Significance criteria are based on Appendix G of the State CEQA Guidelines. The Project would have a significant impact related to hazards and hazardous materials if Project implementation would do any of the following:

- ▶ Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials

- ▶ 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
- ▶ Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school
- ▶ 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, create a significant hazard to the public or the environment
- ▶ For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area
- ▶ For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area
- ▶ Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan
- ▶ Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands

FINDINGS OF THE INITIAL STUDY CONCLUDING NO IMPACT

The IS concluded that no impact would occur for the following thresholds of significance:

- ▶ *Be Located on a Site That Is Included on a List of Hazardous Materials Sites:* Based on the IS (Appendix A), which included results of a review of the Cortese List, the Project site is not included on a list of hazardous materials sites compiled under Government Code Section 65962.5; therefore, there would be no impact.
- ▶ *For a Project Located within an Airport Land Use Plan or within 2 Miles of a Public Airport or Public Use Airport, Result in a Safety Hazard for People Residing or Working in the Project Area:* The IS concluded that because there were no public or public use airports within 2 miles of the Project site, there would be no impact related to people residing or working in the Project area (Appendix A). The airport closest to the Project site is Swansboro Country Airport, a private airport located approximately 8 miles to the northwest in Placerville, California.
- ▶ *For a Project within the Vicinity of a Private Airstrip, Result in a Safety Hazard for People Residing or Working in the Project Area:* The IS concluded that because there were no private airstrips in the vicinity of the Project site, there would be no impact related to people residing or working in the Project area (Appendix A).

These issues are not addressed further in this EIR.

IMPACT ANALYSIS

IMPACT 3.8-1

Potential Hazards from the Routine Transport, Use, or Disposal of Hazardous Materials or through Possible Accident Conditions Involving the Release of Hazardous Materials into the Environment.

*Hazardous materials would be used in minor amounts during construction and operation of the Project and could be released through demolition of buildings containing lead-based paint. The risk of potential exposure to workers and public would be a **potentially significant** impact. Impacts associated with post-Project operation of the Forebay would be **less than significant**.*

Construction-Related Impacts

Hazardous materials would be used in minor amounts during construction of the Project. Construction-related activities would involve use of hazardous materials, such as fuels (gasoline and diesel fuel), oils, hydraulic fluids, lubricants, and cleaners (which could include solvents and corrosives in addition to soaps and detergents) or exposure to lead-based paints. Construction workers and the general public could be exposed to hazards and hazardous materials as a result of improper storage, handling, or use during construction activities; transportation accidents; or fires, explosions, or other emergencies. Construction workers could also be exposed to hazards associated with accidental releases of hazardous materials, which could result in adverse health effects. Lead based paint has been detected in buildings on the Project site, which could pose a potential risk of exposure to workers if it is disturbed.

Haulers delivering materials to the Project would be required to comply with regulations on the transport of hazardous materials codified in 49 CFR 173, 49 CFR 177, and CCR Title 26, Division 6. These regulations provide specific packaging requirements, define unacceptable hazardous materials shipments, and prescribe safe-transit practices, including route restrictions, by carriers of hazardous materials. Compliance with these regulations would reduce the risk of exposure to humans and the environment related to the transportation of hazardous materials.

Hazardous materials regulations, which are codified in CCR Titles 8 and 22, and their enabling legislation set forth in Chapter 6.5 (Section 25100 et seq.) of the California Health and Safety Code, were established at the state level to ensure compliance with federal regulations and reduce the risk to human health and the environment from the routine use of hazardous substances. Routine implementation measures would include the following requirements in compliance with applicable regulations and codes, including, but not limited to CCR Titles 8 and 22, the Uniform Fire Code, and Section 25100, Division 20 of the California Health and Safety Code: all reserve fuel supplies and hazardous materials must be stored within the confines of a designated area; equipment refueling and maintenance must take place only within the staging area; and construction vehicles shall be inspected daily for leaks. These regulations and codes must be implemented, as appropriate, and are monitored by the state and/or local jurisdictions, including the El Dorado County Environmental Management Department.

Contractors would be required to comply with Cal/EPA's Unified Program; regulated activities would be managed by the El Dorado County Environmental Management Department, the designated CUPA for El Dorado County, in accordance with the regulations included in the Unified Program (e.g., hazardous materials release response plans and inventories, California Uniform Fire Code hazardous material management plans and inventories) (El Dorado County 2013). Such compliance would reduce the potential for accidental release of hazardous materials during construction of the Project. As a result, it would minimize the risk of exposure to

construction workers and the public from accidental release of hazardous materials, as well as the demand for incident emergency response.

Implementation of measures to comply with federal, state, and local hazardous materials regulations and codes would reduce impacts related to hazards for construction workers and the general public involving the release of hazardous materials into the environment or through the routine transport, use, or disposal of hazards materials during construction. This impact would be **potentially significant** as a result of Project construction.

Post-Project Operation-Related Impacts

After the dam modifications are complete, hazardous materials, such as oils, grease, or solvents, could be used in small amounts during post-Project operation. As described for construction, measures employed during the use of hazardous materials to comply with federal, state, and local regulations and codes would reduce impacts related to hazards for workers and the general public. This impact would be **less than significant**. No mitigation is required.

Mitigation Measure 3.8-1: Reduce Exposure Risk from Lead-Based Paint Exposure.

Lead-based paint was identified on the exterior wood siding of the A-18 Control Building and A-18 Weir Building; wooden eaves and door jams of the A-18 Control Building and A-18 Weir Building; interior drywall of the A-18 Control Building and A-18 Weir Building; and piping in the Penstock Valve Building. The paint on the exterior of the A-18 Control Building and A-18 Weir Building was found to be deteriorated and flaking.

Because of the positive initial lead determination, the EID or its contractor will prepare a Lead Hazard Control Plan (LHCP) to address worker safety. The LHCP must be prepared by a certified Lead Supervisor or Designer and must address measures to prevent worker exposure, management and disposal of contaminated materials, steps taken to document handling procedures, and other measures required to comply with occupational health and safety requirements.

Timing: During construction activities, as appropriate

Responsibility: EID and contractor

Significance after Mitigation: Implementing Mitigation Measure 3.8-1 will reduce the risk to workers and the public associated with exposure to lead-based paint to a **less-than-significant** level.

IMPACT 3.8-2 **Potential Emission or Handling of Hazardous Materials within 0.25 Mile of a School.** *Pinewood Elementary School is located within 0.25 mile of the Project site. Construction and operation of the Project would involve the use or handling of small amounts of hazardous materials. Because construction activities would use hazardous materials within 0.25 mile of a school, this activity would pose a potential hazard to school occupants if accidental release or emission of hazardous materials were to occur. Therefore, the construction-related impact would be **potentially significant**. **No impact** would occur with post-Project operation of the Forebay.*

Construction-Related Impact

As described in the “Environmental Setting” section, Pinewood Elementary School is the only school located within 0.25 mile of portions of the Project site. Although most areas of the Project site are located more than 0.25 mile from this school, portions of the Project site, including staging and construction areas below the dam and adjacent to the spillway, are located within 0.25 mile of Pinewood Elementary School. As described for Impact 3.8-1 above, construction of the Project would involve the use of hazardous materials, such as fuels (gasoline and diesel fuel), oils, hydraulic fluids, lubricants, and cleaners (which could include solvents and corrosives in addition to soaps and detergents) in staging areas on the Project site. Because the site is located within 0.25 mile of a school, the use or handling of such hazardous materials would pose a potential hazard to school occupants if accidental release or emission of hazardous materials were to occur. Therefore, this impact would be **potentially significant**.

Post-Project Operation-Related Impact

Post-Project operation of the Forebay could involve the use of minor amounts of hazardous materials; however, there would be no changes from current use. In addition, storage and use of these hazardous materials would occur on portions of the Project site that are more than 0.25 mile from Pinewood Elementary School. Therefore, **no impact** would occur with post-Project operation of the Forebay. No mitigation is required.

Mitigation Measure 3.8-2: Store and Handle Hazardous Materials More Than 0.25 Mile from Pinewood Elementary School Whenever Feasible, and Prepare and Implement an Emergency Response Plan.

Whenever feasible, hazardous materials storage and handling facilities will be located more than 0.25 mile from the Pinewood Elementary School boundary. These facilities could include fueling stations, equipment repair or maintenance facilities, or other facilities where hazardous materials may be handled during Project construction. An emergency response plan will be prepared and implemented to control, contain, and clean up hazardous materials accidentally released on the Project site during construction. The plan shall identify roles, responsibilities, actions, and reporting requirements for the management of hazardous materials that may be accidentally released, including notification of school officials that an event within 0.25 mile had occurred. In addition, EID and the construction contractor will direct hazardous materials delivery and disposal vehicles to only use Forebay Road for ingress and egress to the Project site.

Timing: Before and during construction activities, as appropriate

Responsibility: EID and contractor

Significance after Mitigation: Implementing Mitigation Measure 3.8-2 will reduce the potentially significant impact associated with the use or handling of hazardous materials within 0.25 mile of a public school to a **less-than-significant** level by minimizing use within this distance and providing immediate response to accidental releases.

**IMPACT
3.8-3**

Potential Interference with Emergency Evacuation Routes and Emergency Vehicle Access during Project Construction and Operation. *Construction-related impacts on regional and local roadways, in particular Forebay Road, could temporarily impair emergency evacuation routes or emergency vehicle access. This impact would be **potentially significant**. Roadway conditions during operation of the Project would be the same as existing roadway conditions. **No impact** would occur with post-Project operation of the Forebay.*

Construction-Related Impact

As described in Section 2.10, “Construction-Related Traffic,” regional and local roadways, including U.S. 50, Sly Park Road, Pony Express Road, Forebay Road, and Blair Road, would be affected by personal vehicles, equipment, and trucks carrying imported materials to and from the Project site. In addition, Pony Express Road, Polaris Road, and Drop-Off Road would be used as a secondary access route to the western portion of the reservoir and the dam left abutment.

Because earth-moving equipment transporting materials from the borrow area to the Forebay Dam would need to cross Forebay Road, this road would be subject to temporary restrictions during Project construction. The temporary disruption to traffic flow that would result from the removal or reduction of lanes on Forebay Road could result in traffic delays for vehicles traveling on Forebay Road and could temporarily impair emergency evacuation routes or emergency vehicle access. Therefore, this impact would be **potentially significant** as a result of Project construction.

Post-Project Operation-Related Impact

Conditions on regional and local roadways during post-Project operation of the Forebay would be the same as existing roadway conditions. Traffic levels associated with maintenance activities would also be the same as those associated with maintaining the existing Forebay Dam; therefore, they would not interfere with emergency evacuation routes or emergency vehicle access. **No impact** would occur with post-Project operation of the Forebay. No mitigation is required.

Mitigation Measure 3.8-3: Implement Mitigation Measure 3.13-2, Prepare and Implement a Traffic Control Plan.

Timing: Before and during construction activities, as appropriate

Responsibility: EID and contractor

Significance after Mitigation: Implementing Mitigation Measure 3.8-3 will reduce the potentially significant impact associated with interference with emergency evacuation routes and emergency vehicle access to a **less-than-significant** level because the traffic control plan would be used to ensure unimpeded emergency vehicular access and passage, develop detours to ensure acceptable traffic flow through and/or around the construction zone, and minimize traffic congestion.

**IMPACT
3.8-4**

Potential to Expose People or Structures to a Significant Risk of Loss, Injury, or Death Involving Wildland Fires. *The Project site is located in a very high fire hazard severity zone; however, because EID is required to implement measures to comply with the elements of OSHA's fire protection and prevention standard during all phases of construction and because fire protection services are available, this impact during construction and post-Project operation of the Forebay would be **less than significant**.*

Construction-Related Impact

The Project site and surrounding areas are located in a local responsibility area served by El Dorado County Fire Protection District (CAL FIRE 2009). The fuel level in this area is considered moderate (El Dorado County 2003), and there are nearby residences that could be exposed to wildland fire if one were sparked during construction of the Project.

The use of internal-combustion engines, vehicles, and other equipment on the Project site would increase the risk of wildland fire. Activities such as timber removal, slash disposal and burning, earthen materials excavation, and general construction would increase the risk of fire in the woodland environment. The Timber Harvest Plan (THP) will specify procedures for timber harvest, including specific requirements for the treatment and disposal of slash.

Following implementation of the THP, the portions of the Project site still covered partially by shrubs and other vegetation would have to be cleared before excavation of borrow material could occur. The construction contractor would be responsible for clearing the remaining understory, and, as with the timber harvest and slash management operations, use of off-road equipment during clearing would increase the risk of fire. However, because removal and lopping and scattering of debris would occur before clearing in accordance with the THP, the risk associated with this activity would be reduced.

Other construction activities not addressed by the THP could increase risk of wildland fire.

The nearest fire station is located within 0.5 mile of the Project site. In the event of a fire, emergency response times might be increased as described above, but haul roads would be developed in the borrow area and at the dam to reach various construction areas. A previously used haul road from Forebay Road to the dam base would be redeveloped, and a new haul road would be constructed from Forebay Road to the embankment above the penstock. Both would accommodate two-way traffic and would provide reasonable access for emergency vehicles.

Because the Project site and surrounding areas are located in a very high fire hazard severity zone, and for the reasons discussed above, construction activities could pose a threat of wildland fire in the area. However, OSHA's fire protection and prevention standard (29 CFR 1926.150, Subpart F) requires an "employer ... [to] be responsible for the development of a fire protection program to be followed throughout all phases of the construction and demolition work, and ... [to] provide for the firefighting equipment as specified.... As fire hazards occur, there will be no delay in providing the necessary equipment." Therefore, this impact would be **significant** as a result of Project construction.

Post-Project Operation-Related Impact

After construction of the Project is completed, there would be no increased need for fire protection services because the proposed activity would be temporary and would not contribute to population growth or substantial

long-term land use modifications. The removal of up to about 89 acres of woodlands would reduce the amount of combustible fuel on the Project site and the borrow area would be reseeded with grasses following construction of the Project. The nearest fire station is located 0.5 mile from the Project site. The proximity of this station would allow for a rapid response from emergency personnel in the event of a fire on the Project site. Because existing fire protection services are available and there would be no need for additional fire protection services, the risk of wildland fires resulting from operation of the modified Forebay Dam would be **less than significant**.

Mitigation Measure 3.8-4a: Implement Mitigation Measure 3.13-2, Prepare and Implement a Traffic Control Plan.

Implementing Mitigation Measure 3.8-4a will minimize delays to emergency vehicles traveling through the Project area.

Mitigation Measure 3.8-4b: Prepare a Fire Protection and Prevention Plan.

Implementing a Fire Protection and Prevention Plan containing the following provisions will effectively minimize the risk of wildfire or threat to workers, property, and the public:

Implement provisions found in 29 CFR 1926.150 for practices and measures for fire protection, prevention, and control addressing the following topics:

- ▶ Dispensing of flammable/combustible liquids
- ▶ Welding and cutting
- ▶ Use, storage, and transport of compressed gas cylinders
- ▶ Management of open and enclosed storage yards or facilities
- ▶ Fire prevention measures
- ▶ Fire emergency response

Timing: Before and during construction activities, as appropriate

Responsibility: EID and contractor

Significance after Mitigation: Implementing Mitigation Measures 3.8-4a and 3.8-4b will reduce the potentially significant impact associated with interference with emergency evacuation routes, emergency vehicle access, and potential fire risk to a **less-than-significant** level because the traffic control plan will be used to ensure unimpeded emergency vehicular access and passage, and the fire protection and prevention measures will minimize risk of uncontrolled fire and provide mechanism for response and management.

3.8.4 RESIDUAL SIGNIFICANT IMPACTS

All impacts related to hazards and hazardous materials would be less than significant, would be reduced to a less-than-significant level with mitigation, or no impact would occur, as described above. There would be no residual significant impacts.

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3.9 HYDROLOGY AND WATER QUALITY

3.9.1 REGULATORY BACKGROUND

Numerous federal, state, and regional and local acts, rules, plans, policies, and programs define water quality regulations in California. The following discussion focuses on water quality requirements as they apply to the Project and receiving-water quality.

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

Federal Power Act

The Federal Power Act (FPA) of 1935 (16 USC 791 et seq.) was enacted by Congress to regulate nonfederal hydropower projects in order to support comprehensive development of rivers for energy generation and other beneficial uses, such as water supply, flood control, recreation, and fish and wildlife management. FPA regulations are administered by the Federal Energy Regulatory Commission (FERC). FERC provides licenses for operation of hydropower projects. In 2006, the FERC issued a 40-year hydroelectric license for Project 184. The license contains requirements for operating the 21-megawatt hydroelectric power generation project.

Clean Water Act and Associated Programs

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants to surface waters within the United States. The law authorizes the U.S. Environmental Protection Agency (EPA) to set point-source effluent limits for discharges to waters of the United States and requires states (or EPA, in the event of default by states) to set water quality standards for contaminants in surface waters.

The CWA authorizes EPA to delegate many permitting, administrative, and enforcement aspects of the law to state governments. In such cases, however, EPA retains oversight responsibilities. In California, such responsibilities have been delegated to the state, which administers the CWA through the State Water Resources Control Board (SWRCB) and the nine regional water quality control boards (RWQCBs). Two particularly relevant programs resulting from the CWA are the National Pollutant Discharge Elimination System (NPDES) permit process and the requirement to develop total maximum daily loads (TMDLs) for impaired water bodies (i.e., those listed under CWA Section 303[d]).

Under Section 401 of the CWA, a water quality certification is one of the necessary prerequisites before FERC can issue a license amendment for the Project. In California, the SWRCB is responsible for Section 401 compliance. SWRCB action is subject to CEQA compliance; therefore, the SWRCB as a responsible agency can use the information in this EIR, to prepare terms and conditions for this permit.

National Toxics Rule and California Toxics Rule

EPA announced the National Toxics Rule (NTR) on December 22, 1992, which established numeric criteria for priority toxic pollutants for California and several other states. EPA amended the NTR on May 4, 1995, and November 9, 1999. The NTR established water quality criteria for 42 pollutants then not covered under California's statewide water quality regulations.

In September 2004, a court ordered the revocation of California's statewide water quality control plan for priority pollutants (i.e., the Inland Surface Water Plan). In response, EPA began efforts to issue additional numeric water quality criteria for California. EPA announced numeric criteria in the California Toxics Rule (CTR) on May 18, 2000, for priority pollutants not included in the NTR; the CTR was later amended on February 13, 2001. The CTR documentation (*65 Federal Register* 31682, May 18, 2000) carried forward the criteria previously issued in the NTR, thereby providing a single document listing California's adopted water quality criteria for priority pollutants.

Section 303(d) Impaired Waters List

Section 303(d) of the CWA requires states to develop lists of water bodies (or sections of water bodies) that will not attain water quality standards after point-source dischargers (i.e., municipalities and industries) have implemented minimum required levels of treatment. Section 303(d) requires states to develop a TMDL for each listed pollutant or water body. A TMDL is the amount of loading that the water body can receive for a given constituent and still meet water quality criteria for that constituent. The TMDL must include an allocation of allowable loadings to point and nonpoint sources, with consideration of background loadings and a margin of safety. Generally, NPDES permit limitations for listed pollutants must be consistent with the load allocation identified in the TMDL.

Federal Antidegradation Policy

The federal antidegradation policy is designed to protect designated beneficial uses of waters via the level of water quality necessary to protect those uses, and to protect and maintain high-quality waters and national water resources. The federal policy directs states to adopt a statewide policy that includes the following primary provisions (40 CFR 131.12):

- (1) Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.
- (2) Where the quality of waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located....
- (3) Where high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) is California's statutory authority for the protection of water quality. Under the Porter-Cologne Act, California must adopt water quality policies, plans, and objectives (synonymous with the term "criteria" used by EPA) to ensure that beneficial uses of state waters

are reasonably protected. The Porter-Cologne Act requires the nine RWQCBs to adopt water quality control plans that define the beneficial uses of the water bodies throughout the region to be protected, the water quality objectives necessary for reasonable protection of the beneficial uses, and a program of implementation for achieving the water quality objectives. In addition, the act authorizes the SWRCB and RWQCBs to issue and enforce permits containing waste discharge requirements for the discharge of waste to surface waters and land.

Water Quality Control Plan for the Sacramento River and San Joaquin River Basins

The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* (Basin Plan) (Central Valley RWQCB 2007) defines the beneficial uses, water quality objectives, implementation programs, and surveillance and monitoring programs for waters of the Sacramento River and San Joaquin River basins. The Basin Plan contains specific numeric water quality objectives for bacteria, dissolved oxygen (DO), pH, pesticides, electrical conductivity, temperature, turbidity, and trace elements that apply to certain water bodies or portions of water bodies. In addition, the Basin Plan contains numerous narrative water quality objectives.

SWRCB Resolution No. 68-16

SWRCB Resolution No. 68-16, “Statement of Policy with Respect to Maintaining High Quality Waters in California,” is the State of California’s antidegradation policy. The goal of Resolution No. 68-16 is to maintain high-quality waters where they exist in the state. The resolution states, in part:

1. Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies.
2. Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

The SWRCB has interpreted Resolution No. 68-16 to incorporate and be consistent with the federal antidegradation policy (Central Valley RWQCB 2007).

Statewide NPDES Stormwater Permit for General Construction Activity

The SWRCB has issued a general NPDES permit (known as the General Construction Permit) for stormwater discharges associated with construction activity greater than 1 acre in size. The General Construction Permit requires the preparation of storm water pollution prevention plans (SWPPPs) that identify and describe the best management practices (BMPs) to be implemented at construction sites to control pollution from stormwater runoff. Coverage is obtained by submitting a notice of intent to the SWRCB before construction.

Dewatering and Other Low-Threat Discharges to Surface Waters Permit (Central Valley Regional Water Quality Control Board)

Construction activities that involve short-term dewatering require Central Valley Regional Water Quality Control Board issuance of a General Order for Dewatering and Other Low Threat Discharges to Surface Waters (General Dewatering Permit). Discharges may be covered by the permit provided they are (1) either four months or less in duration, or (2) the average dry weather discharge does not exceed 0.25 million gallons per day. Construction dewatering, well development water, pump/well testing, pipeline testing, and miscellaneous dewatering/low-threat discharges are among the types of discharges that may be covered by the permit. The general permit also specifies standards for testing, monitoring, and reporting, receiving water limitations, and discharge prohibitions.

REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Government Code Section 53091 states that building and zoning ordinances do not apply to “construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency.” Public utility projects that serve the facilities described above would not be subject to local plans, policies, regulations, or ordinances. There are no local regulations related to hydrology and water quality relevant to the Project.

3.9.2 ENVIRONMENTAL SETTING

El Dorado Forebay is an offstream reservoir that covers approximately 23 acres. The Forebay is the primary hydrologic feature in the Project area. The Forebay receives water from the El Dorado Canal, which originates at El Dorado Diversion Dam on the South Fork American River at Kyburz. EID controls the flow of water diverted into the El Dorado Canal. The average flow into the Forebay is about 63,000 af per water year (October through September) based on diversion from the South Fork American River for the period 2004 through 2012. The water flows through a series of human-made conveyances—lined canals, flumes, tunnels, and siphons—for 22 miles to the Forebay.

A portion of the water delivered to El Dorado Forebay (up to 40 cubic feet per second [cfs]) is distributed to the Main Ditch for use as drinking water. The remainder is sent through a penstock to the El Dorado Powerhouse, which generates renewable hydroelectric power that is delivered to a Pacific Gas and Electric Company transmission system at the powerhouse. From 2007 through 2012, the mean annual penstock flow ranged from 53 to 92 cfs, with a 6-year mean penstock flow of 65 cfs. Outflow from the powerhouse is discharged to the South Fork American River.

The area below (west of) El Dorado Forebay Dam has several seeps, some of which have become vegetated wetland features, and some of which have flowing channels. Deadman Springs is located in this vicinity. The springs flow northwest and become the North Fork Long Canyon Creek, a tributary of Long Canyon Creek, a tributary of the South Fork American River. No water features are present in the borrow area. A complete discussion of waters of the United States, including wetlands, within the Project site is provided in Section 3.4, “Biological Resources.”

As reported in construction records and California Department of Water Resources Division of Safety of Dams files, groundwater was encountered during foundation excavation for the original dam construction project. To mitigate the localized saturated conditions during construction, a buried drainage system was installed in the

foundation of the dam and discharges below the dam. Seepage from the dam not recaptured at EID's existing seepage pump facility and pumped to the Main Ditch contributes to the hydrology of the North Fork Long Canyon Creek. The volume of water seeping through the dam and pumped back to the Main Ditch is approximately 100–150 gallons per minute. Saturated conditions currently persist on the slope above the right abutment and in a wide area along the toe of the dam; spring flows are monitored using several weirs along the groins and toe of the dam.

Seepage rates below the dam correspond to the water level impounded in the Forebay at any particular time. The South Fork American River watershed upstream of the El Dorado Powerhouse discharge is largely forested and undeveloped, thus, water quality conditions are dictated primarily by natural watershed runoff and the human activities that have potential to alter instream flows or discharge wastes to water bodies. The beneficial uses of the South Fork American River designated by the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Basin Plan) are: municipal, domestic, and industrial water supply; irrigation supply; hydropower; water contact and noncontact recreation; warm and cold freshwater habitat; cold spawning habitat; and wildlife habitat (Central Valley RWQCB 2007).

Sacramento Municipal Utility District (SMUD) initiated a water quality study in October 2002 for its FERC relicensing process of its Upper American River Project consisting of four seasonal sampling phases: first rain (October 2002), spring run-off (spring 2003), summer low-flow (September 2003), and fall 2003 reservoir turnover (FERC and USFS 2008). The water quality parameters measured included conventional constituents (e.g., temperature, pH, electrical conductivity, turbidity, and nutrients), metals, and organics. Based on the results from the study conducted by SMUD, water quality in the American River watershed is considered excellent for its designated beneficial uses.

There are no known contaminants or degraded water quality parameters in the Forebay Reservoir. The only known pollutants in the Project area are those stemming from local roadways.

Mercury is present in the American River watershed as a result of its use in historic gold mining operations. The South Fork American River below Slab Creek Dam to Folsom Reservoir is listed as impaired for mercury on the SWRCB CWA Section 303(d) list of impaired water bodies (SWRCB 2007). Instream and in-reservoir concentrations of total mercury are less than the CTR human health criterion of 0.050 micrograms per liter. However, total mercury was found in fillet samples of piscivorous fish species at levels above EPA guidelines for recreational angling of 0.4 milligrams per kilogram (mg/kg) in fish from Slab Creek Reservoir and above EPA guidelines for subsistence angling of 0.0049 mg/kg in fish from Chili Bar Reservoir (FERC and USFS 2008).

In October 2007, EID issued the Project 184 Water Temperature Monitoring Plan (EID 2007). The plan was a collaborative effort to satisfy water temperature monitoring requirements set forth in the Project 184 Settlement Agreement, SWRCB Water Quality Certification, and FERC license (EID 2003; SWRCB 2006; FERC 2006). No water temperature data are available for the Forebay, and the Forebay was not included in the plan because water entering the Forebay is used consumptively or returned to the South Fork American River at the El Dorado Powerhouse.

Although water temperature may change somewhat between the diversion dam and the Forebay depending on the time of year, the exact change is unknown and was not identified as a concern during relicensing efforts. Forebay is known to support a rainbow trout fishery that is periodically stocked by the California Department of Fish and

Wildlife. Therefore, indirect evidence indicates that the Forebay supports a cold freshwater habitat environment for the resident trout.

Of the 21 dissolved oxygen measurements taken at the El Dorado Diversion Dam, all measurements exceeded the minimum dissolved oxygen requirement of 7 milligrams per liter (mg/l), indicating that the COLD beneficial use was met. On one occasion during the period of record for monitoring under the Water Temperature Monitoring Plan, downstream from the El Dorado Diversion Dam on March 21, 2012, the dissolved oxygen concentration was slightly less than the minimum requirement (6.9 mg/L).

3.9.3 IMPACTS AND MITIGATION MEASURES

ANALYSIS METHODOLOGY

Potential impacts of the Project on hydrology and water quality conditions in the vicinity were assessed qualitatively. Information about construction practices, materials, and locations and the duration of construction were evaluated to assess the potential of Project activities to impair water quality for conventional pollutants (pH, turbidity, DO, nutrients, bacteria, and oil and grease).

THRESHOLDS OF SIGNIFICANCE

Significance criteria are based on Appendix G of the State CEQA Guidelines and professional judgment. The Project would have a significant impact on hydrology and water quality if Project implementation would do any of the following:

- ▶ Violate any water quality standards or waste discharge requirements
- ▶ Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)
- ▶ Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site
- ▶ Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site
- ▶ 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
- ▶ Otherwise substantially degrade water quality
- ▶ Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map
- ▶ Place within a 100-year flood hazard area structures that would impede or redirect flood flows

- ▶ Expose 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
- ▶ Inundation by seiche, tsunami, or mudflow

The significance criteria listed above were applied to all water bodies that could be adversely affected by implementing the Project. Changes in water quality were assessed relative to the current environmental condition before Project implementation.

FINDINGS OF THE INITIAL STUDY CONCLUDING NO IMPACT

The IS concluded that no impact would occur with respect to the following topics:

- ▶ *Place Housing within a 100-Year Flood Hazard Area as Mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or Other Flood Hazard Delineation Map:* No impact would occur because the Project does not include housing development.
- ▶ *Place within a 100-Year Flood Hazard Area Structures That Would Impede or Redirect Flood Flows:* No impact would occur because Project activities would not include construction of any housing or other structures that would impede or redirect flood flows.
- ▶ *Expose 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:* No impact would occur because the primary purpose of the Project is to improve the Forebay Dam to ensure the facility can withstand shaking generated by the postulated maximum design earthquake. The proposed dam facility improvements would reduce the possibility of an uncontrolled release of water downstream of the dam attributable to an earthquake. During construction activities, the EID contractor would ensure that the dewatering system would be in place and constant inspection of the system would occur during critical stages of Project implementation.

For future operations, EID has completed an evaluation of a Probable Maximum Flood hypothetical scenario of the proposed raised Forebay Dam and potential downstream flooding (GEI 2012). The flood wave from the dam failure analysis was routed below the proposed raised Forebay Dam through the North Fork of Long Canyon Creek for a distance of approximately 5 miles to the Slab Creek Reservoir on the South Fork American River. The first mile of the study reach below Forebay Dam is located adjacent to a populated area of Pollock Pines and just south of the South Fork American River. However, the remaining portion of the study reach of Long Canyon Creek is generally considered undeveloped. The evaluation compared a potential dam failure of the proposed dam versus a potential failure of the existing dam and found that the incremental change in flood limits is not detectable at a flood mapping level; therefore, no additional homes have been added to the inundation zone created by the proposed dam raise (GEI 2012). These findings were filed with the California Emergency Management Agency.

During excavation of the stability berm foundation and until the stability berm is constructed to at least the grade prior to the start of excavation, the EID contractor would provide on-site personnel 24 hours per day, 7 days per week to monitor the performance of the dewatering system and to observe the stability of the excavation, dam, and abutments for signs of seepage or stability issues. Backup power for the dewatering

system and an alarm system to alert the EID contractor when the system loses power would be installed. In addition, backfill material would be staged near the excavated area of the dam for immediate replacement in case of an emergency and upon approval of the newly constructed foundation (GEI 2013). *Cause Inundation by Seiche, Tsunami, or Mudflow*: No impact would occur because implementing the Project would not affect any water bodies that could result in seiche, tsunami, or mudflow events.

These issues are not addressed further in this EIR.

IMPACT ANALYSIS

IMPACT 3.9-1 ***Violate Water Quality Standards or Waste Discharge Requirements.*** *Construction-related water quality effects could be significant. Therefore, the construction-related impact would be **potentially significant**. No impact would occur as a result of post-Project operation of the Forebay.*

Construction-Related Impact

During construction, the Project would involve dewatering the reservoir to remove and divert surface waters, seepage, springs, and groundwater from foundations and other working surfaces. Accumulated stormwater, groundwater, or other runoff would be discharged from excavations or temporary containment facilities into the Main Ditch, which carries water to the Reservoir 1 Water Treatment Plant and is not connected with surface waters.

Project activities such as drilling, excavation, and materials hauling may disturb or mobilize sediments, which has the potential to affect total suspended solids, pH, turbidity, and DO levels. Resuspension of sediments may also affect the concentrations of metals (arsenic, cadmium, chromium, copper, lead, nickel, and zinc) in the water by releasing metals that may be present in reservoir sediments from both natural and human sources. Metals, total suspended solids, pH, turbidity, and DO are of concern because of the potential to cause acute effects (e.g., mortality) or chronic effects (e.g., impaired reproduction) on benthic and aquatic life in the reservoir. Additionally, a short-term increase in sediment discharge may occur during construction and could also be considered a potentially significant impact. During construction, stockpiling of soils and earth-moving activities would remove soil cover, disturb soil particles, and alter site drainage patterns, creating conditions conducive to wind and water erosion. Erosion and sedimentation above natural levels could affect drainage patterns. Construction activities of the Project could adversely impact water quality from an increase in erosion when ground is disturbed during construction. During construction, stockpiling of soils and earth-moving activities would remove soil cover, disturb soil particles, and alter site drainage patterns, creating conditions conducive to wind and water erosion. Erosion and sedimentation above natural levels could affect the drainage. Surface water quality could also be effected by the potential release of chemicals, including fuels, oils, and solvents, that could enter the drainages through surface runoff or by subsurface absorption through soils. Therefore, this construction-related impact would be **potentially significant**.

Post-Project Operation-Related Impact

No operational activities could result in a potential violation of water quality standards or waste discharge requirements. Therefore, **no impact** would occur as a result of post-Project operation of the Forebay. No mitigation is required.

Mitigation Measure 3.9-1a: Implement Water Diversion and Control Plan.

EID will develop a water diversion and control plan before the start of construction activities. The water diversion and control plan will identify implementation measures necessary to mitigate potential construction-related impacts on water quality from dewatering activities for the removal and diversion of surface waters, seepage, springs, and groundwater from foundations and other working surfaces. Such measures will include discharging accumulated stormwater, groundwater, or other water from excavations or temporary containment facilities into the Main Ditch, which carries water to the Reservoir 1 Water Treatment Plant and is not connected with surface waters. EID will implement measures identified in the water diversion and control plan according to regulatory requirements.

EID will operate and maintain the water treatment system to provide for settling of suspended solids in the discharge from any sumping, dewatering well, or wellpoint system. Implementation of the water diversion and control plan will reduce impacts from drainage alterations and the potential for erosion and siltation to occur on- or off-site.

Mitigation Measure 3.9-1b: Implement NPDES General Permit and SWPPP.

EID will prepare a SWPPP before the start of construction activities. As required under the NPDES General Permit, the SWPPP will identify implementation measures necessary to mitigate potential construction-related impacts on water quality.

These measures identified in the SWPPP will include BMPs and other standard pollution prevention actions such as erosion and sediment control measures, proper control of nonstormwater discharges, and hazardous-spill prevention and response. The SWPPP will also include requirements for BMP inspections, monitoring, and maintenance. The following items are examples of BMPs that will be implemented during construction:

- ▶ Erosion-control BMPs, such as the use of mulches or hydroseeding to prevent detachment of soil, that follow guidance presented in the *California BMP Handbooks—Construction*. A detailed site map will be included in the SWPPP outlining specific areas where soil disturbance may occur, and the drainage patterns associated with excavation and grading activities. In addition, the SWPPP will provide plans and details for the BMPs to be implemented before and during construction to prevent erosion of exposed soils and to treat sediments before they are transported off-site.
- ▶ Sediment control BMPs such as silt fencing or detention basins that trap soil particles.
- ▶ Construction staging areas designed so that stormwater runoff during construction will be collected and treated in a BMP such as a detention basin.
- ▶ Management of hazardous material and wastes to prevent spills.
- ▶ BMPs for vehicle and equipment fueling so these activities will occur only in designated staging areas with appropriate spill controls.
- ▶ Maintenance checks of equipment and vehicles to prevent spills or leaks of liquids of any kind.

Measures to control on-site spills will be included in the SWPPP. In addition to the spill prevention and control BMPs presented above, the SWPPP will contain a visual monitoring program and a chemical monitoring program for nonvisible pollutants, to be implemented if there is a failure of BMPs.

Materials storage and handling and equipment servicing will occur only in designated areas. If a spill occurs, local regulatory agencies will be informed appropriately and a spill response program will be implemented as outlined in the SWPPP. The following BMPs will be implemented as part of the SWPPP and spill response program:

- ▶ All hydraulic hoses and lines will be regularly inspected for cracks and leaks and maintained appropriately to prevent contamination.
- ▶ Drilling activities will not use ammonium nitrate fuel oil because it dissolves in water and releases ammonia and nitrates.
- ▶ Contractors will submit plans for containment measures for drilling fluids caused by hose breaks and other sources, and for shutdown and cleanup of spills.
- ▶ All refueling and servicing will occur at designated locations that are at least 100 feet from the reservoir's high-water mark and at least 50 feet away from sensitive water features and wetlands, with appropriate containment measures in place to control hazardous materials.

Timing: Before the start of construction, during construction, and until final stabilization requirements are met

Responsibility: EID and contractor

Significance after Mitigation: Implementing Mitigation Measures 3.9-1a and 3.9-1b will reduce the potentially significant impact of Impact 3.9-1 to a **less-than-significant** level because EID's construction contractor will implement the water diversion and control plan and comply with the NPDES General Permit and SWPPP to mitigate impacts on water quality.

IMPACT 3.9-2 *Substantial Depleting Groundwater Supplies or Interference with Groundwater Recharge Such That There Would Be a Net Deficit in Aquifer Volume or a Lowering of the Local Groundwater Table Level. Implementation of construction activities would require removal of groundwater from the dam foundation and other working surfaces. The construction-related impact would be less than significant. No impact would occur during post-Project operation of the Forebay.*

Construction-Related Impact

Implementation of construction activities would require pumping of groundwater from the dam foundation and other working surfaces. As part of dewatering activities, the accumulated groundwater would be discharged from the excavations into the Main Ditch adjacent to the dam. The groundwater dewatering system would operate to not remove existing soils (GEI 2013). The construction of the Project would not restrict movement of groundwater or change near-surface groundwater levels adjacent to the Forebay. Therefore, there would be no effects to groundwater hydrology with implementation of the Project. Dewatering of groundwater would occur

only during the construction timeframe and not significantly deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. The groundwater dewatering system would be removed from the site once construction activities are complete. This construction-related impact would be **less than significant**.

Post-Project Operation-Related Impact

No operational activities could result in depletion of groundwater supplies or interference with groundwater recharge. Therefore, **no impact** would occur during post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

IMPACT 3.9-3 **Substantial Alter the Existing Drainage Pattern of the Site or Area, Including Through the Alteration of the Course of a Stream or River, in a Manner That Would Result in Substantial Erosion or Siltation On- or Off-Site.** *During construction activities at the Forebay Reservoir, The excavation in the borrow area could expose soils and surface drainage patterns in a manner that results in increased erosion and sedimentation both on- and off-site. Therefore, the construction-related impact would be **potentially significant**. No impact would occur during post-Project operation of the Forebay.*

Construction-Related Impact

During an anticipated 3-month timeframe of construction activities, the water level at the El Dorado Forebay would be drawn down by releasing water through the powerhouse penstock to the Main Ditch and possibly into other surface waters below the dam.

There would be no alterations to existing drainage patterns entering the Forebay. The inlet canal to the Forebay would be stabilized to prevent further soil slumping from side slopes.

The seepage from the Forebay would be collected below the dam and pumped to the Main Ditch. Surface flows of the waterways below the dam, which are partially supplied by seepage through the dam, would be reduced by the collection of seepage. Only flows that originate from naturally occurring springs would remain in these waterways. The collection of seepage water would not result in an impact on the course of a stream or induce substantial erosion or siltation.

Development of the borrow area would involve removing vegetation and excavating up to 140,000 cubic yards of earthen material for placement on the dam. Up to 78 acres of sloping woodland could be affected. The removal of vegetation, development of skid trails, grading, and excavation of earthen materials could affect surface drainage patterns and result in concentrated runoff, rerouted flows, increased water velocities, and increased soil erosion and sedimentation. This impact would be **potentially significant**.

Post-Project Operation-Related Impact

Post- Project operations would not substantially alter the existing drainage pattern of the site or area, including any alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site. Because the Forebay is an offstream water storage facility, no waterway or stream would be affected by the facility's continued operation. The collection of seepage water during Forebay operations would

not result in an impact on the course of a stream or induce substantial erosion or siltation. Therefore, no alteration of rivers or streams, on or off the Project site would occur and **no impact** would occur during post-Project operation of the Forebay. No mitigation is required.

Mitigation Measure 3.9-3: Implement Mitigation Measure 3.9-1b.

Timing: Before the start of construction and during construction

Responsibility: EID and contractor

Significance after Mitigation: Implementing Mitigation Measure 3.9-3 will reduce the potentially significant impact associated with Impact 3.9-3 to a **less-than-significant** level because EID will comply with the NPDES General Permit and SWPPP to mitigate impacts. A site-specific SWPPP will be completed and implemented according to regulatory requirements. Implementation of the SWPPP will reduce impacts from drainage alterations and the potential for erosion and siltation to occur on- or off-site.

IMPACT 3.9-4 **Substantial Altering the Existing Drainage Pattern of the Site or Area, Including Through the Alteration of the Course of a Stream or River, or Substantially Increase the Rate or Amount of Surface Runoff in a Manner That Would Result in Flooding On- or Off-Site.** *The excavation in the borrow area could expose soils and surface drainage patterns in a manner that results in increased erosion and sedimentation both on- and off-site. Therefore, the construction-related impact would be **potentially significant**. No impact would occur during post-Project operation of the Forebay.*

Construction-Related Impact

During an anticipated 3-month timeframe of construction activities, the water level at the El Dorado Forebay reservoir would be drawn down by releasing water through the powerhouse penstock and to the Main Ditch adjacent to the reservoir. Water could also be discharged from the El Dorado Forebay reservoir into nearby surface waters. This operation is similar to typical operations occurring at the Forebay. There would be no alterations to existing drainage patterns at the site. The seepage through the El Dorado Forebay Dam would be reduced by construction of the new dam abutment. Implementing the Project would not result in stormwater peak flows or volumes that would substantially differ from existing conditions.

Development of the borrow area would involve removing vegetation and excavating up to 140,000 cubic yards of earthen material for placement on the dam. Up to 78 acres of sloping woodland could be affected. The removal of vegetation, development of skid trails, grading, and excavation of earthen materials could affect surface drainage patterns and result in concentrated runoff, rerouted flows, increased water velocities, and increase potential for flooding either on- or off-site. Stormwater runoff from the borrow area and areas below the dam would be conveyed to the North Fork Long Canyon Creek. This impact would be **potentially significant**.

Post-Project Operation-Related Impact

Post-Project operation of the Forebay would not substantially alter the existing drainage pattern of the site or area, including any alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site. Because the Forebay is an offstream water storage facility, no waterway or stream would

be affected by the facility's continued operation. The collection of seepage water during Forebay operations would not result in an impact on the course of a stream or increase the potential of flooding either on- or off-site. Therefore, no alteration of rivers or streams, on or off the Project site would occur, and **no impact** would occur during post-Project operation of the Forebay.

Mitigation Measure 3.9-4: Implement Mitigation Measure 3.9-1b.

Timing: Before the start of construction, during construction, and until final stabilization requirements are met

Responsibility: EID and contractor

Significance after Mitigation: Implementing Mitigation Measure 3.9-4 will reduce the potentially significant impact associated with Impact 3.9-4 to a **less-than-significant** level because EID's construction contractor will implement measures and comply with the NPDES General Permit and SWPPP to mitigate impacts.

IMPACT 3.9-5 ***Creating or Contribute Runoff Water That Would Exceed the Capacity of Existing or Planned Storm Water Drainage Systems or Provide Substantial Additional Sources of Polluted Runoff***
*Construction of the Forebay dam modifications would not result in exceedance of existing or planned stormwater drainage systems. Construction activities would generate surface runoff containing sediments and potentially other pollutants. Therefore, the construction-related impact would be **potentially significant**. **No impact** would occur during post-Project operation of the Forebay.*

Construction-Related Impact

Construction activities, including excavation, grading, and placement of fill could result in contamination of surface runoff with sediments and other constituents. Stormwater runoff from the borrow area and areas below the dam would be conveyed to the North Fork Long Canyon Creek. Therefore, this impact would be **potentially significant**.

Post-Project Operation-Related Impact

Post-Project operations would not contribute runoff water that would exceed the capacity of storm water drainage systems or act as a source of polluted runoff. Therefore, **no impact** would occur during post-Project operation of the Forebay. No mitigation is required.

Mitigation Measure 3.9-5: Implement Mitigation Measures 3.9-1a and 3.9-1b.

Timing: Before the start of construction, during construction, and until final stabilization requirements are met

Responsibility: EID and contractor

Significance after Mitigation: Implementing Mitigation Measure 3.9-5 will reduce the potentially significant impact associated with Impact 3.9-5 to a **less-than-significant** level with implementation of measures specified in the water diversion and control plan and compliance with the NPDES General Permit and SWPPP to mitigate impacts.

IMPACT 3.9-6 *Otherwise Substantially Degrade Water Quality.* Construction-related water quality effects could be significant. Therefore, this impact would be **potentially significant**. **No impact** would occur during post-Project operation of the Forebay. **No impact** on hydrology would occur. Impact to Forebay water temperature would be **less than significant**.

Construction-Related Impact

Construction activities of the Project could adversely impact water quality from an increase in erosion when ground is disturbed during construction. During construction, stockpiling of soils and earth-moving activities would remove soil cover, disturb soil particles, and alter site drainage patterns, creating conditions conducive to wind and water erosion. Erosion and sedimentation above natural levels could affect the drainage. Surface water quality could also be impacted by the potential release of chemicals, including fuels, oils, and solvents, that could enter the drainages through surface runoff or by subsurface absorption through soils. The potential for soil erosion and impacts on water quality are greatest during construction, when removal of vegetation for initial clearing, grubbing, and grading activities exposes soil and makes it more susceptible to erosion. EID would analyze potential impacts and implement mitigation to reduce the impacts to hydrology and water quality to less than significant. Therefore, this impact would be **potentially significant**.

Post-Project Operation-Related Impact

No post-Project operational activities would substantially degrade water quality. Therefore, **no impact** would occur during post-Project operation of the Forebay. No mitigation is required.

Hydrology and Water Quality

The quality of waters in the American River Basin is considered excellent and supports a variety of beneficial uses. An exception is noted for the South Fork American River from Slab Creek Reservoir to Folsom Reservoir, which is listed under CWA Section 303(d) as impaired because of the presence of mercury (SWRCB 2007). The Project would not cause substantial (or even measurable) changes in concentrations of water quality parameters in the South Fork American River Basin's surface waters, or to adversely affect beneficial uses of these waters. At the point of the return flow from the El Dorado Powerhouse, the water immediately downstream of the return would be the same quality as that upstream of the return for parameters other than temperature (e.g., metals, organics, salinity, pH). Therefore, **no impact** would occur as a result of post-Project operation of the Forebay. No mitigation is required.

Temperature

With the larger storage amount available in the Forebay, water could be retained for a longer period of time, potentially affecting its temperature. This increase would not be sufficient to increase water temperature in any substantial manner because the retention time of water stored in Forebay is not expected to substantially change. Such a minor increase in water temperature would not result in a temperature that would affect existing fisheries or other beneficial uses. Therefore, this impact would be **less than significant** with post-Project operation of the Forebay. No mitigation is required.

Mitigation Measure 3.9-6: Implement Mitigation Measures 3.9-1a and 3.9-1b.

Timing: Before the start of construction, during construction, and until final stabilization requirements are met

Responsibility: EID and contractor

Significance after Mitigation: Implementing Mitigation Measure 3.9-6 will reduce the potentially significant impact associated with Impact 3.9-6 to a **less-than-significant** level because implementation of measures specified in the water diversion and control plan and SWPPP will mitigate impacts.

3.9.4 RESIDUAL SIGNIFICANT IMPACTS

All impacts on hydrology and water quality either would be less than significant or would be reduced to a less-than-significant level with mitigation, or no impact would occur, as described above. There would be no residual significant impacts.

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3.10 NOISE AND VIBRATION

This section describes noise and vibration standards applicable to the Project, presents the existing (ambient) acoustic setting in the Project vicinity, analyzes Project-related impacts, and identifies mitigation measures where necessary to reduce impacts. More detailed information regarding the assessment of noise and vibration impacts, including relevant information on the fundamentals of environmental acoustics and acoustics terminology, is provided in the Noise and Vibration Technical Report presented as Appendix F.

3.10.1 REGULATORY BACKGROUND

STATE PLANS, POLICIES, REGULATIONS, AND GUIDELINES

The California Department of Transportation (Caltrans) has developed guidelines for assessing the significance of vibration produced by transportation and construction sources (Table 3.10-1).

Table 3.10-1 California Department of Transportation Guidelines for Assessment of Vibration Impacts		
Human Response	Impact Levels, VdB re: 1 μ in/sec (PPV, in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	80 (0.040)	68 (0.010)
Distinctly perceptible	96 (0.250)	80 (0.040)
Strongly perceptible	107 (0.900)	88 (0.100)
Severe	114 (2.000)	100 (0.400)
<small>Notes: μin/sec = microinches per second; in/sec = inches per second; PPV = peak particle velocity; VdB = vibration decibels Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment. Source: Caltrans 2004</small>		

REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Because EID has exclusive jurisdiction over the siting, design, and construction of the Project, the Project is not subject to local discretionary regulations. The following local regulations related to noise are provided for informational purposes and to assist with CEQA review. EID has elected to use these local noise standards as guidance for implementing the Project.

El Dorado County General Plan

The Health, Safety, and Noise Element of the *El Dorado County General Plan*, adopted on July 19, 2004, and amended in March 2009, establishes the following goal, objective, and policies applicable to Project-related noise production.

Goal 6.5: Acceptable Noise Levels—Ensure that County residents are not subjected to noise beyond acceptable levels.

- ▶ **Objective 6.5.1: Protection of Noise-Sensitive Development**—Protect existing noise-sensitive developments (e.g., hospitals, schools, churches and residential) from new uses that would generate noise

levels incompatible with those uses and, conversely, discourage noise-sensitive uses from locating near sources of high noise levels.

- **Policy 6.5.1.2:** Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of [Table 3.10-2] at existing or planned noise-sensitive uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.
- **Policy 6.5.1.3:** Where noise mitigation measures are required to achieve the standards of [Table 3.10-2], the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project and the noise barriers are not incompatible with the surroundings.
- **Policy 6.5.1.7:** Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of [Table 3.10-2] for noise-sensitive uses.
- **Policy 6.5.1.11:** The standards outlined in [Table 3.10-3] shall apply to those activities associated with actual construction of a project as long as such construction occurs between the hours of 7 a.m. and 7 p.m., Monday through Friday, and 8 a.m. and 5 p.m. on weekends, and on federally-recognized holidays. Exceptions are allowed if it can be shown that construction beyond these times is necessary to alleviate traffic congestion and safety hazards.

3.10.2 ENVIRONMENTAL SETTING

Noise and vibration in the Project vicinity are dominated by vehicular traffic on local area roadways (including U.S. 50), community activities, and nature sources.

Long-term (48-hour) measurements of ambient noise levels were completed in the Project vicinity on July 9–10, 2013. These measurement sites were selected to represent the nearest residential receivers to Project construction and operations. Table 3.10-4 summarizes the results of the measurements. As shown, average daytime noise levels in the Project area were in the range of 39–45 decibels (dB) (equivalent sound level, or L_{eq}), depending on location. The average day-night average noise level was measured and calculated to be in the range of 44–50 dB (day-night average level, or L_{dn}). This is a quiet noise environment, as expected in a rural mountain setting.

Supplementary short-term (15-minute) measurements of ambient noise levels were completed in the Project vicinity on July 9, 2013, from 12 noon to 2:30 p.m. Measurements were completed at four locations in residential areas that would be directly adjacent to Project construction and operations. Table 3.10-4 summarizes the results of the measurements. As shown, average measured noise levels ranged from 41 to 55 dB (L_{eq}). These levels were somewhat higher than those measured at the long-term sites because of their locations nearer to public roadways.

Noise level measurements were completed using Larson-Davis Laboratories (LDL) Model 820 (long-term) and Model 824 (short-term) precision integrating sound level meters. The meters were calibrated before the measurements using an LDL Model CAL200 acoustical calibrator. The meters were programmed to record

**Table 3.10-2
Noise Level Performance Protection Standards for Noise-Sensitive Land Uses Affected by
Nontransportation Sources**

Noise Level Descriptor	Daytime (7 a.m.–7 p.m.)		Evening (7 p.m.–10 p.m.)		Nighttime (10 p.m.–7 a.m.)	
	Community	Rural	Community	Rural	Community	Rural
Hourly L_{eq} , dB	55	50	50	45	45	40
Max. Level— L_{max} , dB	70	60	60	55	55	50

Notes: dB = decibels; L_{eq} = equivalent sound level, L_{max} = maximum sound level

Each of the noise levels specified above shall be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

El Dorado County can impose noise level standards that are up to 5 dB less than those specified above based upon determination of existing low ambient noise levels in the vicinity of the project site.

In community areas the exterior noise level standard shall be applied to the property line of the receiving property. In rural areas the exterior noise level standard shall be applied at a point 100 feet away from the residence. The above standards shall be measured only on property containing a noise sensitive land use as defined in Objective 6.5.1. This measurement standard may be amended to provide for measurement at the boundary of a recorded noise easement between all affected property owners and approved by El Dorado County.

For the purposes of the Noise Element, transportation noise sources are defined as traffic on public roadways, railroad line operations, and aircraft in flight. Control of noise from these sources is preempted by federal and state regulations. Control of noise from facilities of regulated public facilities is preempted by California Public Utilities Commission (CPUC) regulations. All other noise sources are subject to local regulations. Nontransportation noise sources may include industrial operations, outdoor recreation facilities, HVAC units, schools, hospitals, commercial land uses, other outdoor land use, etc.

Source: El Dorado County 2009

**Table 3.10-3
Maximum Allowable Noise Exposure for Nontransportation Noise Sources in Rural Regions—
Construction Noise**

Land Use Designation	Time Period	Noise Level, dB	
		Hourly L_{eq}	L_{max}
All Residential	7 a.m.–7 p.m.	50	60
	7 p.m.–10 p.m.	45	55
	10 p.m.–7 a.m.	40	50
Commercial, Recreation, and Public Facilities	7 a.m.–7 p.m.	65	75
	7 p.m.–7 a.m.	60	70
Rural Land, Natural Resources, Open Space, and Ag Lands	7 a.m.–7 p.m.	65	75
	7 p.m.–7 a.m.	60	70

Notes; dB = decibels; L_{eq} = equivalent sound level, L_{max} = maximum sound level

Source: El Dorado County 2009

**Table 3.10-4
Summary of Ambient Noise Level Measurements—July 9–10, 2013**

Measurement Site	Location	Average L _{eq} , dB (Range)		L _{dn} , dB
		Daytime	Nighttime	
1 (LT)	Terrace Drive (front yard)	39 (29–46)	41 (28–44)	47 (42–49)
2 (LT)	Forebay Road (back yard)	45 (40–50)	43 (35–48)	50 (47–51)
3 (LT)	Drop Off Road (back yard)	42 (32–53)	38 (30–44)	45
4 (ST)	SW corner of Blair Road and Forebay Road	55	--	--
5 (ST)	Forebay Road south of Sherman Way	48	--	--
6 (ST)	NW of Drop Off Road	41	--	--
7 (ST)	NE corner of Deep Haven Road and Forebay Road	55	--	--

Notes: dB = decibels; L_{dn} = day-night average level; L_{eq} = equivalent sound level; -- = not applicable; NE = northeast, NW = northwest, SW = southwest
 Long-term (LT) measurement results represent the 48 hours of July 9–10, 2013. Short-term (ST) measurement results represent 15-minute durations, and were recorded between 12 noon and 2:30 p.m. on July 9, 2013.
 Source: Data compiled by AECOM in 2013

A-weighted sound levels using a “slow” response. The equipment used complies with all pertinent requirements of the American National Standards Institute for Class 1 sound level meters (ANSI S1.4).

3.10.3 IMPACTS AND MITIGATION MEASURES

ANALYSIS METHODOLOGY

Noise associated with on-site Project construction activities was analyzed using the Federal Highway Administration’s (FHWA’s) Roadway Construction Noise Model and heavy equipment/equipment usage factors for assumed worst-case construction operations. Noise levels associated with on-site construction were compared to the noise level limits in the *El Dorado County General Plan*. Additionally, Project construction noise levels were compared to the measured ambient noise levels in the project area, and a significant impact was defined as a 5+ dB increase; a 5+ dB increase would likely be noticeable to existing noise-sensitive uses in the Project area.

Noise from off-site traffic associated with Project construction was analyzed using FHWA’s Traffic Noise Prediction methodology (FHWA-RD-77-108) and hourly traffic volume data provided by the Project’s traffic engineer for the primary construction traffic route. Project construction traffic noise was compared to existing traffic noise conditions, and the significance of impacts was assessed based on the perception of a noticeable increase in noise levels. For this analysis, a +5 dB increase above ambient conditions is considered a noticeable increase in noise levels.

Levels of ground vibration at the closest residential receivers attributable to on-site construction operations were assessed based on known reference vibration levels for heavy construction equipment operation and standard ground attenuation calculations. A vibration impact was determined to be significant if expected levels would exceed 0.100 peak particle velocity (PPV)/88 vibration decibels (VdB).

THRESHOLDS OF SIGNIFICANCE

Significance criteria are based on Appendix G of the State CEQA Guidelines. The Project would have a significant impact related to noise and/or vibration if Project implementation would do any of the following:

- ▶ Expose people to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
- ▶ Expose people to or generate excessive groundborne vibration or groundborne noise levels
- ▶ Produce a substantial permanent increase in noise levels relative to the ambient condition in the project vicinity
- ▶ Produce a substantial temporary or periodic increase in noise levels relative to the ambient condition in the project vicinity
- ▶ Expose people residing or working in the project area to excessive aircraft noise levels, for projects located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport or
- ▶ Expose people residing or working in the project area to excessive aircraft noise levels, for projects located within the vicinity of a private airstrip

Specifically, an impact would be significant if:

- ▶ Project-related groundborne vibration levels from operations of heavy construction equipment would exceed 0.100 in/sec PPV/88 VdB at the closest residential building facades
- ▶ Permanent operations of the project would increase the background noise level (L_{eq}) by 5 dB or more (noticeable change) or
- ▶ Project-related construction noise (both on-site and off-site [from traffic]) would exceed the measured hourly ambient noise level (L_{eq}) by 5 dB or more at the closest residential receivers

Project-related construction noise levels at the closest residential receivers were compared to the *El Dorado County General Plan* limits presented in Table 3.10-4. However, these comparisons were not used to assess noise impacts; rather, they are provided for informational purposes and to assist with CEQA review.

FINDINGS OF THE INITIAL STUDY CONCLUDING NO IMPACT

The IS concluded that no impact would occur for the following thresholds of significance:

- ▶ *For a Project Located within an Airport Land Use Plan or within 2 Miles of a Public Airport or Public Use Airport, Expose People Residing or Working in the Project Area to Excessive Aircraft Noise Levels:* The IS concluded that because there were no public or public use airports within 2 miles of the Project site, there would be no impact related to people residing or working in the Project area. The airport closest to the Project

site is Swansboro Country Airport, a private airport located approximately 8 miles to the northwest in Placerville, California.

- ▶ *For a Project within the Vicinity of a Private Airstrip, Expose People Residing or Working in the Project Area to Excessive Aircraft Noise Levels:* The IS concluded that because there were no private airstrips in the vicinity of the Project site, there would be no impact related to people residing or working in the Project area.

These issues are not addressed further in this EIR.

IMPACT ANALYSIS

IMPACT 3.10-1 **Construction Noise Levels Exceeding Jurisdictional Standards.** *As stated above, there are no jurisdictional noise level standards applicable to the Project. Therefore, there would be **no impact** from implementation of the Project or with post-Project operation of the Forebay.*

Project-generated noise levels at noise-sensitive receivers were compared to the standards established in the *El Dorado County General Plan*. This analysis was completed for informational purposes and is not used to determine impact significance.

As presented in Table 3.10-2 above, El Dorado County has established a daytime noise level limit of 50 dB L_{eq} at rural residential properties. This limit is approximately 5–10 dB higher than existing ambient conditions observed in the Project vicinity (Table 3.10-4), and is considered to be appropriate given the ambient noise environment.

Construction-Related Impact

Stationary Construction Noise Sources (Nontransportation)

The noisiest Project construction activities would involve harvesting trees and developing the land in the primary and secondary material borrow areas west-northwest of the dam site; excavating aggregate materials from the borrow areas for use at the dam site; and clearing, excavating, backfilling, and completing construction of the dam stability buttress and at the reservoir inlet. The effects of these activities on noise levels are described in Table 3.10-5 and the Noise and Vibration Technical Report (Appendix F).

Construction Traffic Noise

Project construction would add traffic to area roadways, increasing exposure to traffic noise at existing noise-sensitive uses in the Project vicinity. Specifically, Forebay Road north of Pony Express Trail, Blair Road south of Forebay Road, and Polaris Street/Drop Off Road north of Pony Express Trail were analyzed for Project traffic-related noise production using the FHWA Model and traffic volume and distribution information provided in Section 3.13, “Transportation/Traffic.” Additional traffic noise modeling information is provided in the Noise and Vibration Technical Report (Appendix F). Results of the modeling of traffic noise exposure are summarized in Table 3.10-6.

Table 3.10-5 Summary of Construction Noise Level Calculations	
Residential Receiver Location	Noise Level—dB L _{eq}
Tree Harvesting and Development in the Borrow Area(s)	
East-northeast of construction—150 feet—Terrace Drive and El Camino Drive	73
South-southwest of construction—575 feet—Forebay Road	61
West of construction—575 feet—Forebay Road	61
Mining of the Borrow Area(s)	
East-northeast of construction—150 feet—Terrace Drive and El Camino Drive	70
South-southwest of construction—575 feet—Forebay Road	59
West of construction—575 feet—Forebay Road	59
Dam Stability Buttress Work	
North of construction—375 feet—Forebay Road	64
West of construction—950 feet—Forebay Road	56
South-southeast of construction—500 feet—Polaris Street/Drop Off Road	62
Reservoir Inlet Channel Work	
East of construction—375 feet—Forebay Road	64
Notes: dB = decibels; L _{eq} = equivalent sound level Source: Data compiled by AECOM in 2013	

As shown in Table 3.10-6, Project construction-related traffic noise levels during the a.m. peak-hour traffic condition would likely exceed El Dorado County’s daytime noise level limit of 50 dB L_{eq} at residences adjacent to Forebay Road between Pony Express Trail and Blair Road. Although implementing the Project would create an increase in noise, because there are no applicable noise standards, **no impact** resulting from construction would occur.

Table 3.10-6 Summary of Traffic Noise-Level Modeling Results					
Roadway	Segment	Noise Level 50 Feet from C.L., dB L _{eq}			Change, dB
		Existing	Project	Existing + Project	
Forebay Road	Sherman Way to Blair Road	47	55	56	+9
Blair Road	South of Forebay Road	43	40	46	+3
Forebay Road	West of Blair Road	45	43	47	+2
Forebay Road	Sherman Way to Pony Express Trail	48	55	56	+7
Notes: C.L. = roadway centerline; dB = decibels; L _{eq} = equivalent sound level A Project construction traffic noise assessment was not completed for Polaris Street/Drop Off Road because no traffic volume information was available at the time of this study. Project construction traffic for this roadway is expected to be similar to Blair Road south of Forebay Road. Source: Data compiled by AECOM in 2013					

Post-Project Operation-Related Impact

A reinforced concrete conduit would be constructed to extend the existing 14-mile-long tunnel to El Dorado Forebay. This conduit would take the place of a portion of open channel at the reservoir inlet, which currently generates some water noise from a series of high-gradient riffles and cascades. Filling the reservoir from this improved inlet may create additional or relocate existing water noise in the area of the tunnel outlet depending on reservoir level. However, this source of noise would be more than 400 feet distant from the closest residential receivers. Additionally, the average elevation change between the inlet and the new reservoir surface would be reduced as a result of the dam height increase, minimizing noise production from the filling of the reservoir. After Forebay refilling is complete, no change in noise when compared to existing would occur. Therefore, **no impact** would occur as a result of post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

IMPACT 3.10-2 **Potential Exposure to Excessive Groundborne Vibration during Construction.** *Project-related construction may expose local residents to elevated levels of groundborne vibration. This impact would be less than significant. No impact would occur as a result of post-Project operation of the Forebay.*

Construction-Related Impact

As expressed in the Noise and Vibration Technical Report (Appendix F), heavy Project construction would not include operations that could damage nearby buildings structurally or cosmetically. Heavy Project construction activities would produce a vibration level of no more than 87 VdB (0.089 in/sec PPV) at a distance of 25 feet. Because heavy Project construction activities would not occur within 25 feet of acoustically sensitive uses, levels of construction-related ground vibration would not be expected to exceed the established threshold of significance of 88 VdB (0.100 in/sec PPV) at these uses. Therefore, this construction-related impact would be **less than significant**.

Operation-Related Impact

No activities would occur during Project operations and maintenance that would expose local residents to elevated levels of groundborne vibration. Therefore, **no impact** would occur as a result of post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

IMPACT 3.10-3 **Long-Term Increase in Noise Levels during post-Project Operation.** *Daily operations noise associated with the Project are not expected to expose local residents to higher long-term (permanent) noise levels relative to the ambient (existing) condition. This impact does not apply to construction. No impact would occur as a result of post-Project operation of the Forebay.*

Construction-Related Impact

This impact does not apply to construction.

Post-Project Operation-Related Impact

As discussed above, post-Project operations and water-related noise levels at existing residential receivers would not increase. Therefore, **no impact** would occur as a result of post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

IMPACT 3.10-4 **Impact 3.10-4: Construction Noise Levels Exceeding Ambient Conditions.** *Project-related construction may expose local residents to noise levels substantially higher than existing ambient conditions. The construction-related impact would be **significant**. **No impact** would occur as a result of post-Project operation of the Forebay.*

Construction-Related Impact

As shown in Table 3.10-4, average daytime ambient noise levels at residential properties in the Project area ranged from approximately 39 to 45 dB hourly L_{eq} , depending on location. Assuming an average ambient daytime noise level of about 43 dB L_{eq} in the Project area, a significant, short-term construction noise impact would be expected if Project-related noise levels were to exceed 48 dB L_{eq} (i.e., 5 dB above ambient noise levels).

As shown in the discussion of Impact 3.10-1, Project construction-related noise levels would be approximately 56–73 dB L_{eq} for non-transportation sources and 55 dB L_{eq} from traffic on Forebay Road between Pony Express Trail and Blair Road at the closest residences. Because these noise levels would exceed a 5 dB increase over ambient conditions, this construction-related impact would be **significant**.

Post-Project Operation-Related Impact

No activities would occur during Project operations and maintenance that would expose local residents to noise levels exceeding the current ambient conditions. Therefore, **no impact** would occur as a result of post-Project operation of the Forebay. No mitigation is required.

Mitigation Measure 3.10-4: Implement Measures to Reduce Construction Noise Levels.

To limit the nuisance effect of Project construction noise, EID and its construction contractor will implement the following measures:

- ▶ Avoid conducting heavy equipment use and noisy construction activities outside of construction hours from 7:00 a.m. until one-half hour after sunset local time.
- ▶ Turn off construction equipment when not in use (i.e., avoid long-term idling of heavy construction equipment).
- ▶ Position all construction staging and laydown areas as far from neighboring residents as practical. For equipment that emits loud noise levels and that would be operated for extended periods at staging or laydown areas, install portable construction noise barriers, where reasonable and feasible, to mitigate the effects of noise exposure at neighboring residences.

- ▶ Fit all heavy construction equipment with available, manufacturer-specified noise-level reduction components where reasonable and feasible. Maintain all heavy construction equipment in good working order during all operations.

Timing: Throughout Project construction

Responsibility: EID and contractor

Significance after Mitigation: Implementation of Mitigation Measure 3.10-4 would be expected to minimize the temporary, adverse effects of construction noise on local residents. However, given the limitations presented by the Project area terrain and distribution of noise-sensitive properties, no feasible mitigation is available to reduce the significant impact associated with temporary Project construction noise levels to a less-than-significant level. Therefore, Impact 3.10-4 would be **significant and unavoidable**.

3.10.4 RESIDUAL SIGNIFICANT IMPACTS

As described above, Impact 3.10-4 would remain significant following implementation of mitigation. Because of the limitations presented by the Project area's terrain and the distribution of noise-sensitive properties, no feasible mitigation is available to reduce this significant impact to a less-than-significant level. This impact would be significant and unavoidable.

3.11 PUBLIC SERVICES

This section describes the public services provided in the Project area and discusses the relationship between the Project and existing adopted federal, state, and regional and local laws, regulations, and planning goals and policies related to public services. In addition, this section analyzes the potential impacts of the Project on public services during construction and operation of the modified El Dorado Forebay Dam.

3.11.1 REGULATORY BACKGROUND

Federal, state, and local plans, policies, laws, and regulations provide a framework for addressing public services in regard to the Project. The regulatory setting for public services is discussed in detail in Appendix G. A summary of that information as it relates to the impact analysis is provided below.

No federal or state plans, policies, regulations, or laws related to public services apply to the Project.

Government Code Section 53091 states that building and zoning ordinances do not apply to “construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency.” Public utility projects that serve the facilities described above would not be subject to local plans, policies, regulations, or ordinances. The *El Dorado County General Plan* provides a variety of policies related to public services. These policies provide a basis to assist with CEQA review in evaluating the level of significance associated with impacts.

3.11.2 ENVIRONMENTAL SETTING

Appendix G presents a description of the public services in the Project site. A summary of this information is provided in the following text.

FIRE PROTECTION

The community of Pollock Pines, including the project site, is served by Fire Station 17 of the El Dorado County Fire Protection District.

POLICE SERVICES

The Project site is served by the El Dorado County Sheriff’s Office (EID 2013).

SCHOOLS

The Project site is located in Pollock Pines Elementary School District and El Dorado Union High School District (EID 2013). The nearest school, Pinewood Elementary, is located approximately 0.2 mile south of the nearest portion of the Project site.

PARKS

A public baseball field and Pollock Pines Recreation Park are located on EID-owned land adjacent to the Project site to the east. The main day use area and fishing access area are public recreation areas. The primary recreational area in the Pollock Pines region is the Sly Park Recreation Area (EID 2013).

3.11.3 IMPACTS AND MITIGATION MEASURES

ANALYSIS METHODOLOGY

The analysis methodology for public services consisted of a literature review of appropriate documents and review of aerial photography using Google Earth to understand the current setting of public services in the Project vicinity. Information from the review was then used to determine impacts on public services. The IS provided by EID was used primarily to determine whether further analysis of impacts were needed in this EIR. The following documents were reviewed:

- ▶ *El Dorado Forebay Modification Project: Project Description/Initial Study Checklist* (EID 2013)
- ▶ Public Services and Utilities Element of the *El Dorado County General Plan* (El Dorado County 2004)
- ▶ Public Health, Safety, and Noise Element of the *El Dorado County General Plan* (El Dorado County 2009)

THRESHOLDS OF SIGNIFICANCE

Significance criteria are based on Appendix G of the State CEQA Guidelines. The Project would have a significant impact on public services if Project implementation would do any of the following:

Result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

- ▶ Fire protection
- ▶ Police protection
- ▶ Schools
- ▶ Parks
- ▶ Other public facilities

FINDINGS OF THE INITIAL STUDY CONCLUDING NO IMPACT

The IS prepared by EID in 2013 did not dismiss any issues associated with public services from further consideration in this EIR.

IMPACT ANALYSIS

IMPACT 3.11-1 **Impact on Emergency Access Routes Used by Fire and Police Protection Services.** *Construction activities would cause short-term lane closures or detours, which could potentially interfere with implementation of emergency response or emergency evacuation plans. Therefore, the construction-related impact would be **potentially significant**. Project operation would not affect emergency access routes. Therefore, **no impact** would occur with post-Project operation of the Forebay.*

Construction-Related Impact

EID would continue to follow the adopted Emergency Action Plan for El Dorado Hydroelectric Project 184 and other measures required by El Dorado County. These actions would ensure that all appropriate safety measures would be in place if an emergency occurs (EID 2013). However, because short-term lane closures or detours during construction have the potential to interfere with implementation of emergency response or emergency evacuation plans, this impact would be **potentially significant**.

Post-Project Operation-Related Impact

Post-Project operation of the Forebay would not affect emergency access routes. Therefore, **no impact** would occur with post-Project operation of the Forebay, and no mitigation is required.

Mitigation Measure 3.11-1: Implement Mitigation Measure 3.13-2, Prepare and Implement a Traffic Control Plan.

Timing: Before and during construction activities, as appropriate

Responsibility: EID and contractor

Significance after Mitigation: Implementing Mitigation Measure 3.11-1 will reduce the potentially significant impact associated with interference with emergency evacuation routes and emergency vehicle access to a **less-than-significant** level because the traffic control plan will be used to develop detours to ensure acceptable traffic flow through and/or around the construction zone, and minimize traffic congestion.

IMPACT 3.11-2 **Increased Demand for Fire Protection Services.** *Construction activities would cause a short-term increase in the potential demand for fire protection services. This impact would be less than significant. No impact would occur with post-Project operation of the Forebay.*

Construction-Related Impact

During construction, the potential demand for fire protection services would increase. Increased personnel on-site and construction activities would increase fire risk. This increased risk would be short term and would occur only during construction activities. (See also the discussion of Impact 3.8-4, which addresses obligations for meeting fire protection requirements.) Therefore, this impact would be **less than significant**.

Post-Project Operation-Related Impact

Operation-related activities would not contribute to population growth or induce land use modifications that would increase the long-term need for fire protection services (EID 2013). Therefore, **no impact** would occur with post-Project operation of the Forebay.

significant because the traffic control plan will be used to develop detours to ensure acceptable traffic flow through and/or around the construction zone, and minimize traffic congestion.

IMPACT 3.11-5 **Impact on Access to Parks and Recreation Areas.** *Construction activities would cause short-term lane closures or detours, which could potentially interfere with access to the baseball park adjacent to the Forebay. The Forebay main day use and fishing access areas would be closed during construction for safety reasons. The construction-related impact would be **less than significant**. No impact would occur with post-Project operation of the Forebay.*

Construction-Related Impact

During some phases of construction, construction-related traffic could temporarily affect access to Craig Escobar Recreational Area, located adjacent to the Forebay. However, any delayed access to the baseball field would be temporary, and this facility would remain open and unaffected during construction of the Project (EID 2013).

The Forebay main day use and fishing access areas would be closed to the public for safety reasons. Other facilities in addition to the Craig Escobar Recreational Area, such as the Sly Park Recreation Area, would remain available for some portion of displaced users, while local adjacent lands may substitute for those walking, hiking, or conducting other informal activities. Closures of the Forebay recreation areas would be short term and would occur only during construction. Therefore, this impact would be **less than significant**.

Post-Project Operation-Related Impact

Operation of the Forebay after completion of the Project would not limit access to or require closure of any recreation areas. Therefore, **no impact** would occur with post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

3.11.4 RESIDUAL SIGNIFICANT IMPACTS

All impacts on public services either would be less than significant or would be reduced to a less-than-significant level with mitigation, or no impact would occur, as described above. There would be no residual significant impacts.

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3.12 RECREATION

This section characterizes existing recreational facilities and resources found on the Project site and in the vicinity and analyzes the potential impacts of the Project on recreation resources during construction and long-term operation of the Forebay. The regulatory background associated with recreation is also presented along with the current environmental setting.

3.12.1 REGULATORY BACKGROUND

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

No federal plans, policies, regulations, or laws related to recreation apply to the Project beyond the FERC Project license and related plans and documents. The FERC license and related Recreation Implementation Plan do not specifically discuss recreation at El Dorado Forebay; these documents primarily address recreation on National Forest System lands within the FERC project boundary (EID 2007).

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

Water recreation activities at El Dorado Forebay are regulated by the CCR and the California Health and Safety Code. Recreational use of a domestic water supply reservoir is prohibited by the CCR (Title 17, Section 7626), unless it is specifically authorized in a water supply permit. Body-contact recreation in a reservoir where water is stored for domestic use is prohibited by the California Health and Safety Code Section 115825(b) (California Department of Public Health 2000). Therefore, boating and body-contact recreation (e.g., swimming) are not allowed at the Forebay.

REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Government Code Section 53091 states that building and zoning ordinances do not apply to “construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency.” Public utility projects that serve the facilities described above would not be subject to local plans, policies, regulations, or ordinances. The following local regulations related to recreation are provided for informational purposes and are provided as a basis to assist with CEQA review in evaluating the level of significance associated with impacts.

The Parks and Recreation Element of the *El Dorado County General Plan* “establishes goals and policies that address the long range provision and maintenance of parks and recreation facilities needed to improve the quality of life of existing and future El Dorado County residents” (El Dorado County 2004). The element also outlines regional recreational opportunities and facilities, funding sources, and the increasing number of tourism and recreation-based businesses in the county (El Dorado County 2004). The Parks and Recreation Element does not contain any policies or goals specific to the recreation facilities or activities on the Project site.

The *El Dorado County Parks and Trails Master Plan* (El Dorado County 2012) contains the following recommendations related to recreation facilities and trails on the Project site.

CP1. Camino/Pollock Pines Community Park

CP1.B. Identify opportunities to collaborate with EID to add improvements to the Forebay Reservoir property to complement [El Dorado] County park facilities. The feasibility of any improvements depends on various factors including whether or not EID has the authority to grant public access, and operational and safety considerations. Improvements would also need to be compatible with the El Dorado Forebay Reservoir Remediation Project.

TR4. Neighborhood and Community Connectivity Plans

TR4.B. Camino/Pollock Pines. There is also a need for similar non-motorized trails in the Camino/Pollock Pines community. One suggested route would be adjacent to Pony Express Trail, providing a safe non-motorized alternative through the commercial center. Another important trail would be one connecting Pollock Pines with the Sly Park Recreation Area. A third potential route would provide access to EID's Forebay recreation facilities, pending the ability to secure easements along the ditches. Development of this route would also be contingent on compatibility with EID's plans to pipe sections of the Main Ditch downstream of Forebay Reservoir. These are trails that would clearly serve local transportation and recreation function, while contributing to the livability of the community by reducing automobile trips.

The *Draft Placerville Area Parks and Recreation Master Plan* (Foothill Associates 2009) discusses the planned Pollock Pines Community Park, but does not contain any recommendations specific to the Project site. The draft master plan is pending adoption by the Placerville City Council.

3.12.2 ENVIRONMENTAL SETTING

The following discussion characterizes existing recreational facilities and resources found in the Project site and vicinity.

PROJECT SITE SETTING

The Project site includes the Forebay Recreation Area, which is owned and operated by EID and located in the town of Pollock Pines. The Forebay Recreation Area consists of recreation facilities located on the Forebay shoreline, including the main day-use area, the fishing access day-use area, and an informal trail connecting the two day-use areas. The main day-use area is located adjacent to the dam and consists of a picnic area, a parking area, and restrooms. The fishing access day-use area is located in the southeastern corner of the reservoir and includes an open area adjacent to the water's edge and a parking area. The Forebay is a popular local fishing location, with fishing occurring at both the main and fishing access day-use areas. The Forebay Recreation Area is open from dawn to dusk, and there is no fee to use the recreation facilities.

The recreation area received an estimated 16,000 visitors in 2012, averaging about 43 people per day, of which 78%, or about 12,600, visited during the summer season (EID 2012). This number of visitors was estimated by counting vehicles parking in the day-use areas, multiplied by an assumed 2.5 occupants per vehicle, which was based on a prior survey of the Sly Park area.

Although not on the Project site, recreation facilities are also located on lands owned by EID adjacent to the Forebay Recreation Area. These facilities are located east of Forebay Road and include a Little League baseball

field, six regulation horseshoe pits, restrooms, a multipurpose senior center, and a parking lot. These facilities are managed by a concessionaire under a lease with EID.

EID also owns the property where the proposed borrow area is located. There is no public recreational access or allowed use of these lands.

REGIONAL SETTING

Sly Park Recreation Area

The Sly Park Recreation Area is located about 6.5 miles south of the Project site. Centered around the 660-acre Jenkinson Lake, the Sly Park Recreation Area is a popular location for day use, camping, and boating and receives heavy use consistently in the summer (El Dorado County 2012). The area contains eight family campgrounds, with 191 individual sites, six group camping areas, nine day-use areas, two boat ramps, a marina, an equestrian campground, and an event center (EID 2013a, 2013b, 2013c). The recreation area also contains more than 8 miles of hiking, biking, and equestrian trails around the lake (EID 2013d). Waterskiing, wakeboarding, canoeing, kayaking, fishing, cruising, and sailing are allowed on Jenkinson Lake and boat rentals are available (EID 2013e). EID, which owns and manages the Sly Park Recreation Area, charges fees for day use, pets, boat launching, boat rentals, camping, group use, equestrian staging, recreational vehicle dumping, and use of the event center at Sly Park (EID 2013f). Free pedestrian access to Jenkinson Lake also is allowed for individuals who park at limited spaces near the main park entrance, along Mormon Emigrant Trail or other local nearby public and private parking areas.

Other Regional Recreation Areas

In addition to the Sly Park Recreation Area, a few other smaller recreation sites provide recreation facilities and experiences similar to those found on the Project site. Among these are the Bridal Veil Picnic Area in Eldorado National Forest and two parks in the City of Placerville—Lions Park and Lumsden Park. Located east of the Project site in the Eldorado National Forest, the Bridal Veil Picnic Area is a 30-unit day-use area with restrooms on the South Fork of the American River just north of U.S. 50. Visitors can also swim and fish in the river at this site. There is a \$5 day-use fee for the site (USFS 2013).

Located within the City of Placerville, Lions Park is a 24-acre park that provides tennis courts, softball fields, playground, picnic facilities, turf areas, horseshoe pits, walking trails, a Frisbee golf course, and restrooms (City of Placerville 2013a). Also located in Placerville, Lumsden Park is a 4-acre park that provides a playground, turf areas, picnic facilities, horseshoe pits, restrooms, and a small fishing pond (City of Placerville 2013b). There are no day-use fees for either of these parks.

Table 3.12-1 summarizes the facilities at each of these regional recreation sites and their distance from the Project site, and states whether or not there is a day-use fee.

Planned Recreation Facilities

The *El Dorado County Parks and Trails Master Plan* indicates that the county has planned a Pollock Pines Community Park “with proposed amenities to include a baseball field, soccer field, basketball court, volleyball court, horseshoe pits, playground, restrooms, nature pavilion, trails, off-street parking, and an outdoor classroom

Table 3.12-1 Recreation Areas/Facilities in the Vicinity of the Project Site			
Recreation Area	Facilities/Opportunities	Driving Distance from Project Site	Day-Use Fee
Forebay Recreation Area	Picnic facilities, restrooms, informal trail between two day-use areas, fishing opportunities,	0 mile	No
Pollock Pines Community	Senior center, Craig Escobar Recreational Area, horseshoe pits	0.1 mile	No
Sly Park Recreation Area	Picnic facilities, restrooms, campgrounds, hiking/biking/equestrian trails, marina, event center, fishing opportunities, swimming opportunities, boating opportunities	6.5 miles	Yes (some no-fee pedestrian access available)
Bridal Veil Picnic Area	Picnic facilities, restrooms, fishing opportunities, swimming opportunities	5.3 miles	Yes
Lumsden Park	Playground, turf areas, picnic facilities, horseshoe pits, restrooms, fishing opportunities	13 miles	No
Lions Park	Playground, tennis courts, softball fields, picnic facilities, turf areas, horseshoe pits, walking trails, Frisbee golf course, restrooms	15 miles	No
Sources: City of Placerville 2013a, 2013b; EID 2013a, 2013b, 2013c, 2013e, 2013g; USFS 2013			

amphitheater. The park site covers 26 acres at the end of Red Hook Trail north of U.S. 50 in the Pollock Pines community. However, construction of this park has been delayed due to budget constraints. Implementation of the Project may require revisiting the master plan to reduce costs and phased construction” (El Dorado County 2012).

EID designated the Craig Escobar Recreational Area as surplus property in late 2011. In 2013, the El Dorado County Board of Supervisors wrote to express interest in acquiring it, stating, “The intent is to leave this parcel as recreational use for local residents.” Since then, the county’s staff has been obtaining information about the property and discussing the terms of a potential transaction with EID’s staff. Although the final decision would rely on El Dorado County as the new owner, EID does not expect a change in ownership to have any effect on the Little League ballfield or any other activities on that property. None of EID’s construction activities would involve that parcel.

El Dorado County and members of the public have expressed an interest in developing a regional trail in the Pollock Pines area that could include areas around the Forebay. El Dorado County has indicated that it intends to collaborate with EID to investigate options for a regional trail, involving EID-owned lands around or associated with the Forebay (Santiago, pers. comm., 2013). The Project does not include or preclude the development of a regional trail system at or around the Forebay facilities as envisioned by El Dorado County or members of the public.

3.12.3 IMPACTS AND MITIGATION MEASURES

ANALYSIS METHODOLOGY

Potential direct and indirect effects on recreation caused by the Project were assessed by examining potential changes in recreational opportunities, facilities, and experiences caused by the Project.

THRESHOLDS OF SIGNIFICANCE

Significance criteria are based on Appendix G of the State CEQA Guidelines. The Project would have a significant impact on recreation if Project implementation would do any of the following:

- ▶ 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 or
- ▶ Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

In addition, the Project was determined to result in a significant impact on recreation if implementation of the Project would:

- ▶ Substantially degrade recreational experiences

FINDINGS OF THE INITIAL STUDY CONCLUDING NO IMPACT

The IS concluded that no impact would occur with respect to the following threshold of significance:

Include Recreational Facilities or Require the Construction or Expansion of Recreational Facilities That Might Have an Adverse Physical Effect on the Environment: The Project does not include any new recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment. The Project would replace existing recreational facilities that would be affected by implementing the Project. Facilities at the main day-use area would comply with current Americans with Disabilities Act (ADA) requirements. Other than the temporary restricted access to recreational facilities during construction, no modifications to the existing recreational facilities are expected to occur as a result of implementing the Project.

Subsequent to the publication of the IS, EID incorporated the following elements to the Project: (1) replacement of existing recreational facilities that would be affected by the Project and (2) modification of facilities at the main day-use area, where feasible, to comply with current Americans with Disabilities Act (ADA) requirements.

The main day-use area and the fishing access day-use area would be reopened after the completion of the Project. Access to these facilities would occur at the same location as existing facilities. No new uses would be introduced.

The finding of the IS concluding no impact on recreational facilities or the construction or expansion of recreational facilities is still valid because the elements described above would replace existing facilities that are affected by the Project and bring facilities into compliance with current ADA requirements. Because these elements involve

replacement of existing facilities and/or installation of facilities within an existing recreation area to meet ADA requirements, no adverse physical effect on the environment is anticipated as a result of these activities.

This issue is not addressed further in this EIR.

IMPACT ANALYSIS

IMPACT 3.12-1 **Increase in Use of Existing Neighborhood and Regional Parks or Other Recreational Facilities Such That Substantial Physical Deterioration of the Facility Would Occur or Be Accelerated.** *Construction of the Project would require temporary closure of two day-use areas, thus displacing recreation use to other facilities. The construction-related impact would be **less than significant**. No impact would occur with post-Project operation of the Forebay.*

Construction-Related Impact

During dam modification, the main day-use area would be used as a staging area for construction activities and would be closed to public use. To protect public safety, the entire day-use area, including the picnic facilities, restrooms, and access to the crest of the dam and reservoir would be closed throughout the duration of the -24-month construction period. Because of construction activities around the reservoir, especially those involving the canal inlet and timber harvest around the reservoir edge, the fishing access day-use area and informal hiking trail between the two day-use areas would be closed for the duration of the construction period.

Closing the informal trail and the two day-use areas could displace some portion of the users to other sites for the duration of construction. The closest day-use areas with picnic and restroom facilities are the Sly Park Recreation Area, approximately 6.5 miles south of the Forebay, and the Bridal Veil Picnic Area in Eldorado National Forest, located 5.3 miles east of the Forebay. However, displaced recreationists would have to pay a day-use fee at both of these sites, unless they use limited no-fee pedestrian access at Sly Park. The closest day-use areas with picnicking and restroom facilities and no day-use fee are in the City of Placerville (Lions Park and Lumsden Park), located 13–15 miles west of the Forebay. Displaced anglers could fish at the Sly Park Recreation Area, Bridal Veil Picnic Area, or Lumsden Park; anglers would have to pay a day-use fee at the Sly Park or Bridal Veil sites. Free pedestrian access is available for individuals who park at limited spaces near the main park entrance, along Mormon Emigrant Trail or other local nearby public and private parking areas.

Closing the day-use areas would displace approximately 16,000 visitors annually over the 2-year construction period. Displaced users could visit one or more of the substitute locations previously identified, thus increasing use at these substitute locations for 2 years, including over two summers when use is typically highest at recreational sites in this area (between Memorial Day and Labor Day). Free pedestrian access to Jenkinson Lake for individuals who park at limited spaces near the main park entrance, along Mormon Emigrant Trail, or in other local nearby public and private parking areas would continue to provide no-fee recreation opportunities.

It is not known how displaced recreational users would be distributed among other recreational facilities. Factors including the type of use, cost, distance, and seasonal availability would affect user behavior. It is expected that many recreational users of the Forebay would not be displaced to other park facilities and instead would find local substitutes for dog walking, hiking, and birding in the immediate Project vicinity. It may be reasonable to assume

that a portion of Forebay recreational users would find a local substitute for Forebay recreational use, including local roadways, open space, and trails.

Based on this analysis, the temporary displacement of recreational users to other facilities would not substantially deteriorate those facilities. Although some additional use would occur, the level of increased use is not expected to cause measureable physical damage or deterioration to these facilities. For these reasons, this impact would be **less than significant**.

Post-Project Operation-Related Impact

After the Project is complete, including reopening of the day-use area facilities, the reservoir would be operated at a new maximum operating storage capacity of approximately 554 af, as compared to the existing (nonrestricted) storage capacity of approximately 381 af (GEI 2013). Operating the reservoir at this higher water surface level would inundate two benches, portions of the informal trail between the two day-use areas, and a stairway to the shoreline. The benches and trail facilities would be relocated to be outside of the inundation zone, therefore, no deterioration of facilities would occur. The stairway facility would no longer be needed for visitors to reach the shoreline; therefore, it would not be replaced. Thus, **no impact** on recreation would occur as a result of post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

IMPACT 3.12-2 **Potential for Substantial Degradation of Recreation Experiences.** *Construction activities would alter the adjacent recreation setting through additional noise and traffic, thus affecting visitors' experiences. The construction-related impact would be **less than significant**. **No impact** would occur with post-Project operation of the Forebay.*

Construction-Related Impact

Implementing the Project would temporarily affect the recreation setting of the adjacent recreation facilities on the east side of Forebay Road because of construction noise and traffic. Although the day-use areas and trails at the Forebay would be closed, these facilities located east of Forebay Road would remain open during construction. The Senior Center, horseshoe pits, and baseball field are all accessed via Forebay Road, which would also be used to transport construction materials and equipment. Therefore, some delays in accessing recreation facilities may occur as a result of construction vehicle movement and associated congestion.

Noise generated by construction traffic and activities could diminish the recreational experiences of visitors to the adjacent recreation facilities. Over the 2-year construction period, the noise level along Forebay Road is expected to increase because of construction activities. However, the increased noise is not expected to preclude or interfere with recreation in the area; the sound levels expected from construction are similar in intensity to levels of outdoor baseball or other sporting activities. Therefore, recreation experiences for visitors to the facilities adjacent to the Forebay would not be substantially degraded because of noise from construction activities. As a result, construction activities would have a **less-than-significant** impact on recreation experiences.

No long-term adverse impact on the recreation setting of the Forebay Recreation Area from construction activities is expected because the day-use areas would be closed only temporarily during construction. The day-use areas would be reopened to existing uses at existing use levels following completion of the Project.

Post-Project Operation-Related Impact

After construction, the reservoir would be operated at a new maximum operating storage elevation. Operating the reservoir at this higher elevation would require removal of trees and would lessen open areas adjacent to the water's edge. The water's edge would be located closer to some recreation facilities and may improve conditions for fishing use.

In addition, the existing facilities that are affected by the Project would be replaced, and facilities at the main day-use area would be brought into compliance with current ADA requirements where feasible, which would enhance the recreation setting for some visitors. Therefore, **no impact** would occur with post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

3.12.4 RESIDUAL SIGNIFICANT IMPACTS

As described above, either impacts on recreation would be less than significant or no impact would occur. There would be no residual significant impacts.

3.13 TRANSPORTATION/TRAFFIC

This section assesses transportation and traffic impacts associated with implementing the Project. Mitigation measures are recommended, as necessary, to reduce significant impacts to the environment. A more detailed transportation and traffic discussion is presented in the Public Services and Transportation/Traffic Technical Report, which is included as Appendix G of this EIR.

3.13.1 REGULATORY BACKGROUND

Federal, state, and local plans, policies, laws, and regulations provide a framework for addressing aspects of transportation and traffic that would be affected by the Project. The following is a summary of that information as it relates to the impact analysis provided below.

No federal plans, policies, regulations, or laws related to transportation/traffic apply to the Project.

The California Department of Transportation (Caltrans) is responsible for planning, designing, constructing, operating, and maintaining all state-owned roadways. Caltrans prepares various planning documents for its transportation facilities throughout the state. The goals established for specific highways are documented in transportation concept reports. The *Transportation Corridor Concept Report: United States Highway 50* (Caltrans 2010) describes the 20-year improvement concept for U.S. 50. The concept presented for Segment 13, the segment closest to the Project site, is a four-lane rural freeway. Segment 13 extends from the Cedar Grove exit to the point 0.67 mile east of Sly Park Road in El Dorado County.

Operation of the roadway system is typically described in terms of level of service (LOS). It is designated by the letters A through F, with A corresponding to the lowest levels of congestion and F corresponding to the highest level of congestion. At LOS A, traffic is free-flowing at or above the speed limit. At LOS F, traffic is very slow, and each vehicle moves only when traffic around it moves. Traffic frequently slows and stops. The concept LOS is F for Segment 13.

The Sacramento Area Council of Governments (SACOG) is an association of local governments in the six-county Sacramento region that provides transportation planning and funding for the region. SACOG is the metropolitan planning organization responsible for developing the state-required and federally required metropolitan transportation plan every 4 years. The *Metropolitan Transportation Plan/Sustainable Communities Strategy 2035* (SACOG 2012) is the federally mandated long-range planning document for identifying and programming roadway improvements throughout the Sacramento region. The *Metropolitan Transportation Plan/Sustainable Communities Strategy 2035* was also adopted by the El Dorado County Transportation Commission to serve as the county's regional transportation plan (RTP).

Government Code Section 53091 states that building and zoning ordinances do not apply to "construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency." Public utility projects that serve the facilities described above would not be subject to local plans, policies, regulations, or ordinances. Local goals and policies related to transportation/traffic resources were used to assist with CEQA review significance thresholds for evaluating potential impacts associated with the Project.

The Transportation and Circulation Element of the *El Dorado County General Plan* requires that county-maintained roads and state highways within the unincorporated areas of the county shall not be worse than LOS E in the community regions or LOS D in rural centers and rural regions (El Dorado County 2009). In addition, the county should strive to provide safe, continuous, and accessible sidewalks and pedestrian facilities as a viable alternative transportation mode.

3.13.2 ENVIRONMENTAL SETTING

The environmental setting for transportation and traffic addresses existing traffic conditions and the various roadway, bicycle facilities, and public transit in the Project area. More detail is available in the Public Services and Transportation/Traffic Technical Report (Appendix G).

ROADWAYS

The key roadways in the Project area that are likely to be affected by Project-related traffic are U.S. 50, Pony Express Trail, Forebay Road, Sly Park Road, Blair Road, and Polaris Street, which are shown in Exhibit 3.13-1.

Table 3-13-1, “Existing Traffic Operations,” presents a summary of the operational assessment of the regional and local roadways. All roadways currently operate acceptably based on Caltrans and El Dorado County LOS standards.

BICYCLE FACILITIES

Bikeways are classified as Class I (bike paths), Class II (bike lanes), and Class III (bike routes). According to the *El Dorado County Bicycle Transportation Plan* (El Dorado County Transportation Commission 2010), bikeways are planned in the Project area along Sly Park Road, Pony Express Trail, Ridgeway Drive, and Carson Road.

PUBLIC TRANSIT

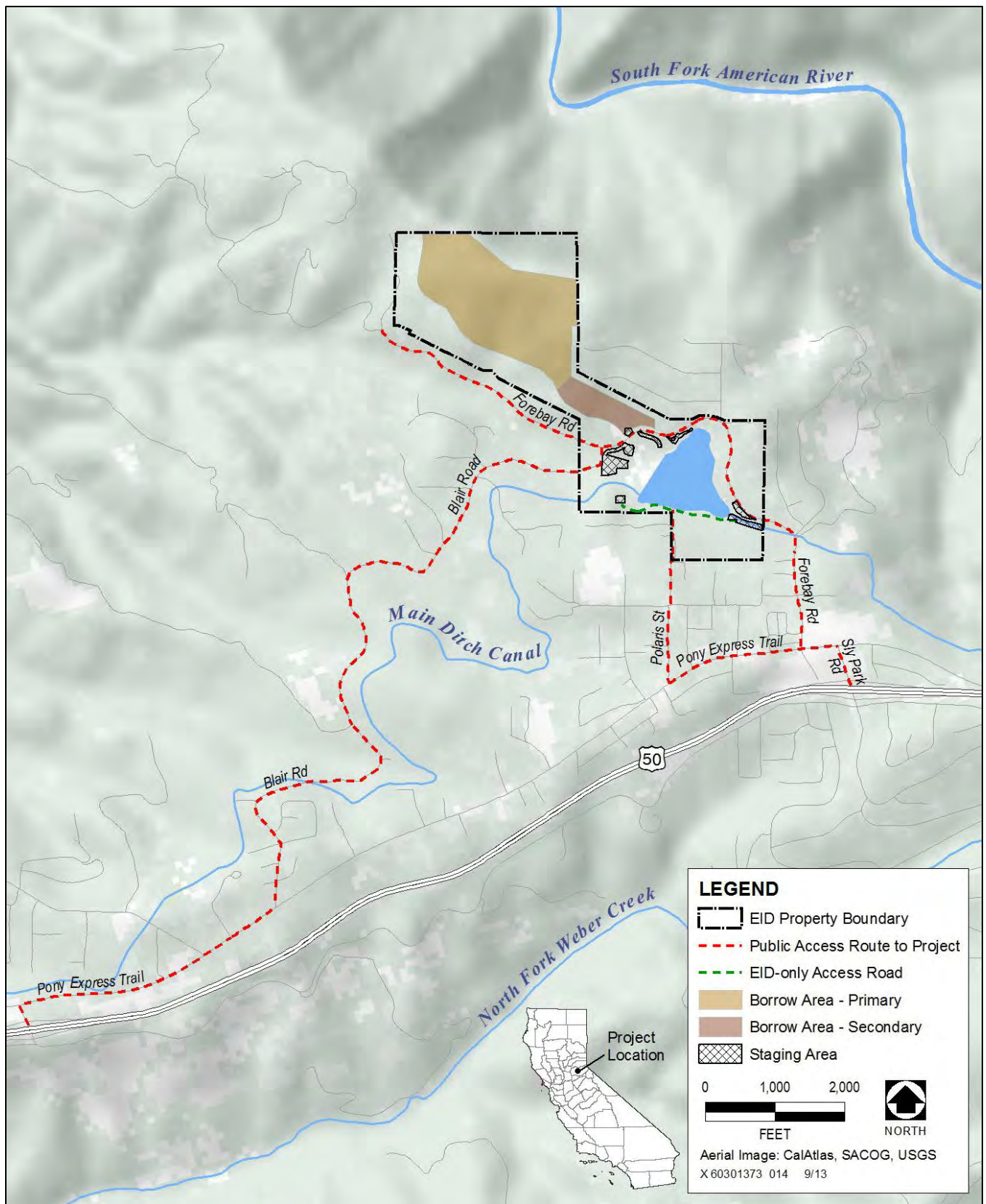
The El Dorado County Transit Authority provides transit service in El Dorado County. The Pollock Pines local transit route is located in the Project area.

3.13.3 IMPACTS AND MITIGATION MEASURES

ANALYSIS METHODOLOGY

Impacts on transportation and traffic resulting from implementing the Project are identified in the following discussion. Impacts are identified for both short-term construction and long-term operation of the Project. Implementing the Project would not introduce any new land uses or activities in the Project area that would generate long-term increases in traffic volume. Potential traffic increases would be limited to temporary construction-related activities associated with installing the Project facilities.

This analysis relies on available information, roadway characteristics, and data collected in June 2013. Impacts on traffic and circulation that would result from increases in traffic volumes or loss of or reduction in travel lanes and potential safety effects associated with construction and operation were considered. Construction characteristics,



Source: EID 2013

Exhibit 3.13-1

Project Area Roadways

Table 3.13-1 Existing Traffic Operations					
Roadway	Location	Peak-Hour Traffic Volume	Roadway Capacity	V/C Ratio	LOS ¹
U.S. 50 eastbound	West of Sly Park Road	1,095	4,010	0.27	A
U.S. 50 westbound	West of Sly Park Road	2,260	4,010	0.56	C
Blair Road	Between Forebay Road and Quick Silver Road	30	1,740	0.02	A
Forebay Road	Between Pony Express Trail and Wheel Street	200	1,740	0.11	B
	Between Sherman Way and Deep Haven Road	95	1,740	0.05	B
	Between Blair Road and Sherman Way	65	1,740	0.04	A
	West of Blair Road	30	1,740	0.02	A
Pony Express Trail	Between Sly Park Road and Hub Street	490	1,740	0.28	C
Sly Park Road	Between Pony Express Trail and Ridgeway Drive	735	1,740	0.42	D
<p>Notes:</p> <p>V/C = volume-to-capacity.</p> <p>LOS = level of service.</p> <p>¹ LOS A represents free-flow travel with an excellent level of comfort and convenience and the freedom to maneuver.</p> <p>LOS B has stable operating conditions, but the presence of other road users causes a noticeable, though slight, reduction in comfort, convenience, and maneuvering freedom.</p> <p>LOS C has stable operating conditions, but the operation of individual users is significantly affected by the interaction with others in the traffic stream.</p> <p>LOS D represents high-density, but stable flow. Users experience severe restriction in speed and freedom to maneuver, with poor levels of comfort and convenience.</p> <p>LOS E represents operating conditions at or near capacity. Speeds are reduced to a low but relatively uniform value. Freedom to maneuver is difficult with users experiencing frustration and poor comfort and convenience. Unstable operation is frequent, and minor disturbances in traffic flow can cause breakdown conditions.</p> <p>LOS F is used to define forced or breakdown conditions. This condition exists wherever the volume of traffic exceeds the capacity of the roadway. Long queues can form behind these bottleneck points with queued traffic traveling in a stop-and-go fashion.</p> <p>Sources: Traffic count data compiled by AECOM in June 2013; El Dorado County 2013; Caltrans 2012</p>					

including estimated construction crew size and equipment requirements and daily use, information on the location of staging areas, and information on the roadways to be used during construction were provided by EID.

Traffic generated by construction of the Project would be added to existing Project area roadway traffic volumes. To assess the impact of truck trips generated by construction of the Project, a heavy-vehicle factor known as a passenger car equivalent (PCE) value was applied to the Project-generated truck traffic. This heavy-vehicle factor is used to account for the additional space occupied, reduced speed, and reduced maneuverability associated with having these vehicles, rather than standard automobiles, on the roadway. A PCE value of 2.0 was applied to the construction equipment truck trip generation estimates as recommended by the *Highway Capacity Manual 2000* (Transportation Research Board 2000).

Assessment of the impact that Project construction traffic could have on local and regional roads includes review of existing peak-hour traffic volumes and consideration of both the addition of Project construction traffic to existing peak-hour traffic levels and the capacity of the road to handle the additional traffic.

THRESHOLDS OF SIGNIFICANCE

Significance criteria are based on Appendix G of the State CEQA Guidelines. The Project would have a significant impact on transportation or traffic if Project implementation would do any of the following:

- ▶ Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and nonmotorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit
- ▶ Conflict with an applicable congestion management program, including but not limited to LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways
- ▶ Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks
- ▶ Substantially increase hazards due to a design feature or incompatible uses
- ▶ Result in inadequate emergency access
- ▶ Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities

FINDINGS OF THE INITIAL STUDY CONCLUDING NO IMPACT

The IS concluded that no impact would occur with respect to the following topic:

- ▶ Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks: The nearest airport is the Placerville Airport, which is approximately 20 miles southwest of the Project site.

This issue is not addressed further in this EIR.

IMPACT ANALYSIS

IMPACT 3.13-1 **Reduction in LOS for Designated Roads or Highways.** *Construction of the Project would temporarily increase traffic on roadways used during construction. This increase in traffic would not cause a reduction in LOS that falls below LOS standards or conflicts with LOS policies set forth by El Dorado County or Caltrans for these roadways. Operating conditions would be unchanged from existing conditions. Therefore, this impact, during Project construction and post-Project operation of the Forebay, would be **less than significant**.*

Construction-Related Impact

Construction of the Project is expected to begin in April 2015. During the construction phase, traffic would be generated by personnel traveling to and from the Project site, export of timber from the Project site, and the delivery of equipment and imported materials (e.g., aggregate, riprap, concrete, pipe).

Based on the current available information, a total of 3,000 highway truck trips, 6,250 materials delivery, and 25,000 crew commuter trips would be required to complete construction of the Project over an estimated 380 construction work days. Table 3-13-2 itemizes the estimated trips on public roadways associated with constructing the Project.

Activity	Trips (Average Daily)
Rock, bedding, and aggregate hauling	22
Timber hauling	16
Materials delivery	50
Construction crews	100
Total	188
Peak-hour total	19

Source: Eymann, pers. comm., 2013

Cumulatively, construction-related traffic, including crew vehicles, and on-road trucks would add approximately 200 total daily trips to area roadways.

Based on the anticipated construction phasing, up to 50 construction workers would be required on-site each day. Construction worker commuting is estimated to add approximately 100 total daily trips to area roadways. About 25 on-road trucks and other vehicles would be required each day for the delivery of materials, fuel, equipment, and other needs. These trucks would make an average of 50 daily trips. Approximately 22 rock and aggregate haul truck trips would be generated daily with the import of these materials from off-site sources. The removal of commercial timber from the Project site would generate additional truck traffic over portions of the construction period. It is expected that during periods when timber is being removed, an additional 16 truck trips would be generated each day.

Although the origin of construction workers and material delivery trips is unknown, it is assumed that 100% of highway trips would originate from the west along U.S. 50. After construction traffic exits U.S. 50, the local roads of Sly Park Road, Pony Express Trail, Forebay Road, and Blair Road would be used to access the Project area. A secondary access route to the western portion of the reservoir and the dam left abutment would be via Pony Express Trail, Polaris Street, and Drop-Off Road. On-site haul trips would be made between the borrow area and Forebay Dam using a constructed off-road haul route. This route would cross Forebay Road near the existing penstock crossing.

An access road would be constructed from Forebay Road to the dam base, and a second road would be constructed from Forebay Road to the embankment above the penstock for construction of the upper portion of embankment.

Because the traffic analysis focuses on peak-hour traffic levels, the maximum number of peak-hour trips generated by Project construction is estimated to be 19 trips. The 19 peak-hour trips assume that the delivery of concrete or other construction materials from outside sources and the removal of timber from the borrow area would be spread evenly throughout a workday.

For purposes of this analysis, the 19 peak-hour trips generated by Project construction include the trips made by construction workers even though they may occur outside peak-hour periods. Table 3.13-3 provides a summary of the resulting LOS when construction traffic is added to existing roadway traffic volumes.

As shown in Table 3.13-3, all roadways would continue to operate at an acceptable LOS with the addition of Project construction traffic according to El Dorado County and Caltrans policies and standards. Implementing the Project would not cause roadway capacities to be exceeded or degrade the LOS to any roadway during critical peak-hour periods.

As shown in Table 3.13-3, all roadways would continue to operate acceptably with the addition of Project construction traffic according to El Dorado County and Caltrans policies and standards. Thus, the construction-related impact would be **less than significant**.

Post-Project Operation-Related Impact

Operating conditions would be unchanged from existing conditions. Maintenance activities would not increase above existing levels employed to maintain the Forebay Dam and therefore would not result in an increase in traffic in the Project area. Because implementing the Project would not cause a reduction in LOS that falls below LOS standards or conflicts with LOS policies set forth by Caltrans or El Dorado County for Project area roadways, the impact related to post-Project operation of the Forebay would be **less than significant**.

Mitigation Measures: No mitigation is required.

**Table 3.13-3
Construction Traffic Effects on Regional and Local Roadways**

Roadway	Location	Peak-Hour Traffic Volume	Construction Peak-Hour Traffic Trips Added	Existing plus Construction Peak-Hour Traffic Volume	Roadway Capacity	V/C Ratio	LOS
U.S. 50 eastbound	West of Sly Park Road	1,095	9	1,104	4,010	0.28	A
U.S. 50 westbound	West of Sly Park Road	2,260	9	2,269	4,010	0.57	C
Blair Road	Between Forebay Road and Quick Silver Road	30	4	34	1,740	0.02	A
Forebay Road	Between Pony Express Trail and Wheel Street	200	15	215	1,740	0.12	C
	Between Sherman Way and Deep Haven Road	95	15	110	1,740	0.06	B
	Between Blair Road and Sherman Way	65	15	80	1,740	0.05	A
	West of Blair Road	30	0	30	1,740	0.02	A
Pony Express Trail	Between Sly Park Road and Hub Street	490	19	509	1,740	0.29	C
Sly Park Road	Between Pony Express Trail and Ridgeway Drive	735	19	754	1,740	0.43	D
Notes: V/C = volume-to-capacity. LOS = level of service. Sources: Traffic count data compiled by AECOM in June 2013; El Dorado County 2013; Caltrans 2012.							

IMPACT 3.13-2 **Increased Traffic Hazards on Local Roadways.** *Construction of the Project could substantially increase hazards on local roadways by introducing incompatible uses, such as use of construction equipment. Therefore, the construction-related impact would be **potentially significant**. Because Post-Project operation of the Forebay would not increase traffic safety hazards on public roadways, **no impact** would occur as a result of post-Project operations.*

Construction-Related Impact

The maneuvering of Project construction vehicles and equipment among the general-purpose vehicles on local roads could cause safety hazards. Haul trucks and other on-road vehicles used during the construction of the Project could increase the hazard risk on existing roadways. Off-road earth-moving equipment transporting soil from the borrow area to the Forebay Dam would cross Forebay Road.

Traffic safety hazard risk could increase because of conflicts where construction vehicles enter a public right-of-way from the Project work site; conflicts where road width is narrowed or a roadway is closed during construction activities, which could result in delays to emergency vehicles passing through the Project area; or increased truck traffic (and the slower speed and wider turning radius of the trucks) during construction.

In addition to these impacts, the use of large trucks to transport equipment and material to and from the work site could affect road conditions on the access routes by increasing the rate of road wear. The degree to which this impact would occur would depend on the design (pavement type and thickness) and the existing condition of the road. Major arterials and collectors are designed to accommodate a mix of vehicle types, including heavy trucks. The potential impacts are expected to be negligible on those roads. However, lower capacity roadways could be substantially affected if construction equipment uses them.

Because of the temporary disruption to traffic flow, roadway wear and tear, the removal or reduction of lanes, the presence of construction equipment in the public right-of-way, and the localized increase in traffic congestion, drivers would be presented with unexpected driving conditions and obstacles, which could result in an increased occurrence of automobile or haul truck accidents.

The increased traffic hazard risk created by construction of the Project would be a **potentially significant** impact.

Post-Project Operation-Related Impact

Project operations would not increase traffic safety hazards on public roadways. Therefore, **no impact** would occur as a result of post-Project operation of the Forebay. No mitigation is required.

Mitigation Measure 3.13-2: Prepare and Implement a Traffic Control Plan.

Before construction begins, EID and/or its contractor would prepare and implement a traffic control plan to minimize construction-related traffic safety hazards on the affected roadways and ensure adequate access for emergency responders. EID and/or its contractor would coordinate development and implementation of this plan with jurisdictional agencies (e.g., El Dorado County), as appropriate. The traffic control plan would, at minimum:

- ▶ Include a discussion of work hours, haul routes, work area delineation, traffic control, and flagging.
- ▶ Determine the need to require workers to park personal vehicles at an approved staging area and take only necessary Project vehicles to the work sites.
- ▶ Develop and implement a plan for notifications and a process for communication with affected residents and landowners before the start of construction. Public notification would include posting of notices and appropriate signage of construction activities. The written notification would include the construction schedule, the exact location and duration of activities on each street (e.g., which roads/lanes and access points/driveways would be blocked on which days and for how long), and contact information for questions and complaints.
- ▶ Provide notification to the public advising them of alternative routes that may be available to avoid delays.
- ▶ Ensure that appropriate warning signs are posted in advance of construction activities, alerting bicyclists and pedestrians to any closures of nonmotorized facilities.
- ▶ Provide notification to administrators of police and fire stations, ambulance service providers, and recreational facility managers of the timing, location, and duration of construction activities and the locations

of detours and lane closures, where applicable. Maintain access for emergency vehicles in and/or adjacent to roadways affected by construction activities at all times.

- ▶ Require the repair and restoration of affected roadway rights-of-way to their original condition after construction is completed.

Timing: Before and during construction activities, as appropriate

Responsibility: EID and contractor

Significance after Mitigation: Implementing Mitigation Measure 3.13-2 would reduce the potentially significant impact associated with traffic hazards to a **less-than-significant** level because the traffic control plan would be used to develop detours to ensure acceptable traffic flow through and/or around the construction zone, minimize impacts on multimodal facilities by providing alternate routes for users of the facilities, and minimize traffic congestion.

IMPACT 3.13-3 **Decreased Performance of Alternative Modes of Transportation.** *Implementing the Project would temporarily conflict with adopted policies, plans, or programs regarding alternative modes of transportation and would temporarily decrease the performance of transportation facilities. Therefore, the construction-related impact would be **significant**. Because operating conditions would be unchanged from existing conditions, **no impact** would occur as a result of post-Project operation of the Forebay.*

Construction-Related Impact

The Project would not involve changes in policies or programs regarding public transit, bicycle, or pedestrian facilities, and it would not involve construction of facilities in locations where future alternative transportation facilities are planned. In addition, implementing the Project would not permanently eliminate existing alternative transportation corridors or facilities (e.g., bike paths, lanes, bus turnouts). However, construction activities might temporarily eliminate access to the crest of the dam, which is used by pedestrians for recreational purposes. El Dorado County Goal TC-4 requires a safe, continuous, and easily accessible nonmotorized transportation system.

In addition, the influx of construction traffic during the construction period might decrease the performance of the existing El Dorado County Transit Authority Pollock Pines local bus route, which travels along Pony Express Trail. As a result, the impact on alternative transportation facilities related to construction of the Project would be **significant**.

Post-Project Operation-Related Impact

Operating conditions would be unchanged from existing conditions. Therefore, Project operations would not conflict with adopted policies, plans, or programs regarding alternative modes of transportation, nor would they decrease the performance of transportation facilities. **No impact** would occur as a result of post-Project operation of the Forebay. No mitigation is required.

Mitigation Measure 3.13-3: Implement Mitigation Measure 3.13-2, Prepare and Implement a Traffic Control Plan.

Timing: Before and during construction activities, as appropriate

Responsibility: EID and contractor

Significance after Mitigation: Implementing Mitigation Measure 3.13-3 would reduce the significant impact associated with alternative modes of travel to a **less-than-significant** level because the traffic control plan would be used to develop detours to ensure acceptable traffic flow through and/or around the construction zone and minimize impacts on multimodal facilities by providing detour signs indicating alternate routes that could be used by transit users, bicyclists, or pedestrians.

3.13.4 RESIDUAL SIGNIFICANT IMPACTS

All impacts on transportation or traffic would be less than significant or would be reduced to a less-than-significant level with mitigation, or no impact would occur, as described above. There would be no residual significant impacts.

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3.14 UTILITIES AND SERVICE SYSTEMS

3.14.1 REGULATORY BACKGROUND

FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

FERC provides licenses for operation of hydropower under provisions of the Federal Power Act. In 2006, FERC issued a 40-year hydroelectric license for Project 184. The license contains requirements for operating the 20-megawatt hydroelectric power generation project.

STATE PLANS, POLICIES, REGULATIONS, AND LAWS

No state plans, policies, regulations, or laws related to public services apply to the Project.

REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

There are no regional or local regulations related to utilities and service systems relevant to the Project.

3.14.2 ENVIRONMENTAL SETTING

EID provides drinking water service for the Pollock Pines community. A small portion of this community south of U.S. 50 is also served by a common wastewater treatment facility, and many residences and businesses have individual or privately owned septic systems for wastewater treatment and disposal (EID 2013a).

EID owns and operates the Forebay, which provides up to 26 million gallons per day of water to the EID Reservoir 1 water treatment plant (WTP). The WTP is located on Gilmore Road in Pollock Pines. Raw water is diverted from the Forebay and travels 3 miles in the Main Ditch to the Reservoir 1 WTP. The water is treated to drinking water standards and then stored in the adjacent Reservoir 1 storage reservoir and delivered to EID drinking water customers. Pacific Gas and Electric Company (PG&E) supplies electricity to the Forebay, and PG&E would supply additional electricity needs during construction activities. The Forebay directly supplies the El Dorado Powerhouse, which provides renewable hydroelectric energy to the statewide electric grid (EID 2013b).

El Dorado Disposal, Inc., provides solid waste disposal for the Pollock Pines area. The local Union Mine Landfill is closed to receive solid waste (El Dorado County 2013), and the majority of solid waste is disposed of outside of the county. The El Dorado Disposal Service disposes of solid waste at the Kiefer Landfill in Sacramento County. Kiefer Landfill consists of 250 acres and is permitted for 660 acres. It is located near the intersection of Kiefer Boulevard and Grant Line Road in Sloughhouse, California (Sacramento County 2013).

3.14.3 IMPACTS AND MITIGATION MEASURES

ANALYSIS METHODOLOGY

The analysis of potential Project impacts on utilities and service systems first involved reviewing appropriate documents to understand the current setting of utilities and service systems in the Project vicinity. The information from this literature review was then used to determine the potential for Project impacts. The IS prepared by EID was used primarily to determine whether further analysis of impacts would be needed in this EIR.

THRESHOLDS OF SIGNIFICANCE

Significance criteria are based on Appendix G of the State CEQA Guidelines. The Project would have a significant impact on utilities and service systems if Project implementation would do any of the following:

- ▶ Exceed wastewater treatment requirements of the applicable regional water quality control board
- ▶ Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects
- ▶ Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects
- ▶ Fail to have sufficient water supplies available to serve the project from existing entitlements needed
- ▶ Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments
- ▶ Be served by a landfill lacking sufficient permitted capacity to accommodate the project's solid waste disposal needs
- ▶ Fail to comply with federal, state, and local statutes and regulations related to solid waste

FINDINGS OF THE INITIAL STUDY CONCLUDING NO IMPACT

The IS concluded that no impact would occur for the following thresholds of significance:

- ▶ *Fail to Have Sufficient Water Supplies Available to Serve the Project from Existing Entitlements and Resources:* Based on the IS (Appendix A), no impact on water supplies would occur because the Project would increase EID's ability to effectively manage water distribution for both domestic water supply and hydropower production. In addition, during construction of the Project, EID would be able to serve its customers drinking water in the Pollock Pines area with supplies from Jenkinson Lake via Reservoir A Water Treatment Plant.
- ▶ *Result in a Determination by the Wastewater Treatment Provider which Serves or May Serve the Project that It Has Adequate Capacity to Serve the Project's Projected Demand in Addition to the Provider's Existing Commitments:* The IS concluded that no impact on local wastewater treatment facility capacity would occur because no population increase would result from Project implementation.
- ▶ *Fail to Comply with Federal, State, and Local Statutes and Regulations Related to Solid Waste:* The IS concluded that no impact would occur because the Project would comply with solid waste-related statutes and regulations.

These issues are not evaluated further in this EIR.

IMPACT ANALYSIS

IMPACT 3.14-1 **Potential to Exceed Wastewater Treatment Requirements of the Applicable Regional Water Quality Control Board.** *Project construction activities would result in additional wastewater generation; however, the volume would be minimal and temporary. Therefore, **no impact** would occur during construction. **No impact** would occur with post-Project operation of the Forebay.*

Construction-Related Impact

Construction activities would generate wastewater requiring control and management. During Project construction, portable toilets would be provided at the construction site and wastewater generated by construction employees would be pumped out on a regular schedule and disposed of at a wastewater treatment plant. The Project would comply with El Dorado County and Central Valley Regional Water Quality Control Board requirements for the disposal of sewage, and wastewater generated at the construction site would not exceed wastewater treatment requirements. Domestic sewage generated on-site would be collected and disposed of at an existing sewage collection facility on a routine basis. Therefore, **no impact** would occur as a result of Project construction.

Post-Project Operation-Related Impact

The Project would not result in any changes to Forebay operations after Project construction is complete, and therefore would not result in the generation of additional wastewater. **No impact** would occur as a result of post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

IMPACT 3.14-2 **Potential Need for a New Water or Wastewater Treatment Facility, the Construction of Which Could Cause Significant Environmental Effects.** *Additional wastewater produced by the Project and water needed for dust control during construction would be temporary and would not result in the need for construction of an additional water or wastewater treatment facility. Therefore, **no impact** would occur during construction. **No impact** would occur with post-Project operation of the Forebay.*

Construction-Related Impact

During construction, water could be used from the Forebay reservoir or obtained from EID's treated water system under a permit for dust control and other construction-related activities. This demand would be accommodated by existing infrastructure and would not require a new water treatment facility.

Project activities would require construction crews to have access to potable water. The additional temporary demand would vary depending on the construction activity and the number of workers. This minor short-term demand would not require the construction of new sources of supply or water treatment facilities.

As mentioned above in Impact 3.14-1, Project activities would not affect wastewater generation or treatment capacity of wastewater systems because Project construction would be temporary and portable toilets would be provided at the construction site.

For these reasons, **no impact** would occur as a result of Project construction.

Post-Project Operation-Related Impact

No operational activities could result in the need for construction of a new water or wastewater treatment facility that could cause significant environmental effects. Therefore, **no impact** would occur as a result of post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

IMPACT 3.14-3 **Potential Need for New Stormwater Drainage Facility, the Construction of Which Could Cause Significant Environmental Effects.** *The Project would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities. Therefore, **no impact** would occur during construction. **No impact** would occur with post-Project operation of the Forebay.*

Construction-Related Impact

The removal of vegetation and compaction of soil associated with construction activities at the Forebay and in the borrow area could result in an increase of runoff into the existing drainage system; however, the increase would be temporary and minimal. The Project would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities. Therefore, **no impact** would occur as a result of Project construction. Further analysis of potential impacts from construction-related runoff and implementation of stormwater management strategies are addressed in Section 3.9, “Hydrology and Water Quality.”

Post-Project Operation-Related Impact

Project operations would increase the capacity of the Forebay reservoir. This would allow for increased operational flexibility for the storage and release of water. Project operations would not change the amount of runoff and therefore would not require the construction of a new stormwater drainage facility. **No impact** would occur as a result of post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

IMPACT 3.14-4 **Potential for Insufficient Permitted Landfill Capacity to Accommodate the Project’s Solid Waste Disposal Needs.** *Waste would be generated during Project construction. The waste generated would be minimal and would be disposed of in a permitted solid waste facility with sufficient capacity. Therefore, this construction-related impact would be **less than significant**. **No impact** would occur with post-Project operation of the Forebay.*

Construction-Related Impact

Project implementation would produce solid waste associated with construction materials and construction workers. Solid waste generated from the construction activities—including debris from structure demolition—would be transported to a permitted solid waste facility. No local landfill is currently open for disposal of solid waste; however, El Dorado Disposal, Inc. provides solid waste service to the Project site and has agreements to dispose of collected waste at the Kiefer Landfill in Sacramento County. This is an existing permitted landfill and

has capacity to serve the region’s future waste disposal needs for many years (Sacramento County 2013). The generated waste would be a minimal contribution to the daily waste load generated in the region and would therefore not cause the solid waste facility to exceed the maximum daily disposal limits. Therefore, this construction-related impact would be **less than significant**.

Post-Project Operation-Related Impact

Project operations would not generate new solid waste. Therefore, **no impact** would occur as a result of post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

IMPACT 3.14-5 **Relocation of Utility Service Infrastructure.** *Project construction would require the relocation of a power pole and associated power line, as well as a buried Supervisory Control and Data Acquisition (SCADA) and telephone communication line. This construction-related impact would be **less than significant**. **No impact** would occur with post-Project operation of the Forebay.*

Construction-Related Impact

The Project would require the relocation of a PG&E power pole and the associated power line a short distance from its current location at the base of the existing dam (EID 2013a). EID would coordinate with PG&E regarding the timing of power line relocation to ensure that the area’s power needs, including those of the Project, would continue to be met. The Project would also require relocation of a buried EID SCADA and telephone communication line that runs through the penstock valve house, along the crest of the existing dam, to the irrigation canal valve house. Because the line would require relocation, a temporary communication line to the valve house would be installed before completion of the embankment (EID 2013a). Therefore, this construction-related impact would be **less than significant**.

Post-Project Operation-Related Impact

No operational activities would require relocation of utility service infrastructure beyond the construction-related infrastructure relocation described above. Therefore, **no impact** would occur as a result of post-Project operation of the Forebay.

Mitigation Measures: No mitigation is required.

3.14.4 RESIDUAL SIGNIFICANT IMPACTS

Either impacts on utilities and service systems would be less than significant, or no impact would occur, as described above. There would be no residual significant impacts.

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4 ALTERNATIVES

4.1 INTRODUCTION TO ALTERNATIVES

The State CEQA Guidelines (Section 15126.6[a]) require that an EIR describe “a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives.” The purpose of the alternatives analysis is to describe the comparative effects of a range of reasonable alternatives that would reduce or eliminate one or more significant project impacts within the basic framework of the project objectives (State CEQA Guidelines, Section 15126.6[b]).

Alternatives considered in an EIR should be potentially feasible and should attain most of the basic project objectives. As described in Chapter 1, “Introduction,” of this DEIR, the specific objectives of the Project are:

- ▶ Safety: Meets dam safety regulatory requirements of the California Department of Water Resources Division of Safety of Dams (DSOD) and FERC
- ▶ Reliability: Protects and improves the water reliability for EID’s customers
- ▶ Financial: Protects EID ratepayers from the cost of required remediation through optimizing hydroelectric generation and minimizing capital costs

4.2 RANGE OF ALTERNATIVES CONSIDERED

The range of alternatives considered in an EIR is governed by the “rule of reason,” which requires evaluation of only those alternatives “necessary to permit a reasoned choice” (State CEQA Guidelines, Section 15126.6[f]). Further, an EIR “need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative” (State CEQA Guidelines, Section 15126.6[f][3]). The analysis should focus on alternatives that are feasible (i.e., that may be accomplished in a successful manner within a reasonable period of time) and that take economic, environmental, social, and technological factors into account.

CEQA requires that, among other alternatives, a “no project” alternative be evaluated in relation to the project. Moreover, the “no project” analysis must “discuss the existing conditions, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services” (State CEQA Guidelines, Section 15126.6[e]). Accordingly, a No-Project Alternative is analyzed in this DEIR at a level of detail sufficient to allow for a meaningful evaluation, analysis, and comparison with the Project.

This discussion identifies and addresses the following four alternatives:

- ▶ Project as proposed by EID
- ▶ No-Project Alternative
- ▶ Dam Retrofit with No Raise of Dam Elevation
- ▶ Dam Retrofit with 3-Foot Dam Raise

4.3 DESCRIPTION OF ALTERNATIVES

The following text describes each of the alternatives identified and carried forward for further consideration in this EIR. These alternatives were identified as feasible, even though they would not achieve all the project objectives.

4.3.1 ALTERNATIVE 1: NO-PROJECT ALTERNATIVE

DSOD and FERC require that the Forebay Dam be structurally strengthened to meet dam safety requirements for the protection of life and property. Implementing the No-Project Alternative would prevent EID from undertaking the Forebay Dam modifications to comply with DSOD and FERC safety requirements. Adoption of this alternative would violate DSOD and FERC dam safety requirements. It would be expected that, to correct public safety risks associated with dam failure, DSOD and FERC would impose further operational restrictions, fines, and potentially decommissioning of the dam, reservoir, penstock, and powerhouse if this alternative were to be implemented. Further, such actions would create substantial constraints on EID's ability to use its consumptive water supplies. EID is not willing to violate state and federal requirements and jeopardize water supplies for its customers.

Because no physical modifications to the Forebay Dam would be undertaken with this alternative, implementing the No-Project Alternative would not result in physical changes to the environment that would be associated with construction of dam remediation and embankment installation and operation of the Forebay. However, several substantial changes could become necessary if DSOD or FERC mandates restrictions on the operations of the Forebay beyond the current limits to water surface elevation that are in place until the Forebay Dam is modified. These changes could include substantial or complete reduction in reservoir water surface levels, installation of a gravity pipeline bypass around the reservoir footprint to provide water supplies to the EID service area, decreased community water reliability, reduction or elimination of hydroelectric power generation revenue, and high capital costs associated with powerhouse and penstock decommissioning construction activities.

If required, such changes would be implemented over 1–3 years.

Although DSOD and FERC dam safety requirements would be satisfied, further changes resulting from implementing the No-Project Alternative could eliminate the functional capability of the Forebay. As a result, other EID Project objectives would not be met, and other significant unintended adverse effects would occur to the EID public water supply and hydroelectric generation revenues.

4.3.2 ALTERNATIVE 2: DAM RETROFIT WITH NO RAISE OF DAM ELEVATION

Alternative 2 would involve implementing dam modifications to comply with DSOD and FERC dam safety requirements, but the dam crest would not be raised. Although EID found that this alternative would achieve the safety objectives of the Project, implementing this alternative would not achieve the Project's water supply reliability and financial objectives.

Because the dam would not be raised above its existing crest elevation of 3,794 feet, less borrow material would be needed to modify the dam when compared to the Project. Implementing Alternative 2 would require that an earthen stability berm be installed at the toe of the existing dam. Constructing the berm would require the

excavation, transfer, and placement of approximately 15,000 cubic yards of material from the borrow area. Another 5,000 cubic yards of material would need to be imported from off-site sources.

Sediment would need to be removed from the reservoir basin to regain a portion of the storage capacity lost by sedimentation and placed in the borrow area. Approximately 100,000 cubic yards of sediment would be removed to restore lost storage capacity of the Forebay and protect water quality of supplies being delivered for municipal water supply. In addition, EID might need to remove approximately 3,300 cubic yards of sediment each year.

Under this alternative, the capacity of the Forebay would continue to be limited to approximately 314 af because of minimum freeboard requirements. As stated in Chapter 2, “Project Description,” before DSOD and FERC ordered EID to restrict the reservoir to below the normal operational level, the reservoir had a storage capacity of approximately 350 af. Implementing this alternative would not restore water supply reliability to conditions that existed before restricted water storage limits were mandated by DSOD and FERC. Dredging activities would be required to be conducted with the reservoir dewatered for an extended period. The loss of water supply and hydropower generation during the dredging period would adversely affect EID’s water supply and revenue generation, as well as the renewable energy supply for California consumers. Other elements of this alternative would be similar to those of the Project, including improving the spillway chute, lining and backfilling the inlet canal, abandoning the two unused penstocks, armoring the reservoir side of the dam, and relocating the seepage pump-back station. The construction activities associated with these modifications would be similar to those of the Project.

This alternative would be constructed over 1–2 years.

Only one of EID’s three Project objectives would be achieved with implementation of this alternative.

4.3.3 ALTERNATIVE 3: DAM RETROFIT WITH 3-FOOT DAM RAISE

Implementing Alternative 3 would involve constructing dam modifications to comply with DSOD and FERC dam safety requirements and raising the dam crest 3 feet, to an elevation of 3,797 feet. In addition, this alternative could include seasonal and/or year-round use of 3- to 5-foot-tall flashboards, subject to DSOD and FERC approval. EID found that this alternative would achieve the safety objectives of the Project but would not achieve the water supply reliability and financial objectives.

Because the dam would be raised only 3 feet, less borrow material would be needed to construct the dam modifications when compared to the Project. Implementing Alternative 3 would require installation of an earthen stability berm at the toe of the existing dam extending up to 3 feet above the existing dam crest. Constructing the berm would require the excavation, transfer, and placement of approximately 40,000 cubic yards of material from the borrow area. Another 15,000 cubic yards of material would need to be imported from off-site sources.

Approximately 100,000 cubic yards of sediment would be removed to restore lost storage capacity of the Forebay and reduce turbid water discharges to the South Fork American River. In addition, EID might need to remove approximately 3,300 cubic yards of sediment each year. Dredging activities would be required to be conducted with the reservoir dewatered for an extended period. The loss of water supply and hydropower generation during the dredging period would adversely affect EID’s water supply and revenue generation, as well as the renewable energy supply for California consumers.

Under this alternative, the capacity of the Forebay would be about 350 af with the approved use flashboards. This volume of water would restore water supply reliability to pre-restriction conditions.

Other elements of this alternative would be similar to those of the Project, including improving the spillway chute, lining and backfilling the inlet canal, abandoning the two unused penstocks, armoring the reservoir side of the dam, relocating the seepage pump-back station, and relocating the drinking water valve house. The construction activities associated with these modifications would be similar to those of the Project.

This alternative would be constructed over a 1 to 2-year period.

This alternative achieves EID’s Project objective for safety. While this alternative would eliminate the current storage restriction required by FERC and DSOD, it does not improve the reliability of the drinking water system and optimize renewable hydroelectric power generation revenue.

4.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED CONSIDERATION

EID conducted a series of investigations to determine which dam remediation and embankment designs could be feasibly implemented to provide stability sufficient to meet DSOD and FERC requirements. Several alternative configurations were developed based on materials availability, constructability, economics, and the ability of the alternative to satisfy DSOD and FERC dam safety regulations (GEI 2011).

Of the alternatives evaluated, four alternatives were considered but two were eliminated from further consideration in this EIR. These two eliminated alternatives are discussed in Table 4-1.

Table 4-1 Alternatives Eliminated from Further Consideration in the EIR		
Alternative	Description	Reason for Elimination
20-Foot Dam Raise Alternative	Raising the Forebay dam crest by 20 feet to an elevation of 3,803 feet would require 220,000 cubic yards of material, which would be used to construct the stability buttress. The cost associated with implementing this alternative would be an estimated 45% greater than the cost of the Project.	This alternative was not found to be cost effective when the higher cost to construct was compared to the benefits achieved, even when the limited increase in hydroelectric power generation revenue compared to that of other alternatives was considered.
Alternative borrow area locations	Three alternative borrow areas are located within 20 miles of the Forebay: <ul style="list-style-type: none"> ▶ Snows Quarry ▶ California Department of Transportation Bullion Bend Stockpile (distance: 2 miles) ▶ California Department of Transportation Piney Point (distance: 7 miles) The quantity, quality, and suitability of the material present at these locations have not been confirmed.	Off-site borrow sources were not found to be cost effective because of increased cost associated with hauling the material over a greater distance and the cost of purchasing the materials from another source. Hauling borrow material to the Forebay would introduce an additional 7,000–9,000 haul-truck trips to local roadways over the 2-year construction period.

Source: Data compiled by AECOM in 2013

4.5 ANALYSIS OF ENVIRONMENTAL IMPACTS

4.5.1 ANALYSIS OF NO-PROJECT ALTERNATIVE

Implementing Alternative 1, the No Project Alternative, would prevent EID from complying with FERC and DSOD requirements. The environmental impacts identified in this EIR associated with implementing the Project would not occur because EID would not modify the dam. No changes to the physical environment associated with Forebay dam modifications would occur.

However, because the Forebay Dam would continue to be in non-compliance with FERC and DSOD requirements, continued operation of the facility would be jeopardized. Both FERC and DSOD have the authority and would likely enforce corrective actions that would alleviate a threat to public safety presented by a facility that does not comply with their respective requirements. Such corrective action could include further reductions in operating capacity, such as reduced stored water volume.

Continued operation of the Forebay at the currently restricted level of operations without the required repairs would be a violation of DSOD and FERC mandates and regulations. It is expected that to correct public safety risks associated with dam failure, DSOD and FERC would impose further operational restrictions, fines, and potentially decommissioning of the dam, reservoir, penstock, and powerhouse if this alternative were implemented. Further, such actions would create substantial constraints on EID's ability to access its consumptive water supplies. EID is not willing to violate state and federal requirements and jeopardize water supplies for its customers.

Additionally, implementing the No-Project would not meet EID's objectives of safety, service reliability, or financial stability for ratepayers. The continued operation of the Forebay is an integral component of FERC Project No. 184 and the existing EID water supply system. Continuing to operate the Forebay at the reduced capacity without making upgrades would eliminate renewable hydroelectric power production and decrease water supply reliability adversely affecting EID's customers and ratepayers.

4.5.2 ANALYSIS OF ALTERNATIVES 2 AND 3

Alternatives 2 and 3 would have environmental impacts similar to those of the Project. They would differ in the extent of the effects, their duration, and their magnitude. The following discussion addresses the major differences in potential impacts that would occur with implementation of either of these alternatives.

EFFECT ON AIR QUALITY AND GREENHOUSE GAS EMISSIONS

Implementing Alternative 2 or 3 would generate air pollutant and greenhouse gas (GHG) emissions similar to those associated with implementing the Project. Although these alternatives would require less earthen material to be excavated and hauled to the Forebay Dam location when compared to the Project, they would require up to 100,000 cubic yards of sediment be excavated from the reservoir and hauled to the primary borrow area for disposal. When combined with the smaller volume of earthen materials needed to construct the dam berm or 3-foot dam raise alternatives, the total volume of earthen materials that would be excavated would be similar to the volume of material needed to construct the Project.

Table 4-2 shows the volume of material that would be excavated and hauled under each alternative. The volume of earthen materials to be excavated and hauled using off-road equipment accounts for most of the earthmoving activities. The Project and Alternative 3 would require the same volume of material to be excavated and hauled. For the Project, 140,000 cubic yards would be excavated and hauled from the borrow area, whereas for Alternative 3 40,000 would be excavated and hauled from the borrow area and 100,000 cubic yards excavated from the Forebay. Alternative 2 would require that a volume equal to about 82% of the Project volume be excavated and hauled. For on-road equipment and trucks, implementing the Project would require a greater volume of material compared to Alternatives 2 and 3.

Table 4-2 Volume Estimates of Material to Be Hauled with Implementation of the Alternatives (Cubic Yards)			
Materials Movement	Project: 10-Foot Dam Raise	Alternative 2: Dam Retrofit with No Raise of Dam Elevation	Alternative 3: Dam Retrofit with 3-Foot Dam Raise
Borrow area to Forebay (off road)	140,000	15,000	40,000
Forebay to borrow area (off road)	0	100,000	100,000
Off-site source to Forebay (on road)	30,900	5,000	15,000
Total Off-road Volume Hauling	140,000	115,000	140,000
Total Materials Hauling	170,900	120,000	155,000
Source: Data compiled by AECOM in 2013			

As discussed in Section 3.3, “Air Quality,” construction emissions have the potential to represent a significant impact. Implementing the Forebay Dam modifications would temporarily generate emissions of reactive organic gases, carbon monoxide, oxides of nitrogen, particulate matter equal to or less than 10 micrometers in diameter, and particulate matter equal to or less than 2.5 micrometers in diameter. During construction, criteria air pollutants and precursors would be temporarily and intermittently emitted by a variety of sources: off-road equipment, on-road haul trucks and worker vehicles, soil disturbance, and burning of vegetation.

Implementing Alternative 2 would produce the least amount of air pollutant and GHG emissions among these three alternatives, and implementing Alternative 3 would produce roughly the same amount of air pollutants and GHG emissions as the Project. However, it is expected that during periods of routine Forebay dredging, as would be required for Alternatives 2 and 3, there would be a reduction of renewable power generation from FERC Project No. 184 facilities. This loss of clean energy generation would need to be replaced with other power sources on the statewide utility grid, which mostly likely would consist of natural gas generation systems. Therefore, there would be a corresponding increase in GHG emissions associated with the reduced power output from the EID hydroelectric facilities.

Similar to the Project, neither Alternative 2 nor 3 would exceed the thresholds of significance, and neither would violate any air quality standards or contribute substantially to an existing or projected air quality violation. These alternatives would generate construction-related fugitive dust and would result in a potentially significant impact,

and mitigation consistent with El Dorado County Air Quality Management District regulations would be required as a condition for implementation.

EFFECTS ON NOISE, TRANSPORTATION/TRAFFIC, RECREATION, PUBLIC SERVICES, AND UTILITIES AND SERVICE SYSTEMS

Alternatives 2 and 3 would have effects on noise, transportation/traffic, recreation, public services, and utilities and service systems similar to those of the Project because their construction would involve the same activities and actions to modify the Forebay Dam. Noise levels generated with construction of Alternative 2 or 3 would be similar to those of the Project. In addition, effects on local traffic movement and circulation, public services, and utilities and service systems with implementation of either alternative would be similar to those of the Project.

Similar to the Project, noise impacts generated by either alternative would be potentially significant and unavoidable, and impacts on traffic, public services, and utilities and service systems associated with Alternative 2 or 3 would be less than significant with mitigation.

However, because the dam modifications under Alternative 2 or 3 would be completed from 1 to 2 years, the duration of impact on these resources could be shorter than under the Project. Therefore, because the duration of the impacts could be less for Alternatives 2 and 3, their relative magnitude of impact is considered to be less than that of the Project.

EFFECT ON FORESTRY RESOURCES, BIOLOGICAL RESOURCES, AND CULTURAL RESOURCES

Alternatives 2 and 3 would have a lesser effect on forestry resources, biological resources, and cultural resources when compared to the Project. Because these alternatives would have a smaller impact area, they would have less potential to affect those resources that occupy the Project site, including sensitive plant and wildlife species and potentially undiscovered cultural resources.

Compared to the Project, Alternatives 2 and 3 would affect a smaller area during construction of the Forebay Dam modifications. These alternatives would have less potential to affect forestlands, biological resources, and cultural resources found in the immediate vicinity of the Forebay. Similar to the Project, Alternatives 2 and 3 would result in the permanent conversion of forestland to nontimber uses. Although the acreage of forestland converted under Alternatives 2 and 3 is estimated to be less than would be converted under the Project, the impact would still be considered significant based on significance criteria identified in the State CEQA Guidelines. Table 4-3 presents the estimated disturbance area of each alternative.

Based on this analysis, Alternatives 2 and 3 would affect less acreage than the Project and would therefore have a lesser impact on forestry resources and lesser potential to affect biological and cultural resources on the Project site. The alternatives would have a similar impact on noise-sensitive species. However, because Alternatives 2 and 3 would require shorter construction periods, the duration of impact on noise-sensitive species would be less.

EFFECT ON HYDROLOGY, WATER QUALITY, AND GEOLOGY AND SOILS

Alternatives 2 and 3 would have effects on hydrology, water quality, and geology and soils similar to those of the Project because their construction would involve the same activities and actions to modify the Forebay Dam.

**Table 4-3
Area of Effect for Project Alternatives (Acres)**

Construction Area	Project: 10-Foot Dam Raise	Alternative 2: Dam Retrofit with No Raise of Dam Elevation	Alternative 3: Dam Retrofit with 3-Foot Dam Raise
Additional Forebay inundation area	5.4	0	1.7
Borrow area ¹	Up to 77.3	8 acres for excavation + 30 acres for reservoir sediment disposal	23 acres for excavation + 30 acres for reservoir sediment disposal
Staging and construction areas	11.5	11.5	11.5
Total	Up to 94.2	49.5	66.2

Note:

¹ The estimated acreage for sediment disposal assumes that the placement of excavated material would occur at an average depth of about 2 feet. Additional lands would be needed in the borrow area for facilities to collect and store water draining from the excavated material until it thoroughly dries.

Source: Data compiled by AECOM in 2013

Project construction activities such as drilling, excavation, and materials hauling might disturb or mobilize sediments, which could affect total suspended solids, pH, turbidity, and dissolved oxygen levels. A short-term increase in sediment discharge might occur during construction and would be a potentially significant impact.

During construction, stockpiling of soils and earthmoving activities would remove soil cover, disturb soil particles, and alter site drainage patterns, creating conditions conducive to wind and water erosion. Erosion and sedimentation above natural levels could affect drainage patterns. Surface water quality could also be affected by the potential release of chemicals, including fuels, oils, and solvents, that could enter the drainages through surface runoff or by subsurface absorption through soils. Therefore, these construction-related impacts would be potentially significant.

As discussed in Table 4-2, Alternative 2 would disturb a smaller area needed for borrow materials. As shown, Alternative 2 would require about 10% of the earthen material as compared to the Project and about 37% of the material as compared to Alternative 3. However, with the need to dispose of sediments from the Forebay, the total volume of earthen materials disturbed by Alternative 2 would be about 82% of the material as compared to the project and Alternative 3.

Based on this information, it can be surmised that the potential effects of Alternative 3 would be similar in magnitude and severity to those of the Project. The effects of Alternative 2 would be expected to be less because a smaller volume of earthen material would be disturbed and the area of disturbance would be smaller. All alternatives have the potential to generate a significant environmental impact on water quality from the disturbance and movement of earthen materials required for Forebay Dam modification. However, mitigation measures are available to minimize potential impacts on water quality that could be applied to Alternatives 2 and 3. With these measures, impacts on water quality would be reduced to a less-than-significant level.

4.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The State CEQA Guidelines require identification of an environmentally superior alternative (Section 15126.6[e][2]). If the No-Project Alternative is environmentally superior, CEQA requires identification of the “environmentally superior alternative other than the no project alternative” from among the alternatives evaluated. The following information is intended make this identification.

Table 4-4 identifies whether each of the alternatives evaluated in this EIR would have no impact, a less-than-significant impact, or a significant impact for each of the environmental topics evaluated in this EIR.

Environmental Topic	Project: 10-Foot Dam Raise	Alternatives		
		Alternative 1: No-Project Alternative	Alternative 2: Dam Retrofit with No Raise of Dam Elevation	Alternative 3: Dam Retrofit with 3-Foot Dam Raise
Aesthetics	LTS	NI	LTS	LTS
Agricultural and forestry resources	S	NI	S	S
Air quality	LTS	LTS	LTS	LTS
Biological resources	LTS	NI	LTS	LTS
Cultural resources	LTS	NI	LTS	LTS
Geology and soils	LTS	NI	LTS	LTS
Greenhouse gas emissions	LTS	LTS	LTS	LTS
Hazards and hazardous materials	LTS	NI	LTS	LTS
Hydrology and water quality	LTS	NI	LTS	LTS
Noise	S	NI	S	S
Public services	LTS	NI	LTS	LTS
Recreation	LTS	NI	LTS	LTS
Transportation/traffic	LTS	NI	LTS	LTS
Utilities and service systems	LTS	S	LTS	LTS

Notes: LTS = less than significant; NI = no impact; S = significant.
Source: Data compiled by AECOM in 2013

As shown in Table 4-4, implementing the alternatives considered in this analysis would have mostly less-than-significant impacts on the environment. The Project and Alternatives 2 and 3 would have less-than-significant impacts on all environmental topics except construction-related noise emissions because mitigation is available to minimize or reduce most impacts.

Implementing the No-Project Alternative would avoid generating these construction-related environmental effects. However, EID would be unable to regain and optimize full reservoir operational use to improve the reliability of the drinking water system and optimize renewable hydroelectric power generation revenue. In addition, because continued operation of the Forebay could be jeopardized by further DSOD or FERC dam safety requirements, there would be a potentially significant impact on continued EID water supply reliability, as well as hydroelectric

power generation revenues enabled by the Forebay. The degree that such future restrictions might affect water supply reliability and hydroelectric power generation revenue is unknown at this time; however, additional restrictions (and thereby additional operational constraints) on Forebay operations would be anticipated, and there is a possibility that use of the Forebay could be eliminated. Continued water supply deliveries and hydroelectric power generation might require the construction of other facilities to replace the function of the Forebay.

The No-Project Alternative could be considered the environmentally superior alternative under CEQA because it would not result in the temporary physical changes to the environment associated with construction of the Dam modifications. However, because there is a potential for a long-term significant impact on EID's water delivery and hydroelectric power-generating utilities, which would not meet the Project objectives, the No-Project Alternative is not considered environmentally superior.

Based on the analysis presented in Table 4-4, the Project and Alternatives 2 and 3 would have similar effects on the environment. Each of these alternatives would affect similar resources and environmental qualities. The duration of the construction period would be longer for the Project when compared to Alternatives 2 and 3. Therefore, the duration of the construction-related impacts would be somewhat greater for the Project. These effects would be temporary and would cease at the end of construction.

Because a larger volume of earthen material would be excavated and a larger area along the reservoir shoreline would be inundated by implementing the Project, it would have greater impact on forestlands, vegetation communities, wildlife habitat, and other, similar resources as shown in Table 4-3. Although these Project impacts would be less than significant, they would be greater than the impacts associated with Alternatives 2 and 3.

Implementing either Alternative 2 or 3 would require annual dredging of sediments from the Forebay to maintain reservoir capacity. About 3,500 cubic yards of sediment would need to be removed, transported, and disposed of, which would most likely occur in the primary borrow area. Assuming a sediment disposal depth of 2-feet, this volume of sediment would annually affect about 1 acre of land. Additional land would receive this sediment each year over the foreseeable future. The hauling and disposal of this sediment would further contribute to air pollutant and GHG emissions from excavators, haul trucks, and spreading equipment each year. The loss of water supply and hydropower generation during the dredging period would adversely affect EID's water supply and revenue generation, as well as the renewable energy supply for California consumers.

Based on the data and analysis presented in Tables 4-2, 4-3, and 4-4 and in the preceding discussion, the Project is considered the environmentally superior alternative. This conclusion is based on the finding that although implementing the Project would initially affect a larger acreage of land for borrow materials, disturbance would cease at the end of construction. In contrast, Alternatives 2 and 3 would have a continuing impact on borrow area lands because of annual sediment disposal.

Although the No-Project Alternative could be considered the environmentally superior alternative as discussed above, it does not meet the Project objectives. Implementing the No-Project Alternative would potentially jeopardize EID's water supply and hydroelectric power generation abilities. The disruption of these services could result in secondary impacts on air quality and domestic water supplies through the need to generate alternative energy supplies for the statewide grid (likely natural gas) and decreased reliability and utilization of alternate water supplies for customer and ratepayers typically supplied from the Forebay. The Project is, therefore, the environmentally superior alternative

because implementation of the Project would achieve all the specified objectives with similar environmental impacts as Alternatives 2 and 3, both of which do not achieve the specified objectives.

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5 CUMULATIVE IMPACT ANALYSIS

Both CEQA and the State CEQA Guidelines require that cumulative impacts be analyzed in an EIR. "Cumulative impact" refers to the combined effect of a project and other past, present, and reasonably foreseeable projects. This chapter describes the cumulative impacts associated with implementing the Project.

According to Section 15130 of the State CEQA Guidelines, an EIR must consider the magnitude of the impacts in light of other projects and actions that could add to and make more severe the effects of the proposed project. A cumulative impact analysis is not provided for environmental effects on which the proposed project would have no impact. Because the intent of the cumulative impact analysis is to identify whether the proposed project may make a considerable contribution to a larger effect, a conclusion of "no impact" means that the project would make no contribution to a particular environmental effect, rendering moot any further consideration of that issue in the EIR.

For any significant cumulative impacts to which the proposed project would contribute, the EIR must determine whether the project's contribution would be "considerable." A contribution is cumulatively considerable if the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

If the project's contribution would not be considerable, then neither further analysis of the issue nor identification of feasible mitigation measures is required. If, however, the proposed project's contribution to the significant cumulative impact would be considerable, then the EIR must describe potentially feasible mitigation measures, if available, that would avoid or reduce the magnitude of the contribution to a less-than-considerable level. If such measures are not available and the project contribution would remain considerable after application of all feasible mitigation measures, then the impact is deemed "cumulatively significant and unavoidable."

As stated in the State CEQA Guidelines (14 CCR Section 15130[b]), the discussion of cumulative impacts must reflect the severity of the impacts, as well as the likelihood of their occurrence; however, the discussion need not be as detailed as the discussion of environmental impacts attributable to the project alone.

5.1 GEOGRAPHIC SCOPE

The geographic area that could be affected by implementing the Project varies, depending on the type of environmental topic being considered. When the impacts of the Project are considered in combination with those of other past, present, and reasonably foreseeable projects to identify cumulative impacts, the geographic area of other projects considered may also vary, depending on the type of environmental impacts being assessed.

The general geographic area associated with the different environmental impacts of the Project defines the boundaries of the area used to compile the list of projects considered in the cumulative impact analysis. Table 5-1 presents the general geographic areas associated with the different resources addressed in this EIR.

**Table 5-1
Geographic Scope of Cumulative Impacts**

Issue Area	Geographic Area
Aesthetics	Project site
Agricultural and forestry resources	Project site
Air quality	Region (El Dorado County Air Quality Management District)
Biological resources	Project site and region
Woodland habitat and wildlife corridors	Project site with regional implications
Sensitive aquatic habitat	Project site with regional implications
Special-status plant and wildlife species	Project site with regional implications
Fish and aquatic habitats	Project site and portions of South Fork American River
Cultural resources	Project site with regional implications
Geology, soils, and seismicity	Project site
Greenhouse gas emissions	Globe
Hazards and hazardous materials	Project site and vicinity
Hydrology and water quality	Project site and vicinity
Noise	Project site and vicinity
Public services	Project site and vicinity
Recreation	Project site and vicinity
Transportation/traffic	Project site and vicinity
Utilities and service systems	Project site and vicinity
Source: Data compiled by AECOM in 2013	

5.2 LIST OF OTHER RELATED ACTIONS AND PROJECTS THAT MAY CONTRIBUTE TO CUMULATIVE ENVIRONMENTAL IMPACTS

EID is continually maintaining or upgrading facilities or installing new facilities in its service area to meet the existing and planned future water demands of its customers. Facility improvements and modification are required to achieve EID’s mission to provide high-quality water, wastewater treatment, recycled water, hydropower, and recreation services in an environmentally and fiscally responsible manner.

Projects are implemented by EID through its *Five-Year Capital Improvement Plan* (2012). This plan is updated annually to forecast funds needed for the implementation of capital improvements for EID facilities. Although numerous EID projects may be implemented in a similar time frame, EID’s facilities are so dispersed that impacts associated with these projects might not combine in a cumulative manner with impacts of the Project. For example, various projects, such as wastewater facility improvements in the western portions of the EID service area near El Dorado Hills, are so distant from the Project site or not connected with drinking water or hydroelectric facilities that their impacts would not contribute to cumulative impacts related to noise, traffic, aesthetic resources, or other environmental topics that are site specific in character. Other topics, such as air quality, are more regional in character; therefore, distant projects might contribute to a cumulative impact. EID’s

current capital improvement plan identifies projects that would be implemented from 2013 through 2017, many of which are not likely to contribute to a cumulative environmental impact.

The list of past, present, and reasonably foreseeable projects used for this cumulative impact analysis includes projects expected to occur at EID facilities that are close enough to have a cumulative impact or sufficiently similar to have potential impacts on the same environmental resources. These projects are summarized in Table 5-2. This list is not intended to be an all-inclusive list of related EID projects in the region. Rather, these are EID projects that are planned and that may affect the same resources that the Project would affect.

Project Name	Status	Project Summary
Main Ditch Piping	2016–2017 construction	Replace 15,000 feet of ditch with pipeline to reduce seepage and evaporation losses.
Reservoir 1 WTP Upgrades	2016 construction	Complete required upgrades to control the formation of disinfection byproducts and remain compliant with regulatory requirements.
Sly Park Intertie Upgrades	2016 construction	Provide interior coating protection to end corrosion that is occurring in 4.9 miles of pipeline.
Flume 46A and 47 Replacement	2015 construction	Install 140 feet of new concrete flume, and remove hazardous trees and rocks to reduce the potential for future flume damage.
Echo Conduit Replacement	2017 construction	Replace 36-inch steel pipe and tunnel because of slippage and rock-fall damage.
Flume 52A Replacement	2016 construction	Replace 400 feet of wooden flume with new flumes, and remove hazardous trees and rocks to reduce the potential for future flume damage.
El Dorado Canal Relining Program	2016–2017 construction	Identify structural deficiencies, and make corrections.
Flume 42 Replacement	2014–2015 construction	Install 432 feet of new concrete flume, and remove hazardous trees and rocks to reduce the potential for future flume damage.
Flume 44 Replacement	2016 construction	Install 436 feet of new concrete flume, and remove hazardous trees and rocks to reduce the potential for future flume damage.
Blakeley Reservoir Improvements	2015 construction	Install a downstream valve and slip lining of the outlet conduit.

In addition to these EID projects, other projects are expected to be implemented by other entities at approximately the same time as the Project. Table 5-3 identifies these projects. These projects, including private property developments, general plan amendments, and other land use actions by the El Dorado County Development Services Department, are being implemented on a routine basis. These projects are occurring throughout El Dorado County, including projects located in the community of Pollock Pines and vicinity.

Table 5-3 Projects by Other Entities That May Contribute to Cumulative Environmental Impacts		
Project Name	Status	Project Summary
Caltrans Sly Park Road Undercrossing Bridge Replacement	2014 construction	Reconstruct U.S. Highway 50 ramp.
El Dorado County Transit Authority Blair Road at EID Canal Bridge Replacement	2015–2017 construction	Replace the bridge at the EID canal crossing, and complete widening and minor realignment at the bridge approaches.
Notes: Caltrans = California Department of Transportation; EID = El Dorado Irrigation District. Sources: Caltrans 2013; El Dorado County Transit Authority 2013		

5.3 POTENTIAL CUMULATIVE IMPACTS CONTRIBUTED TO BY OTHER PROJECTS

The various projects listed in Tables 5-2 and 5-3 may have the potential to generate impacts on the environment that may be either less than significant or significant, depending on their magnitude and severity, their proximity to nearby receptors, and whether they would cause exceedance of a health-based standard or regulatory limit.

Table 5-4 generally identifies the potential types of environmental impacts that could occur with implementation of the projects identified. Although this list may not identify all the impacts that could occur, it does provide a basis of focusing the discussion of cumulative impacts that could occur in combination with the Project.

The projects listed in Table 5-4 would have many similar environmental impacts. Certain projects are so similar that their environmental impacts would be different only because of site-specific conditions unique to those projects. Otherwise, their impacts would be similar among each project group.

Potential environmental impacts that would be expected to be commonly encountered relate to noise, air quality, and greenhouse gas emissions. These impacts are directly associated with the use of construction equipment, haul trucks, and other vehicles.

Environmental impacts that might also be encountered but less often would include impacts on cultural resources, water quality, and traffic. These potential environmental impacts would be encountered when historical structures are being modified, when a project is located in or near a waterway, or when a project is located in a public road right-of-way or when a project would result in local increased traffic caused by the presence of additional vehicles or increased congestion caused by work and traffic controls on local roadways.

5.4 ANALYSIS OF POTENTIAL CUMULATIVE IMPACTS

The analysis presented in Chapter 3, “Environmental Setting, Impacts, and Mitigation Measures,” identifies multiple less-than-significant and significant impacts that could potentially occur with implementation of the Project. Each of these impacts is discussed further in this section because these impacts might act in a cumulative manner to create a significant cumulative impact. Those environmental topics for which the Project would have no impact have been eliminated from further discussion because the Project would not contribute to a cumulative impact.

**Table 5-4
Environmental Impacts of Projects Contributing to Cumulative Impacts**

Project Name	Potential Cumulative Impacts
Main Ditch Piping Flume 46A and 47 Replacement Echo Conduit Replacement Flume 52A Replacement Flume 42 Replacement Flume 44 Replacement	Construction equipment noise Air quality impacts from equipment exhaust and fugitive dust emissions Greenhouse gas emissions from equipment exhaust Loss of wetland or vegetation from seepage control and vegetative clearing Impacts on special-status plant and animal species Impacts on local water quality from construction area runoff, accidental discharges, or erosion Impacts on cultural or historical features
Sly Park Intertie Upgrades	Construction equipment noise Air quality impacts from equipment exhaust, fugitive dust emissions, or use of other coatings or solvents Greenhouse gas emissions from equipment exhaust Impacts on local water quality from construction area runoff, accidental discharges, or erosion
El Dorado Canal Maintenance Program	Construction equipment noise Air quality impacts from equipment exhaust, fugitive dust emissions, or use of other coatings or solvents Greenhouse gas emissions from equipment exhaust Impacts on local water quality from construction area runoff, accidental discharges, or erosion Impacts on cultural or historical features
Caltrans Sly Park Road Undercrossing Bridge Replacement	Construction equipment noise Air quality impacts from equipment exhaust, fugitive dust emissions, or use of other coatings or solvents Greenhouse gas emissions from equipment exhaust Impacts on local water quality from construction area runoff, accidental discharges, or erosion Impact on cultural or historical features Impact on traffic movement and circulation
El Dorado County Transit Authority Blair Road at EID Canal Bridge Replacement	Construction equipment noise Air quality impacts from equipment exhaust, fugitive dust emissions, or use of other coatings or solvents Greenhouse gas emissions from equipment exhaust Loss of wetland or vegetation from seepage control and vegetative clearing Impacts on special-status plant and animal species Impacts on local water quality from construction area runoff, accidental discharges, or erosion Impact on cultural or historical features Impact on traffic movement and circulation
Notes: Caltrans = California Department of Transportation; EID = El Dorado Irrigation District; SCADA = supervisory control and data acquisition. Sources: Compiled by AECOM in 2013	

The analysis concludes that the Project would not contribute to a cumulative impact caused by the combined effect of past, present, or foreseeable future projects, in a manner that would be cumulatively considerable. The incremental effect of the Project on the environment would be less than significant when considered cumulatively.

5.4.1 AESTHETIC RESOURCES

Implementing the Project would not contribute a considerable amount to a cumulative impact on aesthetic resources. The Project would have no impact on designated scenic vistas. Therefore, the Project would not contribute to a cumulative impact on these resources.

The Project would have a less-than-significant impact on nighttime view by creating a source of light on the visual landscape from areas surrounding the existing Forebay. The spill of light from the construction site onto nearby residences could alter the nighttime views of the area, obscure the nighttime sky, and alter the aesthetic quality of the nighttime environment. The addition of light and glare would be a short-term impact that would cease at the end of construction. Because this impact is a short-term change, it is expected to pose only a nuisance to local viewers and would not constitute a significant impact on the environment. The other ongoing and reasonably foreseeable projects would not contribute to a cumulative impact on nearby viewers. They are too distant from the Project construction site to contribute additional nighttime light. No cumulative impact from creating a source of light would occur.

Forest cover would be removed during Forebay Dam modification and would alter the existing limited view areas below the Forebay Dam. The dam would become more visible from a viewpoint below the dam. Changes to the landscape as seen from this viewpoint would include removal of forest cover and exposure of the Forebay Dam. This change to the visible landscape would be limited to the immediate area and would not act in a cumulative manner with other projects. No cumulative impact from altering this view would occur.

Other changes to views of the Forebay resulting from vegetation removal and grading would be less than significant. The other ongoing and reasonably foreseeable projects would not contribute to a cumulative impact on views. They are too distant from the construction site to further alter this view. No cumulative impact would occur.

5.4.2 AGRICULTURAL AND FORESTRY RESOURCES

Implementing the Project would not contribute a considerable amount to a cumulative impact on agricultural or forestry resources. Implementing the Project would not affect agricultural land and would not contribute to a cumulative impact on agricultural lands. It would cause the conversion of up to 89 acres of forestland. Although none of the acreage is located in an area designated as a Timberland Production Zone, the lands do support marketable timber. The loss of this forestland would be a significant impact.

Implementation of other ongoing and reasonably foreseeable projects also has the potential to remove forestlands from timber production. For some projects, the removal of trees would be offset with the replanting of trees where suitable; however, for other projects, permanent removal and conversion to a nonforest use would occur.

More than 633,000 acres of forestland exist in El Dorado County, 411,000 acres of which are publicly owned (TSS Consultants 2010). The acreage of forestland that would be affected by the Project is approximately 0.02%

of the publicly owned forestlands in the county. The loss of these forestlands would not be a considerable contribution to the total El Dorado County forestland total. The loss of up to about 89 acres of forestland with the Project together with implementation of other ongoing and reasonably foreseeable projects that are anticipated to result in incidental forestland conversion would not constitute a considerable contribution to the cumulative loss of forestland in El Dorado County.

5.4.3 AIR QUALITY

Implementing the Project would not contribute a considerable amount to a cumulative impact on air quality. The impacts of the Project on air quality include a potential conflict with or obstruction to implementation of an air quality plan, potential for violation of an air quality standard, cumulatively considerable net increase of a criteria pollutant, exposure of sensitive receptors to substantial pollutant concentrations, and creation of objectionable odors. The air quality impacts resulting from Project implementation were found to be less than significant or less than significant with mitigation.

The Project would not substantially increase mobile-source emissions that were previously included in the El Dorado County Air Quality Management District (EDCAQMD) air quality attainment plan (AQAP). Accordingly, implementation of the Project would not exceed the assumptions used to develop the current plan and would not obstruct or conflict with the AQAP. The Project would also not exceed the recommended thresholds of significance for emissions of ozone precursors (reactive organic gases [ROG] and oxides of nitrogen [NO_x]). Because implementing the Project would not result in a significant increase in ROG and NO_x emissions, the Project would not conflict with or obstruct implementation of the AQAP. Therefore, implementing the Project would not contribute to a conflict with the AQAP caused by the cumulative emissions of the ongoing and reasonably foreseeable projects.

Implementing the Project would generate construction-related emissions of criteria air pollutants, but at levels that would not exceed EDCAQMD thresholds. It would not impede attainment and maintenance of the ambient air quality standards. With implementation of Mitigation Measure 3.2-2, construction-related PM₁₀ (particulate matter equal to or less than 10 micrometers in diameter) emissions would be less than significant. Therefore, the Project would not contribute to a violation of applicable air quality standards caused by the cumulative emissions with the other ongoing and reasonably foreseeable projects. Because construction would be completed in a 2-year period, the Project would not result in long-term (i.e., 70-year lifetime exposure period) emissions of toxic air contaminants (TACs), such as diesel particulate matter in the immediate vicinity of sensitive receptors. Therefore, implementing the Project would not expose nearby receptors to TAC emissions for a period long enough for the TACs to combine in a cumulative manner with TACs from other sources. The other ongoing and reasonably foreseeable projects would also emit TACs for a short period, avoiding long-term exposures to nearby receptors. Therefore, implementing the Project would not contribute the long-term exposure of TACs caused by the cumulative emissions with the other ongoing and reasonably foreseeable projects.

Given the location of the Project, the distance of the Project area from sensitive receptors, and the regulation mandating compliance with applicable EDCAQMD requirements, implementing the Project would not expose nearby receptors to substantial pollutant concentrations associated with the burning of vegetative waste and debris. EDCAQMD rules require that a burn permit be obtained and a smoke management plan be prepared and that open burning be conducted only on designated burn days. All burning activities would be designed and implemented in a manner that would minimize impacts on local and regional air quality. Smoke from vegetation

burning cannot be eliminated, and short-term impacts on air quality are inevitable. However, compliance with EDCAQMD rules and regulations would maximize the dispersal and dilution of smoke produced to avoid potential problems related to smoke production.

Other ongoing and reasonably foreseeable projects would also need to comply with EDCAQMD regulations, and smoke emissions would be subject to the same restrictions that apply to the Project. Adherence to these regulations would avoid creating adverse conditions that could conflict with EDCAQMD requirements or result in substantial air pollutant concentrations. The cumulative impact of the Project combined with impacts of other ongoing and reasonably foreseeable projects would be less than significant.

5.4.4 BIOLOGICAL RESOURCES

Implementing the Project would not contribute a considerable amount to a cumulative impact on biological resources. A total of 26.11 acres of potential jurisdictional waters of the United States have been delineated on the Project site. Direct impacts on wetlands and riparian habitat would result from construction activities, including the permanent loss of wetland features located below the dam and at areas around the reservoir shoreline. Project construction activities, such as excavation, materials hauling, might disturb or mobilize sediments, which have the potential to affect total suspended solids, pH, turbidity, and dissolved oxygen levels in local surface waters. A short-term increase in sediment discharge might occur during construction, causing a potentially significant impact. Up to 88.6 acres of forestland might be removed as a result of implementing the Project. Because construction activities would affect Sierran mixed conifer forest, which contains tree and plant species common and widely distributed throughout the area, construction of the Project would not affect a vegetative community that is unique or of limited distribution.

Implementing the Project would not contribute a considerable amount to a cumulative impact on biological resources. With mitigation as described in Section 3.4, “Biological Resources,” the Project’s impact on jurisdictional waters of the United States would be reduced to a less-than-significant level, and impacts on forest habitat would be less than significant.

Implementing other ongoing and reasonably foreseeable projects would also potentially affect jurisdictional waters of the United States and forestlands in El Dorado County. The extent of these impacts is unknown but could be significant. The implementation of measures to offset the loss of wetlands would reduce the contribution of the Project to this cumulative impact to a level that is not considerable. The replacement or restoration of wetlands would effectively eliminate the Project’s contribution to cumulative wetland losses.

The Project’s contribution to loss of forestlands in El Dorado County would not be considerably considerable because it would affect less than 0.02% of the total publicly owned forestlands in El Dorado County (TSS Consultants 2010).

Construction-related activities would introduce construction personnel, vehicles, and activities that could result in direct mortality of wildlife by harassment or collisions with vehicles. Direct loss of wildlife could result from construction activities, such as vegetation removal, grading and hauling, reservoir dewatering, and reservoir refilling.

The other ongoing and reasonably foreseeable projects have the potential to cause direct mortality of wildlife. This loss of individuals may combine in a cumulative manner, depending on specific species and circumstances causing their loss. With available measures, the Project would not make a considerable contribution to this cumulative impact. Potential direct mortality caused by the Project would be minimized and would not constitute a considerable contribution to a cumulative impact.

5.4.5 CULTURAL RESOURCES

Implementing the Project would not contribute a considerable amount to a cumulative impact on cultural resources. As discussed in Section 3.5, “Cultural Resources,” the Project has the potential to disturb unknown cultural resources or human remains that may be located on the project site. The potentially significant impact on these unknown resources is a conservative conclusion that acknowledges that such resources could be encountered during Project construction. Mitigation measures are recommended to reduce this potentially significant impact to a less-than-significant level.

The cumulative context for historical resources is the El Dorado Canal system. The cumulative context for archaeological resources and human remains is the tribal territory of the Nisenan (Southern Maidu), the Northern Sierra Miwok, and the Washoe. Development in the El Dorado County area over the past several decades has resulted in the demolition and alteration of known historical resources. Because each future project has an individual potential to affect such resources, independent from other projects, no systematic impact on archaeological resources from the implementation of these projects would be expected. Therefore, implementation of the Project, when considered with ongoing and reasonably foreseeable projects, would not make a considerable contribution to a significant cumulative impact on archaeological resources or human remains.

5.4.6 GEOLOGY AND SOILS

Implementing the Project would not contribute a considerable amount to a cumulative impact on geology or soil resources. Implementing the Project would not expose people or structures to increased risks that might be caused by surface rupture, liquefaction, strong seismic ground shaking, or landslides. It also would not contribute to a cumulative impact associated with these issues.

Project construction activities, including excavation, grading, trenching, backfilling, and transport of soil, could result in substantial soil erosion if not properly designed and controlled. Similar construction activities associated with the other ongoing and reasonably foreseeable projects could also result in substantial soil erosion. Mitigation measures are available to minimize the potential for accelerated erosion from construction sites. Although separated by distance and timing, cumulative loss of soil through erosion could occur.

The other projects have the potential to discharge to local surface waterways sediments with the excavation of soil material. Because these other projects are smaller and would not require the excavation and hauling of as much material as the Project, their potential to generate substantial discharges to local waterways is much less.

Because of the distance of the other projects from the Project site and their location in different watersheds, it is not expected that the combination of projects would act in a cumulative manner to cause an impact on geology or soils.

5.4.7 GREENHOUSE GAS EMISSIONS

The Project would not pose a considerable contribution to the cumulative production of GHG emissions.

Greenhouse gas (GHG) and climate change–related impacts are considered to be exclusively cumulative impacts; there are no noncumulative GHG emission impacts from a climate change perspective. Section 3.7, “Greenhouse Gas Emissions,” provides a detailed discussion of the Project’s contribution to the cumulative impact of global warming. The geographic context for GHG emissions is global. Neither EID nor any other agency with jurisdiction over the Project has adopted climate change or GHG reduction measures with which the Project would conflict.

5.4.8 HAZARDS AND HAZARDOUS MATERIALS

Implementation of the Project has the potential to temporarily increase risk of hazards from the transport, use, or disposal of hazardous materials used in the construction of the Project. In addition, the handling and use of hazardous materials could occur within 0.25 mile of a public school. Because of increased construction traffic and roadway restriction, implementing the Project could potentially interfere with the emergency vehicle access or evacuation. Finally, it has the potential to increase wildfire hazards in the Project vicinity, which is designated as a potentially high fire hazard area.

Other ongoing and reasonably foreseeable projects have similar potential to increase risk of hazards from the transport, use, or disposal of hazardous materials. They also could potentially interfere with emergency vehicle access or increase the risk of wildfire hazard. Because each project is different in size, scope, and location, the degree that each project would increase the potential risk is unknown.

Because of the distance of ongoing and reasonably foreseeable projects from the Project site and differences in implementation timing, it is not expected that the combination of projects would act in a cumulative manner to create impacts more severe than already identified for the Project. The various projects would not affect similar roadways or areas; therefore, they would not have compounding effect on the same road system or area.

The Project would not contribute to a cumulative impact on hazards and hazardous materials, along with other ongoing or reasonably foreseeable projects.

5.4.9 HYDROLOGY AND WATER QUALITY

Implementing the Project would not contribute a considerable amount to a cumulative impact on hydrology or water quality. Project construction activities, such as drilling, excavation, and materials hauling, might disturb or mobilize sediments, which have the potential to affect total suspended solids, pH, turbidity, and dissolved oxygen levels in local surface waters. A short-term increase in sediment discharge could occur during construction, causing a potentially significant impact. During construction activities, the water level at the El Dorado Forebay reservoir would be drawn down by releasing water through the powerhouse penstock and to the Main Ditch below the reservoir. There would be no alterations to existing drainage patterns entering the Forebay. The inlet canal to the Forebay would be stabilized to prevent further soil slumping. The seeps immediately below El Dorado Forebay Dam, which are understood to be hydrologically connected to seepage of water stored behind the dam,

would be altered by construction activities. Seepage from the dam not recaptured at EID's existing seepage pump facility and pumped to the Main Ditch also contributes to the hydrology of the North Fork Long Canyon Creek.

During construction, stockpiling of soils and earthmoving activities would remove soil cover, disturb soil particles, and alter site drainage patterns, creating conditions conducive to wind and water erosion. Erosion and sedimentation above natural levels could affect the drainage. Surface water quality could also be affected by the potential release of chemicals, including fuels, oils, and solvents, that could enter the drainages through surface runoff or by subsurface absorption through soils. The removal of vegetation, development of skid trails, grading, and excavation of earthen materials could affect surface drainage patterns and result in concentrated runoff, rerouted flows, increased water velocities, and increased potential for flooding either on- or off-site. Stormwater runoff from the borrow area and areas below the dam would be conveyed to the North Fork Long Canyon Creek.

Other ongoing and reasonably foreseeable projects have the potential to discharge to local surface waterways sediments, fuels, oils, and solvents with excavation of soil material and the operation of construction equipment and trucks. Because these other projects are smaller than the Project and would not require the excavation and hauling of as much material as the Project, their potential to generate substantial discharges to local waterways is much less.

Because of the distance of the other projects from the Project site and their location in different watersheds, it is not expected that the combination of projects would act in a cumulative manner to create an impact on water quality.

5.4.10 NOISE

Implementing the Project would not contribute a considerable amount to a cumulative impact on noise. Noise generated by the construction of the Project would be substantially greater than ambient conditions, and therefore would be a temporary significant impact. Upon completion of construction, noise levels would return to preproject conditions typical of the rural residential land uses found in the area. The Project is not expected to produce a cumulative noise impact when considered with other past, present, and reasonably foreseeable projects.

Other future projects that could potentially contribute to cumulative noise impacts, as listed in Table 5-4, are either too distant to cause an appreciable noise increase or are separated in time from the Project so they would not combine cumulatively. Therefore, the increased noise generated by construction of the Project would not contribute to a cumulative impact of greater severity or magnitude than that caused by the Project alone.

The Project would generate ground-borne vibrations that would not pose a hazard to existing structures in the project vicinity. The impact of these vibrations would be less than significant. Potential vibration from other construction projects or activities is not expected to combine cumulatively with that of the Project. As discussed for impacts on noise, other future projects that could potentially contribute to cumulative vibration impacts, as listed in Table 5-4, either are too distant to cause a perceptible vibration increase or are separated in time from the Project, so they would not combine cumulatively.

5.4.11 PUBLIC SERVICES

Implementing the Project would not contribute a considerable amount to a cumulative impact on public services. Implementation of the Project would increase potential demand on local public services, including police and fire

protection services, and as discussed in Section 3.13, “Transportation/Traffic,” it could cause delays in local bus service, including the school bus service. These impacts would be potentially significant that would be mitigated to a level less than significant.

The other ongoing and reasonably foreseeable projects also could increase demand on police and fire protection services; however, the degree that demand may be increased is unknown. Because these other projects are temporary construction projects, they would not place a permanent or long-term burden on these services.

The cumulative impact on local bus service would be potentially significant. As discussed in Section 3.13, “Transportation/Traffic,” Mitigation Measure 3.13-2, which requires preparing and implementing a traffic control plan, would be capable of reducing the Project contribution to this significant cumulative impact to a less-than-considerable contribution.

5.4.12 RECREATION

Implementing the Project would not contribute a considerable amount to a cumulative impact on recreation resources. The impacts of the Project on recreation are limited to existing Forebay recreationists who would be required to seek alternative recreational opportunities at other locations in El Dorado County and generating construction noise at a level that would pose a nuisance to recreationists at the nearby senior center, horseshoe pits, and baseball field located near Forebay Road. Although these recreational facilities would experience nuisance noise during periods of construction, these facilities would remain open.

The impact caused by displacing up to 16,000 Forebay visitors annually over a 2-year period would be less than significant because Forebay recreational users would find a local substitute for recreational use, including local roadways, open space, and trails and other facilities including Sly Park Recreation Area and the Bridal Veil Picnic Area. The temporary displacement of recreational users to other facilities would not substantially deteriorate other recreational facilities.

Because the ongoing and reasonably foreseeable projects consist primarily of water, road, and wastewater infrastructure improvement projects, which would not require closure of an existing recreation area or cause the displacement of visitors to other recreation areas, these other projects would not contribute, along with the Project, to a cumulative impact. Therefore, no cumulative impact on the other alternative parks and recreational areas would occur.

The construction noise generated by the Project would not substantially degrade recreational activities at the nearby senior center, horseshoe pits, and baseball field. The increased noise might pose a nuisance to users at these facilities, however, because of the distance of the other ongoing and reasonably foreseeable projects from the Project site, it is not expected that construction noise from them would emanate to these facilities. Therefore, no cumulative impact from combined construction noise sources on the users of these facilities would occur.

5.4.13 TRANSPORTATION/TRAFFIC

Implementing the Project would not contribute a considerable amount to a cumulative impact on transportation and traffic. Implementing the Project would not cause a temporary reduction in the level of service (LOS). The

Project would potentially increase traffic hazards on local roadways. The increase in traffic hazards on local roadways would be a potentially significant impact that would be mitigated to a less-than-significant level.

Potential increases in background roadway traffic volumes associated with implementation of the Project could potentially cause a reduction in roadway LOS that falls below applicable standards set forth by El Dorado County or the California Department of Transportation. Because the Project would add only up to 10 vehicle trips per hour during peak traffic conditions, the marginal increase in traffic volumes on Project area roadways caused by Project-related construction traffic would not be a cumulatively considerable contribution.

Each of the projects considered in this analysis would add construction equipment onto Project area roadways. Haul trucks and heavy equipment used during the construction of the ongoing and reasonably foreseeable projects would interact with vehicle movements on existing roadways. The maneuvering of construction vehicles and equipment among the general purpose traffic on local roads could increase safety hazards.

The Project construction traffic could cause traffic safety hazards related to (1) conflicts where construction vehicles access a public right-of-way from the Project site, (2) conflicts where road width is narrowed or a roadway is closed during construction activities, or (3) increased truck traffic in general (and their slower speed and wider turning radii) during construction.

Implementing Mitigation Measure 3.13-2 would reduce the Project's considerable contribution to the potentially significant cumulative impact associated with increased traffic hazards on local roadways to a less-than-significant level because the traffic control plan would be used to ensure acceptable traffic flow through and/or around the construction zone and minimize traffic congestion.

Implementing Mitigation Measure 3.13-2 would reduce the Project's contribution to a less-than-significant level because the traffic control plan would be used to develop detours to ensure acceptable traffic flow through and/or around the construction zone and providing detour signs indicating alternate routes that could be used by transit users, bicyclists, and pedestrians.

5.4.14 UTILITIES AND SERVICE SYSTEMS

Implementing the Project would not contribute a considerable amount to a cumulative impact on utilities and public services. Implementing the Project would require the relocation of a power pole and associated power line, relocation of a buried supervisory control and data acquisition and telephone communication line. This action is independent of other projects and would not act in a cumulative manner. No cumulative impact would occur.

The construction waste generated by the Project and other ongoing and reasonably foreseeable projects in the vicinity would be of minimal volume. The El Dorado Disposal service disposes of solid waste at Kiefer Landfill, which provides waste disposal management for the region. Kiefer Landfill has capacity for the regional area for several years. The construction waste from the projects would be minimal, and the volume would not exceed the capacity of the Kiefer Landfill. Therefore, this cumulative impact would be less than significant.

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6 OTHER CEQA-REQUIRED SECTIONS

This chapter addresses significant irreversible environmental changes, irretrievable commitment of resources, and significant and unavoidable impacts that would occur with implementation of the Project. The IS found that implementing the Project would not result in growth-inducing impacts; therefore, that topic has been eliminated from further discussion in this EIR.

6.1 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

Section 15126.2(c) of the State CEQA Guidelines requires a discussion of the significant irreversible environmental changes that would occur if the proposed project is implemented. Significant irreversible environmental changes are those that involve the permanent loss of resources for future or alternative purposes. These resources cannot be recovered or recycled or are consumed or reduced to unrecoverable forms.

Implementing the Project would result in the irreversible commitment of the following energy and material resources during construction, operation, and maintenance of the proposed facilities:

- ▶ Construction materials, including metal, rock, soil, and concrete
- ▶ Land area committed to the Project facilities includes approximately 5 acres would be inundated by the Forebay expansion, approximately 19 acres would be altered for facility improvements, and about 140,000 cubic yards of earthen material excavated from up to approximately 77 acres would be disturbed in the primary and secondary borrow areas
- ▶ Energy expended in the form of electricity, gasoline, diesel fuel, and oil for equipment and haul trucks and other transportation vehicles that would be needed to construct the Project facilities
- ▶ Conversion of the borrow areas and Forebay expansion zone, which would no longer be suitable for long-term timber production

The use of these nonrenewable resources is expected to account for a minimal portion of the region's resources and would not affect the availability of these resources for other needs in the region.

The use of construction materials needed to implement the Project is considered an irretrievable commitment of resources. However, it is possible that these materials may be available for reuse at a future, unknown date if use of the Forebay Dam is ended, facilities are demolished, and recyclable materials are recovered.

6.2 SIGNIFICANT AND UNAVOIDABLE IMPACTS

CEQA Section 21100(b)(2)(A) provides that an EIR shall include a detailed statement setting forth "any significant effect on the environment that cannot be avoided if the project is implemented." Chapter 3, "Environmental Setting, Impacts, and Mitigation Measures," provides a detailed analysis of all the potentially significant environmental impacts of the Project, lists feasible mitigation measures that could be implemented to reduce or avoid the Project's significant impacts, and states whether these mitigation measures would reduce

these impacts to less-than-significant levels. If a specific impact could not be reduced to a less-than-significant level, it is considered a significant and unavoidable impact. In this EIR, some impacts are considered to be potentially significant and unavoidable because the occurrence and severity of the impact cannot be determined with certainty at this time. For CEQA purposes, a potentially significant and unavoidable impact is treated as if it were a significant and unavoidable impact.

The Project would have the following significant and unavoidable, or potentially significant and unavoidable, environmental impacts:

- ▶ Conversion of up to 89 acres of forestland to a nonforest use
- ▶ Generation of temporary construction noise that would be more than 5 decibels in excess of ambient conditions

7 REPORT PREPARATION

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8.22 CHAPTER 7, “REPORT PREPARATION”

No references cited in this chapter.

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APPENDIX A

Notice of Preparation, Initial Study, and Comments Received on the
Notice of Preparation and Initial Study

Notice of Preparation and Initial Study



**NOTICE OF PREPARATION AND PUBLIC SCOPING MEETING
El Dorado Forebay Modification Project
Environmental Impact Report**

Pollock Pines-Camino Community Center
2675 Sanders Drive, Pollock Pines, CA 95726
Monday, April 1, 2013, 6:00 p.m.

NOTICE IS HEREBY GIVEN that El Dorado Irrigation District (EID or District) staff will hold a California Environmental Quality Act (CEQA) scoping meeting to seek comments on the scope and content of the environmental information that should be included in the Draft Environmental Impact Report (EIR) for the El Dorado Forebay Modification Project (Project).

The Project would remediate the El Dorado Forebay Dam and its associated facilities to meet current dam safety requirements, as required by the California Division of Safety of Dams and the Federal Energy Regulatory Commission. The Project is designed to satisfy these specific regulatory mandates while also improving the reliability of the drinking water system and minimizing impacts to District ratepayers through increased hydroelectric revenue. The Project involves constructing an earthen stability buttress on the dry side of the dam, raising the dam 10 vertical feet, and upgrading appurtenant facilities. Construction is anticipated to occur over a two year period beginning in the spring of 2015 with completion in the fall of 2016.

As part of the CEQA review process, EID has prepared an Initial Study/Notice of Preparation to help determine the scope and content of the EIR. The Initial Study is available for public review from March 13, 2013 through April 11, 2013 at:

1. EID website at www.eid.org
2. Placerville Main Public Library, 345 Fair Lane, Placerville
3. Pollock Pines Public Library, 6210 Pony Express Trail, Pollock Pines
4. EID Customer Service Building, 2890 Mosquito Road, Placerville

EID is conducting a public meeting to provide a forum for the public to comment on the Project. These comments will assist EID staff in determining the scope and content of the Draft EIR, including helping EID to identify the range of alternatives, mitigation measures, and any potentially significant effects associated with the proposed project. We invite you to attend the meeting to learn more about this important project. If you would like to receive project updates that will be posted to the EID website, please sign up through our eNews at www.eid.org.

Comments on the Initial Study must be received by 5:00 p.m. on April 11, 2013. Requests for additional information and comments on the Initial Study can be sent to Brian Deason, Hydroelectric Compliance Analyst, El Dorado Irrigation District at 2890 Mosquito Road, Placerville, CA 95667, or bdeason@eid.org.

El Dorado Forebay Dam Modification Project

**El Dorado Hydroelectric Project
FERC Project No. 184**

Project Description / Initial Study Checklist

March 13, 2013



El Dorado Irrigation District
Project #03011H.01

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I. PROJECT DESCRIPTION

1.0 INTRODUCTION

The El Dorado Forebay (Forebay) is an off-stream reservoir impoundment, created by an earthen embankment dam, in El Dorado County, California, near Pollock Pines on the north side of U.S. Highway 50. The Forebay is a component of the El Dorado Hydroelectric Project, which is owned and operated by the El Dorado Irrigation District (District or EID) and licensed by the Federal Energy Regulatory Commission (FERC) as FERC Project No. 184. The District operates Project No. 184 facilities to provide water for drinking water supply and renewable hydroelectric power generation. A portion of the water delivered to Forebay is conveyed through the Main Ditch to a water treatment plant for distribution in the District's drinking water system. The remaining portion of water delivered to Forebay is conveyed to the El Dorado Powerhouse for renewable hydroelectric power generation.

The El Dorado Forebay Modifications Project (Project) is required to satisfy specific regulatory mandates issued, to the District, by both the California Division of Safety of Dams (DSOD) and the FERC to meet dam safety standards. Additionally the Project would improve the reliability of the drinking water supply and minimize impacts to District ratepayers through optimized power generation revenue. The Project involves constructing an earthen stability buttress on the dry side of the Forebay Dam, raising the Forebay Dam 10 vertical feet, and remediating associated facilities.

1.1 CEQA Review

The proposed El Dorado Forebay Modifications Project is a project under the California Environmental Quality Act (CEQA). In accordance with Section 15051 of the CEQA Guidelines, "Criteria for Identifying the Lead Agency", the District, as a public agency carrying out the proposed Project, is the lead agency. Therefore, EID has prepared this Initial Study to determine if the proposed Project may have a significant effect on the environment.

2.0 PROJECT OBJECTIVES

The Project is designed to meet the following objectives:

- Protect public safety by protecting residents, life, and property below the dam
- Comply with DSOD and FERC dam safety requirements
- Regain and optimize full reservoir operational use to improve the reliability of the drinking water system and optimize renewable hydroelectric power generation revenue

DSOD and the FERC have ordered the District to restrict the reservoir to below the normal operational level due to dam stability and freeboard deficiencies to protect the residents, life, and property below the dam (DSOD 2009; FERC 2009). The Project would increase the stability and provide sufficient freeboard to relieve the regulatory reservoir level operating restriction and meet DSOD and FERC dam safety requirements thereby protecting public safety. The Project

would also effectively recover reservoir capacity lost due to sediments accumulated in the reservoir since the reservoir construction.

Additionally, the Project would improve the District's ability to effectively manage water distribution to both drinking water supply and for renewable hydroelectric power generation. The Project would not affect or increase the District's diversion capacity, canal conveyance capacity, water rights, or hydropower generation capacity. The modified Forebay would continue to serve water for drinking water and hydroelectric demands with a normal maximum operating storage capacity of approximately 550 acre-feet (27 surface water acres) as compared to the existing storage capacity of approximately 350 acre-feet (23 surface water acres) (GEI 2013a). This capacity does not reflect the current operational restriction imposed by DSOD and FERC, which limits storage to approximately 300 acre-feet.

3.0 PROJECT LOCATION

The Project is located in El Dorado County, California, near Pollock Pines, on the north side of U.S. Highway 50, in the Pollock Pines USGS Quadrangle map, Sections 25 and 30, T11N, R12E and R13E (Figure 1). The Project site is on land owned either by the District or private parties; no construction, staging, or access would occur on or through federal lands. Portions of the Project are within the existing FERC Project No. 184 boundary. The total Project footprint is approximately 160 acres.

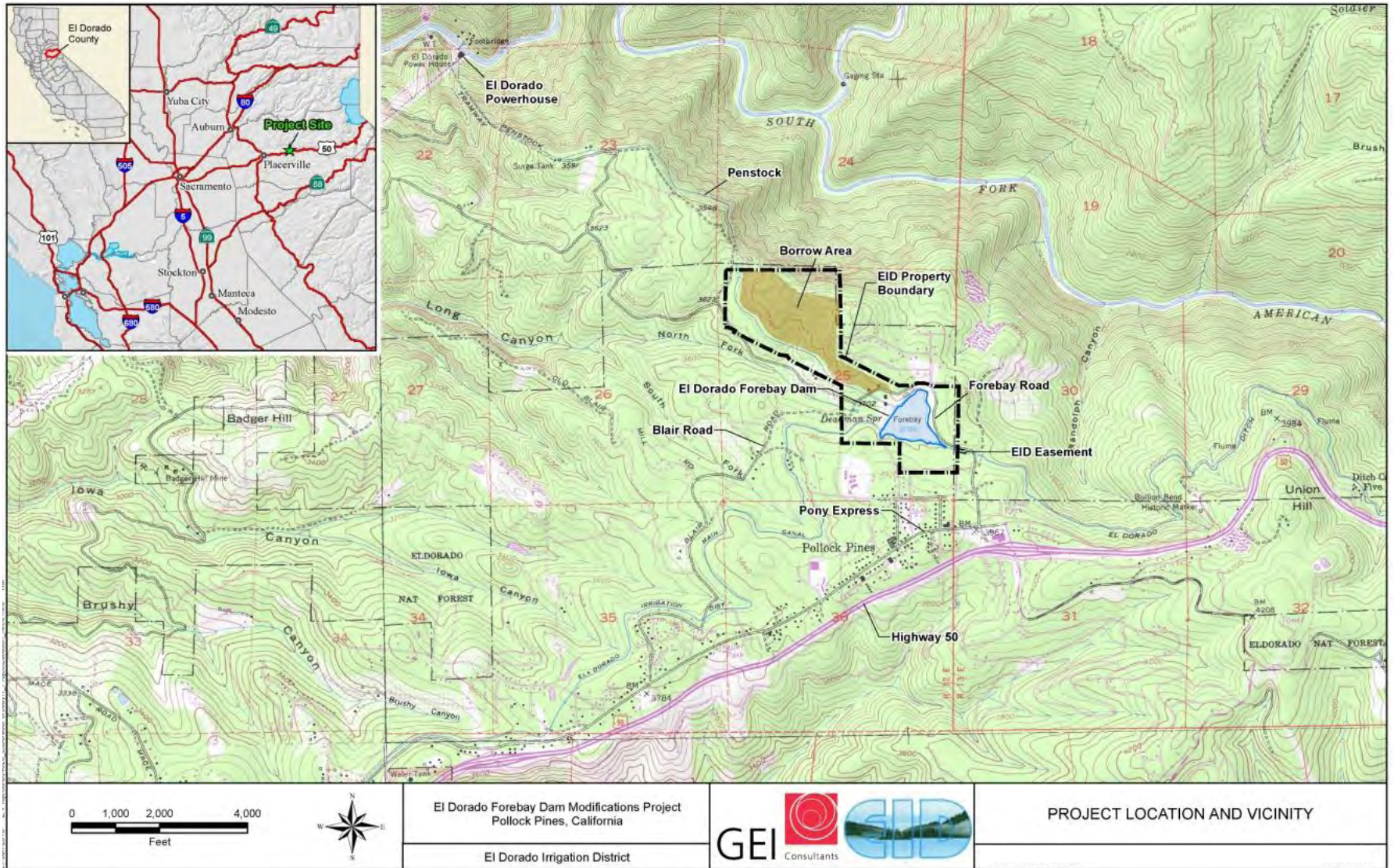


Figure 1. Project Location and Vicinity

4.0 PROJECT ELEMENTS

The Project is comprised of the following elements:

- Constructing an earthen stability buttress and raise the Forebay Dam to meet DSOD and FERC dam safety stability/freeboard requirements and improve emergency water storage and hydroelectric generation efficiency
- Remediating the emergency spillway structure, outfall, and stabilizing the unstable slope along the spillway channel to prevent continued erosion
- Repairing the existing unstable reservoir inlet to prevent further erosion and improve public safety
- Relocating the drinking water valve house to accommodate the stability buttress
- Relocating the dam seepage pump-back station to accommodate the stability buttress
- Abandoning the two unused penstocks within the dam and installing a control valve on the active penstock within the reservoir
- Armoring the reservoir side of the dam with riprap and repairing the wave-induced erosion
- Replacing the drinking water intake structure, installing a new control valve, and clearing accumulated sediments in front of the drinking water intake

Additional information regarding these Project elements is provided below and the general locations for these facility related improvements are depicted in Figure 2.

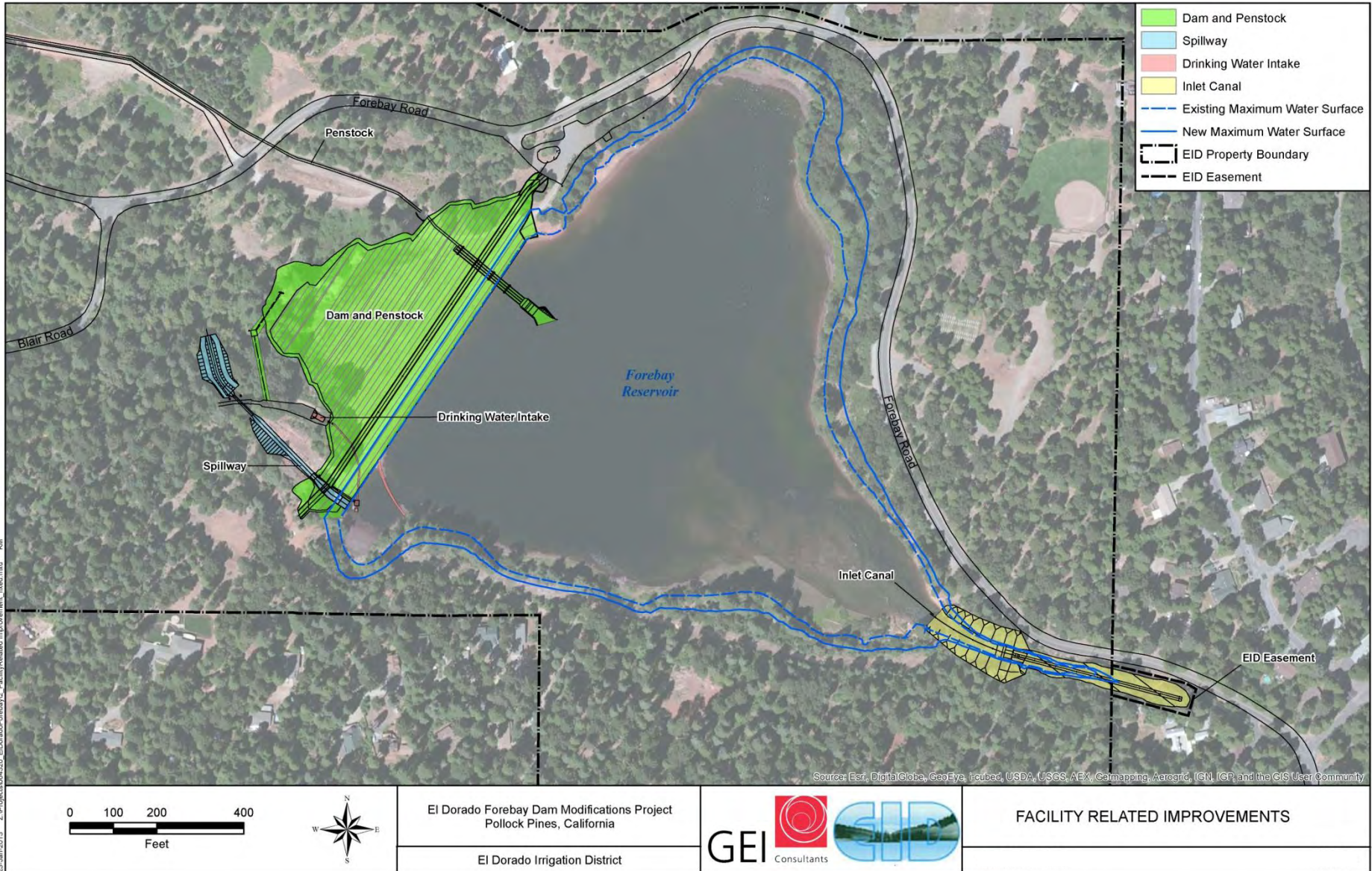


Figure 2. Facility Related Improvements at El Dorado Forebay

4.1 Construction of Earthen Stability Buttress

An earthen stability buttress would be constructed on the dry side of the Forebay Dam to meet regulatory dam safety requirements for the overall stability/freeboard of the dam. The construction of the stability buttress includes excavation to a competent foundation and placement of the buttress at the base of the dam. Preparation and treatment of the foundation under the buttress and appurtenant structures would be needed and include the following:

- A groundwater dewatering system to maintain unsaturated subsurface conditions within the excavation limits
- An earth-fill stockpile maintained near the dam during the toe excavation for dam safety purposes; FERC requires this measure to facilitate immediate remedial measures if dam instability is detected during the foundation excavation process
- Clearing topsoil and vegetation prior to excavation

The buttress would then be constructed by placing earth-fill and drain rock in thin layers, maintaining proper moisture levels and compaction. This process would be continued until the buttress is complete. The modified dam would be approximately 102 feet high and 940 feet long with a crest width of 15 feet. A conceptual drawing, of the cross-section of the existing and proposed dam embankment, is provided in Figure 3.

The modified dam would have an earth-filled dam with internal drainage as necessary for dam safety requirements. An interior drainage system to intercept and collect potential reservoir seepage flowing through the dam and abutments to reduce the potential for saturation of the new stability buttress. Seepage would be routed through a system of pipe underdrains to a replacement seepage pump-back station, where the water would be conveyed back into the Main Ditch consistent with current District operations. As part of the dam modifications, the existing survey monuments, piezometers, and reservoir seepage monitoring weirs would be removed and replaced.

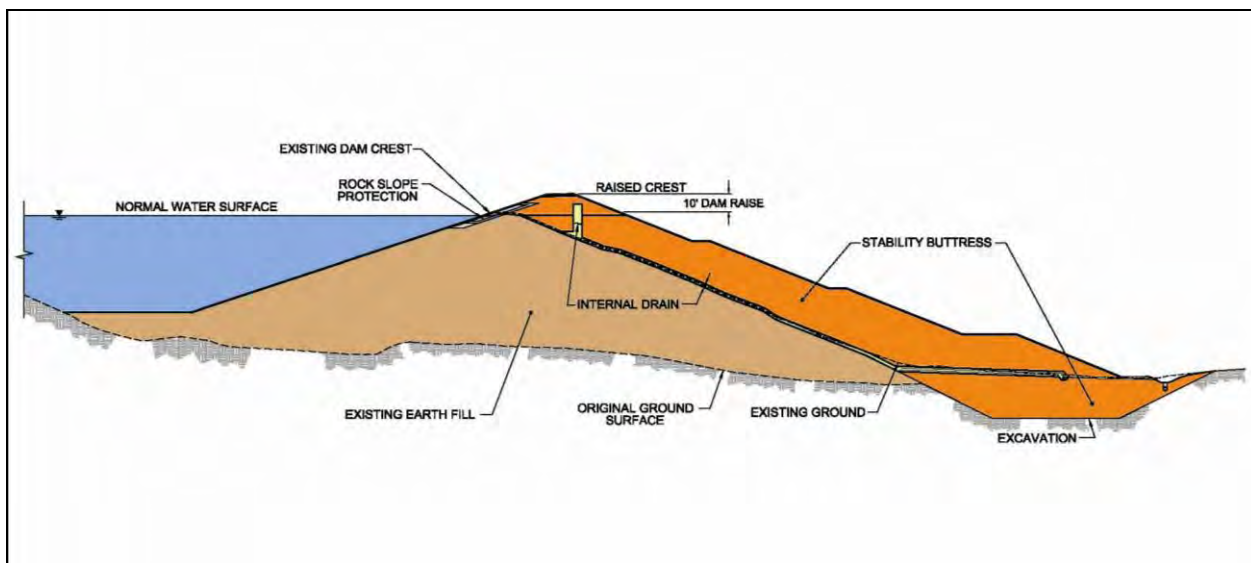


Figure 3. Cross-section of the El Dorado Forebay Dam

4.2 Remediate Spillway Structure

Portions of the spillway would be modified along its current alignment as a U-shaped reinforced concrete structure to accommodate the raised dam embankment. The control section of the spillway would be raised by 10 feet with a new weir wall establishing the sill. A new invert slab, higher side walls, pedestrian walkway, and flashboards would be provided. The existing log boom would be expanded and/or replaced with a new log boom sized for the modified reservoir.

The modified control section of the spillway joins the existing 11-foot-wide, 230-foot-long, gunite-lined spillway channel. The left (west) slope above the gunite lining has experienced some deterioration over the years. The portion of the slope excavated in rock would be scaled and protected with wire mesh anchored to the slope. The portion of the slope excavated in soil would be trimmed back to stabilize the slope and reduce erosion into the spillway.

The existing spillway channel transitions into a 6-foot-diameter steel pipe that conveys water over the Main Ditch. The pipe connects to a reinforced concrete inclined apron and to the hillside below the Main Ditch. An erosion gully has formed in the hillside below which would be rock-lined to reduce future erosion potential.

4.3 Repair Reservoir Inlet

The reservoir inlet is a 600-ft-long unlined earthen canal serving as the transition of the El Dorado Canal to the Forebay Reservoir originating from a tunnel under Forebay Road. The vertical canal slopes are unstable along their entire length. These conditions pose public safety concerns and are a source of sediment to the reservoir.

To stabilize this canal reach, the existing tunnel under Forebay Road would be extended to the reservoir by constructing a reinforced concrete conduit (channel) which would be backfilled above the conduit to mitigate the steep, unstable slopes. At the transition of the conduit to the reservoir, a concrete apron would be installed, and the side slopes and base would be flattened and lined with riprap (stone wall) to reduce the potential for erosion. A portion of this work would occur within a District easement on private property.

4.4 Relocate Drinking Water Valve House

The existing valve house is located within the footprint of the new stability buttress and would need to be relocated. The existing 36-inch pipe through the dam would be extended approximately 65 feet along the alignment of the Main Ditch to position the new valve house outside of the footprint of the modified dam. The portion of new pipe under the buttress would be founded (placed) on rock and encased in concrete. The control system in the new valve house would be replaced and maintain its current functions of transmitting operational data through radio telemetry to the District's SCADA System. The extended conduit would include an electronic flow meter which would replace the existing flow weir in the Main Ditch. The flow weir and measuring structure would be removed.

4.5 Relocate Dam Seepage Pumpback Station

The existing seepage pump-back station is within the footprint of the stability buttress and would need to be relocated. The existing house, piping and weirs would be removed. The new pump-back station would consist of a concrete wet well and vertical turbine pump enclosed in a new pump

house. A pipe system would route seepage from the new embankment filter/drain and existing clay tile drain to the wet well, where it would be pumped to the Main Ditch.

4.6 Abandon Unused Penstocks and Install Control Valve on Active Penstock

The existing Forebay Dam contains three 60-inch penstocks within its embankment. Two of the three penstocks are unused and terminate in a wooden vault under the dam. These two penstocks would be backfilled with concrete for proper abandonment and the existing wooden vault would be removed.

The concrete encasement of the active penstock would be extended to the base of the new buttress. A slide gate with a submersible hydraulic operator would be installed at the penstock intake structure so that the penstock through the dam can be isolated from the reservoir. To facilitate installation of the valve located on the penstock intake near the bottom of the reservoir, it is necessary to completely dewater the reservoir. The reservoir would remain in a dewatered state throughout the normal maintenance outage from October through December. Accumulated sediments around the penstock intake structure may also be removed depending on conditions discovered upon dewatering. The portion of the penstock between the existing dam and the existing penstock control valve would be exposed and encased in concrete. The penstock section within the dam would then be inspected on its interior and exposed exterior sections and repaired as necessary.

4.7 Armor Reservoir Side of Dam

Wave action within the reservoir has created an over-steepened slope just above the normal reservoir water surface and a flatter beach just below the water level. As part of the dam modifications, the eroded slope would be reconstructed to its original inclination and a riprap layer would be positioned to prevent erosion within the normal reservoir fluctuation zone.

4.8 Replace Water Intake Structure

The existing water intake structure would need to be relocated within the new reservoir footprint. The existing structure would be replaced with a steel structure which would be comprised of a walkway, maintenance deck, valve operator platform, trash rack, and control valve. The manually-operated slide gate would be installed at the intake structure so that the drinking water conduit through the dam can be isolated from the reservoir. Accumulated sediments in front of the drinking water intake structure within the reservoir affects water quality and limits operability of the intake at lower reservoir levels. A portion of the accumulated sediments would be removed while the reservoir level is lowered during construction.

5.0 CONSTRUCTION ACTIVITIES

In order to meet the requirements of the District's water and power operations, it is anticipated that the Project would be implemented in two construction seasons, starting in the summer of the first season in 2015 and ending in late fall / early winter of the second season in 2016.

The division of construction activities between the two seasons is largely dependent on reservoir water supply and power operations. Activities that require a lower reservoir level and no flow in the inlet canal would need to be constructed during the annual fall maintenance shutdown, typically conducted from October through mid-December. Activities that require no flow through the

drinking water intake and pipe would need to be constructed during the maintenance shutdown and winter low water demand period (typically from October through about mid-April) so that water customers can continue to receive uninterrupted water service from other EID sources.

Anticipated 2015 Activities

During the maintenance shutdown the inlet canal would not be conveying water to the reservoir, there would not be flow through the power and drinking water conveyances, and the reservoir would be lowered sufficiently to access the work areas within the reservoir. The following activities would be conducted during this maintenance shutdown time period:

- Repairing the existing unstable reservoir inlet
- Abandoning the two unused penstocks within the dam and installing control valve on the active penstock
- Armoring the reservoir-side of the dam to repair the wave-induced erosion
- Replacing the water intake structure, installing a new control valve, and clearing accumulated sediments in front of the drinking water intake
 - Work may continue into the winter and early spring of the second season with domestic water served from other District supplies

In addition, first season activities would include initiating dry side dam embankment construction. Embankment construction activities during the first season would begin prior to the fall shutdown and would continue until winter weather sets in. The first season embankment construction activities would include:

- Borrow area development
- Access road development and Forebay Road temporary shoring, if needed
- Foundation dewatering
- Clearing, grubbing, and stripping stability buttress footprint, and foundation excavation
- Backfill of stability buttress excavation
- Installation of drainage manifold, weirs, and seepage pump-back station
- Embankment construction, the extent of which would be based on late season weather conditions.

Anticipated 2016 Activities

The remaining construction activities would likely be conducted during the second construction season, with the reservoir, including power and drinking water conveyance facilities, remaining in operation. These activities would include:

- Completion of drinking water intake structure
- Construction of new spillway intake structure and installation of the pedestrian bridge
- Repairs to the spillway channel slope and construction of the spillway outlet slope protection
- Completion of embankment construction, including embankment and foundation drainage system
- Installation of embankment instrumentation

It should be noted that some of the activities may be undertaken during the first season provided sufficient construction time is available in the first season and weather permitting.

5.1 Construction Equipment

Contractor equipment could include a construction office and equipment trailers; warehousing and equipment maintenance facilities; and fuel pumps and fuel storage tanks. Mobile construction equipment utilized for the Project would depend on the selected contractor's planned operations, but may include the following typical equipment:

- excavators
- scrapers
- bulldozers
- graders
- rollers
- compactors
- conveyors
- water trucks
- highway trucks
- off-road hauling trucks
- concrete delivery trucks
- vehicle maintenance truck
- front-end loaders
- cranes
- pickup trucks
- drill rigs
- utility equipment to install power lines
- air compressors
- welding equipment
- pumps and piping
- generators
- back-up lighting systems
- communications and safety equipment
- timber harvesting equipment
- erosion control materials
- miscellaneous equipment customary to the mechanical and electrical crafts, and vehicles used to deliver equipment and materials

5.2 Access Roads and Staging Areas

Access to the Project site would be accomplished using established roads including, but not limited to, U.S. Highway 50, Sly Park Road, Forebay Road, Blair Road, Polaris Road, Drop-Off Road, and Pony Express Trail.

Staging areas would be selected and developed by the Contractor within limits approved by District. Several potential staging areas have been identified and are depicted in Figure 4.

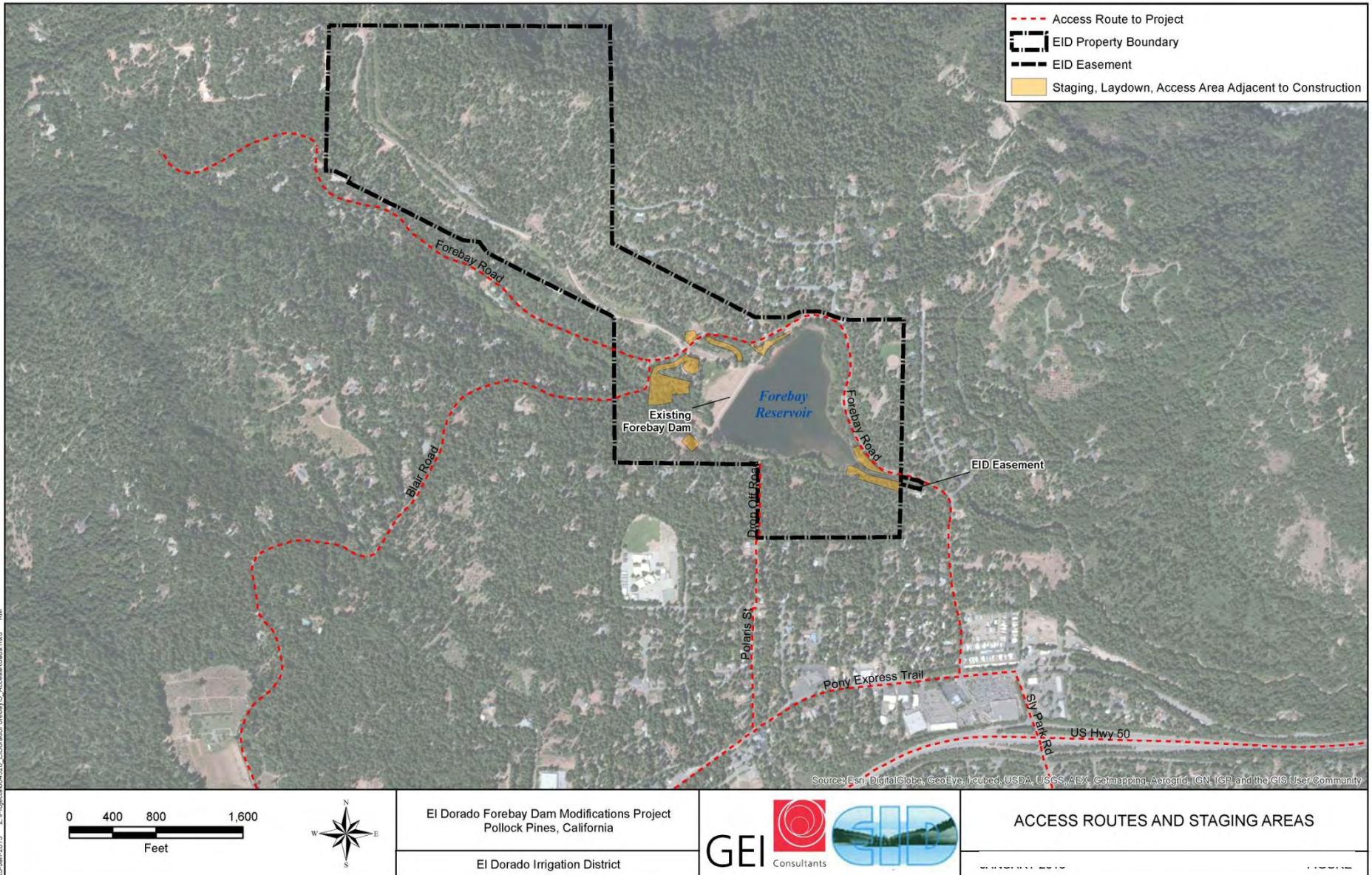


Figure 4. Access routes and staging areas

5.3 Reservoir Operations and Water Control During Construction

The District intends to operate the reservoir within the range of normal reservoir elevations during the majority of the construction of the Project. However, during the fall maintenance shutdown in the first year of construction, it is necessary to completely dewater the reservoir to gain dry access to the penstock intake and other facilities within the reservoir.

Temporary water control systems would be necessary for various Project elements. Water control systems would be required to manage reservoir storage, reservoir inflows, potential storm water inflows, reservoir seepage, and groundwater. Water control systems may utilize a variety of structures including, but not limited to, bladder dams, cofferdams, pumps/hoses, and wells. Water control systems would be designed to discharge either back into the reservoir or into the Main Ditch. Dewatering plans would be prepared prior to construction activities. Each dewatering plan would describe planned dewatering measures, including sequencing, dewatering methods, back-up power requirements, emergency provisions, and monitoring requirements.

5.4 Borrow Material

The estimated borrow material requirements for construction of the project are as follows:

Material Type	Quantity (cubic yards)	Borrow Source
Type 1 – Dam Fill	140,000	On-site borrow area
Type 2 – Filter Sand	13,000	Commercial quarry
Type 3 – Drain Gravel	2,000	Commercial quarry
Type 4 and 4A – Aggregate Base	1,400	Commercial quarry
Type 5 – Riprap Bedding	2,100	Commercial quarry
Type 6 – Riprap	4,800	Commercial quarry
Type 7 – Aggregate Sub-base	2,300	Commercial quarry
Box Culvert Backfill (Semi-Compacted Fill)	4,000	Project excavation or on-site borrow area

Sources for borrow material include the following:

- Embankment material would be obtained from a borrow area developed on District property located northwest of the dam and adjacent to and north of the penstock
- Aggregate and riprap materials would be obtained from commercial sources, most likely in the El Dorado County area

The earth-fill borrow area where source material for the Project would be obtained is identified in Figure 5. The borrow area is located adjacent to the Forebay Dam on the same District-owned parcel. Geotechnical surveys of the borrow area indicate that sufficient volumes of suitable earth-fill material can be obtained from the site. The borrow area has been divided into a primary and secondary section. Borrow material would be preferentially sourced from the primary borrow area. The secondary borrow area would only be utilized if insufficient or inadequate quality material can be obtained from the primary borrow area. The secondary borrow area has been designated as such to reduce the potential for impacts the adjacent residents.

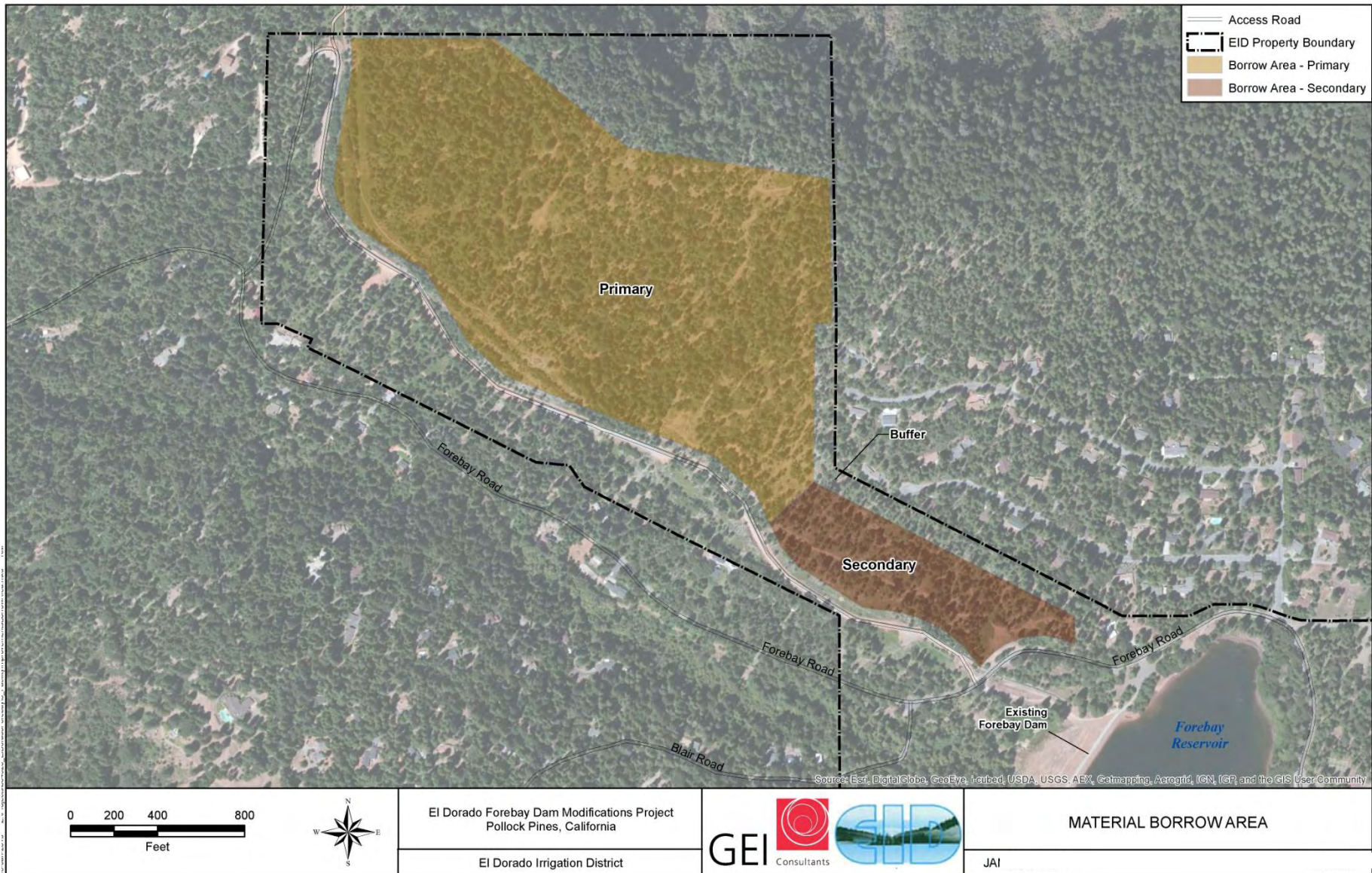


Figure 5. Earth-fill Material Borrow Area

A Timber Harvest Plan (THP) would be prepared prior to development of the on-site borrow area. Marketable trees would be sold and removed from the site. Shrubs and other non-marketable organic materials, including tree stumps, would be cleared and either burned or buried on-site, chipped, or removed for off-site disposal. After larger vegetation is cleared, the topsoil would be stripped and stockpiled for later use in borrow area restoration. Organic soils from stripping of the borrow areas, as well as organic material obtained from the stripping of the existing dam and buttress footprint, would be used as backfill for the Reservoir inlet box culvert, in the restoration of the borrow area, and other non-engineering earth-fill areas as needed for the Project.

The borrow area would be developed to form wide excavations up to 20 ft deep rather than narrow trenches. Existing drainages and drainage paths would be maintained. After completion of borrow excavation, the stripped soils would be used to partially backfill the excavations, and the borrow areas would be re-graded to smoothly blend with the adjacent land and would be re-vegetated with an appropriate seed mix as required by the THP and Storm Water Pollution Prevention Plan (SWPPP) requirements.

Haul roads would be developed within the borrow area and at the dam to reach various construction areas. A haul road would need to be developed from Forebay Road to the dam base. This haul road would be used to access the foundation excavation area, transport embankment material from the borrow area, transport excavation material to disposal areas, deliver earth-fill and construction materials, and for equipment access to other work areas at the base of the dam. This road would need to provide two-way traffic, have grades suitable for large earth-moving equipment, and a turning radius that would allow smooth operation without reversing. A second haul road would also need to be constructed from Forebay Road to the embankment above the penstock for construction of the upper portion of embankment. This road would also need to accommodate two-way traffic. After construction is completed, the haul roads would be developed for maintenance access or, if not needed, would be reclaimed. Dust and erosion control measures would be applied to roads and work areas on a systematic basis.

5.5 Construction-Related Traffic

Personnel, equipment, and imported materials (such as aggregate, riprap, concrete, pipe, etc.) would reach the site via Highway 50, Sly Park Road, Pony Express Road, Forebay Road, and Blair Road, which are paved, all-weather roads suitable for the anticipated loads. A secondary access route to the western portion of the reservoir and the dam's left abutment would be via Pony Express Road, Polaris Road, and Drop-off Road. The bridge crossing of Forebay Road over the District's penstock may need to be temporarily reinforced depending on the anticipated loads.

Earth-moving equipment transporting soil from the borrow area to the Forebay Dam would need to cross Forebay Road. Forebay Road would experience temporary closures during this phase of construction in compliance with El Dorado County Department of Transportation requirements. Traffic control measures would be implemented to ensure safe vehicular passage. It is expected that there would be delays for vehicles traveling on Forebay Road.

Based on the current available information, it is estimated that a total of 3,000 highway truck trips and 10,000 on-site haul trips would be required to complete the Project. The highway truck trips include mobilization, commercial quarried materials, construction materials, concrete, pipe, waste disposal, and timber harvesting. Necessary aggregate and riprap materials would be obtained from a commercial sand and gravel operation. The on-site haul trips include the transport of local borrow and excavated materials.

5.6 Relocation of Utilities

Several utilities would need to be relocated as part of the Project. A Pacific Gas and Electric (PG&E) power pole located near the toe of the dam would need to be relocated. The District is working with PG&E to coordinate the relocation of this power pole as a part of the Project. The District also maintains an underground communication line that runs from the penstock valve house, along the crest of the existing dam, to the drinking water canal valve house. This communications line would need to be removed and relocated as part of the Project. A temporary communication line may be installed, if deemed necessary.

5.7 Avoidance Areas

It is anticipated that some areas within the Project site would need to be avoided during construction. These avoidance areas would be identified prior to initiating construction activities, included within construction plans as appropriate, and would be protected by the installation of appropriate exclusion zone fencing.

6.0 ENVIRONMENTAL REVIEW AND POTENTIAL PERMITTING REQUIREMENTS

District CEQA review, District project approvals, and applicable permits would be required before commencement of the proposed Project activities. Table 1 lists the anticipated agency reviews and permits that would be necessary to implement the Project activities.

Table 1. Agency Review and Potential Permit Requirements

Agency	Applicable Laws/Reviews/ Approvals
El Dorado Irrigation District (CEQA Lead Agency)	Section 21000 et seq. of Public Resources Code and Section 15000 et seq. of the CEQA Guidelines
Federal Energy Regulatory Commission (National Environmental Policy Act; NEPA Lead Agency)	18 CFR Part 2.80, 380 (FERC NEPA Regulations) Non Capacity License Amendment 18 CFR 4.38
U.S. Army Corps of Engineers	Nationwide Permit Section 404 under Clean Water Act
U.S. Fish and Wildlife Service	Endangered Species Act, Section 7 Consultation, Fish and Wildlife Coordination Act
CA Division of Safety of Dams	California Water Code, Division 3 California Code of Regulations, Title 23
State Office of Historic Preservation	Section 106 of National Historic Preservation Act

Agency	Applicable Laws/Reviews/ Approvals
State Water Resources Control Board	Clean Water Act, Section 401, Water Quality Certification under Clean Water Act
Regional Water Resources Control Board, Central Valley Region	National Pollution Discharge Elimination System Construction Activities Storm Water General Permit (2009-0009-DWQ Permit)
CA Department of Fish and Wildlife, North Central Region	Fish and Game Code, Section 1600 et seq., Lakebed Alteration Agreement

6.1 FERC License Requirements

All work would comply with Project No. 184 license requirements. At this time, no temporary or permanent variances to current license requirements have been determined necessary to facilitate the Project. If variances are deemed necessary, all procedures defined in the license would be followed.

FERC has determined the Project involves “repair, modification or reconstruction of an existing dam that would result in a significant change in the normal maximum surface area or elevation of an existing impoundment (18 CFR 4.38).” Therefore, it is necessary for the District to prepare and file a non-capacity license amendment application to amend the maximum water surface elevation of the Forebay Dam. The District will be conducting the three-stage consultation license amendment process as specified in 18 CFR 4.38.

II. ENVIRONMENTAL CHECKLIST

1.0 OVERVIEW:

Project title: El Dorado Forebay Modifications Project

Lead Agency name and address: El Dorado Irrigation District
2890 Mosquito Road
Placerville, CA 95667

Contact person and phone number: Brian Deason
Hydroelectric Compliance Analyst
(530) 642-4064

Project location: Pollock Pines Quadrangle, Sections 30 and 31,
Township 11N, Range 13E, MDB&M

Project sponsor's name and address: El Dorado Irrigation District
2890 Mosquito Road
Placerville, CA 95667

Land designation: Private lands owned by the El Dorado Irrigation District, an easement on private property, and portions of Project activities occur within the El Dorado Hydroelectric Project-FERC Project No. 184 license boundary

2.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this proposed Project, involving at least one impact that is a "Less-than-Significant" or "Less-than-Significant with Mitigation" as indicated by the accompanying environmental checklist.

<input checked="" type="checkbox"/> Aesthetics	<input checked="" type="checkbox"/> Agriculture and Forestry	<input checked="" type="checkbox"/> Air Quality
<input checked="" type="checkbox"/> Biological Resources	<input checked="" type="checkbox"/> Cultural Resources	<input checked="" type="checkbox"/> Geology/Soils
<input checked="" type="checkbox"/> Greenhouse Gas Emissions	<input checked="" type="checkbox"/> Hazards and Hazardous Materials	<input checked="" type="checkbox"/> Hydrology/Water Quality
<input type="checkbox"/> Land Use/Planning	<input type="checkbox"/> Mineral Resources	<input checked="" type="checkbox"/> Noise
<input type="checkbox"/> Population/Housing	<input checked="" type="checkbox"/> Public Services	<input checked="" type="checkbox"/> Recreation
<input checked="" type="checkbox"/> Transportation/Traffic	<input checked="" type="checkbox"/> Utilities/Service Systems	<input checked="" type="checkbox"/> Mandatory Findings of Significance

3.0 EVALUATION OF ENVIRONMENTAL IMPACTS:

The degree of change from existing conditions caused by the Project is compared to the impact evaluation criteria to determine if the change is significant. Where it is determined that one or more significant impacts could result from implementation of the Project, mitigation measures would be developed to reduce or eliminate the significant impacts. Existing conditions serve as a baseline for evaluating the impacts of the Project.

The following terminology is used in this document to describe the various levels of environmental impacts associated with the Project:

- A finding of *no impact* is identified if the analysis concludes that the proposed Project would not affect a particular environmental topical area in any way.
- An impact is considered *less than significant* if the analysis concludes that the proposed Project would not cause a substantial adverse change in the environment.
- An impact is considered *less than significant with mitigation* if the analysis concludes that the proposed Project has the potential to cause a substantial adverse change in the environment, but the proposed Project includes measures to mitigate the potential impact to a less than significant level.
- An impact would be considered a *potentially significant impact* if the analysis concludes that the proposed Project could cause a significant environmental effect. Proposed Projects that potentially produce a significant impact(s) warrant the greater level of analysis and consideration provided by an Environmental Impact Report (EIR).

4.0 CEQA ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Environmental Setting

The region is characterized by mountainous terrain with steep river canyons and mixed conifer-hardwood forests. The elevation at the Project is 3,800 feet. The surrounding area overstory is characterized primarily by Douglas fir, Ponderosa pine, incense cedar and black oaks with an understory composed primarily of Pacific dogwood, bigleaf maple, California hazelnut, and mountain alder. Forebay Road and Blair Road are the primary roadways that provide access to the Project site and are also the access roads for a number of residents in the area. Surrounding uses include a mix of single-family residences, a baseball field and community center on District-owned property, and undeveloped forested lands. There are no scenic highways within the view-shed of the Project.

The existing storage capacity of Forebay Reservoir is approximately 350 acre-feet (23 surface water acres) (GEI 2013a). This capacity does not reflect the current operational restriction imposed by DSOD and FERC, which limits storage to approximately 300 acre-feet. The Forebay Dam is constructed of natural materials and is similar in color tones to the earthen shoreline. The borrow site is located on a District-owned parcel that has typical vegetation covering as the surrounding landscape.

The District would prepare an analysis of the potential impacts to visual resources from implementation of the Project. The analysis would identify mitigation measures that would be employed during construction that the District anticipates would reduce impacts to the local visual character.

Explanations

- a) Less than Significant. The Project site is not designated as a scenic vista under local planning or policy documents. Additionally, the Caltrans Scenic Route Program has not identified the Project site as a scenic route. Local views of the reservoir may be obstructed during construction activities; however, this impact would be temporary.
- b) Less than Significant. The Project activities are not located on a state scenic highway. Tree removal is necessary in the borrow area, below the dam, and within the new high water mark of the reservoir. Removal of the trees would occur on District owned property after completion of a THP, and would not occur in an area identified as a scenic resource under local planning or policy documents.
- c) Potentially Significant Impact. Many of the Project components would be occurring within previously impacted areas. However, the Forebay Dam would be raised 10 vertical feet and an adjacent borrow area would be developed which would provide the District with earth-fill material for the dam retrofit. Implementation of the proposed Project would require temporary dewatering of the reservoir which could impact the surrounding viewshed. The development of the borrow area would include removal of vegetation and grading activities. The Project activities would temporarily degrade the existing visual character or quality of the site. Once the Project has been completed, the District would revegetate the borrow area in accordance with a site specific THP and SWPPP. The District would prepare an analysis of the potential impacts to visual resources associated with constructed Project features and future operations.
- d) Less than Significant Impact. Construction of the project would occur during the daylight hours unless nighttime work activities are required to meet the construction schedule. All hauling activities are anticipated to occur during daylight hours.

Existing lighting would be replaced and new lighting would not differ from the current lighting located at the Project site. Therefore, there would be less than significant impacts to lighting that would adversely affect day or nighttime views of the area. Project activities would also include installation of new or replacement appurtenances at the Forebay dam which would be constructed with galvanized metal or painted with a non-reflective paint to reduce the potential for glare.

Additionally, the maximum surface elevation of the Forebay Reservoir would increase, and therefore result in minor changes to glare angles from the sun. However, given that the reservoir fluctuates as part of normal facility operations and the constant repositioning of the sun this impact is expected to be less than significant.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<p>II. AGRICULTURE AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:</p>				
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

Surrounding uses include a mix of single-family residences, a baseball field and community center on District-owned property, and undeveloped forested lands.

Explanations

- a) No Impact. The Project would not 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 Department of Conservation (CDC), to non-agricultural use (CDC 2013).
- b) No Impact. The Project would not conflict with existing zoning for agricultural use, or a Williamson Act contract.
- c) No Impact. The Project would not 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) Less than Significant with Mitigation. Implementation of the Project would occur on District-owned property. Tree removal is necessary in the borrow area, below the dam, and within the new high water mark of the reservoir. Development of the borrow area would result in some loss of forested land. The District has identified primary and secondary areas for accessing the borrow area earth-fill material, and therefore potentially reducing the amount of tree removal at this site. Use of the secondary earth-fill material area would only be necessary if the material in the primary area is insufficient for completing the construction activities. A THP would be completed prior to the implementation of the Project activities, and the District would revegetate the borrow area in accordance with THP and SWPPP requirements. Around the perimeter of the borrow area the District would require a buffer of trees to remain in place. The buffer area would be approximately 100 feet where the property is adjacent to homeowners, and 25 feet where the property is adjacent to undeveloped land.

- e) No Impact. The Project would not involve other changes in the existing environment, which could result in the conversion of Farmland to non-agricultural use.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management 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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Environmental Setting

The proposed Project would take place within the Mountain Counties Air Basin (MCAB), and the Project site is within the jurisdiction of the El Dorado County Air Quality Management District (AQMD). El Dorado County is designated as “serious non-attainment” for the federal ozone standard, and portions of the western slope of the County are designated as non-attainment for particulate matter less than 2.5 micrometers in diameter (PM_{2.5}). Under state authority (California Health and Safety Code Section 39608(a)), El Dorado County is designated non-attainment for the ozone standard and particulate matter less than 10 micrometers in diameter (PM₁₀) (AQMD 2002). The MCAB is designated either as attainment or unclassified for the remaining federal and state criteria pollutant standards for nitrogen dioxide (NO₂), sulfur dioxide (SO₂), carbon monoxide (CO), sulfates, hydrogen sulfide (H₂S), lead, and visibility reducing particles (AQMD 2002). The El

Dorado County AQMD specifies thresholds of significance for construction emissions. The AQMD recommends a significance threshold of 82 lbs/day (AQMD 2002) with respect to short-term and long-term emissions of nitrogen oxide (NO_x) and reactive organic gases (ROG).

The District would prepare an air quality analysis of the potential impacts to air quality during implementation of the Project activities. The analysis would identify mitigation measures that the District would employ during construction to reduce equipment-generated impacts to air quality.

Explanations

- a) Potentially Significant Impact. Implementation of the Project could potentially conflict with or obstruct implementation of the AQMD Air Quality Plan. In accordance with the El Dorado County AQMD, the District would complete an air quality analysis to estimate potential emissions produced by Project implementation. Best management practices (BMPs) would be implemented during construction activities which would reduce impacts from potential exceedences in air quality emissions limits.
- b) Potentially Significant Impact. Project construction activities have the potential to temporarily impact air quality as a result of emissions from the construction equipment utilized during implementation of the Project. Though the construction emissions would be temporary in duration, it is likely the Project activities would have the potential to exceed AQMD emissions limits for NO_x, ROG, PM₁₀ and PM_{2.5}. In accordance with the El Dorado County AQMD, the District would complete an air quality analysis to estimate potential emissions produced by Project implementation. Best management practices (BMPs) would be implemented during construction activities which would reduce impacts from potential exceedences in air quality emissions limits.
- c) Less than Significant Impact. The proposed Project activities would be temporary and there would be no change to the total Project 184 hydropower generation, and therefore would not contribute to a cumulatively considerable net increase of any criteria pollutant to the air basin that would affect the long-term ambient air quality status for the federal and state ozone standards.
- d) Potentially Significant Impact. The AQMD defines sensitive receptors in Rule 101, General Provisions and Definitions, to include areas, facilities, or groups that may be more heavily impacted by various activities, which create air pollutants, based on the nature of the contaminant. Examples of sensitive receptors include, but are not limited to, towns, campgrounds, hospitals, nursing homes, schools, airports, public events, shopping centers, mandatory Class I Federal areas, the elderly, the young, and people with respiratory difficulty. Adjacent to the Forebay Reservoir there is a baseball field which is operated by the Snowline Little League and a community center which is used by various community groups. Pinewood Elementary School is located approximately 0.25 miles from the Project site, and is separated from the Project by hilly topography. Impacts to these facilities would be analyzed in the air quality analysis, and BMPs would be identified to reduce or eliminate any impacts to sensitive groups. In addition, the Forebay Reservoir day use areas would be closed during construction to ensure impacts to recreationists in these areas would not occur.

- e) Potentially Significant Impact. The Project construction activities could create objectionable odors as defined under the El Dorado County AQMD rules for public nuisance odors. These odors would be temporary and would most likely be associated with diesel emissions limited to certain phases of construction.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES: Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

Surrounding uses include a mix of single-family residences, a baseball field and community center on District-owned property, and undeveloped forested lands.

A preliminary wetland delineation was completed in December 2011 for the Project (ICF 2011). The wetland delineation figures were updated to reflect guidance provided by the Sacramento District Office of the Army Corps of Engineers Regulatory Branch (ACOE) and the final wetland delineation figures were provided to the ACOE in March 2013 (ICF 2013).

The project is located in the California Floristic Province in the Northern High Sierra Nevada subregion (Hickman 1993). Vegetation communities found in the study area include Sierran mixed conifer forest, riparian forest, upland scrub, non-native annual grassland, emergent wetland, and seasonal wetland. A description of each community type follows.

Sierran Mixed Conifer Forest

Mixed conifer forest occurs along the penstock access road and around the Forebay. Dominant overstory species in this vegetation community include incense cedar (*Calocedrus decurrens*), sugar pine (*Pinus lambertiana*), Ponderosa pine (*Pinus ponderosa*), and black oak (*Quercus kelloggii*). Smaller trees of these species, as well as tan-oak (*Lithocarpus densiflora*), mountain dogwood (*Cornus nuttallii*), and deer brush (*Ceanothus integerrimus*), occur in the understory. Sparse annual grasses and herbaceous species occur because of the duff layer.

Riparian Forest

Riparian forest occurs throughout the area west of the Forebay Dam and in two areas at the edge of the Forebay. All but one of the riparian forest areas were identified as containing wetland features. There are three main riparian forest types in the study area based on the dominant overstory species, which include white alder (*Alnus rhombifolia*), big-leaf maple (*Acer macrophyllum*), and shining willow (*Salix lucida* ssp. *lasiandra*).

Upland Scrub

Upland scrub occurs at the edges of the penstock access road in more disturbed areas outside the Sierran mixed conifer forest canopy. The dominant cover species is mountain misery (*Chamaebatia foliolosa*), but tree seedlings and some manzanita (*Arctostaphylos* sp.) are also present. Occasional forbs such as soap root (*Chlorogalum pomeridianum*) and Indian paintbrush (*Castilleja* sp.) also occur in this plant community, but many areas have woody debris covering the open ground.

Non-Native Annual Grassland

The Forebay Dam face and some disturbed areas south of the penstock access road support non-native annual grassland. The dominant annual grasses include hedgehog dogtail (*Cynosurus echinatus*), blue wildrye (*Elymus glaucus*), and barbed goat grass (*Aegilops trunciensis*). This community type supports a number of invasive herbaceous species, including perennial sweet pea (*Lathyrus latifolius*), yellow salsify (*Tragopogon dubius*), Klamath weed (*Hypericum perforatum*), and ox-eye daisy (*Leucanthemum vulgare*). However, native forbs, including penstemon (*Penstemon* sp.), are also present.

Emergent Wetland

This community occurs at the base of the Forebay Dam, but similar species also occur in the riparian forest understory adjacent to the perennial drainages. The emergent wetland has no tree overstory. Dominant species are velvet grass (*Holcus lanatus*), iris-leaved rush (*Juncus xiphioides*), and spike bentgrass (*Agrostis exarata*).

Seasonal Wetland

Seasonal wetland vegetation communities occur along the penstock access road in depressions that appear to have been used as borrow areas. Dominant species in these wetlands include Himalayan blackberry (*Rubus armeniacus*), blueberry (*Vaccinium uliginosum*), and bitter dogbane (*Apocynum androsaemifolium*).

- a) Less than Significant with Mitigation. Queries were completed of the California Natural Diversity Database (CNDDDB) and the United States Fish and Wildlife Service (USFWS) database (databases accessed in February 2013) identifying federally endangered, threatened, proposed and candidate aquatic and terrestrial wildlife species as potentially occurring within or near the Project site. A biological survey and analysis was completed for the 14-Mile Tunnel, Spillway 47C, and Spillway 46 Project in January 2012 which is located approximately east of the proposed Project site (EN2 2012). Species information provided in this previous report has been incorporated into this section. During preparation of the draft Environmental Impact Report for the proposed Project, an additional biological assessment would be completed of the Project site to determine the presence of and potential habitat for rare plants, and special status aquatic and terrestrial wildlife species.

Special Status Plants

The below list of special-status plants is based on the January 2012 biological survey for the above mentioned project, and it is possible that potential habitat and occurrences of the following species could apply to the proposed Project.

- Three-bracted onion (*Allium tribracteatum*)
- El Dorado Manzanita (*Arctostaphylos nissenana*)
- Pleasant Valley Mariposa lily (*Calochortus clavatus* var. *avius*)
- Mountain lady's slipper (*Cypripedium montanum*)
- Saw-toothed lewisia (*Lewisia serrata*)
- Yellow bur navarretia (*Navarretia prolifera* ssp. *lutea*)
- Stebbins' phacelia (*Phacelia stebbinsii*)

Special Status Wildlife

The below list of special-status wildlife species are based on the January 2012 biological survey for the above mentioned project, and it is possible that potential habitat and occurrences of the following species could apply to the proposed Project.

- Northern Goshawk (*Accipiter gentilis*)
 - Golden Eagle (*Aquila chryaetos*)
 - Bald Eagle (*Haliaeetus leucocephalus*)
 - California Spotted Owl (*Strix occidentalis occidentalis*)
 - Long-eared Owl (*Asio otis*)
 - Willow Flycatcher (*Empidonax traillii*)
 - Pallid Bat (*Antrozous pallidus*)
 - Townsend's Big-eared Bat (*Corynorhinus townsendii*)
 - Silver-haired Bat (*Lasionycteris noctivagans*)
 - Hoary Bat (*Lasiurus cinereus*)
 - Long-eared Myotis (*Myotis evotis*)
 - Little Brown Bat (*Myotis lucifugus*)
 - Long-legged Myotis (*Myotis volans*)
 - Fringed Myotis (*Myotis thysanodes*)
 - Yuma Myotis (*Myotis yumanensis*)
 - Pine (=American) Marten (*Martes americana sierrae*)
 - Ringtail (*Bassariscus astutus*)
 - Foothill Yellow-legged Frog (*Rana boylei*)
 - California Red-legged Frog (*Rana aurora*)
 - Western Pond Turtle (*Actinemys marmorata*)
- b) Less than Significant with Mitigation. Construction activities would require removal of trees in the area around the Forebay Reservoir shoreline and below the dam. Raising of the Forebay Dam 10 vertical feet would result in the permanent loss of habitat directly adjacent to the reservoir. This modification of shoreline is not enough to significantly alter the surrounding habitat quality, since a new periphery of shoreline would be created. Terrestrial species would be able to utilize the riparian area following construction.

In addition, the ground and vegetation on the dry side of the Forebay Dam would be disturbed during construction. Impacts to habitat and the species that use this habitat would primarily be temporary. Disturbing the riparian habitat may also adversely affect water quality as a result of increased erosion and sediment discharge into the reservoir.

The District would acquire a Streambed Alteration Agreement (SAA) from the California Department of Fish and Wildlife (CDFW) per Fish and Game Code, Section 1600 et. seq., and the District would implement specific best management practices (BMPs) and mitigation measures identified in the SAA. The District would also install BMPs (geotextile fabric or other erosion control measures appropriate for the conditions) to ensure soil stabilization and encourage the natural revegetation of the stream banks. As discussed in the Hydrology and Water Quality Section of this Initial Study, mitigation measures would be implemented that the District anticipates would reduce potential impacts to water quality.

- c) Less than Significant with Mitigation. Jurisdictional waters of the U.S. include jurisdictional wetlands as well as all other waters of the U.S. such as creeks, ponds, and intermittent drainages. Wetlands are defined as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (ACOE 1987). The majority of jurisdictional wetlands in the United States meet three wetland assessment criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. Jurisdictional waters of the U.S. can also be defined by exhibiting a defined bed and bank and an ordinary high water mark (OHWM).

Potential waters of the U.S. have been delineated within the study area, and the District has met with the ACOE to discuss the proposed Project activities and identify the appropriate permitting process. A total of 26.11 acres of potential waters of the U.S. were determined to occur within the study area (ICF 2011a and ICF 2013) including:

- 23.40 acres of open water
- 1.31 acres of riparian wetland
- 0.53 acres of canal
- 0.36 acres of emergent wetland
- 0.26 acres of seasonal wetland
- 0.13 acres of ephemeral drainage
- 0.12 acres of perennial drainage

Mitigation measures would be implemented that the District anticipates would reduce impacts to regulated wetlands and other waters of the U.S. to less than significant levels.

- d) Less than Significant with Mitigation. The few drainages within the Project site are ephemeral (i.e. flow only during storm events) and do not provide enough water to support a fishery. The Forebay Reservoir is an off-stream reservoir, and therefore fish species located within this waterbody cannot migrate beyond the confines of the reservoir. No fish species within the Project site are identified as special-status species, and the Forebay Reservoir is seasonally stocked with farm-raised rainbow trout by the California Department of Fish and Wildlife (CDFW) for recreational purposes. Construction related impacts to the aquatic species in Forebay Reservoir could result from the reservoir drawdown activity and the subsequent increase of turbidity and the effects on other water quality parameters necessary for aquatic survival. These effects would be temporary, and once the construction activities are complete and the reservoir is refilled, the District would coordinate with CDFW to resume fish stocking. Additionally, the District would coordinate with CDFW regarding alternate fish stocking locations during construction. Mitigation measures would be implemented that the District anticipates would reduce impacts to fish species to less-than-significant levels.

CDFW is concerned with the protection of deer migration corridors where urban expansion may pose a threat. Critical habitat is defined by CDFW as habitat that is essential to the long-term productivity of the herd. The deer in the vicinity of the Project are considered to be part of the Pacific Deer Herd (Hinz 1981). The Pacific Deer Herd is migratory and occurs west of the Sierra Nevada crest. The herd is defined by the Rubicon River on the north, the SFAR on the south, and roughly a north-south line above 2,500 feet elevation, paralleling Highway 49 between Placerville and Georgetown. The Project site is outside of

the defined herd boundaries, and therefore no mitigation for migrating deer is required during the proposed construction activities.

- e) Less than Significant with Mitigation. Only trees that must be removed to gain access and construct the Project would be removed. Tree removal is necessary in the borrow area, below the dam, and within the new high water mark of the reservoir. Development of the borrow area would result in some loss of forest land. A THP would be completed prior to the implementation of the Project activities.

El Dorado County has developed an Oak Woodland Management Plan (OWMP) (EDC 2008). The Project would require the removal of oaks from the Project site. The removal of oaks would be evaluated in the context of the OWMP to determine required mitigation measures.

- f) No Impact. The Project is not within an area that has an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES: Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Environmental Setting

The Project is located in the Sierra foothills region of El Dorado County. The Project site occupies a section of the Sierra Nevada that is ethnographically associated with three distinct Native American groups: the Nisenan (Southern Maidu), the Northern Sierra Miwok, and the Washoe. While the exact geographic borders of each group's territory remains unclear, it is commonly accepted that their territories overlap in the area west of Lake Tahoe and east of present-day Camino (ASM 2013). Villages or permanent habitation sites were typically situated on high ground located as close as possible to a water source. Ethnogeography sources for the Nisenan, Northern Sierra Miwok, and Washoe do not identify any ancestral villages or other named ethnographic sites in the Project site or vicinity (ASM 2013).

The discovery of gold at Sutter's Mill in Coloma in 1848 caused a dramatic alteration of life in California. As the news of the discovery of gold spread, the population of California and particularly the Motherlode expanded rapidly as more and more people traveled to the area to search for gold. Consequently, additional roads were constructed along and near current U.S. 50 to facilitate travel and transportation of goods.

As the towns and their population grew along and near the current U.S. 50 route, other infrastructure was needed which included roads and water supply systems. Consequently, to meet the growing domestic needs, existing ditch systems supplying water to mining operations were converted to domestic uses, and new water supply systems were constructed. Some of these water supply

systems, including the El Dorado Canal and the Forebay Reservoir, were not only used for supplying water, but were also developed into hydroelectric power generation systems.

A portion of the Project site is located within the Project 184 FERC boundary which is part of the Historic Properties Management Plan (HPMP) and has been completely surveyed for cultural resources (FW 2003). The District consulted with the California State Historic Preservation Officer (SHPO) to determine if the features of Project 184 (including the features associated with Forebay Dam) were eligible for inclusion in the National Register of Historic Places (NRHP). On August 11, 2008, the SHPO concurred with the District's determination that the only eligible resources for Project 184 are the Lake Aloha Dam Complex and the El Dorado Rock Wall Discontinuous District. The Project would not adversely affect these eligible resources.

Two cultural resource investigations have been conducted for the Project. ICF International and ASM Affiliates conducted archival research, corresponded with Native Americans, and completed field inventories and evaluations to determine if the Project would have adverse affects to cultural or archaeological resources. In 2011, ICF International completed a cultural resources inventory of the proposed borrow area (ICF 2011b). ICF International identified two cultural resources within the survey boundary. One feature is located outside of the Project work area and therefore would not be affected by the Project. The other feature is located within the Project work area and warranted further investigation to determine its eligibility for listing on the NRHP and/or California Register of Historical Resources (CRHR). In 2012, ASM Affiliates completed an NRHP evaluation of the feature described by ICF International that is located within the Project work area (ASM 2013). Additionally, ASM completed a cultural resources inventory of 34 acres in two parcels west and south of the Forebay Dam. ASM concluded that no NRHP or CRHR eligible historic properties or resources were identified within the Project work area and the proposed Project would not adversely affect any historic properties.

Explanations

- a)-b) Less than Significant with Mitigation. No NRHP or CRHR eligible historic properties or resources were identified within the Project work area and the proposed Project would not adversely affect any historic properties. Construction would require ground disturbing activities that could potentially unearth previously unidentified, subsurface cultural resources. If previously unidentified cultural resources were located, the District would require the contractor to implement mitigation measures during proposed construction activities to minimize the potential impacts.
- c) No Impact. No geologic strata that would contain paleontological resources exist at the site.
- d) Less than Significant with Mitigation. During ground disturbing activities, there is a potential to unearth previously unidentified human remains. In the event that human remains are discovered, all work must stop in the immediate vicinity of the find and the County Coroner must be notified in accordance with Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native American, the Native American Heritage Commission (NAHC) would be notified and procedures outlined in the CEQA Guidelines § 15064.5(e) would be followed. Also, the District would immediately notify an on-call archaeologist in regard to compliance with the federal Native American Graves Protection and Repatriation Act (NAGPRA).

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. GEOLOGY AND SOILS: Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the state geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

The Project site is located in the geomorphic province of the Sierra Nevada. The Sierra Nevada province is a northwest trending mountain range 400 miles long and 40 to 100 miles wide. It is bounded on the west by the Great Valley province, on the north by the Cascade Range, and on the east by the Basin Range province. On the south side it is bounded by the Garlock fault. This trending range extends from the Mojave Desert to the Modoc Plateau. Bedrock varies from Paleozoic Age metamorphic to Holocene Age sedimentary and volcanic rock.

The Project site is situated at approximate elevation 3,800 ft and about one mile south of the South Fork of the American River. The dam itself is located on deeply weathered metamorphic rocks, classified at infrequent exposures as micaceous and talcose phyllites and meta-sandstones. Volcanic alluvium and mudflow deposits of the Mehrten Formation (Tm) cover the older Paleozoic rocks over much of the higher region in the reservoir area.

The NRCS Soil Survey indicates that three soil series are within the Project site (ICF 2011). The soil series map units are Josephine very rocky loam, 15% to 50% slopes, Mariposa-Josephine very rocky loams, 15% to 50% slopes, and McCarthy cobbly loam, 9% to 50% slopes.

- **Josephine very rocky loam, 15% to 50% slopes (JsE).** The Josephine map unit consists of well-drained soils, underlain by tilted schists, slates, and contact metamorphic rocks. These soils occur on gently rolling to very steep mountainous uplands. Runoff is medium to rapid, and erosion hazard is moderate to high.
- **Mariposa-Josephine very rocky loams, 15% to 50% slopes (McE).** The Mariposa-Josephine map unit consists of well-drained, very rocky loam soils underlain by vertically tilted schists and slate and contact metamorphic rock. These soils occur on hilly to steep mountainous uplands. Mariposa very rocky loam makes up about 60% of the complex and occurs on ridges, sharp breaks, and most south- and west-facing slopes. Josephine very rocky silt loam makes up about 35% of the complex and occurs on concave slopes and most of the north- and east-facing slopes. Inclusions of very rocky loam make up about 5% of the complex. Runoff is medium to rapid, and erosion hazard is moderate to high.
- **McCarthy cobbly loam, 9% to 50% slopes (MhE).** The McCarthy map unit consists of well-drained soils underlain by volcanic conglomerate and breccia. This soil occurs on side slopes of andesitic ridges. The texture is cobbly to very cobbly loam. Runoff is medium to rapid, and erosion hazard is moderate to high.

Explanations

- a) Less than Significant Impact. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic related ground failure including liquefaction, and landslides.

- i) California Geological Survey does not list the County of El Dorado as a county affected by the Alquist-Priolo Earthquake Fault Zone. There are no known active or capable faults at or adjacent to the El Dorado Forebay Dam site. The Project site is located within the western Sierra Nevada and is potentially affected by seismic sources located within the Sierra Nevada Mountains, the Sierra Nevada Foothills Fault System to the west, and the Sierra Nevada Frontal Fault System to the east. Based on maximum magnitude and distance considerations, the Spring Valley Fault is the most critical (controlling) feature, although it has a low rate of slip (no recognized Holocene activity). The Jenkinson West Fault also represents a local seismic hazard, but potentially less critical to El Dorado Forebay Dam because of its lower assigned upper bound of magnitude (GEI 2011b).
- ii) The primary purpose of the Project is to improve the Forebay Dam to ensure the facility can withstand shaking generated by the postulated maximum design earthquake. Currently, the dam is classified as a “High Hazard Potential” structure under California Division of Safety of Dams (DSOD) and Federal Energy Regulatory Commission (FERC) Guidelines, and the reservoir is under restriction by these agencies. The agencies concluded that the existing freeboard is inadequate; the factor of safety for the dry side embankment slope is marginal and is requiring the District to develop a plan and schedule to improve the overall dam safety (DSOD 2009; FERC 2009). The proposed upgrades to the Forebay Dam structure would improve dam safety in the event seismic activity occurs, and improve the efficiency of reservoir operations. These upgrades would include construction of a stability buttress on the dry side of the dam, raising the dam crest and emergency spillway crest, providing rip rap erosion protection at the outlet of the emergency spillway, plugging two non-operational penstocks, providing erosion protection for the reservoir side of the dam, and improvements to the dam’s appurtenant structures.
- iii) The Project would not create ground failure or liquefaction. In order to determine if the residual soils in the dam foundation were likely to experience sudden loss of strength or large strains during a seismic event, both simplified procedures and two-dimensional nonlinear response analyses were performed to estimate potential earthquake-induced deformations. Both analysis methodologies confirmed that sudden loss of strength or liquefaction is unlikely to occur as a result of earthquake shaking (GEI 2011a).
- iv) No recent landslides have been reported along the margins of the Forebay Reservoir. Several areas of shallow raveling, sloughing, and erosion gullies have been observed in very steep cuts and slopes along the inlet canal above the reservoir, partly in response to canal incision and/or lateral erosion. These erosional features have resulted in near-vertical slopes and localized overhangs, which are expected to continue to ravel and slough with time if left unaddressed. Based on previous investigations, there has been no evidence of sinkhole activity in the dam and reservoir area, and the local geology is not conducive to sinkhole formation (GEI 2011).

The borrow area is located on the southwest-facing slope of a forested hillside area on property immediately adjacent the dam. The District conducted a geotechnical investigation of the area by excavating and sampling 38 exploratory test pits (GEI 2011). Most test pits encountered residual soils originating from the decomposition or complete weathering of the metamorphic bedrock. The residual soils consist of red silt (ML) of low plasticity with sand and gravel increasing with depth and proximity to bedrock. The bedrock consists of metasiltstone and metasandstone with a wide range of weathering and hardness. Given the moderate slopes and the area located on a southwest facing slope the potential for a landslide is considered low.

- b) Less than Significant with Mitigation. Construction unavoidably increases the potential for runoff from disturbed areas. Temporary erosion/runoff best management control measures would be implemented during construction to minimize storm water pollution resulting from erosion and sediment migration from the construction, borrow, and staging areas. These temporary control measures would include implementing construction staging in a manner that minimizes the amount of area disturbed at any one time; secondary containment for storage of fuel and oil; and the management of stockpiles and disturbed areas by means of earth berms, diversion ditches, straw wattles, straw bales, silt fences, gravel filters, mulching, revegetation, and temporary covers as appropriate. Erosion and storm water pollution control measures would be consistent with the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities requirements, and would be included in a site specific Storm Water Pollution Prevention Plan (SWPPP).

After completion of construction activities, the temporary facilities would be demobilized and site restoration measures would be implemented to minimize soil erosion. Site restoration measures for areas disturbed by construction activities, including the borrow area and laydown/staging areas, may include regrading, reseeding, construction of permanent diversion ditches, use of straw wattles and bales, application of straw mulch, and other measures deemed appropriate to meet all applicable erosion control requirements.

In addition, the inlet canal from the 14-Mile tunnel to the reservoir currently has slope erosion and slumping, contributing additional local sediment load to the reservoir. The proposed Project would include the regrading and stabilization of the inlet canal to ensure continued operation in compliance with all water quality requirements. Also, to reduce erosion potential on the slopes of the dam, vegetation consisting of a mix of native grasses would be planted. Crushed rock would be placed along the groins and toe of the new embankment on the dry side of the dam. The rock would be graded to serve as a shallow swale to collect runoff from the dry side of the dam, which would then convey the runoff to the toe of the dam.

c) Less than Significant with Mitigation. The foundation objectives for the embankment dam raise, stability buttress, and appurtenant structures are identified in the *El Dorado Forebay Dam Upgrades Design Basis Memorandum* (GEI 2011b) and further detailed in the 90% Construction Drawings (GEI 2013b). During construction it would be necessary to confirm the geologic conditions at the Project site are consistent with the foundation objectives. Confirmation the Project site is consistent with the foundation requirements outlined in the construction drawings would ensure the Project is built on a stable geologic unit; therefore, reducing the potential of a landslide, lateral spreading, subsidence, liquefaction or collapse during construction or the subsequent operation of the Forebay Dam.

The District and DSOD would inspect and approve all foundation surfaces prior to placement of embankment material and concrete. Additional excavation may be required to obtain a satisfactory foundation and would be performed as directed in the field by the engineer with concurrence by DSOD (GEI 2011b).

d) No Impact. The Project site is located on residual soils, primarily consisting of stiff silt of low plasticity. The existing Forebay Dam embankment is constructed with local silty soils. The soils in the borrow area also consist of silty soils of low plasticity. Additionally, the soils within the Project site are likely to have low shrink-swell potential.

e) No Impact. The Project consists of improving the Forebay Dam structure. The Project would not introduce septic tanks or alternative wastewater disposal systems that require soil infiltration.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. GREENHOUSE GAS EMISSIONS: Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Environmental Setting

Assembly Bill 32 (AB 32) established legislation in September 2006 for the State of California to combat greenhouse gases and promote the development and use of energy-efficient technologies. In addition, AB 32 established a comprehensive program of regulatory and market mechanisms to achieve real, quantifiable, cost-effective reductions of greenhouse gas emissions. The law requires a reduction of carbon emissions in California to 1990 levels by 2020. CARB is the primary state agency designated to implement the requirements outlined in AB 32.

The District would prepare an air quality analysis of the potential impacts from release of greenhouse gases (GHGs) during implementation of the Project activities. The analysis would identify mitigation measures that the District would employ during construction to reduce the potential generation of GHGs.

- a) Potentially Significant Impact. The Project would generate temporary construction-related GHG emissions, with most of the emissions generated by off-road construction equipment, hauling of construction materials, and construction worker trips. Removal of the tress and understory vegetation at the borrow site could reduce the benefits of carbon sequestration from the forested area. However, the Project would not generate long-term operation GHGs, nor would it increase water conveyance, which could lead indirectly to increased GHGs through water procurement, transport, treatment, and use.
- b) Potentially Significant Impact. Project construction activities would be temporary, and could have potentially significant effects on AB 32 greenhouse gas emission reduction goals. El Dorado County has not developed a GHG reduction plan or established emissions limits for construction-related GHG emissions.

For Project operations, long-term maintenance activities would require minimal vehicle miles traveled, since the proposed Project maintenance would be incorporated into the existing District's operations and maintenance schedule. Therefore, Project operations would not impact long-term planning efforts for reducing GHGs.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Explanations

- a) Less than Significant with Mitigation. The Project would not require the routine transfer or disposal of hazardous materials. Though, during construction activities, materials such as fuel would be transported and stored at the Project site along with oil and lubricants. The District would minimize the hazards of using these materials by employing storm water BMPs as described in the Hydrology and Water Quality Section of this Initial Study. Additionally, all materials being disposed of by the District would be evaluated for appropriate State and Federal hazardous waste criteria. Therefore, the District anticipates that less than significant impacts regarding use of hazardous materials would occur during implementation of the Project. In addition, long-term operations of the Forebay Reservoir and the dam facility would not require the transport or disposal of hazardous materials.
- b) Less than Significant with Mitigation. A potential hazard associated with the Project would be the possibility of an accidental release of a hazardous substance such as fuel, oil, or lubricants from construction equipment during utilization and transport of equipment and materials to the site. The District would minimize the potential for hazardous materials release by employing storm water BMPs as described in the Hydrology and Water Quality Section of this Initial Study, and therefore the District anticipates that less than significant impacts regarding potential release of hazardous materials would occur during implementation of the Project.
- c) Less than Significant Impact. Pinewood Elementary School is located approximately 0.25 miles from the Project site. There is a ridge that separates the school from Forebay Reservoir, and the roadways that would be utilized to transport materials to and from the Project site during construction do not pass within the vicinity of the school.
- d) No Impact. The Project site is not included on any list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.
- e) No Impact. There is no airport located in the Project vicinity.

- f) No Impact. There are not airstrips located in the Project vicinity.
- g) Less than Significant with Mitigation. The primary objective of the Project is to make improvements to the Forebay Dam to better protect public safety by protecting residents, life, and property below the dam. Short-term lane closures or detours during construction activities could have the potential to interfere with implementation of emergency response or emergency evacuation plans. However, the District would follow the adopted Emergency Action Plan for the El Dorado Hydroelectric Project 184 (EID 2011), and other measures required by El Dorado County during implementation of the construction activities to ensure all safety measures are in place in the event an emergency occurs. Therefore, the District anticipates that less-than-significant impacts regarding interference in response to an emergency would occur during implementation of the Project.
- h) Less than Significant with Mitigation. The Project site is within a wildland urban interface area and these wildland areas adjacent to the Project could catch fire if an errant spark or heat from construction equipment provides ignition. The California Department of Forestry and Fire Protection (CalFire) has indicated the Project site is within moderate to very high fuel rank (Cal Fire 2013). Additionally, short-term lane closures or detours during construction activities could potentially interfere with implementation of emergency response or emergency evacuation plans.

The District would adhere to all fire prevention and protection requirements and regulations of El Dorado County including the El Dorado County Fire Hazard Ordinance and the Uniform Fire Code, as applicable. Pertinent measures include, but are not limited to, the use of equipment with spark arrestors and non-sparking tools during Project activities. In addition, a Fire Prevention Plan would be developed by the District contractor and approved by the District which would be implemented throughout the duration of construction activities. Therefore, the District anticipates that less than significant impacts would occur for exposure of people or structures to a wildfire risk during implementation of the Project.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. HYDROLOGY AND WATER QUALITY: Would the project:				
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Expose 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j) Inundation by seiche, tsunami, or mudflow	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

The study area lies within the Sierra Nevada at elevation of approximately 3,800 feet above mean sea level (AMSL). The climate is generally Mediterranean, with cool, wet winters and hot, dry summers. Precipitation occurs primarily in winter, generally between November and April, with no appreciable precipitation during summer except for occasional thundershowers. The National Weather Service cooperative weather station closest to the study area is the Pacific House station in Pacific House, California, approximately five miles east of the study area and at an approximate elevation of 3,440 feet AMSL. The average annual precipitation at Pacific House is 51.66 inches, with 61 inches of snowfall (Western Regional Climate Center 2013).

The study area is located within the 840-square-mile South Fork American River (SFAR) watershed (Hydrologic Unit Code #18020129) (EID 2009). The SFAR is a tributary to the American River, the lower part of which is a traditionally navigable waterway (TNW).

The Forebay, an off-stream reservoir, is the primary hydrologic feature in the study area. The Forebay receives water from the El Dorado Canal, which originates at the El Dorado Diversion Dam on the South Fork American River at Kyburz. EID controls the flow of water diverted into the El Dorado Canal. The water flows through a series of man-made conveyances, including lined canals, flumes, tunnels, and siphons, for 22 miles to the Forebay. A portion of the water delivered to Forebay is distributed to the Main Ditch for drinking water use, and the remainder is sent through a penstock to the El Dorado Powerhouse, which generates renewable hydroelectric power that is delivered to a Pacific Gas and Electric Company (PG&E) transmission system at the powerhouse. Outflow from the powerhouse is discharged to the SFAR through the piping and valving system of the hydroelectric generation system.

The area below (west of) the Forebay Dam has a number of seeps, some of which have become vegetated wetland features, and some of which have flowing channels. Deadman Springs is located in this vicinity. The springs flow northwest and become the North Fork Long Canyon Creek, a tributary of Long Canyon Creek, which is a tributary of the SFAR. A field survey of the borrow area

was completed in July and August of 2012, and five water features were identified and mapped as part of the preliminary wetland delineation (ICF 2012).

As reported in construction records and DSOD files, groundwater was encountered during foundation excavation for the original dam construction project. To mitigate the localized saturated conditions during construction, a buried drainage system was installed on the dry side of the dam crest. A clay-tile collector drain placed in the location of the Long Creek channel discharges downstream of the dam. Saturated conditions currently persist on the slope above the right abutment and in a wide area along the toe of the dam, and spring flows are monitored using several weirs along the groins and toe of the dam.

Explanations

- a) Less than Significant with Mitigation. The Project would involve dewatering activities for the removal and diversion of surface waters, seepage, springs, and groundwater from all foundations and other working surfaces. This would include discharging accumulated storm water, groundwater, or other water from excavations or temporary containment facilities into the Main Ditch which carries water to the Reservoir 1 Water Treatment Plant and is not connected with surface waters. The District contractor would operate, and maintain a water treatment system to provide for settling of suspended solids in the discharge from any sumping, dewatering well or wellpoint system. A Water Diversion and Control Plan would be completed by the District contractor and submitted to the District for review and approval prior to the start of Project activities.

During implementation of the Project, there is a potential for the release of chemicals, including fuels, oils, and solvents that could enter into the drainages through surface runoff or by subsurface absorption through soils. Construction-related water quality effects could be significant. Additionally, a short-term increase of sediment discharge may occur during construction and could also be considered a potentially significant impact that requires mitigation. During construction, stockpiling of soils and earthmoving activities would remove soil cover, disturb soil particles, and alter site drainage patterns, creating conditions conducive to wind and water erosion. Erosion and sedimentation above natural levels could affect the drainage. Erosion and storm water pollution control measures would be implemented consistent with the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities requirements, and would be included in a site specific SWPPP.

- b) Less than Significant Impact. Implementation of construction activities would require removal of groundwater from the dam foundation and other working surfaces. Dewatering activities would include discharging the accumulated groundwater from the excavations into the Main Ditch below the dam. The groundwater dewatering system would operate so as to prevent removal of existing soils (GEI 2013b). Dewatering of groundwater during project construction would not significantly deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. The groundwater dewatering system would be removed from the site once construction activities are complete and normal groundwater flow would return to pre-Project conditions.

- c) Less than Significant with Mitigation. During Forebay Reservoir drawdown the water would be released through the penstock as part of typical operations and then to the Main Ditch below the reservoir and would not be discharged into nearby surface waters. During construction activities at the Forebay Reservoir, regrading and stabilization of the inlet canal to prevent further soil slumping and removal of a sediment bar that has accumulated in front of the drinking water intake would occur. The seeps immediately below the Forebay Dam, which are partially supplied by water from leakage within the dam, would be altered by construction activities.

During the excavation of the borrow area, temporary drainage measures would be implemented to control surface water. Existing borrow area drainage courses would be maintained undisturbed except for necessary haul road crossings equipped with culverts, and the overall land drainage patterns would not be changed by borrow operations.

A Water Diversion and Control Plan would be completed by the contractor and submitted to the District for review and approval prior to the start of Project activities, and a site specific SWPPP would be completed and implemented according to regulatory requirements. Implementation of the Water Diversion and Control Plan and the SWPPP would reduce impacts from drainage alterations and the potential for erosion and siltation to occur on- or off-site. In addition, the District would be in compliance with all water discharge limits identified in the regulatory permits obtained for the proposed Project.

- d) Less than Significant with Mitigation. Refer to sections a) and c) above.
- e) Less than Significant with Mitigation. Refer to sections a) and c) above.
- f) Less than Significant with Mitigation. Refer to sections a) and c) above.
- g) No Impact. The Project does not include housing development.
- h) No Impact. The Project activities would not include construction of any housing or other structures which would impede or redirect flood flows.
- i) No Impact. The primary purpose of the Project is to improve the Forebay Dam to ensure the facility can withstand shaking generated by the postulated maximum design earthquake. The proposed dam facility improvements would reduce the possibility of an uncontrolled release of water downstream of the dam due to an earthquake.

During construction activities the District contractor would ensure that the dewatering system would be in place and constant inspection of the system would occur during critical stages of Project implementation. During excavation of the stability berm foundation and until the stability berm is constructed to at least the grade prior to the start of excavation, the District contractor would provide on-site personnel 24 hours per day, 7 days per week to monitor the performance of the dewatering system and to observe the stability of the excavation, dam, and abutments for signs of seepage or stability issues. Backup power for the dewatering system and an alarm system to alert the District contractor when the system loses power would be installed. In addition, backfill material would be staged near the excavated area of the dam for immediate replacement upon approval of the newly constructed foundation (GEI 2013b).

For future operations, the District has completed an evaluation of a Probable Maximum Flood (PMF) hypothetical scenario of the proposed raised Forebay Dam and potential downstream flooding (GEI 2012). The flood wave from the dam failure analysis was routed below the proposed raised Forebay Dam through the North Fork of Long Canyon Creek for a distance of approximately 5 miles to the Slab Creek Reservoir on the SFAR. The first mile of the study reach below Forebay Dam is adjacent to a populated area of Pollock Pines and just south of the SFAR. However, the remaining portion of the study reach of Long Canyon Creek is generally considered undeveloped. The evaluation compared the proposed raised Forebay Dam PMF with the existing dam failure results, and concluded that the incremental change in flood limits are not detectable at a flood mapping level, and therefore no additional homes have been added to the inundation zone created by the proposed dam raise (GEI 2012).

- j) No Impact. The Project does not impact any water bodies that could result in seiche, tsunami, or mudflow events.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
X. LAND USE AND PLANNING: Would the project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

The Forebay Reservoir is a component of the El Dorado Hydroelectric Project No. 184 which is owned and operated by the District and licensed by FERC. The Project site is located on contiguous District-owned parcels. Surrounding uses include a mix of single-family residences, a baseball field and community center on District-owned property, and undeveloped forested lands.

Explanations

- a) No Impact. The Project is required to satisfy specific regulatory mandates issued to the District by both the DSOD and the FERC to meet dam safety standards, while improving the reliability of the drinking water system and minimizing impacts to District ratepayers through increased hydroelectric power generation revenue. The Project construction activities would occur on property either owned by the District, or on existing easements and rights-of-way, and therefore division of a community would not occur as a result of the Project activities.
- d) No Impact. As discussed in section a), the Project would satisfy regulatory mandates for dam safety, improve the drinking water system, and minimize impacts to ratepayers. The Project would not require a change in zoning of the Project site, and development of the borrow area site would follow the El Dorado County Zoning Ordinance, Title 17. The Project would therefore not conflict with the El Dorado County General Plan (EDC 2004).
- c) No Impact. There are no habitat conservation plans or natural community conservation plans for the area.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. MINERAL RESOURCES: Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

Commercially available mineral resources are not known to exist on or immediately adjacent to the Project site. The Project site is not identified on the Mineral Resource (-MR) overlay of the El Dorado County General Plan Land Use Map (EDC 2004).

The borrow area and dam are located on contiguous District-owned parcels. The proposed Project includes the construction of a stability buttress to be placed on the dry side of the existing dam. This work would be accomplished through the excavation of on-site soils to construct the buttress. The excavation of on-site soils is an integral and necessary part of the construction Project, and there would not be any surplus materials exported from the site.

The borrow area would be developed to form wide excavations up to 20 ft deep rather than narrow trenches. Existing drainages and drainage paths would be maintained. The District has identified primary and secondary areas for accessing the borrow area earth-fill material; therefore, potentially reducing the amount of ground disturbance at this site. After completion of borrow excavation, the stripped soils (top layer of soil containing organic materials) and other surplus soils from on-site construction would be used to partially backfill the excavations, and the borrow area would be re-graded to blend with the natural contours which would then be re-vegetated as required by the SWPPP and THP and in accordance with all other applicable requirements.

Explanations

- a) No Impact. Because mineral resources are not known to exist on or immediately adjacent to the Project site, the Project would not affect known mineral resources that could be of value to the region and the residents of the state.
- b) No Impact. Because mineral resources are not known to exist on or immediately adjacent to the Project site, the Project would not result in the loss of availability of a locally important mineral resource recovery site.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. NOISE: Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

Surrounding uses include a mix of single-family residences, a baseball field and community center on District-owned property, and undeveloped forested lands. Pinewood Elementary School is not accessed from Forebay Road but is within a 0.25 miles of the Forebay Reservoir. The noise environment of the Project site is dominated by natural sounds, and traffic produced by use of Forebay and Blair Roads. The District would prepare an acoustical analysis of the potential noise impacts during implementation of the Project activities. The analysis would identify mitigation measures that the District would employ during construction to reduce the impacts from noise generated from equipment use.

Explanations

- a) Potentially Significant Impact. The Project involves constructing an earthen stability buttress on the dry side of the Forebay Dam, raising the Forebay Dam 10 vertical feet, remediating various facilities associated with the dam and reservoir inlet, and developing a borrow area adjacent to Forebay Dam. Project-generated noise impacts would be temporary, produced by the operation of construction equipment implementing the proposed improvements. Among other land uses, there are residential dwellings in the vicinity of the Project site.

El Dorado County has established guidelines in the 2004 General Plan for acceptable levels of noise. Policy 6.5.1.11 establishes that construction noise between the hours of 7am and 7pm within rural regions and land use designations consistent with the Project shall not exceed 65 dBA or a maximum of 75 dBA (EDC 2004). As construction at a facility for the storage of water, the Project is exempt from local land use regulation, including the El Dorado County General Plan, under Government Code sections 53090 and 53091.

However, General Plan Policy 6.5.1.11 establishes an appropriate threshold for assessing the significance of Project-related noise impacts. Project activities would most likely generate temporary noise levels in excess of the above mentioned noise guidelines. As part of the acoustical analysis, appropriate measures would be identified to assist with mitigating noise impacts generated from Project construction activities.

- b) Potentially Significant Impact. Heavy equipment would be utilized during Project construction activities which could expose people to generated groundborne vibration and to groundborne noise levels. As part of the acoustical analysis, appropriate safety measures would be identified to assist with mitigating any impacts from groundborne vibration and groundborne noise levels.
- c) Less than Significant Impact. The Project operations may cause a negligible increase in ambient noise levels near the canal inlet to the reservoir. The existing 14-Mile tunnel would be extended to the reservoir by constructing a reinforced concrete conduit, and the filling of the reservoir from this improved inlet may cause a slight audible increase in noise levels in the area of the tunnel outlet. However, the average elevation change between the canal inlet and new reservoir surface would be reduced, and therefore this impact is anticipated to be less than significant.
- d) Potentially Significant Impact. During construction activities, there would be temporary noise increases from the use of equipment. The District would require the contractor to comply with all applicable noise and occupational safety standards as defined in the construction specifications, and to protect workers and other persons from the health effects of increased noise levels from the use of construction equipment (GEI 2013b). As part of the acoustical analysis, appropriate measures would be identified to assist with mitigating any noise impacts generated from Project construction activities.
- e) No Impact. There are no public airports within two miles of the Project.
- f) No Impact. There are no private airstrips in the vicinity of the Project.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. POPULATION AND HOUSING: Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace substantial numbers of people, necessitating the construction or replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

The Project site is located on District-owned property. The Project would not alter the number or type of residential units that exist, nor would it introduce land use or changes that would attract new residents creating a need for additional housing.

Explanations

- a) No Impact. The Project is required to satisfy specific regulatory mandates issued to the District by both the DSOD and the FERC to meet dam safety standards, while improving the reliability of the drinking water system and minimizing impacts to District ratepayers through increased hydroelectric power generation revenue, and would not directly or indirectly induce substantial population growth in the area.
- b) No Impact. The Project would not result in displacing or replacing existing housing.
- c) No Impact. The Project would not result in the displacement of any people, necessitating the construction or replacement of housing anywhere.

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

Environmental Setting

The Project site is located within an unincorporated area of El Dorado County, and is within the jurisdiction of the El Dorado County’s Sheriff’s Department and Fire Protection District. The Project site is located in Pollock Pines, CA, which is within the Pollock Pines Elementary School District and El Dorado Union High School District.

The District would prepare a traffic analysis of the potential impacts to traffic circulation during implementation of the Project activities. The analysis would identify mitigation measures that the District would employ during construction to reduce any potential impacts to public response times and performance objectives for the identified public services.

Explanations

Fire Protection: Less than Significant with Mitigation. Short-term lane closures or detours during construction activities could have the potential to interfere with implementation of emergency response or emergency evacuation plans. However, the District would follow the adopted Emergency Action Plan for the El Dorado Hydroelectric Project 184 (EID 2011), and other measures required by El Dorado County during implementation of the construction activities to ensure all safety measures are in place in the event an emergency occurs. However,

the District would analyze potential impacts to emergency response times in a traffic study which would then provide measures the District anticipates would mitigate impacts to fire protection access routes. Completion of the Project would not contribute to an increased need for fire protection services, since the proposed activity would be temporary and not contribute to population growth or other long-term land use modifications.

Police Protection: Less than Significant with Mitigation. Short-term lane closures or detours during construction activities could have the potential to interfere with implementation of emergency response or emergency evacuation plans. However, the District would follow the adopted Emergency Action Plan for the El Dorado Hydroelectric Project 184 (EID 2011), and other measures required by El Dorado County during implementation of the construction activities to ensure all safety measures are in place in the event an emergency occurs. However, the District would analyze potential impacts to emergency response times in a traffic study which would then provide measures the District anticipates would mitigate impacts to police protection access routes. Completion of the Project would not contribute to an increased need for police services, since the proposed activity would be temporary and not contribute to population growth or other long-term land use modifications.

Schools: Less than Significant with Mitigation. The Project would not impact existing school facilities, nor would it contribute to any change in population, or other land use modifications that would impact the local school districts. Pinewood Elementary School is accessed directly from Pony Express Trail and is not accessed from Forebay Road, though Pinewood Elementary bus routes do utilize Blair and Forebay Roads which could be impacted due to potential delays from construction traffic. However, the District would analyze potential impacts to school bus circulation in a traffic study which would then provide measures the District anticipates would mitigate impacts to school bus routes.

Parks: Less than Significant Impact. Due to the high level of construction related traffic during certain phases of the construction, the Project could temporarily impact the existing baseball field by delaying access to the field during certain times of the day. However, the baseball field facility would remain open during Project implementation activities.

Other Public Facilities: Less than Significant Impact. During implementation of the Project, construction activities would temporarily impact public use of the Forebay Day Use and Fishing Access areas, since neither would be usable by the public for safety reasons. However, the Forebay Day Use Area and Fishing Access Area are not a primary recreation opportunity for the Pollock Pines community, since the Sly Park Recreation Area serves as the primary recreational destination. Completion of the Project would not contribute to an increased need for other government facilities, since the proposed activity would be temporary and not contribute to population growth or other long-term land use modifications.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

Two day-use recreational areas are located within the Project site. These facilities are owned and operated by the District. These day-use areas provide fishing opportunities and a picnic area. Boating and body contact (e.g. swimming) are not allowed at this facility pursuant to California Department of Public Health requirements, since the reservoir supplies public drinking water. The reservoir is stocked with fish by the CDFW and parking is available to the public utilizing these day-use areas.

Explanations

- a) Less than Significant Impact. Construction activities would occur at the Forebay Reservoir Dam which includes a day-use facility for public access. The day-use facility parking area would be utilized for staging of construction equipment thereby eliminating public parking spaces and public access at the day-use areas during construction. Additionally, pedestrian access to the day-use areas would be closed during the duration of the construction activities for public safety reasons. After Project construction activities are complete, recreational opportunities would return to pre-Project conditions and operations.

The closest recreational facility to the Forebay Reservoir is the Sly Park Recreation Area which is approximately 10 miles from the Project Site. With the temporary closure of the Forebay day-use area there is a potential for the Sly Park Recreation Area to receive increased recreational visitation.

- b) No Impact. The Proposed Project does not include any new recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment. Other than the temporary restricted access to recreational facilities during construction, no modifications to the existing recreational facilities are expected to occur as a result of the Project.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. TRANSPORTATION/TRAFFIC: Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Environmental Setting

Personnel, equipment, and construction materials (such as aggregate, riprap, concrete, pipe, etc.) would reach the site via U.S. Highway 50, Sly Park Road, Pony Express Road, Forebay Road, and Blair Road. These roads are paved, all-weather roads suitable for the anticipated loads. A secondary access route to the western portion of the reservoir and the dam's left abutment would be via Pony Express Road, Polaris Road, and Drop-off Road. Forebay Road runs through the District owned parcel and would need to be crossed during earthmoving activities to the dam.

The County General Plan Transportation and Circulation Element established LOS standards for county roads and highways (EDC 2004). Policy TC-Xd establishes a minimum LOS D for roads in rural areas. Pony Express Trail and Forebay currently meets the County's standard. The District would prepare a traffic analysis of the potential impacts to traffic circulation during implementation of the Project activities. The analysis would identify mitigation measures that the District would employ during construction to reduce the impacts to traffic.

Explanations

- a) Potentially Significant Impact. Implementation of Project activities could conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of a local traffic circulation system. Project equipment would be staged at the Project site, and therefore reducing the number of equipment accessing the site on daily basis. Within the construction area, the main sources of construction traffic would be the required transport of borrow material for dam construction. It is anticipated the greatest impacts to local traffic would occur during the transport of earth-fill materials from the borrow area, delivery of concrete or other construction materials from outside sources, and removal of timber from the borrow area. As part of the traffic analysis, appropriate safety measures would be identified to assist with mitigating any impacts to local traffic circulation.
- b) Potentially Significant Impact. See Section A above.
- c) No Impact. The Project would not affect air traffic patterns. The nearest airport is the Placerville Airport which is approximately 20 miles southwest of the Project site.
- d) Less than Significant with Mitigation. Construction activities would include the staging of large equipment at the Project site, and trucks hauling materials daily to and from the Project. The use of the borrow area adjacent to Forebay Road would require a haul road through the property and across Forebay Road. Ingress and egress to this haul road from Forebay Road would not be designed with hazardous features to traffic circulation. As part of the traffic analysis, appropriate measures would be identified that the District anticipates would mitigate any temporary incompatible uses from accessing the area around the Project site.
- e) Less than Significant with Mitigation. The Project could result in impacts to emergency access to the surrounding areas, and construction-related traffic could delay or obstruct the movement of emergency vehicles or evacuation routes in the event of a wildfire or other emergency needs. As part of the traffic analysis, appropriate measures would be identified that the District anticipates would mitigate any impacts to emergency access to the area surrounding the Project site.

- f) Less than Significant with Mitigation. The El Dorado County Transit Authority (EDCTA) provides transit services at two locations near the Project site, which are the Safeway Plaza on Pony Express Trail, and the Pollock Pines Post Office located on Sanders Drive off of Pony Express Trail. In addition, the EDCTA provides transport services to the Senior Center located on Forebay Road for those riders requesting the additional service (Jackson, personal communication, 2013). As part of the traffic analysis, appropriate measures would be identified that the District anticipates would assist with mitigating any temporary impacts to public transportation services.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Require or result in the construction of new water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

The District is the drinking water and wastewater service provider for the Pollock Pines community in which the proposed Project takes place. A small portion of this community south of Highway 50 is also served by a common wastewater treatment facility, and many residences and businesses in the area are served by individual and privately owned wastewater treatment systems (e.g. septic systems).

The District owns and operates the Forebay Reservoir which supplies up to 26 million gallons per day (mgd) of raw water to the Reservoir 1 Water Treatment Plant (WTP) located off of Gilmore Road in Pollock Pines. A raw water pump station at the Reservoir A WTP (near Jenkinson Lake) allows raw water to be pumped to the Reservoir 1 WTP via the Sly Park Intertie providing a back-up raw water supply to the Reservoir 1 WTP in the event that the Forebay Reservoir supply is not available.

PG&E is the electricity supplier for the area and would supply any additional electricity needs to the Project site during construction activities. The Project activity would require the removal and relocation of a power pole and the associated power line to a nearby location, which would be coordinated with PG&E prior to the start of construction and occur concurrently with the proposed construction activities. The power pole is currently located in the area planned for construction of the stability berm.

In addition, the Project would require the relocation of a buried SCADA and telephone communication line that runs from the penstock valve house, along the crest of the existing dam, to the irrigation canal valve house. The existing communications line would need to be removed prior to stripping the existing dam crest. A temporary communications system would be installed to the new valve house prior to completion of the embankment to ensure continued communications at this location.

Explanations

- a) Less than Significant Impact. During Project construction, portable toilets would be provided at the construction site and wastewater generated from construction employees would be pumped out on a regular schedule and would be disposed of at a wastewater treatment plant. The Project would comply with all County requirements related to the disposal of sewage, and daily wastewater generated at the construction site would not exceed wastewater treatment requirements. Additionally, the Project would not result in

any changes to the Forebay operations after the Project is complete, and therefore would not result in the generation of additional wastewater.

- b) **Less than Significant Impact.** During construction, water would be utilized from the Forebay Reservoir and used for dust control and other construction related activities. This water would not be used for drinking water, and therefore would not place additional demand on any water treatment facility.

Project activities would require construction crews to have access to potable water. The additional temporary demand would vary depending on the construction activity and the number of workers. Since the use of potable water would serve a temporary working crew, the demand would not require the construction of new water treatment facilities.

As mentioned above in Section A, the Project activities would not impact wastewater generation or treatment capacity of wastewater systems, since Project construction is temporary and portable toilets would be provided at the construction site.

- c) **Less than Significant with Mitigation.** The Project would not require or result in the construction of new storm water drainage facilities or expansion of existing facilities. However, the construction activities at the Forebay and borrow area could result in an increase of runoff into the existing drainage system. However, as identified under the Hydrology and Water Quality Section, a SWPPP would be prepared and the identified BMPs implemented for construction activities to control runoff into drainages during construction would reduce potential impacts from storm water releases.
- d) **No Impact.** The Project would improve the District's ability to effectively manage water distribution to both domestic water supply and for hydropower production. The Project would improve the safety, reliability, and flexibility of the District's water supply and hydropower generation. The Project would not increase the District's diversion capacity, water rights, or hydropower generation capacity. Therefore, the Project would not increase water supply demand or require new or expanded water supply entitlements.
- e) **No Impact.** As mentioned above in Section A, the Project activities would not impact wastewater generation or treatment capacity of wastewater systems, since Project construction is temporary and portable toilets would be provided at the construction site. In addition, the Project would not cause a population increase that would impact the capacity of the local wastewater treatment facility.
- f) **Less than Significant Impact.** Implementation of the Project would produce solid waste associated with construction materials and construction workers. Solid waste generated from the construction activities including debris from structure demolition, power poles, and piping would be transported to a permitted solid waste facility. The generated waste would most likely be minimal, and would therefore not cause the solid waste facility to exceed the maximum daily disposal limits. In addition, Project operations would not generate new solid waste.
- g) **No Impact.** The Project would comply with federal, state, and local statutes and regulations related to solid waste.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Explanations

- a) The proposed Project would include construction best management practices (BMPs) to minimize environmental effects. For the resource areas of agriculture and forestry, biological resources, cultural resources, geology and soils, hydrology and water quality, and hazardous materials, there is a potential for significant effects. However, the District would prepare analyses for the applicable resource areas to specifically identify the mitigation measures, and whether significant impacts would remain after the implemented mitigation measures.

The impacts areas are summarized in the following list:

Agriculture and Forest Resources: Tree removal is necessary in the borrow area, below the dam, and below the new high water mark of the reservoir. Development of the borrow area would result in some loss of forested land. A Timber Harvest Plan (THP) would be completed prior to the implementation of the Project activities, and the District would revegetate the borrow area in accordance with THP and Storm Water Pollution Prevention Plan (SWPPP) requirements.

Biological Resources: The Project activities could potentially impact sensitive species within the Project area, and have the potential to impact riparian and wetland areas. The District would prepare a Biological Assessment of the Project area to determine the presence of and potential habitat for rare plants, and special status aquatic and terrestrial wildlife species. To mitigate potentially significant impacts to sensitive species and their habitats, the District would implement mitigation measures and comply with all applicable regulatory requirements.

Cultural Resources: No NRHP or CRHR eligible historic properties or resources were identified within the Project work area and the proposed Project would not adversely affect any historic properties. Construction would require ground disturbing activities that could potentially unearth previously unidentified, subsurface cultural resources. If previously unidentified cultural resources were located, the District would require the contractor to implement mitigation measures during proposed construction activities to minimize the potential impacts.

Geology and Soils: The foundation objectives for the embankment dam raise, stability berm, and appurtenant structures are identified in the construction specifications (GEI 2011b and 2013b). Confirmation the Project site is consistent with the foundation requirements outlined in the construction drawings would ensure the Project is built on a stable geologic unit. Construction unavoidably increases the potential for runoff from disturbed areas. Erosion and storm water pollution control measures would be consistent with the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities requirements, and would be included in a site specific SWPPP.

Hazards and Hazardous Materials: All materials being disposed of by the District would be evaluated for appropriate State and Federal hazardous waste criteria. Additionally, the District would adhere to all fire prevention and protection requirements and regulations of El Dorado County including the El Dorado County Fire Hazard Ordinance and the Uniform Fire Code, as applicable, and follow the adopted Emergency Action Plan for the El Dorado Hydroelectric Project 184, as well as safety measures identified by El Dorado County.

Hydrology and Water Quality: To minimize the potential of the proposed Project to violate water quality standards or waste discharge requirements, BMPs would be implemented during construction activities to prevent sediment/pollutants from entering the local drainages. During the excavation of the borrow area temporary drainage measures would be implemented to control surface water. Existing borrow area drainage courses would be maintained undisturbed except for necessary haul road crossings equipped with culverts, and the overall land drainage patterns would not be changed by borrow operations. A Water Diversion and Control Plan would be completed by the District contractor and submitted to the District for review and approval prior to the start of Project activities.

- b) The District is planning to implement the Main Ditch – Forebay to Reservoir 1 Project, which could occur during the same time period as the proposed Project. Additionally, Caltrans may be implementing the Sly Park Bridge Replacement Project which would replace the bridge crossing at U.S. Highway 50 and the Sly Park Interchange. Implementation of the proposed Project could have cumulatively considerable environmental impacts when considered in combination with these other potential projects. Additional analysis of the potential for cumulative impacts will be addressed in the draft Environmental Impact Report.
- c) The primary objective of the Project is to make improvements to the Forebay Dam to better protect public safety by protecting residents, life, and property below the dam. For the resource areas of aesthetics, air quality and greenhouse gas emissions, noise, public services, transportation and traffic, and utilities and service systems there is a potential for significant effects. However, the District would prepare analyses to applicable resource areas to specifically identify the mitigation measures, and whether significant impacts would remain after the implemented mitigation measures.

The impacts areas are summarized in the following list:

Aesthetics: Implementation of the proposed Project would require temporary dewatering of the reservoir during the fall maintenance outage, which could impact the surrounding viewshed. The development of the borrow area would include removal of vegetation and grading activities. The Project activities would temporarily degrade the existing visual character or quality of the site. Once the Project has been completed, the District would revegetate the borrow area in accordance with a site specific THP and SWPPP. The District would prepare an analysis of the potential impacts to visual resources associated with constructed Project features and future operations.

Air Quality and Greenhouse Gas Emissions: Project construction activities have the potential for exceeding air quality emissions standards and releasing greenhouse gases during construction activities. The District would prepare an air quality analysis of the potential impacts to air quality and impacts to sensitive groups during implementation of the Project activities. The analysis would identify mitigation measures that the District would employ during construction to reduce equipment generated impacts to air quality and sensitive groups.

Noise: Project generated noise impacts would be temporary, produced by the operation of construction equipment implementing the proposed improvements. Heavy equipment utilized during Project construction activities could expose people to generated groundborne vibration and to groundborne noise levels. The District would prepare an acoustical analysis of the potential noise impacts during implementation of the Project activities. The analysis would identify mitigation measures that would be employed during construction to reduce noise generated impacts from equipment use.

Public Services: The District would prepare a traffic analysis of the potential impacts to traffic circulation during implementation of the Project activities. The analysis would identify mitigation measures that the District would employ during construction to reduce any potential impacts to public response times and performance objectives for fire and police protection services and school bus circulation.

Transportation and Traffic: Implementation of Project activities could conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of a local traffic circulation system. The District would prepare a traffic analysis of the potential impacts to traffic circulation, the possible incompatible uses from equipment accessing the Project site, emergency access to the surrounding areas, and public transit services during implementation of the Project activities. The analysis would identify mitigation measures that the District would employ during construction to reduce the impacts to traffic.

Utilities and Service Systems: Project construction activities at the Forebay and borrow area could result in an increase of runoff into the existing drainage system. However, as identified under the Hydrology and Water Quality Section, a SWPPP would be prepared and the identified BMPs implemented for construction activities to control runoff into drainages during construction would reduce potential impacts from storm water releases.

III. DETERMINATION

(To be completed by the Lead Agency)

On the basis of this initial evaluation:

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

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

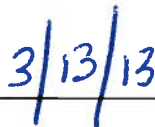
I find that the proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

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

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



Signature



Date

**Brian Deason, Hydroelectric Compliance Analyst
El Dorado Irrigation District**

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V. ACRONYMS

AB	Assembly Bill
ACOE	Army Corps of Engineers
AQMD	Air Quality Management District
BMP	best management practices
CARB	California Air Resources Board
CDC	California Department of Conservation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CRHR	California Register of Historic Resources
CRLF	California red-legged frog
CWA	Clean Water Act
CY	cubic yards
DBH	Diameter at Breast Height
ENF	Eldorado National Forest
FERC	Federal Energy Regulatory Commission
FYLF	Foothill yellow-legged frog
GHGs	Greenhouse Gases
H ₂ S	Hydrogen Sulfide
HPMP	Historic Properties Management Plan
IS	Initial Study
MCAB	Mountain Counties Air Basin
MND	Mitigated Negative Declaration
NAHC	Native American Heritage Commission
NO ₂	nitrogen dioxide
NO _x	oxides of nitrogen
NAGPRA	Native American Graves Protection and Repatriation Act
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OWMP	Oak Woodland Management Plan
PAC	Protected Activity Center
PG&E	Pacific Gas & Electric Company
PM ₁₀	particulate matter less than 10 micrometers in diameter
PM _{2.5}	particulate matter less than 2.5 micrometers in diameter
ROG	reactive organic gases
SAA	Streambed Alteration Agreement
SC	special concern
SFAR	South Fork American River
SHPO	State Historic Preservation Officer
SO ₂	sulfur dioxide
SWPPP	Storm Water Pollution Prevention Plan
THP	Timber Harvest Plan

USEPA	United States Environmental Protection Agency
USFS	United State Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

Comments Received on the Notice of Preparation and Initial Study



DEPARTMENT OF FORESTRY AND FIRE PROTECTION

2840 Mt. Danaher Road
Camino, CA 95709
(530) 644-2346
Website: www.fire.ca.gov



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MAR 27 2013

ADMINISTRATIVE
SERVICES

March 26, 2013

Mr. Brian Deason
El Dorado Irrigation District
2890 Mosquito Road
Placerville, CA 95667

Reference: El Dorado Forebay Dam Modification Project
SCH# 2013032036

Dear Mr. Deason:

The California Department of Forestry and Fire Protect (CAL FIRE) appreciates the opportunity to review and provide the following input on this proposed project. The proposed project may have an impact upon our department's resource management responsibilities and our authority to issue the appropriate timber harvesting permit.

The proposed project is located on forest land as defined by the California Forest Practice Act. Be advised that if trees of any size are removed as part of the project, the landowner may be required to apply for a Timberland Conversion Permit (TCP) or Exemption and file a Timber Harvest Plan (THP) with CAL FIRE. These documents must be prepared by a Registered Professional Forester (RPF), and when approved, tree removal must be done by a Licensed Timber Operator (LTO). The landowner should contact the local CAL FIRE area forester Robert Little, at the address and telephone number indicated above for specific information as to what may be required for this project.

In addition, any development must comply with Public Resource Code (PRC) 4290 and California Code Regulations (CCR) 1270-1276 which address fire and life safety regulations. These regulations include, but are not limited to the following issues: roadway design and length, driveway grades, dead-end road lengths, turnarounds, turnouts, signage, and emergency water standards.

Sincerely,

THOMAS J. TINSLEY
Division Chief, Pre-Fire Management

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DEPARTMENT OF WATER RESOURCES

1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

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APR 12 2013

ADMINISTRATIVE
SERVICES

APR 11 2013

Mr. Brian Deason, Hydroelectric Compliance Analyst
El Dorado Irrigation District
2890 Mosquito Road
Placerville, California 95667

SCH #2013032036, Notice of Preparation for the El Dorado Forebay Dam Modification
Project Draft Environmental Impact Report
El Dorado County

Dear Mr. Deason:

We have reviewed the Notice of Preparation to adopt an Environmental Impact Report for the above referenced project, which describes the construction of an earthen buttress, raising the Forebay Dam 10 feet, and remediation of associated facilities at El Dorado Forebay Dam.

El Dorado Forebay Dam, No. 53-10, is currently under our jurisdiction for dam safety. An enlargement application has been submitted for the proposed project. We are currently working with the Owner to resolve all dam safety related issues prior to approval of the application.

If you have any questions or need additional information, you may contact Office Engineer Randy Fessler at (916) 227-4601 or me at (916) 227-4631.

Sincerely,

A handwritten signature in black ink, appearing to read "Andrew J. Mangney".

Andrew J. Mangney, Regional Engineer
Central Region
Field Engineering Branch
Division of Safety of Dams

cc: (See attached list.)

cc: Ms. Nadell Gayou
Resources Agency Project Coordinator
Environmental Review Section
Division of Statewide Integrated Water Management
901 P Street
Sacramento, California 95814

Governor's Office of Planning and Research
State Clearinghouse
Post Office Box 3044
Sacramento, California 95812-3044

DEPARTMENT OF TRANSPORTATION

DISTRICT 3—SACRAMENTO AREA OFFICE

2379 GATEWAY OAKS DRIVE, SUITE 150

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April 11, 2013

032013-ELD-0012

03-ELD-50 / PM 30.93

SCH# 2013032036

Mr. Brian Deason
El Dorado Irrigation District
2890 Mosquito Road
Placerville, CA 95667

El Dorado Forebay Dam Modification Project – Notice of Preparation (NOP)

Dear Mr. Deason:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the project referenced above. The proposed project will consist of repairing the existing reservoir to satisfy regulatory and safety requirements issued by both the California Division of Safety of Dams and the Federal Energy Regulatory Commission. Additionally the project will improve reliability of the drinking water supply and optimize power generation. The project will be implemented in two construction seasons in the summer of 2015 and 2016 with an estimated total of 3,000 highway truck trips. The project is located approximately 0.5 miles north of U.S. Highway (US) 50/Sly Park Road Interchange. The following comments are based on the NOP.

Transportation Management Plan (TMP)

If it is determined that traffic restriction and detours are needed on or affecting State highways, a TMP or construction Traffic Impact Study may be required of the developer for approval by Caltrans prior to construction. TMPs must be prepared in accordance with Caltrans' *Manual on Uniform Traffic Control Devices*. Further information is available for download at the following web address: <http://www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/pdf/camutcd2012/Part6.pdf>

Encroachment Permit

Please be advised that any work or traffic control that would encroach onto the State Right of Way (ROW) requires an encroachment permit that is issued by Caltrans. To apply, a completed encroachment permit application, environmental documentation, and five sets of plans clearly indicating State ROW must be submitted to the address below. Timothy Greutert, District Office Chief, Office of Permits, Caltrans, District 3, 703 B Street, Marysville, CA 95901. Traffic-related mitigation measures should be incorporated into the construction plans prior to the encroachment

Mr. Deason/El Dorado Irrigation District
April 11, 2013
Page 2

permit process. See the website linked below for more information.
<http://www.dot.ca.gov/hq/traffops/developserv/permits/>

Construction Traffic on US 50

During construction of the facility, it is recommended that construction vehicles be limited to travel on US 50 during off-peak hours.

Please provide our office with copies of any further actions regarding this project.

If you have any questions regarding these comments or require additional information, please contact Melinda Bacharach at (916) 274-0635 or by email at: melinda.bacharach@dot.ca.gov

Sincerely,



ERIC FREDERICKS, Chief
Office of Transportation Planning - South

c: Scott Morgan, State Clearinghouse

From: [Elizabeth Fulmer](#)
To: [Deason, Brian](#)
Subject: Forebay Dam Comment
Date: Thursday, April 11, 2013 3:06:06 PM

Dear Mr. Deason,

I have some comments and a request regarding the riprap layer that will be positioned on the dam to prevent erosion. I have looked on line and have found that there are different kinds and sizes of riprap. It can also be made out of different materials. I am hoping that you can both describe and **e-mail** a photo and/or illustration of the size & kind of riprap that will be used at Forebay.

COMMENTS:

I hope that the riprap used to armor the reservoir side of the dam will allow the **numerous** fisherman that fish along the dam to continue to have **easy** access to the water along the dam.

I hope that the kind of riprap used to armor the reservoir side of the dam will not be unnecessarily large and substantially degrade the existing visual character and quality of the site and its surroundings.

Sincerely,
Elizabeth Fulmer

From: Carlton, Mary Lynn
To: "Sylvia A. Hamblin"
Cc: Deason, Brian
Subject: RE: forebay project
Date: Tuesday, March 19, 2013 10:33:08 AM

Dear Ms. Hamblin – please see below a response to your questions from Brian Deason, our Hydroelectric Compliance Analyst.

Ms. Hamblin,

Thank you for your interest in the El Dorado Forebay Modification Project. We are currently developing a list of Frequently Asked Questions (FAQs) for the Project and recreation at Forebay is one of the topics. I would like to respond to your questions now since the FAQ page is not yet online.

Regarding the shoreline, the Project does include removal of trees and vegetation around the perimeter of the reservoir in the area that will be below the new high water mark of the reservoir. The Project does not include any changes to the current recreation facilities or recreation management at Forebay. The day-use facilities will need to be closed during construction to provide staging areas for construction equipment and for public safety reasons. The Project would not change the current restriction on swimming or boating recreation activities at the reservoir, which are regulated by the California Department of Public Health because the reservoir supplies public drinking water.

Thank you again for your interest in the Project. More information about the Project is available in the Project Description / Initial Study, which includes a description of the Project as well as a preliminary assessment of the environmental effects associated with the Project. This document is available online at eid.org – follow the Forebay Dam Project icon on the main page of eid.org for a link to the document. I will include your comments for consideration during the environmental review process for the project.

Please let me know if you have any additional questions.

Sincerely,

Brian Deason
Hydroelectric Compliance Analyst
El Dorado Irrigation District
2890 Mosquito Road
Placerville, CA 95667
PHONE: 530-642-4064
FAX 530-622-6197

Mary Lynn Carlton

Director,
Communications/Community Relations
El Dorado Irrigation District
2890 Mosquito Road
Placerville, CA 95667
mcarlton@eid.org
office: 530.642.4103
fax: 530.622.1195

From: Sylvia A. Hamblin [mailto:hamblinsyl@gmail.com]
Sent: Monday, March 18, 2013 5:18 PM
To: Carlton, Mary Lynn
Subject: Re: forebay project

Thank you. I did sign up for the "E-notifier" Great!

On Mon, Mar 18, 2013 at 5:05 PM, Carlton, Mary Lynn <mcarlton@eid.org> wrote:
Hi Ms. Hamblin,

I just wanted you to know I received your email and will be back in touch once I hear back from the Project Manager on your questions. Just to clarify, you may sign up on our website front page on the "E-Notifier" section for information for the Forebay project (as well as other topics as well).

Mary Lynn

Mary Lynn Carlton

Director,
Communications/Community Relations
El Dorado Irrigation District
2890 Mosquito Road
Placerville, CA 95667
mcarlton@eid.org
office: 530.642.4103
fax: 530.622.1195

From: Sylvia A. Hamblin [mailto:hamblinsyl@gmail.com]
Sent: Monday, March 18, 2013 12:57 PM
To: # Communications
Subject: forebay project

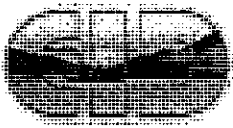
I am very excited to learn about this project. The shoreline looks so shabby and unkept. Will the project entail the cleaning up of the perimeter. Maybe put some

benches to watch the sunset. Great sunset there.

Another question, will we be able to kayak on the waterway? I know that you disallow swimming but kayaks are not poluters. Just a thought.

Great project. Hope you can beautify the shoreline as well. I signed up for your newsletter. Sorry I can't make the meeting in Pollock, but I am very interested in the progress.

Cheers, Sylvia



COMMENT FORM

Initial Study / Notice of Preparation
El Dorado Forebay Dam Modification Project
Environmental Impact Report

To submit a written statement, please complete the following information and comment below. You may hand to an attendant at tonight's meeting, or submit to the address listed below by 5:00 P.M., April 11, 2013. Please write legibly so that your comment or questions can be addressed, thank you.

Name: Cleve Hart Organization: _____, or Resident

Address: 2698 Roman Blvd Pollock Pine

Comment: I would like to know if any
consideration to enhancing the water
cascade at the head of the lake?
At present the terrain makes it almost
impossible to view the cascade, I
understand the head of the lake will
be modified to accommodate the raised
water level. ~~What~~ Could this modification
include enhancements to the esthetics
of the new cascade, what would the
cost be to do this & could community involvement
contribute to paying to make this more
attractive?

Mail comments to Brian Deason, Hydroelectric Compliance Analyst, El Dorado
Irrigation District at 2890 Mosquito Road, Placerville, CA 95667, or
bdeason@eid.org.

Visit www.eid.org to sign-up for e-mail updates.

Comments must be received by 5:00 p.m., Thursday, April 11, 2013.

From: Oswald, Cindy -FS
To: Deason, Brian
Cc: Nelson, Duane -FS
Subject: Comments to El Dorado Forebay Modification Project
Date: Wednesday, April 10, 2013 12:52:49 PM

Dear Brian:

I have reviewed the Draft EIR for the subject Project. The boundary between EID property and National Forest property needs to be located, marked, and recorded to BLM standards (Sec. 24/25, T11N, R12E). Our records indicate that the nearest located corner is the section corner 23/24/25/26.

Cindy L Oswald

Lands & Resource Officer
c/o Placerville Ranger Station
4260 Eight Mile Road
Camino, CA 95709-9583
(530) 647-5320
coswald@fs.fed.us

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APPENDIX B

Aesthetics Technical Report: El Dorado Forebay Dam Modification Project

Aesthetic Resources
Technical Report
El Dorado Forebay Dam Modification Project

Prepared for:



El Dorado Irrigation District

AECOM

October 2013

Aesthetic Resources
Technical Report

El Dorado Forebay Dam Modification Project

Prepared for:



El Dorado Irrigation District
2890 Mosquito Road
Placerville, CA 95667

Contact:

Brian Deason
Hydroelectric Compliance Analyst
530/622-4513

Prepared by:

AECOM
2020 L Street, Suite 400
Sacramento, CA 95811

Contact:

Richard Hunn
916/414-5800

AECOM

October 2013

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ACRONYMS AND OTHER ABBREVIATIONS

CEQA	California Environmental Quality Act
EID	El Dorado Irrigation District
Forebay	El Dorado Forebay
U.S. 50	U.S. Highway 50

1 INTRODUCTION

The El Dorado Irrigation District (EID) is proposing to implement modifications to the existing El Dorado Forebay Dam. As part of this proposal, EID is undertaking the preparation of environmental studies and impact assessment in compliance with the California Environmental Quality Act (CEQA) and other applicable state and federal statutes.

Aesthetic, or visual, resources are the physical features of the landscape that contribute to the public's enjoyment of the environment, including landform (topographic variation) and land cover (water, vegetation, and the built environment). This report describes the existing visual conditions of the Project site and immediate area. The description of existing aesthetic resources is accompanied by a map of the Project site that identifies key viewpoints (Exhibit 1) and the corresponding photographs (Exhibits 2–6) taken on June 26 and July 4, 2013. The exhibits are presented at the end of this technical report.

This report also provides a qualitative evaluation of the changes to those conditions that would occur as a result of Project implementation. Exhibits 7–10 present simulations of what views from key viewpoints might look like after the Project is complete. These photosimulations are included as an aid to readers and are based on engineering drawings. They are not exact representations of future conditions. Rather, these renderings provide an interpretation of anticipated changes to the landscape.

The changes of a project on the visual environment are generally defined in terms of a project's visual characteristics and potential visibility, the extent to which the project would change the perceived visual character and quality of the environment in which it would be located, and the expected level of sensitivity that the viewing public may have in areas where project facilities would alter existing views. Under CEQA, new sources of light and glare are included in the analysis of aesthetics. Mitigation measures are identified to reduce those changes to aesthetic character that are found to be substantial.

1.1 REGULATORY BACKGROUND

1.1.1 FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

No federal plans, policies, regulations, or laws related to aesthetic resources apply to the Project.

1.1.2 STATE PLANS, POLICIES, REGULATIONS, AND LAWS

CALIFORNIA SCENIC HIGHWAY PROGRAM

California's Scenic Highway Program was created by the California Legislature in 1963. Its purpose is to protect and enhance the natural scenic beauty of California highways and adjacent corridors through special conservation treatment. The state laws governing the Scenic Highway Program are found in the Streets and Highways Code, Sections 260–263.

When a city or county nominates an eligible scenic highway for official designation, it must identify and define the scenic corridor of the highway. Scenic corridors consist of land that is visible from the highway right-of-way and are composed primarily of scenic and natural features. Topography, vegetation, viewing distance, and/or

jurisdictional lines determine the corridor boundaries. The city or county must also adopt ordinances, zoning, and/or planning policies to preserve the scenic quality of the corridor or document the regulations that already exist in various portions of local codes. These regulations provide a concise strategy for maintaining the scenic character of the corridor. The only designated state scenic highway that is within the vicinity of the Project is U.S. Highway 50 (U.S. 50), which is located approximately one-half mile from the site (Caltrans 2013). The Project site is not visible from U.S. 50.

1.1.3 REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

EL DORADO COUNTY GENERAL PLAN

Government Code Section 53091 states that building and zoning ordinances do not apply to “construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency.” Public utility projects that serve the facilities described above would not be subject to local plans, policies, regulations, or ordinances. The following local regulations related to aesthetic resources are provided for informational purposes and are provided as a basis to assist with CEQA review in evaluating the level of significance associated with impacts. The following objective from the *El Dorado County General Plan* addresses aesthetic resources (El Dorado County 2004):

- ▶ **Objective 7.4.4: Forest and Oak Woodland Resources**—Protect and conserve forest and woodland resources for their wildlife habitat, recreation, water production, domestic livestock grazing, production of a sustainable flow of wood products, and aesthetic values.

Government Code Section 53091 states Building and Zoning Ordinances do not apply to “construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency.” Therefore, EID is not subject to *El Dorado County General Plan* Policy 7.4.4.4 (under Objective 7.4.4) for mitigating impacts on oak woodlands.

1.2 ENVIRONMENTAL SETTING

1.2.1 VISUAL CHARACTER OF THE PROJECT VICINITY

The region is characterized by mountainous terrain with steep river canyons and mixed conifer-hardwood forests. The elevation of the Project site is about 3,800 feet above sea level. The surrounding forest is dominated by Douglas-fir, ponderosa pine, incense cedar, and black oak with an understory composed primarily of Pacific dogwood, bigleaf maple, California hazelnut, and mountain alder. Forebay Road and Blair Road are the primary roadways that provide access to the Project site and are also the only access roads for some residents in the area. Surrounding uses include a mix of single-family residences, a baseball field and community center, and undeveloped forested lands. No scenic highways are located in the Project area or are visible from the Project features.

The Forebay Dam is constructed of local earthen materials and is similar in color tones to the surrounding areas. The borrow area is located on EID-owned property located adjacent to the dam and on the Project site that has vegetation typical of that in the surrounding landscape, including signs of past logging operations.

1.2.2 VIEWER GROUPS AND VIEWER SENSITIVITY

The primary viewers in the Project area are local residents and visiting recreationists.

Residents of an area tend to have a higher awareness of and greater concern for visual changes made near where they live than travelers passing by a location. Visitors who regularly engage in recreational pursuits, such as sight-seeing, fishing, or walking, typically have a heightened awareness of their surroundings and would be sensitive to changes in the visual environment. Both residents and visiting recreationists have a high level of sensitivity to visual change.

1.2.3 VISUAL QUALITY OF THE PROJECT AREA

Typical views in the Project area are of forested land surrounding the reservoir and the surrounding roads. Extended viewing distances are limited because of dense vegetative growth. El Dorado Forebay (Forebay) is an offstream reservoir impoundment that regulates water diversions for drinking water supply and renewable hydroelectric power generation. Reservoir levels fluctuate on a regular basis depending on drinking water and hydroelectric power generation demands.

The views from Viewpoints 1 and 2 (Exhibit 2) are typical views of the primary borrow area along the western portion of Forebay Road. Most of the view to the north is of dense forest (Viewpoint 2) with a few breaks in the forested areas for private roads and driveways leading to residential properties (Viewpoint 1). The dense vegetation makes it nearly impossible to see past the first line of trees. The penstock, located several hundred feet from the road, is not visible from these viewpoints.

The residential neighborhoods north of the Project site are surrounded with heavily forested land. The view of the primary borrow area from Viewpoint 3 (Exhibit 3) is dominated by larger trees that allow slightly more distant views. The view of the secondary borrow area from Viewpoint 4 (Exhibit 3) includes the penstock in the distant background and larger trees in the foreground. As shown, dense understory vegetation has been removed to minimize fire hazard, extending the viewing distance several hundred yards. Without this fuel load management, shrubs and smaller trees would obstruct the view to less than 100 feet as occurs in other adjacent areas. Because the penstock is painted green, discerning it among the remaining shrubs and other understory plants is difficult.

Residential properties, such as the one visible from Viewpoint 5 (Exhibit 4), tend to be forested with cleared driveways and home sites. Observers on these streets would find it difficult to discern the Project site beyond the homes and trees on these properties.

The view from Viewpoint 6 (Exhibit 4) is the only location where the dry side of the dam is visible. From Forebay Road, vehicle occupants may see only a quick glimpse of the earthen dam as they pass. Human-made features in the view include the penstock and valve house, post and wire fences, and utility poles and conductors.

At the main day-use area (Viewpoint 7) (Exhibit 5), visitors can use EID picnic tables and BBQ grills and enjoy large shade trees and unobstructed views across the reservoir to the densely forested southern shore. Although residential properties are located toward the southwest, they are hidden behind the dense growth. From the southwestern corner of the reservoir, visitors may look out across the dam and reservoir.

The view from Viewpoint 8 (Exhibit 5) is of human-made elements. Fences, a floating boom, and the dam dominate the foreground. The background is composed primarily of trees.

Visitors to fishing access day-use area (Viewpoint 9) (Exhibit 6) looking west toward the dam see trees surrounding them and shrubs and fencing (not in the photograph) to the left. This view is primarily of human-made elements, including asphalt pavement and signs in the foreground, with the reservoir and earthen dam visible in the background.

2 ANALYSIS

2.1 METHODOLOGY

The visual analysis is based on a field visit, a review of maps and aerial photographs, and an evaluation of the changes to the existing visual resources that would result from Project implementation. Because an assessment of visual quality is a subjective matter, reasonable people can disagree as to whether alteration in the visual character of the Project site would result in adverse, beneficial, or negligible effects on the visual character.

2.2 DESCRIPTION OF PROJECT AREA AESTHETIC CHARACTER

The views from Viewpoints 1, 2, and 5 are not anticipated to change with Project construction. The foreground trees or buildings would continue to block views of changes in the background, so there would be no change to the visual character or quality at these locations.

The view from Viewpoint 3 would not be significantly altered by Project construction. Viewers at Viewpoint 3 would most likely be local residents. Trees would be removed in portions of the primary borrow area; however, views of the primary borrow area would be limited because a 100-foot buffer of undisturbed trees, and vegetation would be maintained between the borrow areas and residential properties. In addition, residential properties between the street and the buffer area would further restrict views of the primary borrow area. Eastern portions of the primary borrow area would be exposed to viewers at Viewpoint 3; however, this exposure would be limited by existing topography. Most of the primary borrow area is not visible from Viewpoint 3. The changes to views from Viewpoint 3 related to loss of trees in the middle ground would not be substantial.

As a result of construction, views from Viewpoint 4 would be altered if use of the secondary borrow area is necessary; trees could be removed in the middle ground, allowing a viewer to see the secondary borrow areas past the 100-foot buffer. The secondary borrow area would not be used unless the primary borrow area did not provide sufficient material. Viewers at Viewpoint 4 would most likely be local residents. Residents immediately adjacent to the Project site would likely see construction equipment; however, views of the secondary borrow area would be limited because a 100-foot buffer of undisturbed trees and vegetation would be maintained between the borrow areas and residential properties. In addition, there is a buffer upslope of the penstock to prevent damage to facilities. Because of this buffer, the penstock would be difficult to distinguish from the undergrowth. The changes to views from Viewpoint 4 related to loss of trees in the middle ground would not be substantial.

Views from Viewpoint 6 would be altered by Project construction. Viewers at Viewpoint 6 would most likely be local residents traveling on Forebay Road. During construction, the area visible from this viewpoint would be used to stage construction equipment and materials and for construction of the dam buttress and embankment.

Portions of this area would be cleared of vegetation, and dam construction activities would be visible to travelers. As shown in Exhibit 7, the dam would become more visible, and a portion of the existing vegetation and forest cover, as seen from this viewpoint, would be removed. The dam face, which is currently obscured by vegetation, would be exposed to viewers with this change. EID would plant grass seed on the dam and other affected areas as required to prevent erosion, and there would be natural recolonization of shrubs and trees in areas where woody vegetation would not be prohibited for dam safety purposes. The changes to the visual character caused by staging construction equipment would not be substantial because this would be a short-term change and the typical viewers would be in cars and would have only a few seconds of this view before moving past. The reseeded of this area combined with natural recolonization would lessen the change to the visual character in the long term. Changes to views from this viewpoint would not substantially alter the existing visual character or quality of the site and its surroundings.

During construction, many of the views of the dam and reservoir would be unavailable because the dam and shoreline areas around the reservoir, including day-use areas, would not be open for public access. The views from Viewpoints 7, 8, and 9 would be inaccessible during Project construction. After construction, all viewpoints would become accessible. Therefore, views of construction activities, such as earthmoving, reservoir dewatering, and tree removal, would be limited to passing views from Forebay Road. Visual changes to views from Viewpoints 7, 8, and 9 following Project construction activities are described in the following discussion.

The view from Viewpoint 7 would be altered by Project construction. Viewers at Viewpoint 7 are most likely to be residents and recreationists. As shown in Exhibit 8, the Forebay water level would be higher, and trees would be removed from the shoreline opposite from the main day-use area. The trees at the main day-use area are anticipated to remain unaffected. Therefore, from this viewpoint, the change to the existing visual character or quality of the site and its surroundings would not be substantial.

The view from Viewpoint 8 would be altered by Project construction. Viewers at Viewpoint 8 would most likely be residents and recreationists. As shown in Exhibit 9, the dam would be raised, and trees in the foreground would be removed. The floating boom would continue to be used to protect the irrigation inlet from debris. Because the primary landscape features, distance, and context would not change with implementation of the dam modifications, the quality of the view would not be affected. Therefore, changes to the view from this viewpoint would not substantially degrade the existing visual character or quality of the site and its surroundings. Note in the exhibit that the fence around the spillway was digitally removed from the existing view photograph to allow a more accurate comparison to the photosimulated perspective. The fence would be retained or replaced as part of the Project for public safety reasons.

The view from Viewpoint 9 would be altered by Project construction. Viewers at Viewpoint 9 would most likely be residents and recreationists. As shown in Exhibit 10, the dam and reservoir water surface would be more visible following construction. Trees would be removed below the high-water mark. For this reason, more of the reservoir surface would become visible from this viewpoint. The selective removal of vegetation and increase in water surface elevation would not substantially degrade the existing visual character or quality of the site and its surroundings.

Construction activities are anticipated to occur 7 days per week from 7 a.m. until one-half hour after sunset. Work through the night could be required on a limited basis, including during periods of reservoir drawdown and inlet canal shutdown. Work performed after dusk would require temporary construction lighting. In addition, security lighting might be used at the staging areas to reduce the risk of theft or vandalism. Because these light sources

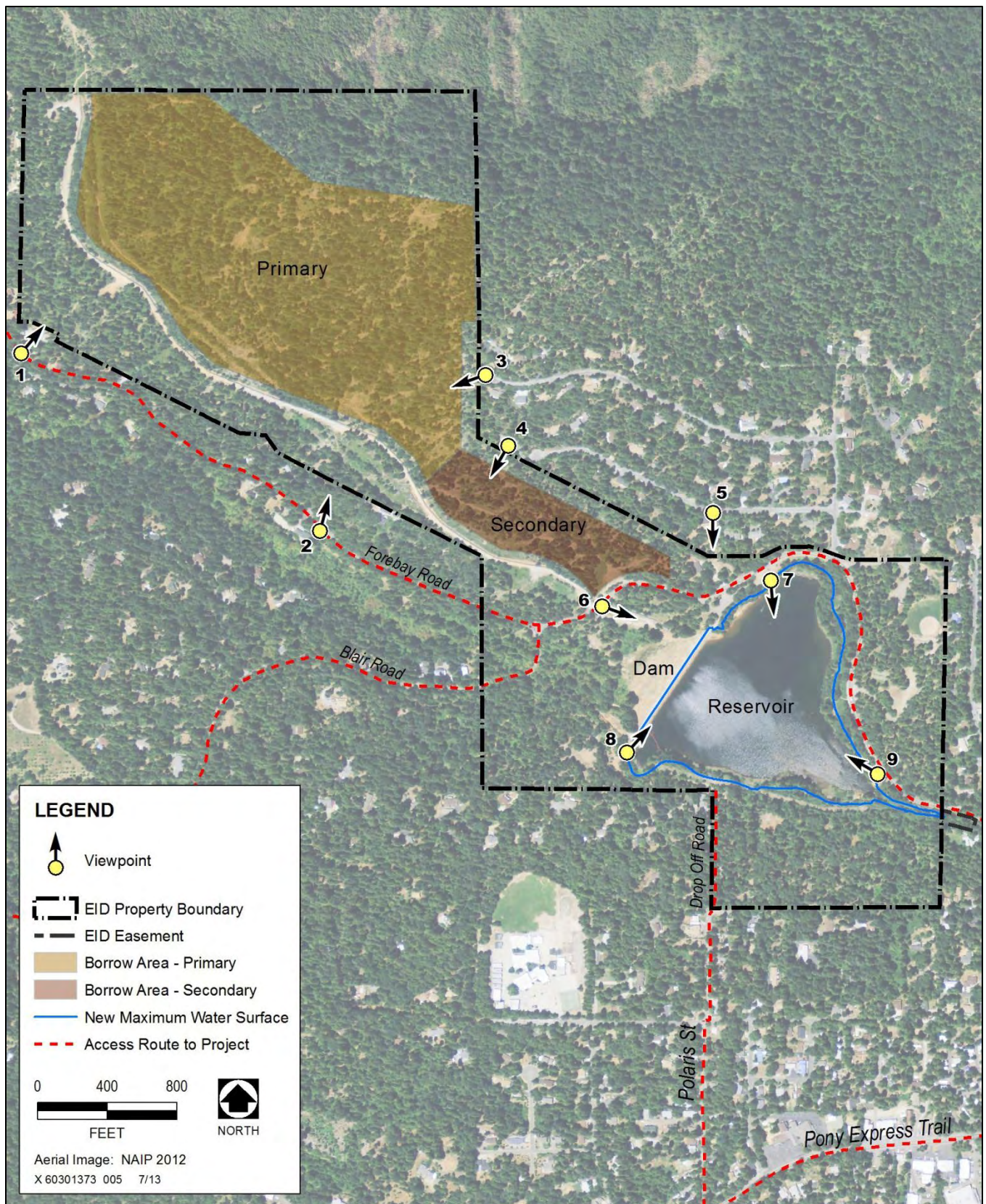
might be used, nearby viewers might be affected by off-site light spill. The spill of light onto nearby residences could expand the nighttime views of the area, obscure the nighttime sky, and alter the aesthetic quality of the nighttime environment. The addition of light and glare would be a short-term effect that would cease at the end of construction. Because this effect is a short-term change, it is expected to pose only a nuisance to local viewers and would not constitute a substantial change in the environment. There would be no construction-related sources of daytime glare.

The Project site is located in a rural location with little to no lighting at night. There is currently no lighting in public areas related to operation of the reservoir and other facilities. Activities at the reservoir and dam area related to recreation or operation and maintenance are anticipated to occur during daylight.

Project activities would also include installing new or replacement appurtenances at the Forebay Dam, which would be constructed with galvanized metal or painted with a nonreflective paint to reduce the potential for glare. In addition, the maximum surface elevation of the Forebay Reservoir would increase, resulting in minor changes to glare angles from the sun. However, because the reservoir fluctuates as part of normal facility operations and the constant repositioning of the sun, this change would not be substantial. The operation-related change to daytime or nighttime views would not be substantial.

3 REFERENCES

El Dorado County. 2004. *El Dorado County General Plan*, Conservation and Open Space Element. Adopted by the Board of Supervisors July 19, 2004, Resolution Number 235-2004. Placerville, CA.



Source: Data provided by EID and adapted by AECOM in 2013

Exhibit 1

Locations of Photograph Viewpoints



Viewpoint 1: View from Forebay Road, looking north toward primary borrow area.



Viewpoint 2: View from Forebay Road, looking north toward primary borrow area.

Exhibit 2

Photograph Viewpoints 1 and 2



Viewpoint 3: View from west end of Terrace Drive, looking southwest toward primary borrow area.



Viewpoint 4: View from west end of El Camino Drive, looking southwest across secondary borrow area with penstock in background.

Exhibit 3

Photograph Viewpoints 3 and 4



Viewpoint 5: View from El Camino Drive, looking south across a residential property toward reservoir.



Viewpoint 6: View from Forebay Road where it crosses the penstock, looking east toward the dam

Exhibit 4

Photograph Viewpoints 5 and 6



Viewpoint 7: View from the main day-use area, looking south across reservoir.



Viewpoint 8: View from southeastern corner of the reservoir, looking northeast across dam.

Exhibit 5

Photograph Viewpoints 7 and 8



Viewpoint 9: View from the fishing access day-use area, looking northwest across reservoir.

Exhibit 6

Photograph Viewpoint 9



Existing view from Viewpoint 6.



Photosimulation of Project features from Viewpoint 6.

Exhibit 7 Existing View and Photosimulation of Project Features from Photograph Viewpoint 6



Existing view from Viewpoint 7.



Photosimulation of Project features from Viewpoint 7.

Exhibit 8 Existing View and Photosimulation of Project Features from Photograph Viewpoint 7



Existing view from Viewpoint 8. The fence around the spillway has been digitally removed from this exhibit to allow a more accurate comparison to the photosimulated perspective. The fence would be retained or replaced as part of the Project.



Photosimulation of Project features from Viewpoint 8.

Exhibit 9 Existing View and Photosimulation of Project Features from Photograph Viewpoint 8



Existing view from Viewpoint 9.



Photosimulation of Project features from Viewpoint 9.

Exhibit 10 Existing View and Photosimulation of Project Features from Photograph Viewpoint 9

APPENDIX C

Air Quality and Greenhouse Gas Technical Report:
El Dorado Forebay Dam Modification Project

Air Quality and Greenhouse Gas
Technical Report
El Dorado Forebay Dam Modification Project

Prepared for:



El Dorado Irrigation District

AECOM

October 2013

Air Quality and Greenhouse Gas
Technical Report

El Dorado Forebay Dam Modification Project

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A Emission Modeling Assumptions and Details

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ACRONYMS AND OTHER ABBREVIATIONS

°C	degrees Celsius
°F	degrees Fahrenheit
µg/m ³	micrograms per cubic meter
2011 RFPP	<i>Sacramento Regional 8-Hour Ozone 2011 Reasonable Further Progress Plan</i>
AB	Assembly bill
AQAP	Air Quality Attainment Plan
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emission Estimator Model
CCAA	California Clean Air Act
CEQA	California Environmental Quality Act
CH ₄	methane
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalents
EDCAQMD	El Dorado County Air Quality Management District
EID	El Dorado Irrigation District
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gas
GWP	global warming potential
MCAB	Mountain Counties Air Basin
mg/m ³	milligrams per cubic meter
MPO	metropolitan planning organization
MT	metric tons
N ₂ O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NO ₂	nitrogen dioxide
NOA	naturally occurring asbestos
NO _x	oxides of nitrogen
PM	particulate matter
PM _{2.5}	particulate matter equal to or less than 2.5 micrometers in diameter

PM ₁₀	particulate matter equal to or less than 10 micrometers in diameter
ppb	parts per billion
ppm	parts per million
Project	El Dorado Forebay Dam Modification Project
ROG	reactive organic gases
SB	Senate bill
SFNA	Sacramento Federal Ozone Nonattainment Area
SIP	State Implementation Plan
SO ₂	sulfur dioxide
TAC	toxic air contaminant

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1 INTRODUCTION

The El Dorado Irrigation District (EID) is proposing to implement modifications to the existing El Dorado Forebay Dam. As part of this proposal, EID is undertaking the preparation of environmental studies and impact assessment in compliance with the California Environmental Quality Act (CEQA) and other applicable state and federal statutes.

This technical report presents background information necessary to support the air quality and greenhouse gas (GHG) analysis presented in the El Dorado Forebay Dam Modification Project (Project) Environmental Impact Report. This technical report describes the existing setting of air quality and GHGs in the area surrounding the Project site, standards related to air quality and GHGs, the estimated emissions that would be generated from Project implementation, and the calculations and assumptions used to estimate the future emissions.

1.1 REGULATORY BACKGROUND

1.1.1 FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

NATIONAL AMBIENT AIR QUALITY STANDARDS

The Clean Air Act (CAA) (Title 42, Sections 7401–7671 of the U.S. Code) requires that National Ambient Air Quality Standards (NAAQS) be adopted to protect the public health and welfare from the effects of air pollution. The U.S. Environmental Protection Agency (EPA) has established primary and secondary NAAQS that specify allowable ambient concentrations of criteria pollutants while still protecting public health:

- ▶ *Primary NAAQS* are established at levels necessary to protect the public health—including the health of sensitive populations such as asthmatics, children, and the elderly—with an adequate margin of safety.
- ▶ *Secondary NAAQS* specify the levels of air quality determined appropriate to protect the public welfare from any known or anticipated adverse effects of air contaminants.

Current standards are set for ozone; carbon monoxide (CO); nitrogen dioxide (NO₂); sulfur dioxide (SO₂); lead; and particulate matter (PM), which is subdivided into two classes based on particle size: PM equal to or less than 10 micrometers in diameter (PM₁₀) and PM equal to or less than 2.5 micrometers in diameter (PM_{2.5}). The NAAQS for these pollutants are shown in Table 1.

Acting under the provisions of the CAA, EPA requires each state with regions that have not attained the NAAQS to prepare a State Implementation Plan (SIP) detailing how each local area will meet these standards. The SIP is a legal agreement between each state and the federal government to commit resources to improving air quality. It serves as the template for conducting regional and project-level air quality analyses. The SIP is not a single document; rather, it is a compilation of new and previously submitted attainment plans, emissions reduction programs, air district rules, state regulations, and federal controls.

On April 2, 2007, in *Massachusetts v. EPA*, 549 U.S. 497 (2007), the U.S. Supreme Court found that GHGs are air pollutants covered by the CAA and that EPA has the authority to regulate GHGs. The court held that the EPA

**Table 1
National and California Ambient Air Quality Standards**

Pollutant	Averaging Time	California Standards ^a		National Standards ^b		
		Concentration ^c	Primary ^{c,d}	Secondary ^{c,e}		
Ozone	1 hour	0.09 ppm (180 µg/m ³)	–	0.075 ppm (147 µg/m ³)	Same as primary standard	
	8 hours	0.070 ppm (137 µg/m ³)				
Respirable particulate matter (PM ₁₀) ^f	24 hours	50 µg/m ³	150 µg/m ³	–	Same as primary standard	
	Annual arithmetic mean	20 µg/m ³				
Fine particulate matter (PM _{2.5}) ^f	24 hours	–	35 µg/m ³	12 µg/m ³	Same as primary standard	
	Annual arithmetic mean	12 µg/m ³				
Carbon monoxide	8 hours	9.0 ppm (10 mg/m ³)	9 ppm (10 mg/m ³)	–	None	
	1 hour	20 ppm (23 mg/m ³)	35 ppm (40 mg/m ³)			
	8 hours (Lake Tahoe)	6 ppm (7 mg/m ³)				
Nitrogen dioxide ^g	Annual arithmetic mean	0.030 ppm (57 µg/m ³)	0.053 ppm (100 µg/m ³)	100 ppb (188 µg/m ³)	Same as primary standard	
	1 hour	0.18 ppm (339 µg/m ³)				
Sulfur dioxide ^h	Annual arithmetic mean	–	0.030 ppm (for certain areas) ^h	–	–	
	24 hours	0.04 ppm (105 µg/m ³)	0.14 ppm (for certain areas) ^h			
	3 hours	–	–			0.5 ppm (1,300 µg/m ³)
	1 hour	0.25 ppm (655 µg/m ³)	75 ppb (196 µg/m ³)			
Lead ^{ij}	30-day average	1.5 µg/m ³	–	1.5 µg/m ³ (for certain areas) ^j	Same as primary standard	
	Calendar quarter	–				
	Rolling 3-month average	–	0.15 µg/m ³			
Visibility-reducing particles ^k	8 hours	See footnote j				
Sulfates	24 hours	25 µg/m ³			No national standards	
Hydrogen sulfide	1 hour	0.03 ppm (42 µg/m ³)				
Vinyl chloride ⁱ	24 hours	0.01 ppm (26 µg/m ³)				

Notes: mg/m³ = milligrams per cubic meter; PM_{2.5} = fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; PM₁₀ = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; ppb = parts per billion; ppm = parts per million; µg/m³ = micrograms per cubic meter

^a California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, and particulate matter (PM₁₀, PM_{2.5}, and visibility-reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

**Table 1
National and California Ambient Air Quality Standards**

Pollutant	Averaging Time	California Standards ^a	National Standards ^b	
		Concentration ^c	Primary ^{c,d}	Secondary ^{c,e}
<p>^b National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM₁₀, the 24-hour is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than 1. For PM_{2.5}, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standards. Contact EPA for further clarification and current national policies.</p> <p>^c Concentration expressed first in the units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and reference pressure of 760 torr; parts per million (ppm) in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.</p> <p>^d National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.</p> <p>^e National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.</p> <p>^f On December 14, 2012, the national annual PM_{2.5} primary standard was lowered from 15 µg/m³ to 12.0 µg/m³. The existing national 24-hour PM_{2.5} standards (primary and secondary) were retained at 35 µg/m³, as was the annual secondary standard of 15 µg/m³. The existing 24-hour PM₁₀ standards (primary and secondary) of 150 µg/m³ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.</p> <p>^g To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of ppm. To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.</p> <p>^h On June 2, 2010, a new 1-hour SO₂ standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO₂ national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.</p> <p>Note that the 1-hour national standard is in units of ppb. California standards are in units of ppm. To directly compare the 1-hour national standard to the California standard, the units can be converted to ppm. In this case, the national standard of 75 ppb is identical of 0.075 ppm.</p> <p>ⁱ The California Air Resources Board (ARB) has identified lead and vinyl chloride as toxic air contaminants with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.</p> <p>^j The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 µg/m³ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standards are approved.</p> <p>^k In 1989, ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and the “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.</p>				
Source: ARB 2013a				

Administrator must determine (1) whether or not emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare; or (2) whether the science is too uncertain to make a reasoned decision.

MANDATORY GREENHOUSE GAS REPORTING RULE

On October 30, 2009, EPA published the final version of the Mandatory Greenhouse Gas Reporting Rule in the Federal Register. In general, compliance with this national reporting requirement will provide EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons (MT) or more of carbon dioxide (CO₂) per year. An estimated 85% of the total U.S. GHG emissions, from approximately 10,000 facilities, are covered by this final rule. Subsequent rulings have expanded the emissions sources required to report emissions data, and now include oil and natural gas industries, industrial wastewater treatment plants, and industrial landfills.

GENERAL CONFORMITY

General conformity requirements were adopted by Congress as part of the Clean Air Act Amendments (CAAA) and were implemented by EPA regulations in 1993. The purpose of the general conformity program is to ensure that actions taken by the federal government do not undermine state or local efforts to achieve and maintain NAAQS.

The General Conformity Rule (Title 40, Sections 51.850 through 51.860 and 93.150 through 93.160 of the Code of Federal Regulations) requires any federal agency responsible for an action occurring in a federal nonattainment or attainment/maintenance area to demonstrate conformity to the applicable SIP. To do so, the federal agency must determine that the action is either exempt from General Conformity Rule requirements or subject to a formal conformity determination. All reasonably foreseeable emissions predicted to result from the action—both direct and indirect—must be considered, and the location and quantity of emissions must be identified.

A federal action is exempt and considered to conform to the SIP if an applicability analysis shows that total direct and indirect emissions of pollutants from construction and operation of the action would be less than specified emission-rate thresholds. These thresholds, known as *de minimis* levels, for a region vary depending on the project area's attainment/maintenance and nonattainment designations and classifications. If the action is determined to not be exempt and the emissions would exceed the *de minimis* levels, a formal air quality conformity analysis is required. The action cannot proceed unless mitigation measures are identified that would bring the project into conformance. General conformity applies only to pollutants for which the area is nonattainment or attainment/maintenance for the NAAQS.

PROPOSED FINDINGS FOR GREENHOUSE GASES UNDER THE FEDERAL CLEAN AIR ACT

On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- ▶ *Endangerment Finding*: The current and projected concentrations in the atmosphere of the six key well-mixed GHGs—CO₂, methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—threaten the public health and welfare of current and future generations.

- ▶ *Cause or Contribute Finding:* The combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution, which threatens the public health and welfare.

Although these findings did not themselves impose any requirements on industry or other entities, this action was a prerequisite to finalizing EPA's Proposed Greenhouse Gas Emission Standards for Light-Duty Vehicles, which were published on September 15, 2009. On May 7, 2010, the final Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards were published in the *Federal Register*. The emissions standards will require that model year 2016 vehicles meet an estimated combined average emissions level of 250 grams of CO₂ per mile, which is equivalent to mileage of 35.5 miles per gallon if the automobile industry were to meet this CO₂ level solely by improving fuel economy.

On August 28, 2012, the U.S. Department of Transportation and EPA issued a joint Final Rulemaking requiring additional federal GHG and fuel economy standards for passenger cars and light-duty trucks produced in model years 2017 through 2025. These vehicles would be required to meet an estimated combined average emissions level of 163 grams of CO₂ per mile in model year 2025, which is equivalent to mileage of 54.5 miles per gallon if the improvements were made solely through improvements in fuel efficiency.

In addition to the standards for light-duty vehicles, on August 9, 2011, the U.S. Department of Transportation and EPA announced standards to reduce GHG emissions and improve the fuel efficiency of heavy-duty trucks and buses.

1.1.2 STATE PLANS, POLICIES, REGULATIONS, AND LAWS

The California Air Resources Board (ARB) has established California Ambient Air Quality Standards (CAAQS) that are generally more restrictive than the NAAQS. The CAAQS are also shown in Table 1.

ARB is the lead agency for developing California's SIP and oversees the activities of local air quality management agencies. The California CAA (CCAA) (California Health and Safety Code, Section 40911 et seq.) requires each area exceeding the CAAQS for criteria pollutants to develop a plan for achieving those standards. Air districts must design plans that achieve an annual reduction in districtwide emissions of 5% or more, averaged every consecutive 3-year period (California Health and Safety Code, Section 40914). Specifically, air districts must develop and implement air pollution reduction measures to achieve the CAAQS for any criteria pollutants for which the region is classified as nonattainment. These measures are described in Air Quality Attainment Plans (AQAPs) or Air Quality Management Plans (AQMPs) that the air districts submit to ARB for review and approval. ARB incorporates the AQAPs and AQMPs from local air districts into the SIP for EPA approval.

ARB also maintains air quality monitoring stations throughout the state in conjunction with local air districts. The data collected at these stations are used by ARB to classify regions as being in attainment or nonattainment with respect to each CAAQS and NAAQS, and to monitor progress toward attaining air quality standards.

With the passage of legislation including Senate bills (SBs) and Assembly bills (ABs) and executive orders, California launched an innovative and proactive approach to dealing with GHG emissions and climate change at the state level.

ASSEMBLY BILL 1493 (PAVLEY)

AB 1493 required ARB to develop and implement regulations to reduce GHG emissions from automobiles and light-duty trucks. These stricter emissions standards were designed to apply to automobiles and light-duty trucks beginning with model year 2009. In June 2009, the EPA Administrator granted a CAA waiver of preemption to California. This waiver allowed California to implement its own GHG emissions standards for motor vehicles beginning with model year 2009. California agencies will work with federal agencies to conduct joint rulemaking to reduce GHG emissions for passenger car model years 2017 through 2025.

EXECUTIVE ORDER S-3-05

The goal of this executive order, signed by Governor Arnold Schwarzenegger on June 1, 2005, is to reduce California's GHG emissions to year 2000 levels by 2010, 1990 levels by 2020, and 80% below the 1990 levels by the year 2050. In 2006, this goal was reinforced with the passage of AB 32.

GLOBAL WARMING SOLUTIONS ACT OF 2006 AND EXECUTIVE ORDER S-20-06

The Global Warming Solutions Act of 2006 set the same overall GHG emissions reduction goals as outlined in Executive Order S-3-05. The Act further requires that ARB create a plan that includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06, signed on October 18, 2006, further directed state agencies to begin implementing the Act, including the recommendations made by the State of California's Climate Action Team.

EXECUTIVE ORDER S-01-07

Governor Schwarzenegger set forth the low-carbon fuel standard for California. Under this executive order, the carbon intensity of California's transportation fuels is to be reduced by at least 10% by 2020.

SENATE BILL 97

SB 97 (Chapter 185, Statutes of 2007) required the Governor's Office of Planning and Research to develop recommended amendments to the State CEQA Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.

SENATE BILL 375

SB 375 (Chapter 728, Statutes of 2008) was enacted to align regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 required metropolitan planning organizations (MPOs) to adopt a sustainable communities strategy or alternative planning strategy, which would prescribe land use allocation in that MPO's regional transportation plan. On September 23, 2010, ARB adopted regional GHG targets for passenger vehicles and light-duty trucks for 2020 and 2035 for the 18 MPOs in California. Transportation projects would not be eligible for funding programmed after January 1, 2012, if MPOs did not meet the GHG reduction targets.

1.1.3 REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

The El Dorado County Air Quality Management District (EDCAQMD) attains and maintains air quality conditions in El Dorado County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues.

The clean-air strategy of EDCAQMD involves preparing plans for the attainment of ambient air-quality standards, adopting and enforcing rules and regulations on sources of air pollution, and issuing permits for stationary sources of air pollution. EDCAQMD also inspects stationary sources and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the CAA, CAAA, and CCAA.

The ARB Climate Change Scoping Plan states that local governments are “essential partners” in the effort to reduce GHG emissions (ARB 2008). The scoping plan also acknowledges that local governments have broad influence and, in some cases, exclusive jurisdiction over activities that contribute to significant direct and indirect GHG emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Many of the proposed measures to reduce GHG emissions rely on local government actions. The EDCAQMD has no regulations addressing GHG emissions.

EDCAQMD AIR QUALITY PLANS

EDCAQMD prepared and submitted an AQAP in 1994 in coordination with the air quality management districts and air pollution control districts of Sacramento, Placer, Solano, Sutter, and Yolo Counties. The 1994 AQAP was submitted in compliance with requirements set forth in the CCAA that specifically addressed the nonattainment status for ozone and, to a lesser extent, CO and PM₁₀.

The western portion of El Dorado County is also part of the Sacramento Federal Ozone Nonattainment Area (SFNA), which also includes Yolo County and portions of Placer and Solano Counties. As a nonattainment area, the region is required to submit rate-of-progress milestone evaluations in accordance with the CAAA. Milestone reports for the 8-hour ozone standard were prepared for 1996, 1999, 2002, and 2006. The AQAP and milestone reports present comprehensive strategies to reduce emissions of reactive organic gases (ROG), oxides of nitrogen (NO_x), and PM₁₀ from stationary, area, mobile, and indirect sources. Such strategies include adopting rules and regulations; enhancing CEQA participation; implementing a new and modified indirect-source review program; adopting local air quality plans; and implementing control measures for stationary, mobile, and indirect sources.

On June 4, 2010, EPA reclassified the SFNA as a “severe” 8-hour nonattainment area, which extended the attainment deadline for the 8-hour ozone standard from 2013 to 2019. The air pollution control and air quality management districts that make up the SFNA prepared the *Sacramento Regional 8-Hour Ozone 2011 Reasonable Further Progress Plan* (2011 RFPP), which demonstrated progress toward attainment of the federal 8-hour ozone standard. The 2011 RFPP concluded that the region would be able to achieve attainment of the 8-hour ozone standard by the 2019 deadline.

EDCAQMD RULES AND REGULATIONS

The following specific EDCAQMD rules are applicable to the Project:

- ▶ *Rule 202: Visible Emissions.* A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than 3 minutes in any 1 hour which is as dark or darker in shade as that designated as number 1 on the Ringelmann Chart, as published by the U.S. Bureau of Mines.
- ▶ *Rule 205: Nuisance.* A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons, or to the public, or which endanger the comfort, repose, health or safety of any such persons, or the public, or which cause to have a natural tendency to cause injury or damage to business or property. This rule does not apply to odors emanating from agriculture operations necessary for the growing of crops or raising of fowl or animals.
- ▶ *Rule 223: Fugitive Dust—General Requirements.* The purpose of this rule is to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce or mitigate fugitive dust emissions.
- ▶ *Rule 223-1: Fugitive Dust—Construction, Bulk Material Handling, Blasting, Other Earthmoving Activities and Carryout and Trackout Prevention.* The purpose of this rule is to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce or mitigate fugitive dust emissions.
- ▶ *Rule 223-2: Fugitive Dust—Asbestos Hazard Mitigation.* The purpose of this rule is to reduce the amount of asbestos particulate matter entrained in the ambient air as a result of any construction or construction related activities that disturbs or potentially disturbs naturally occurring asbestos by requiring actions to prevent, reduce or mitigate asbestos emissions.
- ▶ *Rule 300: Open Burning.* This rule provides standards for open burning in El Dorado County. The rule identifies exempt activities and permit procedures for open burning of vegetation. For any open burning, an appropriate permit is always required, unless exempted.

The Project would be subject to the above rules during all construction phases. Open burning of vegetation would be subject to Rule 300, and EID or its contractor would be required to submit a Smoke Management Plan and Burn Permit Application to EDCAQMD for approval before beginning construction of the Project. For projects greater than 100 acres in size, such as the Project, EDCAQMD may require additional smoke management procedures. In addition, the Project would also be subject to the requirements of ARB Title 17 of the California Code of Regulations, Smoke Management Guidelines for Agricultural and Prescribed Burning.

EL DORADO COUNTY GENERAL PLAN

Government Code Section 53091 states that building and zoning ordinances do not apply to “construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency.” Public utility projects that serve the facilities described above would not be subject to

local plans, policies, regulations, or ordinances. The following local regulations related to air quality are provided for informational purposes and are provided as a basis to assist with CEQA review in evaluating the level of significance associated with impacts.

The El Dorado County Board of Supervisors adopted a General Plan on July 19, 2004. Goals and policies related to air quality are included in the Public Health, Safety, and Noise Element, which was amended in March 2009 (El Dorado County 2009). The following goal, objectives, and policy included in the Public Health, Safety, and Noise Element are relevant to the Project:

Goal 6.7: Air Quality Maintenance. (A) Strive to achieve and maintain ambient air quality standards established by the U.S. Environmental Protection Agency and the California Air Resources Board. (B) Minimize public exposure to toxic or hazardous air pollutants and air pollutants that create unpleasant odors.

- ▶ **Objective 6.7.1:** El Dorado County Clean Air Plan—Adopt and enforce the El Dorado County Clean Air Act Plan in conjunction with the County Air Quality Management District.
- ▶ **Objective 6.7.5:** Agricultural and Fuel Reduction Burning—Adopt and maintain air quality regulations which will continue to permit agricultural and fuel reduction burning while minimizing their adverse effects.
- ▶ **Objective 6.7.7:** Construction Related, Short-Term Emissions—Reduce construction related, short-term emissions by adopting regulations which minimize their adverse effects.
 - **Policy 6.7.7.1:** The County shall consider air quality when planning the land uses and transportation systems to accommodate expected growth, and shall use the recommendations in the most recent version of the El Dorado County Air Quality Management (AQMD) *Guide to Air Quality Assessment: Determining Significance of Air Quality Impacts Under the California Environmental Quality Act*, to analyze potential air quality changes (e.g., short-term construction, long-term operations, toxic and odor-related emissions) and to require feasible mitigation requirements for such changes. The County shall also consider any new information or technology that becomes available prior to periodic updates of the Guide. The County shall encourage actions (e.g., use of light-colored roofs and retention of trees) to help mitigate heat island effects on air quality.

1.2 ENVIRONMENTAL SETTING

1.2.1 AIR QUALITY SETTING

“Air pollution” is a general term that refers to one or more chemical substances that degrade the quality of the atmosphere. Individual air pollutants may adversely affect human or animal health, reduce visibility, damage property, and reduce the productivity or vigor of crops and natural vegetation. The criteria air pollutants that are most important for this analysis are those that can be traced principally to motor vehicles and construction activities. In addition to the criteria pollutants, toxic air contaminants (TACs) and odors are air pollutants of concern.

CRITERIA AIR POLLUTANTS

As mentioned previously, EPA has identified six air pollutants as being of concern nationwide: ozone, CO, NO₂, SO₂, lead, and PM. The sources of these pollutants, their effects on human health and the nation's welfare, and their final deposition in the atmosphere vary considerably.

Ozone

Ozone, the principal component of smog, is formed in the atmosphere through a series of reactions involving ROG and NO_x in the presence of sunlight. ROG and NO_x are called precursors of ozone. NO_x includes various combinations of nitrogen and oxygen, such as nitrogen oxide (i.e., NO) and NO₂. Ozone is a principal cause of lung and eye irritation in the urban environment. Substantial ozone concentrations are usually produced only in the summer, when atmospheric inversions are greatest and temperatures are high. ROG and NO_x emissions are both considered critical in ozone formation.

Carbon Monoxide

CO is a colorless and odorless gas that, in the urban environment, is associated primarily with the incomplete combustion of fossil fuels in motor vehicles. Relatively high concentrations are typically found near crowded intersections and along heavily used roadways carrying slow-moving traffic. Even under the most severe meteorological and traffic conditions, high concentrations of CO are limited to locations within a relatively short distance (300–600 feet) of heavily traveled roadways. Emissions from vehicular traffic can cause localized CO increases, and severe congestion at major signalized intersections can generate elevated CO levels, called “hot spots,” that can be hazardous to human receptors adjacent to the intersections.

Nitrogen Dioxide

NO₂ is a product of combustion and is generated in vehicles and in stationary sources such as power plants and boilers. NO₂ can cause lung damage. As noted above, NO₂ is part of the NO_x family and is a principal contributor to ozone and smog generation.

Sulfur Dioxide

SO₂ is a combustion product; its primary source is power plants and heavy industries that use coal or oil as fuel. SO₂ is also a product of diesel engine combustion. The health effects of SO₂ include lung disease and breathing problems for asthmatics. SO₂ in the atmosphere contributes to the formation of acid rain.

Lead

Lead is a highly toxic metal that may cause a range of effects on human health. Previously, the lead used in gasoline anti-knock additives represented a major source of lead emissions to the atmosphere. Soon after its inception, EPA began working to reduce lead emissions, issuing the first reduction standards in 1973. Lead emissions have decreased substantially as the use of leaded gasoline has been nearly eliminated.

Particulate Matter

PM is a complex mixture of extremely small particles and liquid droplets. PM is made up of several components: acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. Natural sources of particulates include windblown dust and ocean spray.

The size of PM is directly linked to the potential for causing health problems. EPA is concerned about particles that are 10 micrometers in diameter or smaller because those are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. Health studies have shown an association between exposure to PM and premature death. Other important effects include aggravation of respiratory and cardiovascular disease, lung disease, decreased lung function, asthma attacks, and certain cardiovascular problems such as heart attacks and irregular heartbeat (EPA 2013). Older adults, people with heart and lung disease, and children are particularly sensitive to fine-particle exposure. EPA groups PM into two categories, PM_{2.5} and PM₁₀, as described below.

Fine Particulate Matter

Fine particles, such as those found in smoke and haze, are PM_{2.5}. Sources of fine particles include all types of combustion activities (e.g., motor vehicles, power plants, wood burning) and certain industrial processes. PM_{2.5} is the major cause of reduced visibility (haze) in California.

Inhalable Particulate Matter

PM₁₀ includes both fine (less than 2.5 micrometers) and coarse dust particles. Coarse particles, such as those found near roadways and dusty industries, are larger than 2.5 micrometers and smaller than 10 micrometers in diameter. Sources of coarse particles include crushing or grinding operations and dust from paved or unpaved roads. The health effects of PM₁₀ are similar to those of PM_{2.5}. PM₁₀ levels are controlled primarily by controlling dust at construction and industrial sites, cleaning paved roads, and wetting or paving frequently used unpaved roads.

TOXIC AIR CONTAMINANTS

In addition to criteria air pollutants, EPA and ARB regulate TACs, also known as hazardous air pollutants. Concentrations of TACs are also used as indicators of ambient air quality conditions. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in ambient air; however, their high toxicity may pose a threat to public health even at low concentrations. Most TACs originate from human-made sources: on-road mobile sources, off-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories and refineries).

ASBESTOS AND NATURALLY OCCURRING ASBESTOS-BEARING SERPENTINE

Asbestos is a known carcinogen, and inhaling asbestos may result in the development of lung cancer or mesothelioma. The Project does not include construction activities that would involve asbestos.

Serpentine is a mineral commonly found in seismically active regions of California, usually in association with ultramafic rocks and along associated faults. Certain types of serpentine occur naturally in a fibrous form known generically as Naturally Occurring Asbestos (NOA). According to the Asbestos Review Area map for El Dorado County, NOA is not typically found in the geological formations present in the Project area (EDCAQMD 2013).

ODORS

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

The human nose is the sole sensing device for odors. The ability to detect odors varies considerably among the population and is quite subjective. Some individuals can smell minute quantities of specific substances; others may not have the same sensitivity, but may be sensitive to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person may be perfectly acceptable to another (e.g., fast food restaurant). It is important to also note that an unfamiliar odor is detected more easily and is more likely to result in complaints than a familiar one. This is because of a phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition occurs only when the odor's intensity changes.

ENVIRONMENTAL SETTING, CLIMATE, AND METEOROLOGY

The Project site is located in El Dorado County. El Dorado County is part of the Mountain Counties Air Basin (MCAB), which includes all of Amador, Calaveras, Mariposa, Nevada, Plumas, Sierra, and Tuolumne Counties and the western slope of El Dorado County and the central portion of Placer County.

Ambient concentrations of air pollutant emissions are determined by the amount of emissions released by pollutant sources, the atmosphere's ability to transport and dilute such emissions, and the stability of the pollutants (i.e., breakdown of pollutants through chemical reactions). Terrain, wind, atmospheric stability, and the presence of sunlight all affect transport, dilution, and pollutant stability. Therefore, when evaluating air quality changes in a particular region, it is important to understand the air basin's topography, meteorology, and climate in addition to the emission sources. The environmental factors and pollutant sources that affect ambient air pollutant concentrations are discussed separately below.

The MCAB lies along the northern Sierra Nevada, close to or contiguous with the Nevada border, and covers an area of roughly 11,000 square miles. Elevations in the MCAB range from 10,000 feet at the Sierra Nevada crest to several hundred feet above sea level at the Sacramento/El Dorado County boundary. El Dorado County consists of hilly and mountainous terrain that affects airflow patterns throughout the county. These mountain and hill formations direct surface air flows, cause shallow vertical mixing, and create areas of high pollutant concentrations by hindering dispersion. Because of its proximity to the Sacramento Valley, the MCAB and El Dorado County are prone to receiving pollutant transport from the more populated and traffic-heavy areas.

The Sierra Nevada receives large amounts of precipitation from storms moving in from the Pacific Ocean in the winter, with lighter amounts from intermittent "monsoonal" moisture flows from the south and cumulus buildup in the summer. Precipitation levels are high at the highest elevations, but decline rapidly toward the western and flatter portions of the basin. Winter temperatures in the mountains can be below freezing for weeks at a time, and

substantial amounts of snow can accumulate; but in the western foothills, winter temperatures usually dip below freezing only at night and precipitation is mixed as rain or light snow. Rainfall at the Placerville Station in El Dorado County, which is the closest climate monitoring station to the Project area and represents the Project's area, climate, and topography in the MCAB, averages approximately 38.76 inches annually (WRCC 2013). The heaviest precipitation occurs from November through March. The mean annual air temperature ranges from 53 degrees Fahrenheit (°F) in January to 91°F in July, with an annual average temperature of approximately 70°F (WRCC 2013).

Inversion layers, where warm air overlies cooler air, frequently occur and trap pollutants close to the ground. In the winter, these conditions can lead to CO "hot spots" (i.e., exceedance of the ambient air quality standard for CO) along heavily traveled roads and at busy intersections. During summer's longer daylight hours, stagnant air, high temperatures, and plentiful sunshine provide the conditions and energy for the photochemical reaction between ROG and NO_x that result in the formation of ozone. Because of its long formation time, ozone is a regional pollutant rather than a local hot-spot problem.

In the summer, the strong upwind valley air flowing east into the MCAB from the Central Valley is an effective transport medium for ozone precursors and ozone generated in the Bay Area and the Sacramento and San Joaquin Valleys. These transported pollutants predominate as the cause of ozone in the MCAB and are largely responsible for the exceedances of the CAAQS and NAAQS.

REGIONAL AND LOCAL AIR QUALITY

To determine whether a region's air quality is healthful or unhealthy, pollutant levels in ambient air samples are compared to the CAAQS and NAAQS. ARB and EPA use monitoring data presented to designate an area's attainment status with respect to the CAAQS and NAAQS, respectively, for criteria air pollutants. The purpose of these designations is to identify areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are "nonattainment," "attainment," and "unclassified." The "unclassified" designation is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards.

The most recent attainment designations with respect to the MCAB are shown for each criteria air pollutant in Table 2. With respect to the CAAQS, the MCAB is currently designated as a nonattainment area for ozone and PM₁₀, and as an attainment or unclassified area for all other pollutants. With respect to the NAAQS, the MCAB is designated as a nonattainment area for ozone and as an attainment or unclassified area for all other pollutants.

Ambient concentrations of air pollutants in the MCAB are measured at air quality monitoring stations operated by ARB. The closest and most representative air quality monitoring station to the Project area is the Placerville monitoring station. However, that monitoring station collects data only for ozone concentrations. Monitoring data for other pollutants were obtained from other monitoring stations in the MCAB or the closest monitoring station in the Sacramento Valley Air Basin (if data were not available in the MCAB). In general, the ambient air-quality measurements from these stations are representative of the air quality near the Project area. Table 3 summarizes the exceedances of the NAAQS and CAAQS and the highest pollutant levels recorded at the monitoring stations from 2010 through 2012.

Table 2 Mountain Counties Air Basin Attainment Status			
Pollutant	Averaging Time	California Attainment Status	National Attainment Status
Ozone	1 hour	N	—
	8 hour	N	N
Carbon monoxide (CO)	1 hour	U	U/A
	8 hour	U	U/A
Nitrogen dioxide (NO ₂)	Annual arithmetic mean	—	U/A
	1-hour	A	U/A
Respirable particulate matter (PM ₁₀)	Annual arithmetic mean	N	—
	24-hour	N	U
Fine particulate matter (PM _{2.5})	Annual arithmetic mean	U	A
	24-hour	—	N

Notes:
A = attainment; N = nonattainment; U = unclassified; U/A = unclassifiable/attainment; — = no standard
Source: ARB 2013b

Table 3 Summary of Annual Ambient Air Quality Data (2010–2012)			
	2010	2011	2012
Ozone¹			
Maximum concentration (1-hour/8-hour, ppm)	0.112/0.102	0.103/0.086	0.108/0.096
Number of days national standard exceeded (1-hour/8-hour)	3/8	2/5	6/20
Number of days state standard exceeded (1-hour/8-hour)	0/19	0/16	0/50
Carbon Monoxide (CO)²			
Maximum concentration (1-hour/8-hour, ppm)	3.1/1.16	2.3/1.87	2.1/1.54
Number of days national standard exceeded (1-hour/8-hour)	0/0	0/0	0/0
Number of days state standard exceeded (8-hour)	0	0	0
Nitrogen Dioxide (NO₂)³			
Maximum concentration (1-hour, ppm)	0.033	0.028	*
Number of days state standard exceeded	0	0	0
Annual average (ppm)	0.004	*	*
Fine Particulate Matter (PM_{2.5})⁴			
Maximum concentration (µg/m ³)	11.4	33.9	26.9
Number of days national standard exceeded (measured/calculated) ⁵	0/0.0	0/0.0	0/0.0
State annual average (µg/m ³) (national/California)	*	9.1	7.0
Respirable Particulate Matter (PM₁₀)⁴			
Maximum concentration (µg/m ³) (national/California) ⁶	26.3/25.8	32.2/34.1	44.6/43.8
Number of days state standard exceeded (measured/calculated) ⁵	0/*	0/*	0/*

**Table 3
Summary of Annual Ambient Air Quality Data (2010–2012)**

	2010	2011	2012
Number of days national standard exceeded (measured/calculated) ⁵	0/0.0	0/*	0/0.0
Annual average ($\mu\text{g}/\text{m}^3$) (national/California)	22.5/—	24.9/24.7	22.4/22.3
Notes: $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter; ppm = parts per million; * = data not available			
¹ Measurements were recorded at the Placerville, California monitoring station.			
² Measurements were registered at the North Highlands–Blackfoot Way monitoring station. Carbon monoxide is not measured at any monitoring stations in the Mountain Counties Air Basin.			
³ Measurements were recorded at the Grass Valley–Litton Building monitoring station.			
⁴ Measurements were recorded at the San Andreas–Gold Strike Road monitoring station.			
⁵ State and national statistics may differ for the following reasons: State statistics are based on California-approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers. State statistics are based on local conditions while national statistics are based on standard conditions. State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.			
⁶ Measured days are those days that an actual measurement was greater than the level of the state daily standard or the national daily standard. Measurements are typically collected every 6 days. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.			
Source: ARB 2013c			

1.2.2 GREENHOUSE GAS SETTING

Certain gases in the earth’s atmosphere, classified as GHGs, play a critical role in determining the earth’s surface temperature. A portion of the solar radiation that enters the atmosphere is absorbed by the earth’s surface, and a smaller portion of this radiation is reflected back toward space. This infrared radiation (i.e., thermal heat) is absorbed by GHGs within the atmosphere; as a result, infrared radiation released from the earth that otherwise would have escaped back into space is instead “trapped,” resulting in a warming of the atmosphere. This phenomenon, known as the “greenhouse effect,” is responsible for maintaining a habitable climate on the earth. Without the naturally occurring greenhouse effect, the earth would not be able to support life as we know it.

GHGs are present in the atmosphere naturally, are released by natural and anthropogenic (human-caused) sources, and are formed from secondary reactions taking place in the atmosphere. The following are GHGs that are widely accepted as the principal contributors to human-induced global climate change:

- ▶ Carbon dioxide
- ▶ Methane
- ▶ Nitrous oxide
- ▶ Hydrofluorocarbons
- ▶ Perfluorocarbons
- ▶ Sulfur hexafluoride

Global warming potential (GWP) is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to CO₂. The concept of CO₂ equivalents (CO₂e) is used to account for the different GWP potentials of GHGs to absorb infrared radiation. The GWP of a GHG is based on several factors, including the

relative effectiveness of a gas in absorbing infrared radiation and the length of time (i.e., lifetime) that the gas remains in the atmosphere (“atmospheric lifetime”). The reference gas for GWP is CO₂; therefore, CO₂ has a GWP of 1. The other main GHGs that have been attributed to human activity are CH₄, which has a GWP of 21, and N₂O, which has a GWP of 310 (UNFCCC 2013). For example, 1 ton of CH₄ has the same contribution to the greenhouse effect as approximately 21 tons of CO₂. GHGs with lower emissions rates than CO₂ may still contribute to climate change because they are more effective at absorbing outgoing infrared radiation than CO₂ (i.e., high GWP).

GHG emissions associated with human activities are highly likely responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of the earth’s atmosphere and oceans, with corresponding effects on global circulation patterns and climate (IPCC 2007). Similarly, emissions of GHGs are borne globally, as opposed to localized air quality effects of criteria air pollutants and toxic air contaminants. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; suffice it to say, the quantity is enormous, and no single project alone would measurably contribute to a noticeable incremental change in the global average temperature, or to a global, local, or micro climate. From the standpoint of CEQA, GHG-related effects to global climate change are inherently cumulative.

EMISSION SECTORS

GHG emissions contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, electric utility, residential, commercial, and agricultural sectors. Emissions of CO₂ are byproducts of fossil fuel combustion, and CH₄, a highly potent GHG, is the primary component in natural gas and is associated with agricultural practices and landfills. N₂O is also largely attributable to agricultural practices and soil management.

For purposes of accounting for and regulating GHG emissions, the sources of GHG emissions are grouped into emissions sectors. ARB identifies the following main GHG emissions sectors that account for most human-caused GHG emissions generated in California:

- ▶ *Transportation:* On-road motor vehicles, recreational vehicles, aviation, ships, and rail
- ▶ *Electricity:* Use and production of electrical energy
- ▶ *Industry:* Mainly stationary sources (e.g., boilers and engines) associated with process emissions
- ▶ *Commercial and Residential:* Area sources, such as landscape maintenance equipment, fireplaces, and consumption of natural gas for space and water heating
- ▶ *Agriculture:* Agricultural sources that include off-road farm equipment; irrigation pumps; crop residue burning (CO₂); and emissions from flooded soils, livestock waste, crop residue decomposition, and fertilizer volatilization (CH₄ and N₂O)
- ▶ *High-GWP Gases:* Refrigerants and electrical insulation (e.g., sulfur hexafluoride), among other sources
- ▶ *Recycling and Waste:* Waste management facilities and landfills; primary emissions are CO₂ from combustion and CH₄ from landfills and wastewater treatment

2 ANALYSIS

2.1 METHODOLOGY

Short-term construction-generated emissions of criteria air pollutants and ozone precursors were assessed in accordance with methods recommended by the EDCAQMD *Guide to Air Quality Assessment* (EDCAQMD 2002). Construction emissions associated with the Project were quantified using the California Emission Estimator Model (CalEEMod) Version 2011.1.1. CalEEMod allows the user to enter project-specific construction information, such as types, number, and horsepower of construction equipment, and number and length of off-site motor vehicle trips. Construction-related exhaust emissions for the Project were estimated for construction worker commutes, haul trucks, and the use of off-road equipment.

Emissions were estimated for each construction phase based on Project-specific information. Heavy-duty construction equipment would be brought to the site via the network of regional highways and local streets during a period of approximately 1 month before construction. It is anticipated that the Project would be implemented in two construction seasons, starting in spring of the first season in 2015 and ending in late fall/early winter of the second season in 2016. Construction activities would be allowed 7 days a week, from 7 a.m. until one-half hour after sunset. On limited occasions, nighttime work might also occur with prior written authorization from EID. The Project's construction emissions were modeled to estimate the average daily emissions that would occur over the duration of the construction period, consistent with the EDCAQMD *Guide to Air Quality Assessment* (EDCAQMD 2002).

Emission estimates for earthmoving and material delivery are based on the information presented in Table 4, below. Based on the current schedule, earthmoving would occur primarily in two phases: July through December 2015 and June through August 2016. The highway truck trips would include mobilization; transport of commercial quarried materials, construction materials, concrete, and pipe; waste material disposal; and timber harvesting. Off-site materials would likely be provided by quarry and commercial sand and gravel operations in El Dorado County or other nearby counties. These trips were assumed to be about 40 miles in each direction, which is consistent with default distances recommended by CalEEMod. The on-site haul trips include the transport of local borrow and excavated materials. On-site haul trips were assumed to be less than 1 mile in each direction.

Based on the anticipated construction phasing, up to 50 construction workers may be working on-site each day. Commuting by construction workers would add approximately 100 total daily one-way trips to regional roadways. Total daily construction traffic, including construction worker commute trips, equipment delivery trips, and material delivery trips, would be approximately 200 total daily trips. On-road vehicle emissions were estimated using ARB's on-road emissions inventory model EMFAC2011, which provides emission factors for various vehicle types during specific operational years. For the Project, the earliest construction year (2015) was used to develop on-road emissions factors, which would result in a conservative estimate of emissions. It is anticipated that on-road emission factors would decrease with time because of turnover in vehicle fleet and improvements in emissions technology.

Fugitive PM dust emissions are associated primarily with site preparation. These emissions vary as a function of such parameters as soil silt content, soil moisture, wind speed, acreage of the disturbance area, and miles traveled

**Table 4
Estimated Use of Construction Equipment**

Equipment	Time Frame						Hours per Day	Estimated Duration (hours) (assumes 22 days per month)
	April/May 2015: Mobilization	June and July 2015: Develop Roads, Staging and Borrow Areas	August and September 2015: Construct Dam Buttress	October through December 2015: Forebay Maintenance and Drawdown	January and February 2016: Finish Outlet Works	May through August 2016: Spillway Modifications		
Excavator, small	1	—	1	2	1	1	2	660
Excavator, big	—	1	1	2	1	1	5	1,760
Bulldozer	—	1	1	1	—	1	5	1,210
Grade-all	—	—	—	1	1	1	5	990
Grader	—	1	1	1	0.5	1	5	1,430
Highway truck	1	4	4	4	1	4	10	10,340
Water truck	1	1	1	1	—	1	10	2,640
Concrete transit truck	—	—	—	2	1	0.25	5	990
Scrapers	—	2	2	—	—	2	10	3,520
Truck-mounted crane	1	1	—	5	1	1	2	1,056
Tamping compactor	—	—	1	1	—	1	5	990
Vibratory compactor	—	—	1	1	1	1	2	484
Lube truck	—	1	1	1	1	1	2	572
Other equipment (drill rig, sweeper, utility vehicle)	—	2	3	—	2	3	3	852
Subtotal major mobile equipment	4	14	17	22	10.5	19.25	—	—

**Table 4
Estimated Use of Construction Equipment**

Equipment	Time Frame						Hours per Day	Estimated Duration (hours) (assumes 22 days per month)
	April/May 2015: Mobilization	June and July 2015: Develop Roads, Staging and Borrow Areas	August and September 2015: Construct Dam Buttress	October through December 2015: Forebay Maintenance and Drawdown	January and February 2016: Finish Outlet Works	May through August 2016: Spillway Modifications		
Pickup trucks	3	3	6	8	6	6	2	3,564
Total mobile equipment	7	17	23	30	16.5	25.25	—	—
Source: EID 2013								

by construction vehicles on- and off-site. The analysis conservatively assumed that the entire Project site (approximately 154 acres) would be disturbed, and that the daily acreage disturbed was based on the total acreage divided by days of the applicable construction phases. CalEEMod also includes a module to estimate fugitive PM dust emissions based on Project-specific parameters.

Vegetation would be cleared from the on-site borrow area. Marketable trees that need to be removed to obtain sufficient borrow material would be sold and removed from the site. Other nonmarketable trees, tree stumps, shrubs, and other nonmarketable organic materials would be cleared and primarily burned; however, some materials may be buried on-site, chipped, or removed for off-site disposal. For the purposes of this air quality analysis, it was assumed that all nonmarketable woody materials would be burned on-site. PM₁₀ emissions associated with open burning were estimated using methodology and emission factors recommended by ARB (2008). An assessment was conducted to estimate the amount (tons per acre) and types of organic materials that would be required to be burned as part of the Project.

2.2 PROJECT EMISSIONS

As shown in Table 5, average daily construction emissions for the Project are estimated to be approximately 6 pounds of ROG, 51 pounds of NO_x, 25 pounds of CO, 365 pounds of PM₁₀, and 276 pounds of PM_{2.5}. Additional emission modeling assumptions and details are provided in Attachment A, “Emission Modeling Assumptions and Details.”

The contribution to PM₁₀ and PM_{2.5} emissions would be from the burning of organic materials associated with timber harvesting in the Project borrow area.

Construction of the Project would generate approximately 1,276 MT CO₂e over the entire construction period, which would last 21 months. These emissions include heavy-duty construction equipment, haul trucks, and construction worker vehicles. As described in Chapter 3.3, “Air Quality,” the Project would also involve burning of woody residual materials. However, emissions generated by burning the residual materials are considered biogenic

Table 5 Average Daily Construction Emissions					
Construction Phase	Average Daily Emissions (lb/day)				
	ROG	NO_x	CO	PM₁₀	PM_{2.5}
Average daily emissions	6.36	51.42	24.72	364.75	275.58
Threshold of significance	82	82	AAQS	AAQS	NA

Notes: AAQS = ambient air quality standards; CO = carbon monoxide; NA = not applicable; NO_x = oxides of nitrogen; PM₁₀ = particulate matter equal to or less than 10 micrometers in diameter; PM_{2.5} = particulate matter equal to or less than 2.5 micrometers in diameter; ROG = reactive organic gases

PM₁₀ estimates include emissions associated with burning of vegetation.

Source: Modeled by AECOM in 2013

emissions in that they represent previously sequestered carbon and are part of the carbon cycle. Therefore, the burn emissions have not been incorporated into Project’s GHG emissions. To estimate amortized construction emissions, the total construction-related GHG emissions of 1,276 MT CO₂e associated with the Project are divided by 30 years (approximately 43 MT CO₂ per year).

2.3 PROPOSED MITIGATION MEASURE

2.3.1 REDUCE CONSTRUCTION-RELATED EMISSIONS OF FUGITIVE DUST

EID will comply with EDCAQMD Rule 202, Visible Emissions; Rule 205, Nuisance; Rule 223, Fugitive Dust – General Requirements; and Rule 223-1, Fugitive Dust – Construction, Bulk Material Handling, Blasting, Other Earthmoving Activities, and Carryout and Trackout Prevention. In compliance with Rule 223.1, EID will submit a Fugitive Dust Plan that includes the following key elements:

- ▶ Apply water to dry areas during grading and earthmoving activities
- ▶ Install temporary covers over open storage piles
- ▶ Apply water to unpaved haul and access roads
- ▶ Apply water on disturbed surfaces to form a visible crust, and restrict vehicle access to maintain the crust during inactive operations

Timing: During all Project construction phases

Responsibility: EID and contractor

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ATTACHMENT A

Results of Air Quality Modeling

El Dorado Forebay
Construction Emissions Summary

Construction Phase/Emission Source	Pollutants (tons) ¹					Pollutants (metric tons)	Construction Days
	ROG	NO _x	CO	PM ₁₀	PM _{2.5}	CO _{2e}	
Off-Road Construction Equipment	0.92	7.30	3.17	0.28	0.28	1,032.98	308
On-Road Construction	0.04	0.48	0.18	0.02	0.01	122.55	
On-Road Construction Workers	0.02	0.14	0.46	0.02	0.01	119.99	
Fugitive Dust ²	-	-	-	8.50	0.04	-	
Total Emissions (tons)	0.98	7.92	3.81	8.82	0.34	1,275.53	
Vegetation Burning (pounds/day)				307.47	273.34		
Average Daily Emissions (pounds/day)³	6.36	51.42	24.72	364.75	275.58		
EDCAQMD Thresholds of Significance (pounds/day)	82	82					
Exceed Thresholds of Significance?	No	No					

Notes:

1. Total pollutant emissions by source (e.g., on-road construction) were estimated in tons for the entire construction period of the project.
2. Fugitive dust emissions for PM10 and PM2.5 were estimated from CalEEMod "El Dorado Forebay Grading" presented in this appendix. The CalEEMod "El Dorado Forebay Grading" estimates are only applicable for fugitive dust emissions and do not include references to other pollutant emissions, such as ROG and NOx. Emissions from off-road equipment related to grading activities were calculated separately.
3. Average daily emissions (pounds/day) = Total project emissions (tons) * 2000 (lbs/ton) / Number of construction days (308)

El Dorado Forebay
Off-Road Construction Equipment

Construction Phase	Start Date	End Date	Work Days	Number	Hrs/Day	Horsepower	Load Factor	Pollutants (tons)						
								ROG	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}	MT CO ₂ e
Mobilization/Temp Facility	5/1/2015	5/26/2015	22					0.02	0.13	0.05	0	0	0	21.28
Excavator (Small)				1	2	190	0.38							
Water Truck				1	10	362	0.38							
Crane				1	2	314	0.29							
Clearing/Stripping	6/1/2015	7/21/2015	44					0.16	1.32	0.56	0	0.05	0.05	173.41
Excavator (Big)				1	5	300	0.38							
Bulldozer				1	5	231	0.39							
Grader				1	5	218	0.41							
Water Truck				1	10	362	0.38							
Scraper				2	10	407	0.48							
Crane				1	2	314	0.29							
Dam Phase 1	8/1/2015	9/21/2015	44					0.18	1.47	0.62	0	0.06	0.06	193.99
Excavator (Small)				1	2	190	0.38							
Excavator (Big)				1	5	300	0.38							
Bulldozer				1	5	231	0.39							
Grader				1	5	218	0.41							
Water Truck				1	10	362	0.38							
Scraper				2	10	407	0.48							
Tamping Compactor				1	5	401	0.38							
Vibratory Compactor				1	2	130	0.38							
Drawdown Work	10/1/2015	12/16/2015	66					0.18	1.42	0.59	0	0.05	0.05	209.14
Excavator (Small)				2	2	190	0.38							
Excavator (Big)				2	5	300	0.38							
Bulldozer				1	5	231	0.39							
Grade-All				1	5	101	0.201							
Grader				1	5	218	0.41							
Water Truck				1	10	362	0.38							
Crane				5	2	314	0.29							
Tamping Compactor				1	5	401	0.38							
Vibratory Compactor				1	2	130	0.38							
Finish Outlet Works	1/1/2016	2/21/2016	44					0.03	0.19	0.1	0	0.01	0.01	33.02
Excavator (Small)				1	2	190	0.38							
Excavator (Big)				1	5	300	0.38							
Grade-All				1	5	101	0.201							
Grader				0.5	5	218	0.41							
Crane				1	2	314	0.29							
Vibratory Compactor				1	2	130	0.38							
Dam Phase 2 & Spillway Mod	5/1/2016	8/11/2016	88					0.35	2.77	1.25	0	0.11	0.11	402.14
Excavator (Small)				1	2	190	0.38							
Excavator (Big)				1	5	300	0.38							
Bulldozer				1	5	231	0.39							
Grade-All				1	5	101	0.201							
Grader				1	5	218	0.41							
Water Truck				1	10	362	0.38							
Scraper				2	10	407	0.48							
Crane				1	2	314	0.29							
Tamping Compactor				1	5	401	0.38							
Vibratory Compactor				1	2	130	0.38							
Total			308					0.92	7.3	3.17	0	0.28	0.28	1032.98

El Dorado Forebay
On-Road Construction

Construction Worker Vehicles

Construction Component	Duration (work days)	One-Way Trips		Total Activity		Total Pollutants (tons)						
		Daily One-Way Trips	Equipment Delivery	Total Trips	Total Distance	ROG	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}	Metric Tons CO ₂ e
Average Construction Workers												
<i>Worker Trips</i>	154	100		15,400	308,000	0.02	0.14	0.46	0.00	0.02	0.01	119.99
Construction Total						0.02	0.14	0.46	0.00	0.02	0.01	119.99

Construction Vehicles (Non-Construction Worker)

Phase	Duration (work days)	Total Hours of Operation (hrs)	Average Speed (mph)	Total VMT	Pollutants (tons)						
					ROG	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}	CO ₂
Highway Dump Truck	-	-	-	58,400	0.02	0.46	0.08	0.00	0.01	0.01	101.86
Concrete Transit Truck	-	990	35	34,650	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Lubricating Truck	-	572	35	20,020	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pickup Truck	-	3564	15	53,460	0.00	0.03	0.10	0.00	0.00	0.00	20.69
Construction Work Vehicles (Non-Construction Worker) Total Emissions					0.04	0.48	0.18	0.00	0.02	0.01	122.55

On-Road Emission Factors

Vehicle Types	Pollutants (grams/mile)						
	ROG	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}	CO ₂
Passenger Vehicles	0.065	0.404	1.343	0.004	0.066	0.038	370.114
Work Trucks	0.082	0.451	1.663	0.004	0.071	0.042	387.112
Light Heavy Duty	0.211	4.094	1.078	0.005	0.142	0.082	522.401
Haul Trucks	0.279	7.078	1.284	0.017	0.223	0.152	1744.183

Note: On-road emission factors for El Dorado County in 2015
Source: EMFAC 2011

Work days per week	7	days
Haul Truck Trip Length	40	miles
Worker Trip Length	20	miles

El Dorado Forebay (Construction Phasing)
El Dorado-Mountain County County, Annual

1.0 Project Characteristics

1.1 Land Usage

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.7	Utility Company
Climate Zone	1	Precipitation Freq (Days)	70	

1.3 User Entered Comments

- Project Characteristics -
- Construction Phase - PD
- Off-road Equipment - PD
- Off-road Equipment - PD
- Off-road Equipment - PD
- Off-road Equipment - PD
- Off-road Equipment - PD
- Off-road Equipment - PD
- Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.53	4.33	1.82	0.01	0.00	0.16	0.16	0.00	0.16	0.16	0.00	596.92	596.92	0.04	0.00	597.82
2016	0.38	2.96	1.36	0.00	0.00	0.11	0.11	0.00	0.11	0.11	0.00	434.52	434.52	0.03	0.00	435.16
Total	0.91	7.29	3.18	0.01	0.00	0.27	0.27	0.00	0.27	0.27	0.00	1,031.44	1,031.44	0.07	0.00	1,032.98

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.46	3.01	3.03	0.01	0.00	0.18	0.18	0.00	0.18	0.18	0.00	596.92	596.92	0.04	0.00	597.82
2016	0.34	2.19	2.22	0.00	0.00	0.13	0.13	0.00	0.13	0.13	0.00	434.52	434.52	0.03	0.00	435.16
Total	0.80	5.20	5.25	0.01	0.00	0.31	0.31	0.00	0.31	0.31	0.00	1,031.44	1,031.44	0.07	0.00	1,032.98

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

3.2 Mobilization/TempFacility - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.02	0.13	0.05	0.00		0.00	0.00		0.00	0.00	0.00	21.26	21.26	0.00	0.00	21.28
Total	0.02	0.13	0.05	0.00		0.00	0.00		0.00	0.00	0.00	21.26	21.26	0.00	0.00	21.28

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	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
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
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.2 Mobilization/TempFacility - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.02	0.11	0.11	0.00		0.01	0.01		0.01	0.01	0.00	21.26	21.26	0.00	0.00	21.28
Total	0.02	0.11	0.11	0.00		0.01	0.01		0.01	0.01	0.00	21.26	21.26	0.00	0.00	21.28

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	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
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
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.3 Clearing and Stripping - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.16	1.32	0.56	0.00		0.05	0.05		0.05	0.05	0.00	173.14	173.14	0.01	0.00	173.41
Total	0.16	1.32	0.56	0.00		0.05	0.05		0.05	0.05	0.00	173.14	173.14	0.01	0.00	173.41

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	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
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
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.3 Clearing and Stripping - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.13	0.87	0.87	0.00		0.05	0.05		0.05	0.05	0.00	173.14	173.14	0.01	0.00	173.41
Total	0.13	0.87	0.87	0.00		0.05	0.05		0.05	0.05	0.00	173.14	173.14	0.01	0.00	173.41

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	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
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
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.4 Dam Phase 1 - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.18	1.47	0.62	0.00		0.06	0.06		0.06	0.06	0.00	193.69	193.69	0.01	0.00	193.99
Total	0.18	1.47	0.62	0.00		0.06	0.06		0.06	0.06	0.00	193.69	193.69	0.01	0.00	193.99

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	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
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
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.4 Dam Phase 1 - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.15	0.98	0.98	0.00		0.06	0.06		0.06	0.06	0.00	193.69	193.69	0.01	0.00	193.99
Total	0.15	0.98	0.98	0.00		0.06	0.06		0.06	0.06	0.00	193.69	193.69	0.01	0.00	193.99

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	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
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
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.5 Drawdown Work - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.18	1.42	0.59	0.00		0.05	0.05		0.05	0.05	0.00	208.84	208.84	0.01	0.00	209.14
Total	0.18	1.42	0.59	0.00		0.05	0.05		0.05	0.05	0.00	208.84	208.84	0.01	0.00	209.14

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	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
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
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.5 Drawdown Work - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.16	1.05	1.07	0.00		0.06	0.06		0.06	0.06	0.00	208.84	208.84	0.01	0.00	209.14
Total	0.16	1.05	1.07	0.00		0.06	0.06		0.06	0.06	0.00	208.84	208.84	0.01	0.00	209.14

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	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
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
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.6 Finish Outlet Works - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.03	0.19	0.10	0.00		0.01	0.01		0.01	0.01	0.00	32.97	32.97	0.00	0.00	33.02
Total	0.03	0.19	0.10	0.00		0.01	0.01		0.01	0.01	0.00	32.97	32.97	0.00	0.00	33.02

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	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
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
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.6 Finish Outlet Works - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.03	0.17	0.18	0.00		0.01	0.01		0.01	0.01	0.00	32.97	32.97	0.00	0.00	33.02
Total	0.03	0.17	0.18	0.00		0.01	0.01		0.01	0.01	0.00	32.97	32.97	0.00	0.00	33.02

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	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
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
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.7 Dam Phase 2 and Spillway Mod - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.35	2.77	1.25	0.00		0.11	0.11		0.11	0.11	0.00	401.55	401.55	0.03	0.00	402.14
Total	0.35	2.77	1.25	0.00		0.11	0.11		0.11	0.11	0.00	401.55	401.55	0.03	0.00	402.14

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	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
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
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.7 Dam Phase 2 and Spillway Mod - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.31	2.03	2.05	0.00		0.12	0.12		0.12	0.12	0.00	401.55	401.55	0.03	0.00	402.14
Total	0.31	2.03	2.05	0.00		0.12	0.12		0.12	0.12	0.00	401.55	401.55	0.03	0.00	402.14

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	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
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
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

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

4.3 Trip Type Information

Land Use	Miles			Trip %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW

5.0 Energy Detail

5.1 Mitigation Measures Energy

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

EI Dorado Forebay Grading
EI Dorado-Mountain County County, Annual

1.0 Project Characteristics

1.1 Land Usage

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.7	Utility Company
Climate Zone	1	Precipitation Freq (Days)	70	

1.3 User Entered Comments

- Project Characteristics -
- Construction Phase - PD - half of Dam Phase 2/Spillway Mod is for grading
- Off-road Equipment - only fugitive dust modeling
- Off-road Equipment - only fugitive dust modeling
- Off-road Equipment - only fugitive dust modeling
- Grading - Total import split between Dam Phase 1 and Dam Phase 2
- Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.38	2.38	3.27	0.00	4.37	0.08	4.44	0.03	0.08	0.11	0.00	406.00	406.00	0.02	0.00	406.41
2016	0.33	1.94	2.83	0.00	4.28	0.06	4.34	0.02	0.06	0.08	0.00	384.05	384.05	0.02	0.00	384.37
Total	0.71	4.32	6.10	0.00	8.65	0.14	8.78	0.05	0.14	0.19	0.00	790.05	790.05	0.04	0.00	790.78

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.38	2.38	3.27	0.00	4.27	0.08	4.35	0.02	0.08	0.10	0.00	406.00	406.00	0.02	0.00	406.41
2016	0.33	1.94	2.83	0.00	4.23	0.06	4.29	0.02	0.06	0.07	0.00	384.05	384.05	0.02	0.00	384.37
Total	0.71	4.32	6.10	0.00	8.50	0.14	8.64	0.04	0.14	0.17	0.00	790.05	790.05	0.04	0.00	790.78

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Clearing and Stripping - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.08	0.00	0.08	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.24	0.19	0.00		0.01	0.01		0.01	0.01	0.00	27.99	27.99	0.00	0.00	28.04
Total	0.03	0.24	0.19	0.00	0.08	0.01	0.09	0.01	0.01	0.02	0.00	27.99	27.99	0.00	0.00	28.04

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	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
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
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.2 Clearing and Stripping - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.24	0.19	0.00		0.01	0.01		0.01	0.01	0.00	27.99	27.99	0.00	0.00	28.04
Total	0.03	0.24	0.19	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	27.99	27.99	0.00	0.00	28.04

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	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
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
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.3 Dam Phase 1 - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.09	0.00	0.09	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.24	0.19	0.00		0.01	0.01		0.01	0.01	0.00	27.99	27.99	0.00	0.00	28.04
Total	0.03	0.24	0.19	0.00	0.09	0.01	0.10	0.01	0.01	0.02	0.00	27.99	27.99	0.00	0.00	28.04

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.32	1.91	2.89	0.00	4.19	0.05	4.24	0.01	0.05	0.06	0.00	350.03	350.03	0.01	0.00	350.32
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
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
Total	0.32	1.91	2.89	0.00	4.19	0.05	4.24	0.01	0.05	0.06	0.00	350.03	350.03	0.01	0.00	350.32

3.3 Dam Phase 1 - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.24	0.19	0.00		0.01	0.01		0.01	0.01	0.00	27.99	27.99	0.00	0.00	28.04
Total	0.03	0.24	0.19	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	27.99	27.99	0.00	0.00	28.04

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.32	1.91	2.89	0.00	4.19	0.05	4.24	0.01	0.05	0.06	0.00	350.03	350.03	0.01	0.00	350.32
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
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
Total	0.32	1.91	2.89	0.00	4.19	0.05	4.24	0.01	0.05	0.06	0.00	350.03	350.03	0.01	0.00	350.32

3.4 Dam Phase 2 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.09	0.00	0.09	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.21	0.19	0.00		0.01	0.01		0.01	0.01	0.00	27.99	27.99	0.00	0.00	28.04
Total	0.03	0.21	0.19	0.00	0.09	0.01	0.10	0.01	0.01	0.02	0.00	27.99	27.99	0.00	0.00	28.04

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.30	1.72	2.64	0.00	4.19	0.04	4.23	0.01	0.04	0.06	0.00	356.07	356.07	0.01	0.00	356.33
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
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
Total	0.30	1.72	2.64	0.00	4.19	0.04	4.23	0.01	0.04	0.06	0.00	356.07	356.07	0.01	0.00	356.33

3.4 Dam Phase 2 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.21	0.19	0.00		0.01	0.01		0.01	0.01	0.00	27.99	27.99	0.00	0.00	28.04
Total	0.03	0.21	0.19	0.00	0.04	0.01	0.05	0.00	0.01	0.01	0.00	27.99	27.99	0.00	0.00	28.04

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.30	1.72	2.64	0.00	4.19	0.04	4.23	0.01	0.04	0.06	0.00	356.07	356.07	0.01	0.00	356.33
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
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
Total	0.30	1.72	2.64	0.00	4.19	0.04	4.23	0.01	0.04	0.06	0.00	356.07	356.07	0.01	0.00	356.33

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

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

4.3 Trip Type Information

Land Use	Miles			Trip %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW

5.0 Energy Detail

5.1 Mitigation Measures Energy

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

APPENDIX D

California Red-Legged Frog (*Rana draytonii*) Habitat Assessment for the El Dorado Forebay Dam Modification Project (El Dorado County, California)

California Red-Legged Frog (*Rana draytonii*)
Habitat Assessment
For the
El Dorado Forebay Dam Modification Project
(El Dorado County, California)

11 September 2013

Prepared for:
AECOM



**California Red-Legged Frog (*Rana draytonii*)
Habitat Assessment for
EID Forebay**

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- Attachment A. California Natural Diversity Database Search Results
- Attachment B. Representative Site Photographs

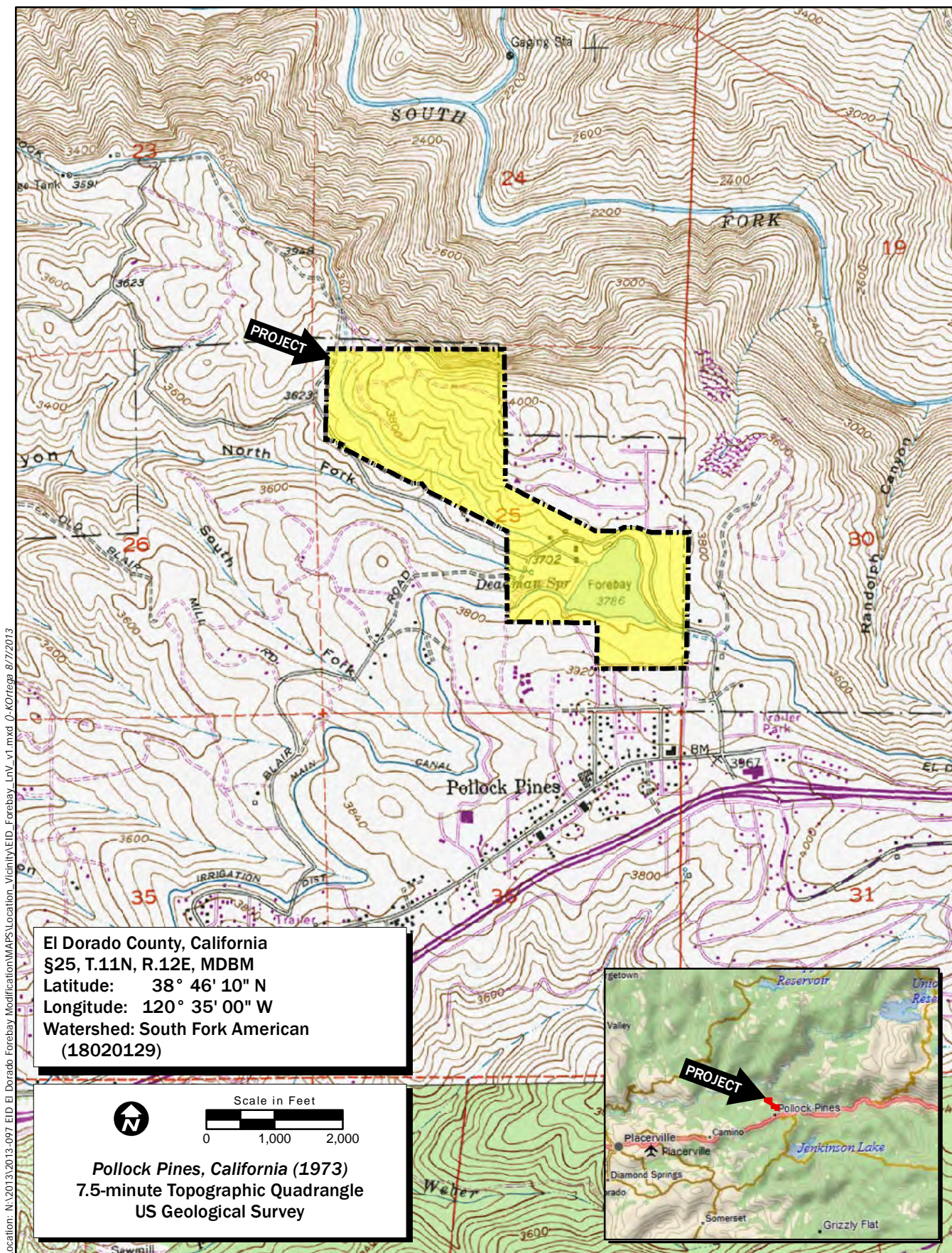
1.0 INTRODUCTION

At the request of El Dorado Irrigation District (EID) and AECOM, ECORP Consulting, Inc. (ECORP) conducted a habitat assessment for the federally listed threatened California red-legged frog (*Rana draytonii*) within the El Dorado Forebay (Forebay) Dam Modification Project (Project) area. The proposed project is part of Federal Energy Regulatory Commission (FERC) Project No. 184. The approximately 160-acre project site is located near Pollock Pines, El Dorado County, California (Figure 1. *Project Location and Vicinity*). It occurs north of U.S. Highway 50 in part of Section 25, T11N, R12E, of the Pollock Pines USGS 7.5 minute topographic quadrangle (U.S. Department of the Interior, Geological Survey (USGS) 1973). The Project is located at approximately 38° 46' 10" North and 120° 35' 00" West within the South Fork American watershed (USGS Hydrological Unit Code [HUC] #18020129) (USGS 1978). The project site is on land owned by EID and situated at an elevation range between approximately 3,750 and 3,850 feet above mean sea level (MSL). The Forebay is an off-stream reservoir impoundment created by an earthen dam which provides water for drinking water supply and hydroelectric power generation.

1.1 Environmental Setting

The project is located in the California Floristic Province in the Northern High Sierra Nevada subregion (Baldwin et al. 2012). Vegetation communities (Sawyer et al. 2009) and aquatic resources found in the study area include Sierran mixed conifer forest, riparian forest, upland scrub, nonnative annual grassland, emergent wetland, open water (Forebay), ephemeral and perennial drainages, canals, riparian wetlands, and seasonal wetlands.

Sierran mixed conifer forest occurs across the majority of the site including around the Forebay. The assemblage is best described as *Pinus ponderosa*–*Calocedrus decurrens* (ponderosa pine–incense cedar) mixed coniferous forest (Sawyer et al. 2009). Woody understory vegetation surrounding the Forebay includes canyon live oak (*Quercus chrysolepis*), black oak (*Q. kelloggii*), tan-oak (*Lithocarpus densiflora*), mountain dogwood (*Cornus nuttallii*), deer brush (*Ceanothus integerrimus*), and Sierra coffeeberry (*Frangula rubra*).



El Dorado County, California
 §25, T.11N, R.12E, MDBM
 Latitude: 38° 46' 10" N
 Longitude: 120° 35' 00" W
 Watershed: South Fork American
 (18020129)

Pollock Pines, California (1973)
 7.5-minute Topographic Quadrangle
 US Geological Survey

Location: N:\2013\2013-097 EID - El Dorado Forebay Modification\MAPS\Location_Vicinity\EID_Forebay_Lrv_v1.mxd 0-Kortega 8/7/2013

Map Date: 8/2/2013
 Service Layer Credits: Copyright:© 2012 DeLorme

Figure 1. Project Location and Vicinity

2013-097 EID - El Dorado Forebay Modification

The understory is dense in places with small-diameter shrubs and young trees; vining Himalayan blackberry (*Rubus arventiacus*) is also dense in places. Deep shade and a thick duff layer result in sparse coverage of annual grasses (*Avena fatua*, *Cynosurus echinatus*) and herbaceous species (*Raphanus sativa*, *Convolvulus arvensis*, *Artemisia douglasiana*, *Lathyrus* sp.).

Riparian forest occurs west of the Forebay Dam and in areas at the edge of the Forebay. These are mesic to hydric areas, with a white alder (*Alnus rhombifolia*), big-leaf maple (*Acer macrophyllum*), or willow (*Salix* sp.) canopy. Understory is a dense mixture of mountain dogwood, hazelnut (*Corylis cornuta*), Himalayan blackberry, velvet grass (*Holcus lanatus*), sedges (*Cyperaceae*), ferns, and forbs. Upland scrub occurs at the edges of the penstock access road in sunny and disturbed areas adjacent to Sierran mixed conifer forest. The dominant species is mountain misery, small trees and stunted manzanita (*Arctostaphylos viscida* ssp. *viscida*). Occasional forbs occur in open patches in this community. The Forebay Dam face and areas south of the penstock access road support nonnative annual grassland dominated by introduced grasses including hedgehog dogtail (*Cynosurus echinatus*), blue wildrye (*Elymus glaucus*), and barbed goat grass (*Aegilops trunciensis*). This community type supports a number of nonnative herbaceous species, including sweet pea (*Lathyrus* sp.), yellow salsify (*Tragopogon dubius*), Klamath weed (*Hypericum perforatum*), mustards (*Brassicaceae*), turkey mullein (*Croton setigerus*), and plantain (*Plantago* sp.).

1.2 Aquatic Features

The Forebay is a large lentic feature that dominates the landscape. Emergent wetlands occur at the base of the Forebay Dam and in parts of the riparian forest as a result of seepage from the dam. Seasonal wetlands occur along the penstock access road in depressions that appear to have been used as borrow areas. A complex perennial drainage system originates from seepage at the downstream base of the dam and becomes braided through the riparian forest. Three ephemeral drainages occur in the same area. Two canals, including the inlet to the Forebay and the main ditch outlet, occur in the study area. Riparian wetlands occur in places around the reservoir, most notably west of the dam.

1.3 California Red-Legged Frog: Species Biology, Habitat, and Distribution

The California red-legged frog was listed as a threatened species by the USFWS on May 23, 1996 (USFWS 1996), and in 2002 the USFWS published the *Recovery Plan for the California Red-Legged Frog (Rana aurora draytonii)* (USFWS 2002). Critical habitat was designated for 450,000 acres of habitat in 34 units in 2006 (Fed. Reg. 71, No. 71, Thursday April 13, 2006). It was subsequently revised to more than 1.6 million acres of habitat in 48 units in 2010 (Fed. Reg. 75, No. 51; Wednesday, March 17, 2010). One critical habitat unit (ELD-1) is designated within El Dorado County, which consists of 5,400 acres of federal and private lands south of U.S. Highway 50 near Pollock Pines. This frog is considered a Species of Special Concern by California Department of Fish and Wildlife.

The California red-legged frog is California's largest native true frog (Wright and Wright 1949), ranging from 4 to 13 cm (1.5 to 5.1 in) in length from the tip of the snout to the vent (Stebbins 2003), with females attaining a larger size than males. The dorsal surface of subadults and adults may be brown, gray, olive, red, or orange, and often has a pattern of dark spots with lighter centers (Stebbins 2003). The abdomen and hind legs of adults are usually red. Unlike some other native frogs, the skin does not usually look rough or warty. Prominent dorsolateral folds often run from the eye to the hip. The hind legs are well-developed with large webbed feet. A cream, white, or orange stripe usually extends along the upper lip from beneath the eye to the rear of the jaw. The groin area may show a bold black mottling with a white or yellow background, and the hind legs have black bars above (Stebbins and McGinnis 2012).

A member of the globally distributed anuran family Ranidae, the California red-legged frog was once one of the most common frogs in the state, where it occurred in most ponded freshwaters throughout the central and foothill regions of California (Stebbins and McGinnis 2012). The historic distribution of the California red-legged frog extended south in the Coast Ranges from Mendocino County, California, to Baja, Mexico, and along the western slope of the Sierra Nevada at elevations generally below 1,220 m (4,000 ft.) (Jennings and Hayes 1994). They were historically known from 46 counties; however, this species is now restricted to approximately 240 streams or drainages within 24 counties, representing a loss of 70 percent of its former range (USFWS 2002). Over the last 120 years, over-harvest for use as food, the

widespread drainage of Central Valley marshes, the introduction of non-native competitors and predators, disease, upslope wafting of pesticides, and the interacting effects of these stressors have led to massive declines (USFWS 2002). The current range of the frog is greatly reduced, with most remaining populations occurring along California's coastal ranges from Marin County to Ventura County (Fellers 2005). Six small relictual populations are known to occur in the Sierra Nevada (Fellers 2005). These populations are widely separated from each other, sometimes by hundreds of miles (Federal Register, Volume 75, No. 51; Wednesday, March 17, 2010).

1.3.1 Breeding Habitat

A true "pond frog," adult California red-legged frogs generally breed in deeper (>28 in) still or slow moving water in the vicinity of dense, emergent riparian vegetation (Hayes and Jennings 1988). A complex stand of overhanging willows and cattails may occur, and undercut banks and exposed roots are often an indicator of this frog's presence (Hayes and Jennings 1988). They breed from January through April, with males appearing at breeding sites weeks before females (Jennings and Hayes 1994). Individuals occurring in coastal drainages may be active year-round (Jennings *et al.* 1992), while those found in interior locations (e.g. Sierra Nevada foothills) are generally less active during the cold season. Eggs are laid in globular softball-sized clutches and attached to emergent vegetation such as bulrushes (*Scirpus* sp.) or cattails (Jennings *et al.* 1992), usually near the water's surface. The number of eggs per clutch averages approximately 2,000 and they hatch within 6 to 14 days (Jennings and Hayes 1994). The resultant tadpoles generally transform into froglets 3.5 to 7 months after hatching, although in some populations they do not transform until the next spring (Fellers *et al.* 2001, Fellers 2005 and references therein).

1.3.2 Dispersal, Foraging, and Sheltering Habitat

Upland areas are used extensively for migration and foraging (Stebbins and McGinnis 2012) and the frog aestivates in small mammal burrows and in deep leaf litter (Fellers 2005). Tadpoles generally graze on algae and diatoms, while juveniles and adults are carnivorous and feed on suitably-sized arthropods and small vertebrates. Habitat complexity, including small mammal

burrows, undercut banks, emergent vegetation, leaf litter, and deeper water is important and necessary for predator avoidance for all size classes, and presumably allows for the coexistence of metamorphs and juveniles with larger adults which would otherwise prey upon smaller frogs (Bobzien *et al.* 2000).

California red-legged frogs disperse upstream and downstream of breeding habitat and across upland areas to forage and seek shelter. Unlike some other ranid frogs, they do not have a distinct breeding migration (Fellers 2005, Fellers and Kleeman 2007). Dispersal distances are generally less than 0.5 mile, with a few individuals making larger movements up to two miles (Bulger *et al.* 2003, Fellers 2005). Movements are typically along riparian corridors, but some individuals, especially on rainy nights, may move directly from one site to another through normally inhospitable habitats such as heavily grazed pastures or oak-grassland savannas (Fellers 2005, Fellers and Kleeman 2007).

During the non-breeding season, habitat includes nearly any area within 1.0 to 2.0 mi of a breeding site that remains moist and cool through the summer (Fellers 2005). Such areas may include vegetation such as coyote bush (*Baccharis pilularis*), California blackberry thickets (*Rubus ursinus*), and root masses associated with willow (*Salix* spp.) and California bay trees (*Umbellularia californica*). In addition, any landscape feature that provides cover (animal burrows, boulders or rocks, organic debris such as downed trees or logs, industrial debris, and other cover objects) or agricultural features (such as drains, watering troughs, spring boxes, abandoned sheds, or hay stacks) may also be used as shelter. Incised stream channels with depths greater than 18 inches can also provide important summer refugia. Accessibility to shelter is essential for the survival of frogs within a watershed, and the lack of these habitats can be a limiting factor.

2.0 METHODS

ECORP biologist Eric Stitt conducted field-based habitat assessments for the California red-legged frog within appropriate aquatic habitats and associated upland areas on the subject property on June 27 and 28, 2013. Habitats evaluated included the open water Forebay, emergent wetland, riparian wetland, ephemeral drainages, perennial drainages, and canals.

Habitat evaluations were conducted by walking along and around the perimeters of aquatic features and through adjacent upland areas. Parameters such as habitat type and location, vegetation, species present, and potential refugia were recorded. Photographs were taken to document current conditions.

Habitat assessments for the California red-legged frog were based primarily on habitat requirements as described by USFWS (2005). Potential aquatic habitats and adjacent uplands were evaluated as to their potential to support breeding, foraging activities, refugia, and as dispersal corridors. Prior to site visits, the California Natural Diversity Database (CNDDDB), maintained by the California Department of Fish and Wildlife (CDFW), was queried for California red-legged frog occurrences within the "Pollock Pines," "Old Iron Mountain," "Sly Park," "Camino," "Robbs Peak," "Riverton," "Devil Peak," "Tunnel Hill," and "Slate Mountain" USGS 7.5 minute quadrangles (CDFW 2013).



3.0 RESULTS



3.1 Existing Records


There is one documented population of California red-legged frog within five miles of the project site (CDFW 2013) (Figure 2. *California Natural Diversity Database Occurrence Records for California Red-legged Frog [Rana draytonii]*). The closest recorded sighting occurs approximately 1.75 miles from the Project area boundaries (Occurrence #586) (Figure 2 and Attachment A). This represents a well-known population at Spivey Pond on Weber Creek (a tributary to the South Fork American River) and is the basis for USFWS establishing critical habitat unit ELD-1 in El Dorado County. The Project site is separated from Spivey Pond by U.S. Highway 50 and is located in an adjacent watershed. California red-legged frogs were first documented here in 1997 (Fed. Reg. 71, No. 71, Thursday April 13, 2006), the year after the frog was listed as a threatened species, and regular monitoring of the population continues at this site. This 63-acre site was purchased by the American River Conservancy in 1998 for preservation and has since been transferred to the Bureau of Land Management (BLM) which has designated the site as an Area of Critical Environmental Concern (ACEC) in recognition of the site's importance for the frog's status.


Location: N:\2013\2013-097 EID - El Dorado Forebay Modification\MAPS\SSS_Survey_and_Mapping\CNDDDB\EID_Forebay_CNDDDB_CTS_201307.mxd (DW, KOrtega 8/7/2013)

Figure 2.
CNDDB Occurrences of
California Red-legged Frog
Rana draytonii

Distance From Project
 1 mile
 5 miles

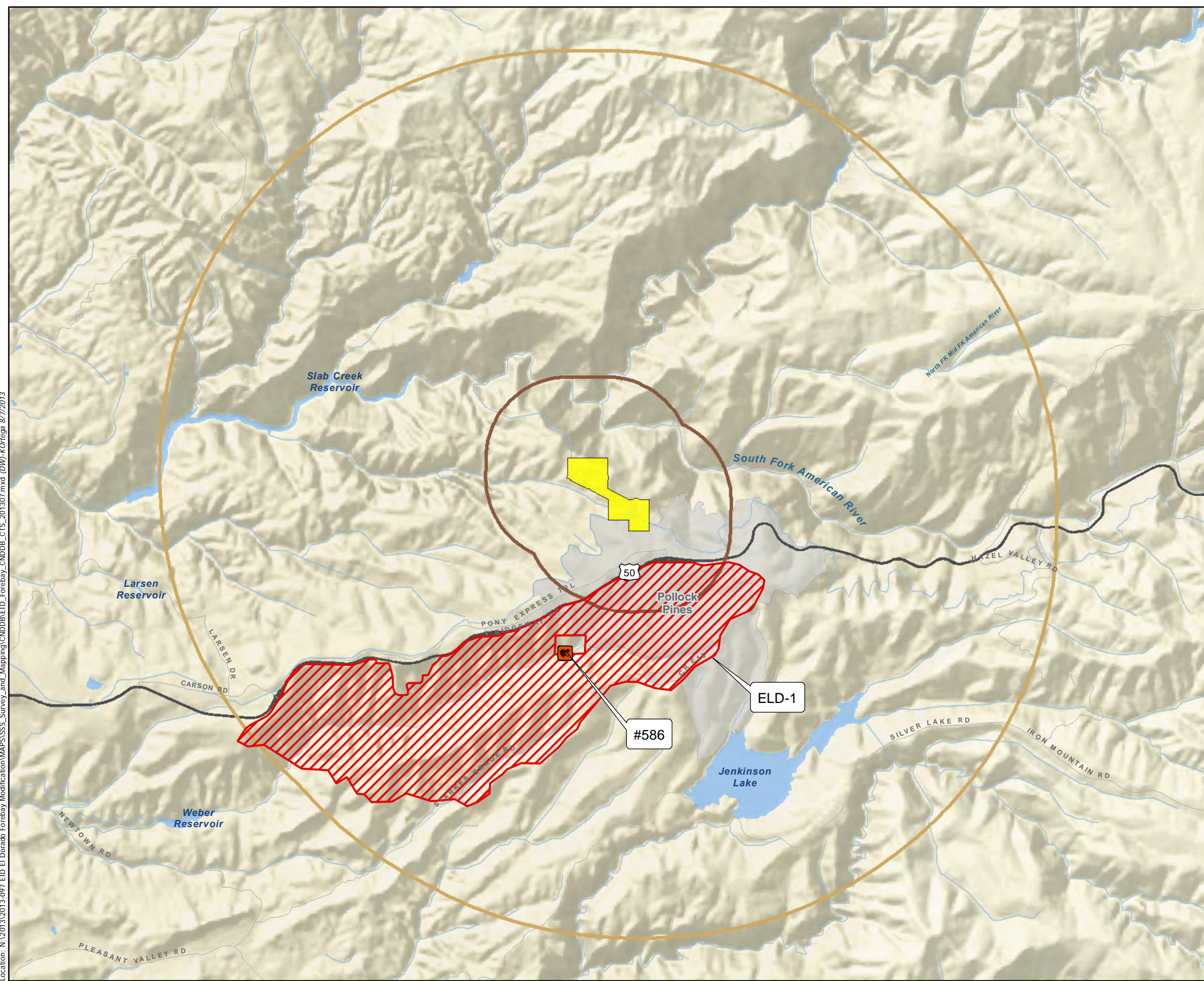
Boundaries
 Project Boundary ¹
 CNDDB Polygon Extent ²

CNDDB Occurrences ²
 California Red-legged Frog (*Rana draytonii*)

Critical Habitat ³
 California Red-legged Frog (*Rana draytonii*)

This map may include multiple species' occurrences at each location, some of which may not be visible on this graphic. The CNDDB occurrences shown may not reflect the actual location of the occurrence.

¹ Project Boundary: AECOM/EID
² CDFG California Natural Diversity Database (CNDDB), July 2013 Update (GIS Shapefile)
³ USFWS Critical Habitat, April 2010
 CNDDB Occurrences Located on USGS 7.5' Quadrangles: Sly Park



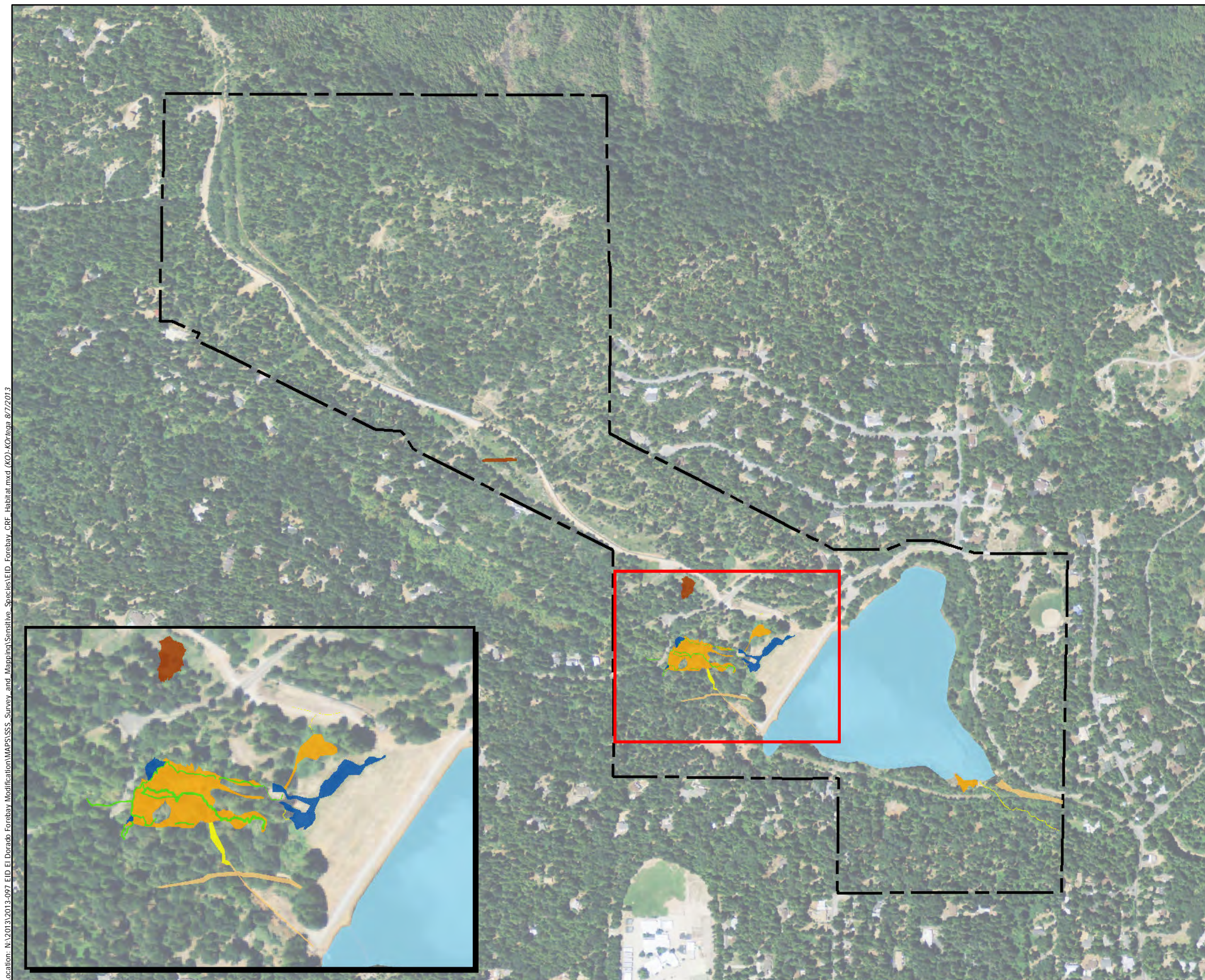
Other records from El Dorado County include a 2002 record from Sopiago Creek (Caldor USGS topographic quad), 0.8 mile north-northwest of Cooks Station and north of Highway 88 (Occurrence #609). This observation is from private lands approximately 17 miles southeast of the project site within the Upper Cosumnes watershed and has not been monitored regularly. Two "sensitive" CNDDDB records (Occurrence #1284 and #1317) exist for the Georgetown area: both are current as of year 2009 and are at least 12 miles northwest of the project area. Lastly, a highly suspect record (Occurrence #814) exists for the eastern shore of Folsom Lake in El Dorado Hills. This 2005 record is for a purported juvenile California red-legged frog observed near a small watercourse draining to the lake in a residential neighborhood. This record is generally discounted by researchers. No additional sightings have occurred in the area since this (2005) record, despite its location near a readily accessible residential neighborhood. Additionally, American bullfrogs, which may be confused with California red-legged frogs by unqualified observers, are very common in the area of the purported sighting.

3.2 Site Descriptions

3.2.1 Open Water (Forebay)

The Forebay is a 23.4-acre lentic feature that dominates the landscape (Figure 3. *California Red-Legged Frog Habitat Assessment Survey Map*). The reservoir originates from El Dorado Canal off the South Fork American River and is impounded by an earthen dam as it flows northwest in the project area. Flows are highly regulated for delivery of drinking water and hydroelectric power. The Forebay is shallower at the inlet to the east and becomes deeper north and west nearer the base of the dam. An area of shallow water at the southwest of the Forebay is set apart by buoys in the area of the drinking water inlet and emergency spillway. Within this area, floating debris (bark, sticks, twigs, trash) is abundant. Shoreline and banks are soil and gently sloped throughout most of the feature. They lacked undercutting, root balls, and other habitat complexities. Very little emergent, submergent, or floating aquatic vegetation, used by California red-legged frogs for attachment of egg clusters, for foraging and refuge sites for tadpoles, and as escape cover by adult frogs was present. All visible pond substrate was bare soil. Three to four small (10-20 ft²) islands of sticks, logs, and imbedded soil were scattered throughout the Forebay in deep water.

Figure 3.
California Red-Legged Frog
Habitat Assessment Survey Map



Map Features

Property Boundary

Vegetation Type

- Emergent Wetland
- Riparian Wetland
- Ephemeral Drainage
- Perennial Drainage
- Seasonal Wetland
- Canal
- Open Water

Location: N:\2013\2013-097_EI Dorado Forebay Modification\MAPS\SSS_Survey_and_Mapping\Sensitive_Species\EID_Forebay_CRF_Habitat.mxd (KO)_KO_1map_8/7/2013



The Forebay attracts abundant visitor recreational use and, as a result, the entire perimeter of the feature is accessible to the public, with dog walkers, picnickers, and anglers all commonly found around the shore. The Forebay is stocked regularly with hatchery-reared trout (*Oncorhynchus* sp.). Large common carp (*Cyprinus carpio*) were observed foraging in shallow edge-water, but no other fish species were observed.

The gently sloping, soil-dominated substrates at the Forebay lacked heterogeneity and complexity. Undercut banks with exposed rootballs are a common indicator of quality red-legged frog habitat, which in this case were entirely missing. Similarly, complex shaded areas of shoreline were generally lacking for most of the feature. However, areas of bankside vegetation could be found in the upland riparian and riparian wetland communities on the northeastern edge and southeastern edge of the Forebay, respectively. The site lacks primary constituent elements needed for breeding by the frog. Combined with a lack of occurrence records from this heavily visited site and an abundance of aquatic predators including hatchery-reared trout, carp, and crayfish, it is very unlikely to provide breeding, foraging, or dispersal habitat for California red-legged frogs.

3.2.2 Canal

Two canals occur in the study area, including El Dorado Canal (the inlet to the Forebay) and the Main Ditch (the outlet). El Dorado Canal and the Main Ditch are engineered for delivery of water to and from the Forebay and featured high velocity water. The inlet originates from a tunnel under Forebay Road and has vertical soil banks, fenced off to render the canal inaccessible to people. Water was approximately 3-4 feet deep, 6-10 feet wide, and moving at high velocity during the site visit.

The Main Ditch exits the Forebay at the southern base of the dam. The canal is concrete-lined for most of its length in the project boundaries, and water flows at high velocity. Water depth is shallow in this channel, commonly 15-30 inches, and deeply shaded. Neither the El Dorado Canal nor the Main Ditch provide breeding habitat for California red-legged frogs. The consistent high velocity water flows and lack of ponded areas with egg attachment sites make these sites unusable for breeding.

3.2.3 Seasonal Wetland

Seasonal wetlands occur along the penstock access road in depressions that appear to have been used as borrow areas. Dominant species in these wetlands included Himalayan blackberry, bog blueberry (*Vaccinium uliginosum*), and bitter dogbane (*Apocynum androsaemifolium*). These features were dry during site visits and do not provide suitable breeding habitat for California red-legged frogs.

3.2.4 Perennial Drainages, Ephemeral Drainages, Riparian Wetlands, and Emergent Wetlands

A complex perennial drainage system originates from three emergent wetlands (seeps) at the downstream base of the dam and braids through the riparian woodland, converging to a single drainage which drains off-site to the west of the property. Several ephemeral drainages and a complex of hydric riparian wetlands also occur within the same area in the understory of riparian forest. The perennial and ephemeral drainages were all narrow in width, usually between 1-2 feet across. Water was shallow, less than 1 inch to approximately 6 inches deep in places, and there was very little ponding. Dominant species were velvet grass (*Holcus lanatus*), iris-leaved rush (*Juncus xiphioides*), and spike bentgrass (*Agrostis exarata*). Narrow-leaved cattails (*Typha angustifolia*) and ferns provide vertical structure. Although this area may provide potential foraging habitat for California red-legged frogs, primary constituent elements indicative of breeding habitat were non-existent.

3.3 Aquatic Habitats within One Mile of the Site

3.3.1 Ponds

Two ponds occur within a one-mile radius of the project site (Google Earth, March 2013; "Pollock Pines," California 7.5-minute quadrangle, U.S. Department of the Interior, Geological Survey 1973). Pond 1 is located approximately 0.8 mile due west of the Forebay and comprises approximately 12,750 ft² in area (Figure 4. *Aquatic Habitats Within One Mile of the Site*). The pond appears to be perennial, partially sunlit, and resides within oak (*Quercus* sp.) woodland. Pond 2 is approximately 1.6 miles northwest of the Forebay (but within the one-mile buffer

around the project site) and 3,250 ft² in area. This pond may have a shorter hydroperiod and in historic photographs appears to be dry in late July and August of some years. This pond has an open shoreline devoid of trees for approximately half of its perimeter. Both sites are on private land and were not visited for this site assessment. It appears from aerial photography that either could potentially provide breeding and foraging habitat for California red-legged frogs.

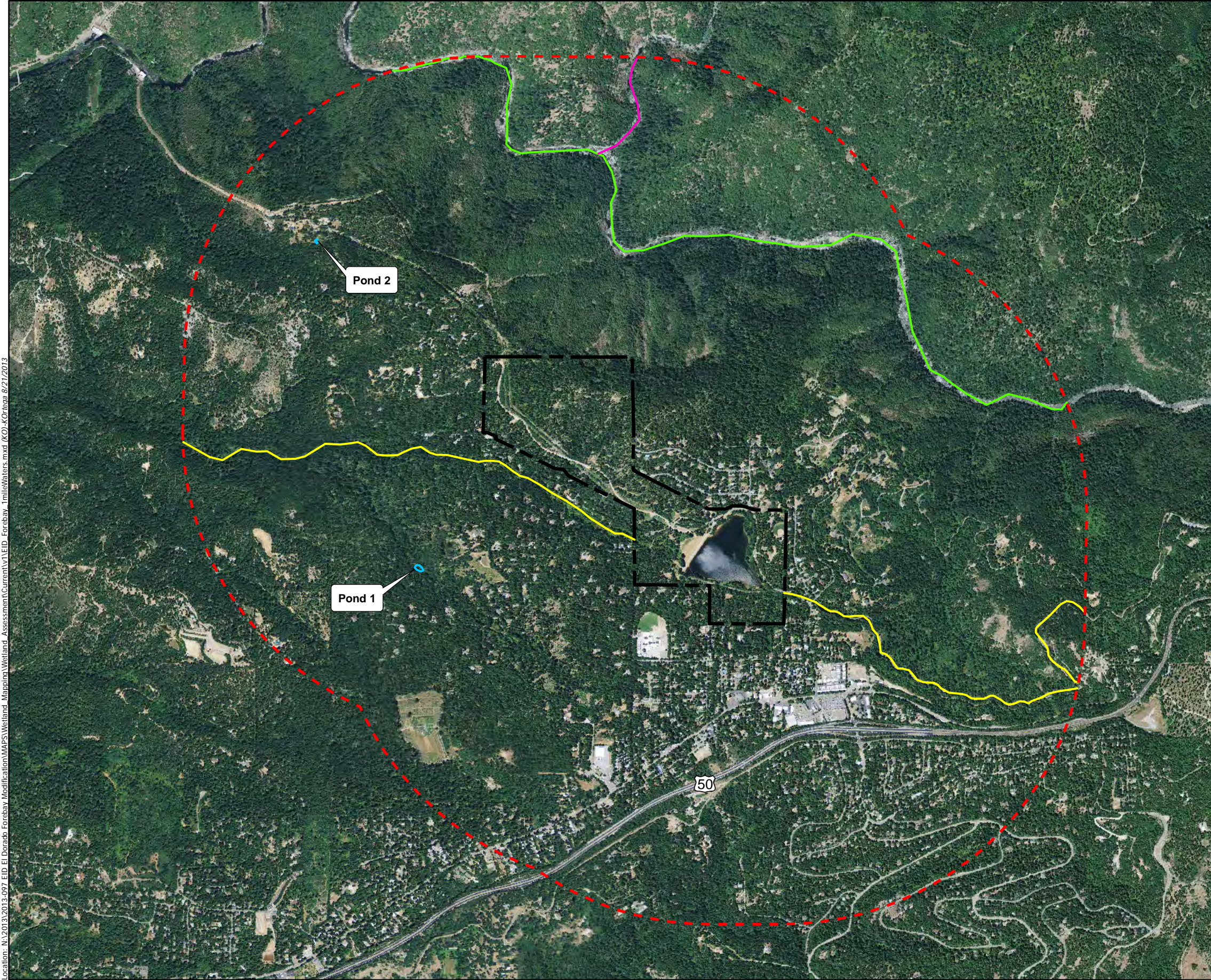
3.3.2 Ditches

The upstream continuation of the El Dorado Canal runs from the South Fork American River to the Forebay (Figure 4). Downstream of the Forebay, the ditch exits the Forebay as the EID Main Ditch, which then flows southwest beyond the one-mile boundary. These are linear high velocity features with no deep, ponded breeding habitat for California red-legged frogs.

3.3.3 Rivers

An approximately 2.85-mile section of the South Fork American River occurs within the one-mile project buffer to the north, and approximately 2000 feet lower in elevation in a deep canyon. This is a wide, high velocity lotic system with bedrock, cobble, and sand substrates. This reach is generally open and sunlit. A tributary, Silver Creek, enters the south fork to the north. The high velocity flows and lack of deep ponded areas with complex bank structure make this river unlikely to serve as breeding habitat for California red-legged frogs.

Figure 4.
Aquatic Habitats Within
1 Mile of EID Forebay Project Site



Map Features

Project Boundary

1 Mile Buffer

Aquatic Habitat

Silver Creek

South Fork American River

Main Ditch

Pond

Location: N:\2013\2013-097 EID El Dorado Forebay Modification\MAPS\Wetland_Mapping\Wetland_Assessment\Current\1\EID_Forebay_1mileWaters.mxd (KO)-KOrlena 8/21/2013

4.0 CONCLUSION

There is very low likelihood that the California red-legged frog occurs on the Project site. No breeding habitat was identified on-site. Regarding the Forebay itself, the necessary emergent, submergent, or floating aquatic vegetation (for attachment of egg clusters) was completely lacking. Bankside complexity such as steep and undercut banks, overhanging willows and other vegetation, root balls and root wads, and abundant small mammal burrows was similarly lacking, and the presence of predatory trout, carp, crayfish, and American bullfrogs (observed during previous surveys) make the likelihood of successful breeding even less probable. Other aquatic features on-site similarly lack elements needed for breeding. Lastly, despite the presence nearby of a well-known California red-legged frog population, there are no recorded occurrences from this frequently visited site. This habitat assessment is consistent with the findings of determinate level surveys at the Forebay performed in 2002, which did not yield positive findings (ECORP 2002, USFWS 2003). In addition, determinate level surveys conducted in 2004 at Pollock Pines Reservoir (Site 145) nearby were negative (ECORP 2004). USFWS provided concurrence with this assessment in 2004 (USFWS 2004).

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LIST OF ATTACHMENTS

Attachment A – California Natural Diversity Database Search Results

Attachment B – Representative Site Photographs

ATTACHMENT A

California Natural Diversity Database Search Results

Rana draytonii

California red-legged frog

Element Code: AAABH01022

----- **Status** ----- **NDDB Element Ranks** ----- **Other Lists** -----
Federal: Threatened **Global:** G4T2T3 **CDFG Status:** SC
State: None **State:** S2S3

----- **Habitat Associations** -----
General: LOWLANDS & FOOTHILLS IN OR NEAR PERMANENT SOURCES OF DEEP WATER WITH DENSE, SHRUBBY OR EMERGENT RIPARIAN VEGETATION.
Micro: REQUIRES 11-20 WEEKS OF PERMANENT WATER FOR LARVAL DEVELOPMENT. MUST HAVE ACCESS TO ESTIVATION HABITAT.

Occurrence No. 586 **Map Index:** 49277 **EO Index:** 49277 **----- Dates Last Seen -----**
Occ Rank: Good **Element:** 2008-04-17
Origin: Natural/Native occurrence **Site:** 2008-04-17
Presence: Presumed Extant
Trend: Unknown **Record Last Updated:** 2009-04-23

Quad Summary: Sly Park (3812065/509A)

County Summary: El Dorado

Lat/Long: 38.74489° / -120.59958° **Township:** 10N
UTM: Zone-10 N4291203 E708614 **Range:** 12E
Mapping Precision:SPECIFIC **Section:** 01 **Qtr:**SE
Symbol Type: POINT **Meridian:** M
Radius: 80 meters **Elevation:** 3,200 ft

Location: SPIVEY POND, ON THE NORTH FORK OF WEBER CREEK, EL DORADO COUNTY.

Location Detail: WEBER CREEK, FROM WEBER RESERVOIR UPSTREAM TO SNOWS ROAD AND 100 YARDS UPSTREAM OF SNOWS ROAD. WAS ALSO SURVEYED IN 1997; NO CRLF'S WERE FOUND, BUT 1 BULLFROG AND 1 YOY WESTERN POND TURTLE WERE FOUND.

Ecological: ONE OF TWO REMAINING POPULATIONS KNOWN FROM THE SIERRA NEVADAS. WEBER CREEK CONTAINS THE FOLLOWING FISH SPECIES: ONCORHYNCHUS MYKISS, LAVINIA SYMMETRICUS, CATOSTOMUS OCCIDENTALIS, & CENTRARCHIDS (IN WEBER RESERVOIR).

Threat: THREATENED BY THE PRESENCE OF BULLFROGS AND RAINBOW TROUT.

General: 6 ADULTS OBS (10-15 ESTIMATED) ON 2 JUL DURING SPOTLIGHT SURVEYS; 1 CRLF TADPOLE & NUMEROUS Hyla regilla TADPOLES OBS ON 3 JUL 1997. 6 ADS & 2 OF UNK AGE OBS ON 12 SEP 2002. 3 ADS & 5 JUVS OBS 26 SEP 2007. 5 ADS & 2 JUVS ON 17 APR 2008.

Owner/Manager: PVT

Rana draytonii

California red-legged frog

Element Code: AAABH01022

_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: Threatened	Global: G4T2T3	CDFG Status: SC
State: None	State: S2S3	

_____ **Habitat Associations** _____

General: LOWLANDS & FOOTHILLS IN OR NEAR PERMANENT SOURCES OF DEEP WATER WITH DENSE, SHRUBBY OR EMERGENT RIPARIAN VEGETATION.

Micro: REQUIRES 11-20 WEEKS OF PERMANENT WATER FOR LARVAL DEVELOPMENT. MUST HAVE ACCESS TO ESTIVATION HABITAT.

Occurrence No. 609	Map Index: 50057	EO Index: 50057	_____ Dates Last Seen _____
Occ Rank: Good			Element: 2002-11-18
Origin: Natural/Native occurrence			Site: 2002-11-18
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2003-01-30

Quad Summary: Caldor (3812054/508C)

County Summary: El Dorado

Lat/Long: 38.53713° / -120.43970°	Township: 08N
UTM: Zone-10 N4268521 E723155	Range: 14E
Mapping Precision: SPECIFIC	Section: 21 Qtr: NW
Symbol Type: POINT	Meridian: M
Radius: 80 meters	Elevation: 4,200 ft

Location: SOPIAGO CREEK, 0.8 MILE NNW OF COOKS STATION, NORTH OF HIGHWAY 88

Location Detail: FROGS WERE LOCATED AT THE SITE OF AN OLD, DAM THAT HAD BURST.

Ecological: HABITAT CONSISTS OF WILLOW/ALDER RIPARIAN.

Threat: THREATENED BY THE LANDOWNERS PLANS TO REBUILD THE DAM.

General: 3 ADULTS OBSERVED ON 18 NOV 2002.

Owner/Manager: PVT

Rana draytonii

California red-legged frog

Element Code: AAABH01022

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: Threatened	Global: G4T2T3	CDFG Status: SC
State: None	State: S2S3	

_____ **Habitat Associations** _____

General: LOWLANDS & FOOTHILLS IN OR NEAR PERMANENT SOURCES OF DEEP WATER WITH DENSE, SHRUBBY OR EMERGENT RIPARIAN VEGETATION.

Micro: REQUIRES 11-20 WEEKS OF PERMANENT WATER FOR LARVAL DEVELOPMENT. MUST HAVE ACCESS TO ESTIVATION HABITAT.

Occurrence No. 814	Map Index: 61448	EO Index: 61484	_____ Dates Last Seen _____
Occ Rank: Fair			Element: 2005-05-12
Origin: Natural/Native occurrence			Site: 2005-05-12
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2005-05-31

Quad Summary: Clarksville (3812161/511A)

County Summary: El Dorado

Lat/Long: 38.73547° / -121.08304°	Township: 10N
UTM: Zone-10 N4289167 E666615	Range: 08E
Mapping Precision: SPECIFIC	Section: 10 Qtr: SE
Symbol Type: POINT	Meridian: M
Radius: 80 meters	Elevation: 485 ft

Location: DRAINAGE/WATERCOURSE AT THE END OF FITCH WAY, EAST SIDE OF FOLSOM LAKE, SW OF IRON MOUNTAIN

Location Detail: THIS DRAINAGE EMANATES FROM A PVC PIPE AT THE END OF FITCH WAY; FROG OBSERVED ON A SMALL FOOTBRIDGE CROSSING THE WATERCOURSE.

Ecological: HABITAT CONSISTS OF A SMALL WATERCOURSE THAT DRAINS INTO FOLSOM LAKE; VEGETATED BY SEDGES AND HIMALAYAN BLACKBERRY.

Threat:

General: 1 JUVENILE FROG OBSERVED ON 12 MAY 2005.

Owner/Manager: DPR-FOLSOM LAKE SRA, USBOR

Rana draytonii		
California red-legged frog		Element Code: AAABH01022
Status	NDDB Element Ranks	Other Lists
Federal: Threatened State: None	Global: G4T2T3 State: S2S3	CDFG Status: SC
Habitat Associations		
General: LOWLANDS & FOOTHILLS IN OR NEAR PERMANENT SOURCES OF DEEP WATER WITH DENSE, SHRUBBY OR EMERGENT RIPARIAN VEGETATION.		
Micro: REQUIRES 11-20 WEEKS OF PERMANENT WATER FOR LARVAL DEVELOPMENT. MUST HAVE ACCESS TO ESTIVATION HABITAT.		

* SENSITIVE *

Occurrence No. 1284	Map Index: 76309	EO Index: 77288	Dates Last Seen
Occ Rank: Fair			Element: 2009-08-13
Origin: Natural/Native occurrence			Site: 2009-08-13
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-08-20

Quad Summary: Georgetown (3812087/526A)

County Summary: El Dorado

* SENSITIVE *

Lat/Long:	Township:
UTM:	Range:
Mapping Precision:	Section:
Symbol Type:	Meridian:
Radius:	Elevation:
	Qtr:

Location: *SENSITIVE* Location information suppressed.

Location Detail: Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information: (916) 324-3812.

Ecological: HABITAT CONSISTS OF A SERIES OF SMALL POOLS/WET AREAS IN A SMALL EPHEMERAL DRAINAGE. STREAM CHANNEL IS OCCASIONALLY SCoured. SITE IS ON FOREST SERVICE LAND WITH NEARBY RECREATION TRAIL. PRIVATE RURAL RESIDENTIAL PROPERTY WITHIN 0.5 MILE.

Threat: RECREATION AND FUELS REDUCTION PROJECTS (CONTROLLED BURNING, VEGETATION REMOVAL?).

General:

Owner/Manager:

Rana draytonii

California red-legged frog

Element Code: AAABH01022

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: Threatened	Global: G4T2T3	CDFG Status: SC
State: None	State: S2S3	

_____ **Habitat Associations** _____

General: LOWLANDS & FOOTHILLS IN OR NEAR PERMANENT SOURCES OF DEEP WATER WITH DENSE, SHRUBBY OR EMERGENT RIPARIAN VEGETATION.

Micro: REQUIRES 11-20 WEEKS OF PERMANENT WATER FOR LARVAL DEVELOPMENT. MUST HAVE ACCESS TO ESTIVATION HABITAT.

* SENSITIVE *

Occurrence No. 1317	Map Index: 76582	EO Index: 77562	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 2009-09-08
Origin: Natural/Native occurrence			Site: 2009-09-08
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-09-16

Quad Summary: Georgetown (3812087/526A)

County Summary: El Dorado

* SENSITIVE *

Lat/Long:	Township:	
UTM:	Range:	
Mapping Precision:	Section:	Qtr:
Symbol Type:	Meridian:	
Radius:	Elevation:	

Location: *SENSITIVE* Location information suppressed.

Location Detail: Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information: (916) 324-3812.

Ecological: HABITAT CONSISTS OF A SERIES OF SMALL POOLS/WET AREAS IN A SMALL EPHEMERAL DRAINAGE.

Threat: RECREATION AND FUELS REDUCTION PROJECTS.

General:

Owner/Manager:

ATTACHMENT B

Representative Site Photographs



Eastern bank of Forebay looking southeast to El Dorado Ditch inlet. Notice shallow soil banks of Forebay and vertical banks of inlet. No emergent vegetation or bank complexity present.



Looking northwest along eastern edge of Forebay. Again, showing little complexity along Forebay shore.



Looking southwest along Forebay dam shore showing bare ground and frequently used walking trail along top of dam.



One of the emergent wetlands below dam showing origin of water for ephemeral and perennial drainages.



The emergency spillway channel at southwestern corner of Forebay.



The EID Main Canal as it empties water from the Forebay. Notice the velocity apparent in the surface water.

APPENDIX E

Special-Status Species with Potential to Occur on Project Site

**Table E
Special-Status Species with Potential to Occur on Project Site**

Common Name	Scientific Name	Federal Status	California Status	Other Status	Habitat Description	Potential to Occur On-Site
Plants						
Three-bracted onion	<i>Allium tribracteatum</i>	—	—	1B	Occurs on volcanic slopes in chaparral; lower and upper montane coniferous forest; 4,000–8,000 feet; blooms April through August	Low; Project site lacks volcanic soils.
Nissenan manzanita	<i>Arctostaphylos nissenana</i>	—	—	1B	Occurs in rocky, closed-cone coniferous forest and chaparral; 1,500–3,500 feet; blooms February through March	Low; Project site is above the elevational limit of the species.
Pleasant Valley Mariposa-lily	<i>Calochortus clavatus</i> var. <i>avius</i>	—	—	1B	Lower montane coniferous forest (Josephine silt loam and volcanic); 2,970–5,910 feet; blooms May through July	Moderate; Josephine loam soils are present in areas on the Project site, and elevational requirements are met.
Mountain lady's-slipper	<i>Cypripedium montanum</i>	—	—	4.2	Broadleaf upland forest; cismontane woodland; lower montane coniferous forest; north coast coniferous forest; between sea level and 5,000 feet; blooms March through August	Low; out of known range of the species in California.
Parry's horkelia	<i>Horkelia parryi</i>	—	—	1B	Occurs primarily in Ione-formation soils in chaparral and cismontane woodland; 265–3,400 feet; blooms April through September	Low; Ione formation soils are not on the Project site.
Saw-toothed lewisia	<i>Lewisia serrata</i>	—	—	1B	Occurs in seeps on mesic, rocky slopes in broad-leafed upland forests, lower montane coniferous forest and riparian forest; 2,960–4,700 feet; blooms May through June	Low; seeps and mesic slopes in upland and lower montane coniferous forest are lacking.
Yellow bur navarretia	<i>Navarretia prolifera</i> ssp. <i>lutea</i>	—	—	4.3	Dry, rocky flats near drainage channels in chaparral and cismontane woodland; 2,800–5,000 feet; blooms May through July	Low; rocky flat microhabitats do not occur on-site.
Stebbins' phacelia	<i>Phacelia stebbinsii</i>	—	—	1B	Occurs in meadows and seeps, cismontane woodland, lower montane coniferous forest, and riparian woodland, sometimes on Josephine loam soils; 2,000–6,600 feet; blooms May through July	Moderate; Josephine loam soils are present in areas on the Project site, and elevational requirements are met.
Invertebrates						
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	FT, FPD	—	—	Elderberry shrubs, Central Valley and foothills below 3,000 feet	Absent; no elderberry shrubs were observed on-site, and site is above the elevational range of the beetle.

**Table E
Special-Status Species with Potential to Occur on Project Site**

Common Name	Scientific Name	Federal Status	California Status	Other Status	Habitat Description	Potential to Occur On-Site
Fish						
Delta smelt	<i>Hypomesus transpacificus</i>	FT	CE	—	Sacramento–San Joaquin Delta	Absent; no habitat for this species was on-site.
Hardhead	<i>Mylopharodon conocephalus</i>	—	—	CSC	Sacramento–San Joaquin Delta	Absent; no habitat for this species was on-site.
Central Valley steelhead	<i>Oncorhynchus mykiss</i>	FT	—	—	Deep pools with sand and gravel or boulder substrates in large streams at middle and high elevations, in undisturbed areas	Absent; no habitat for this species was on-site.
Central Valley spring -run Chinook salmon	<i>Oncorhynchus tshawytscha</i>	FT	CT	—	Undammed rivers, streams, and creeks	Absent; no habitat for this species was on-site.
Winter-run Chinook salmon, Sacramento River	<i>Oncorhynchus tshawytscha</i>	—	—	NMFS, CSC	Undammed rivers, streams, and creeks	Absent; no habitat for this species was on-site.
Amphibians						
Foothill yellow-legged frog	<i>Rana boylei</i>	—	—	CSC	Partly shaded, shallow streams and riffles with a rocky substrate; variety of habitats, including valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal shrub, mixed chaparral, and wet meadows; 0–6,000 feet	Absent; habitat for this species (shallow, cobble-lined streams and creeks) is lacking.
California red-legged frog	<i>Rana draytonii</i>	FT	—	CSC	Perennial streams, marshes, and ponds; lowlands and foothills in or near permanent sources of deep water with dense, shrubby, or emergent riparian vegetation; 0–4,920 feet	Low; although records and critical habitat are within 1 mile to the south, breeding habitat is lacking on-site; the easy public access and high visitorship to the area would likely result in records for this species if it were present.
Reptiles						
Western pond turtle	<i>Actinemys marmorata</i>	—	—	CSC	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation; 0–6,560 feet	Present; several individuals were observed on-site during the June 27–28 field survey.
Birds						
Cooper's hawk (nesting)	<i>Accipiter cooperii</i>	—	—	CNDDDB	Woodland	Moderate; potential habitat (deciduous or coniferous forests for breeding and foraging) is present.

**Table E
Special-Status Species with Potential to Occur on Project Site**

Common Name	Scientific Name	Federal Status	California Status	Other Status	Habitat Description	Potential to Occur On-Site
Northern goshawk (nesting)	<i>Accipiter gentilis</i>	—	—	CSC	Nests at middle and higher elevations in mature dense conifer forests; pinyon-juniper and low-elevation riparian habitats; 0–8,040 feet	Low; canopy is lacking dense coverage needed by this species for nesting.
Sharp-shinned hawk (nesting)	<i>Accipiter striatus</i>	—	—	CNDDDB	Woodland	Moderate; potential habitat (coniferous forests for breeding and foraging) is present.
Golden eagle (nesting)	<i>Aquila chrysaetos</i>			BGEPA	Occurs in rolling foothills, mountain areas, sage-juniper flats, and deserts; uses cliff-walled canyons and large trees in open areas for nesting	Low; nesting habitat is not present on-site.
Long-eared owl (nesting)	<i>Asio otus</i>	—	—	CSC	Riparian habitat with tall willows and cottonwoods; oak thickets with dense tree stands along stream courses; requires adjacent open lands with abundant mice	Low; nesting habitat and foraging habitat are not present on-site.
Olive-sided flycatcher	<i>Contopus cooperi</i>	—	—	CSC	Nests in mixed conifer, montane hardwood-conifer, Douglas-fir, and other forested habitats	Moderate; potential breeding habitat is present on-site
Yellow warbler (nesting)	<i>Dendroica petechia</i>	—	—	CSC	Riparian	Moderate; potential breeding habitat is present on-site, and the Project site is located in known breeding elevation limits.
Willow flycatcher (nesting)	<i>Empidonax traillii</i>	—	CE		Extensive willow thickets; isolated meadows of the Sierra Nevada; along rivers	Low; the Project site lacks extensive willow thickets.
Bald eagle (nesting)	<i>Haliaeetus leucocephalus</i>	Fd	CE (rev)	CFP, BGEPA	Nests in large old-growth or dominant live trees with open branches, usually within 1 mile of large water features	Low; there are no nesting records for the area, and forage supply is limited.
Bank swallow	<i>Riparia riparia</i>	—	CT	—	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert; 0–6,560 feet	Moderate; a small area of potential breeding habitat is present at the eastern outfall of the canal.
California spotted owl (nesting)	<i>Strix occidentalis occidentalis</i>	—	—	CSC	Dense, old-growth, multilayered mix conifer, redwood, and Douglas-fir habitats; 0–7,600 feet	Low; the canopy lacks the dense coverage needed by this species for nesting.
Mammals						
Pallid bat	<i>Antrozous pallidus</i>	—	—	CSC, WBWG:H	Mines, artificial structures, rock outcrops, and woodlands near open grasslands for foraging	Low; mines and rocky outcrops are lacking on-site.
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	—	—	CSC, WBWG:H	Caves and cavelike habitats usually near mesic habitats; not found in subalpine and alpine habitats	Low; caves and similar habitats do not occur on-site.

**Table E
Special-Status Species with Potential to Occur on Project Site**

Common Name	Scientific Name	Federal Status	California Status	Other Status	Habitat Description	Potential to Occur On-Site
Silver-haired bat	<i>Lasionycteris noctivagans</i>	—	—	WBWG:M	Coastal and montane coniferous forests; valley foothill woodlands, pinyon-juniper woodlands, valley foothill, and montane riparian habitats	Moderate; potential habitats, including hollow trees, snags, and loose bark, are present on-site.
Hoary bat	<i>Lasiurus cinereus</i>	—	—	WBWG:M	All woodlands and forest with medium to large trees and dense foliage	Moderate; species roosts in dense foliage of medium to large trees, which are present on-site.
Long-eared myotis	<i>Myotis evotis</i>	—	—	WBWG:M	All brush, woodland, and forest habitats from 0 to 8,900 feet; coniferous woodlands and forests	Moderate; potential habitats, including hollow trees, snags, and loose bark are present on-site.
Little brown bat	<i>Myotis lucifugus</i>	—	—	WBWG:M	Middle-elevation forests: sagebrush, bitterbush, alkali desert scrub, wet meadow, and montane chaparral	Moderate; potential habitats, including hollow trees, snags, and loose bark, are present on-site.
Fringed myotis	<i>Myotis thysanodes</i>	—	—	WBWG:H	Pinyon-juniper, valley foothill hardwood, and hardwood conifer; 4,365–7,220 feet	Moderate; species uses buildings and crevices for roosts, among other features; such habitats are present on-site.
Long-legged myotis	<i>Myotis volans</i>	—	—	WBWG:H	Woodland and forest habitats above 3,950 feet; forages in chaparral, coastal scrub, Great Basin shrub habitats, and early successional stages of woodlands and forests	Moderate; potential habitats, including hollow trees, snags, and loose bark, are present on-site.
Ringtail	<i>Bassariscus astutus</i>	—	—	CFP	Riparian habitats of most forest and shrub habitats at low to middle elevations; or sea level to 8,500 feet	Moderate; hollow trees, snags, and tree cavities that provide cover are present on-site.
Sierra Nevada snowshoe hare	<i>Lepus americanus tahoensis</i>	—	—	CSC	Dense deciduous streamside vegetation, especially fir; 4,800–8,200 feet	Absent; site is below the elevational range of the species.
Pine marten	<i>Martes americana</i>	—	—	CNDDDB	High-elevation evergreen forests, old-growth conifer, snags, tree cavities, highly associated with red fir (<i>Abies magnifica</i>); 4,000–10,600 feet	Low; old-growth coniferous forest composed of red fir is absent from the Project site.
Fisher (West Coast DPS)	<i>Martes pennanti</i>	FC	—	CSC	Intermediate to large tree stages of coniferous forests and deciduous-riparian areas with high-percent canopy closure; 0–8,000 feet	Low; there are no recent records from the area, and the canopy is too open on-site.

**Table E
Special-Status Species with Potential to Occur on Project Site**

Common Name	Scientific Name	Federal Status	California Status	Other Status	Habitat Description	Potential to Occur On-Site
Sierra Nevada red fox	<i>Vulpes vulpes necator</i>	—	CT	—	Brushy, wooded areas, generally above 7,000 feet	Low; site is below the elevational range of the species, and high visitorship and road traffic render the site very marginal habitat.

Notes:

1B = California Native Plant Society plants that are rare or endangered in California and elsewhere.

4 = California Native Plant Society plants of limited distribution; a watch list.

BGEPA = Bald and Golden Eagle Protection Act.

CE = California Endangered Species Act or Native Plant Protection Act listing as endangered.

CFP = California Fish and Game Code fully protected species (Section 3511—birds, Section 4700—mammals, Section 5050—reptiles/amphibians).

CSC = California Department of Fish and Wildlife Species of Special Concern.

CT = California Endangered Species Act or Native Plant Protection Act listing as threatened.

DPS = Distinct Population Segment.

FC = candidate for federal Endangered Species Act listing as threatened or endangered.

Fd = formally delisted (delisted species are monitored for 5 years).

FPD = listed under federal Endangered Species Act but formally proposed for delisting.

FT = federally listed as threatened.

NMFS = National Oceanic and Atmospheric Administration/National Marine Fisheries Service species of concern.

WBWG:H = Western Bat Working Group—high priority.

WBWG:M = Western Bat Working Group—medium priority.

CNDDDB = species that is tracked by the California Department of Fish and Wildlife's Natural Diversity Database but does not have any of the special-status designations identified above.

Sources: CNDDDB (2013), CNPS (2013); data compiled by ECORP in 2013

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APPENDIX F

Noise and Vibration Technical Report: El Dorado
Forebay Dam Modification Project

Noise and Vibration
Technical Report

El Dorado Forebay Dam Modification Project

Prepared for:



El Dorado Irrigation District

AECOM

October 2013

Noise and Vibration
Technical Report

El Dorado Forebay Dam Modification Project

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ACRONYMS AND OTHER ABBREVIATIONS

μPa	micro-Pascals
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
dB	decibels
EID	El Dorado Irrigation District
FHWA	Federal Highway Administration
Forebay	El Dorado Forebay
Hz	Hertz
in/sec	inches per second
kHz	kilo-Hertz
LDL	Larson-Davis Laboratories
L_{dn}	day-night average level
L_{eq}	equivalent sound level
L_{max}	maximum sound level
LT	long term
PPV	peak particle velocity
Project	El Dorado Forebay Dam Modification Project
RMS	root mean square
ST	short term
U.S. 50	U.S. Highway 50
VdB	vibration decibels

1 INTRODUCTION

The El Dorado Irrigation District (EID) is proposing to implement modifications to the existing El Dorado Forebay Dam. As part of this proposal, EID is undertaking the preparation of environmental studies and impact assessment in compliance with the California Environmental Quality Act (CEQA) and other applicable state and federal statutes.

This technical report presents background information necessary to support the noise and vibration analyses presented in various environmental impact documents addressing the El Dorado Forebay Dam Modification Project (Project). This report describes noise and vibration standards applicable to the Project, provides a general background and terminology related to acoustics, presents the existing (ambient) acoustic setting in the Project vicinity, and analyzes Project-generated changes to noise and vibration. Proposed mitigation measures are included in this report.

1.1 REGULATORY BACKGROUND

1.1.1 STATE PLANS, POLICIES, REGULATIONS, AND GUIDELINES

The California Department of Transportation (Caltrans) has developed guidelines for assessing the significance of vibration produced by transportation and construction sources, as presented in Table 1.

Table 1 California Department of Transportation Guidelines for Assessment of Vibration		
Human Response	Vibration Levels, VdB (PPV) ^a	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	80 (0.040)	68 (0.010)
Distinctly perceptible	96 (0.250)	80 (0.040)
Strongly perceptible	107 (0.900)	88 (0.100)
Severe	114 (2.000)	100 (0.400)
Notes:		
PPV = peak particle velocity; VdB = vibration decibels.		
Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.		
^a Vibration levels are referenced to 1 microinch per second. PPV is referenced to inches per second.		
Source: Caltrans 2004		

1.1.2 REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

Government Code Section 53091 states that building and zoning ordinances do not apply to “construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency.” Public utility projects that serve the facilities described above would not be subject to local plans, policies, regulations, or ordinances. The following local regulations related to noise are provided for informational purposes and are provided as a basis to assist with CEQA review in evaluating the level of significance associated with impacts.

EL DORADO COUNTY GENERAL PLAN

The Health, Safety, and Noise Element of the *El Dorado County General Plan* (El Dorado County 2009), adopted on July 19, 2004, and amended in March 2009, establishes the following goal, objective, and policies applicable to noise production:

Goal 6.5: Acceptable Noise Levels—Ensure that County residents are not subjected to noise beyond acceptable levels.

- ▶ **Objective 6.5.1: Protection of Noise-Sensitive Development**—Protect existing noise-sensitive developments (e.g., hospitals, schools, churches and residential) from new uses that would generate noise levels incompatible with those uses and, conversely, discourage noise-sensitive uses from locating near sources of high noise levels.
 - **Policy 6.5.1.2:** Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of [Table 2] at existing or planned noise-sensitive uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

Noise Level Descriptor	Daytime (7 a.m.–7 p.m.)		Evening (7 p.m.–10 p.m.)		Nighttime (10 p.m.–7 a.m.)	
	Community	Rural	Community	Rural	Community	Rural
Hourly L_{eq} , dB	55	50	50	45	45	40
Max. Level— L_{max} , dB	70	60	60	55	55	50

Notes:

dB = decibels; L_{eq} = equivalent sound level, L_{max} = maximum sound level.

Each of the noise levels specified above shall be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

El Dorado County can impose noise level standards that are up to 5 dB less than those specified above based upon determination of existing low ambient noise levels in the vicinity of the Project site.

In community areas the exterior noise level standard shall be applied to the property line of the receiving property. In rural areas the exterior noise level standard shall be applied at a point 100 feet away from the residence. The above standards shall be measured only on property containing a noise sensitive land use as defined in Objective 6.5.1. This measurement standard may be amended to provide for measurement at the boundary of a recorded noise easement between all affected property owners and approved by El Dorado County.

For the purposes of the Noise Element, transportation noise sources are defined as traffic on public roadways, railroad line operations, and aircraft in flight. Control of noise from these sources is preempted by federal and state regulations. Control of noise from facilities of regulated public facilities is preempted by California Public Utilities Commission regulations. All other noise sources are subject to local regulations. Nontransportation noise sources may include industrial operations, outdoor recreation facilities, HVAC units, schools, hospitals, commercial land uses, and other outdoor land uses.

Source: El Dorado County 2009

- **Policy 6.5.1.3:** Where noise mitigation measures are required to achieve the standards of [Table 2], the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project and the noise barriers are not incompatible with the surroundings.
- **Policy 6.5.1.7:** Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of [Table 2] for noise-sensitive uses.
- **Policy 6.5.1.11:** The standards outlined in [Table 3] shall apply to those activities associated with actual construction of a project as long as such construction occurs between the hours of 7 a.m. and 7 p.m., Monday through Friday, and 8 a.m. and 5 p.m. on weekends, and on federally-recognized holidays. Exceptions are allowed if it can be shown that construction beyond these times is necessary to alleviate traffic congestion and safety hazards.

Table 3 Maximum Allowable Noise Exposure for Nontransportation Noise Sources in Rural Regions— Construction Noise			
Land Use Designation	Time Period	Noise Level, dB	
		Hourly L_{eq}	L_{max}
All residential	7 a.m.–7 p.m.	50	60
	7 p.m.–10 p.m.	45	55
	10 p.m.–7 a.m.	40	50
Commercial, recreation, and public facilities	7 a.m.–7 p.m.	65	75
	7 p.m.–7 a.m.	60	70
Rural land, natural resources, open space, and agricultural lands	7 a.m.–7 p.m.	65	75
	7 p.m.–7 a.m.	60	70
Notes:			
dB = decibels; L_{eq} = equivalent sound level, L_{max} = maximum sound level,			
Source: El Dorado County 2009			

1.2 ENVIRONMENTAL SETTING

1.2.1 ACOUSTICS BACKGROUND AND TERMINOLOGY

SOUND, NOISE, AND ACOUSTICS

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air). Noise is generally defined as sound that is unwanted (i.e., loud, unexpected, or annoying). Acoustics is defined as the physics of sound. In acoustics, the fundamental scientific model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and the obstructions or atmospheric factors affecting the propagation path to the receiver determine the sound level and characteristics of the noise perceived by the receiver. Acoustics addresses primarily the propagation and control of sound.

FREQUENCY

The number of sound pressure peaks traveling past a given point in a single second is referred to as the frequency, expressed in cycles per second or Hertz (Hz). A given sound may consist of energy at a single frequency (pure tone) or at many frequencies over a broad frequency range (or band). Human hearing is generally affected by sound frequencies between 20 Hz and 20,000 Hz (20 kilo-Hertz or kHz).

AMPLITUDE

The amplitude of pressure waves generated by a sound source determines the perceived loudness of that source. Sound pressure amplitude is measured in micro-Pascals (μPa). One μPa is approximately 100 billionths (0.0000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 μPa to 100,000,000 μPa . Because of this wide range of values, sound is rarely expressed in terms of pressure. Instead, a logarithmic scale is used to describe sound pressure level in terms of decibels (dB). The threshold of human hearing (near-total silence) is approximately 0 dB, which corresponds to 20 μPa .

USE OF DECIBEL SCALE

Because decibels are logarithmic units, sound pressure levels cannot be added or subtracted through ordinary arithmetic means. With the decibel scale, a doubling of sound energy corresponds to an increase of 3 dB. In other words, when two sources are each producing sound of the same loudness, the resulting sound level at a given distance is approximately 3 dB higher than the sound level produced by one of the sources under the same conditions. For example, if one automobile produces a sound pressure level of 70 dB when it passes an observer, two cars passing simultaneously produce 73 dB. With the decibel scale, three sources of equal loudness together produce a sound level approximately 5 dB louder than one source, and 10 equally loud sources together produce a sound level approximately 10 dB louder than the single source.

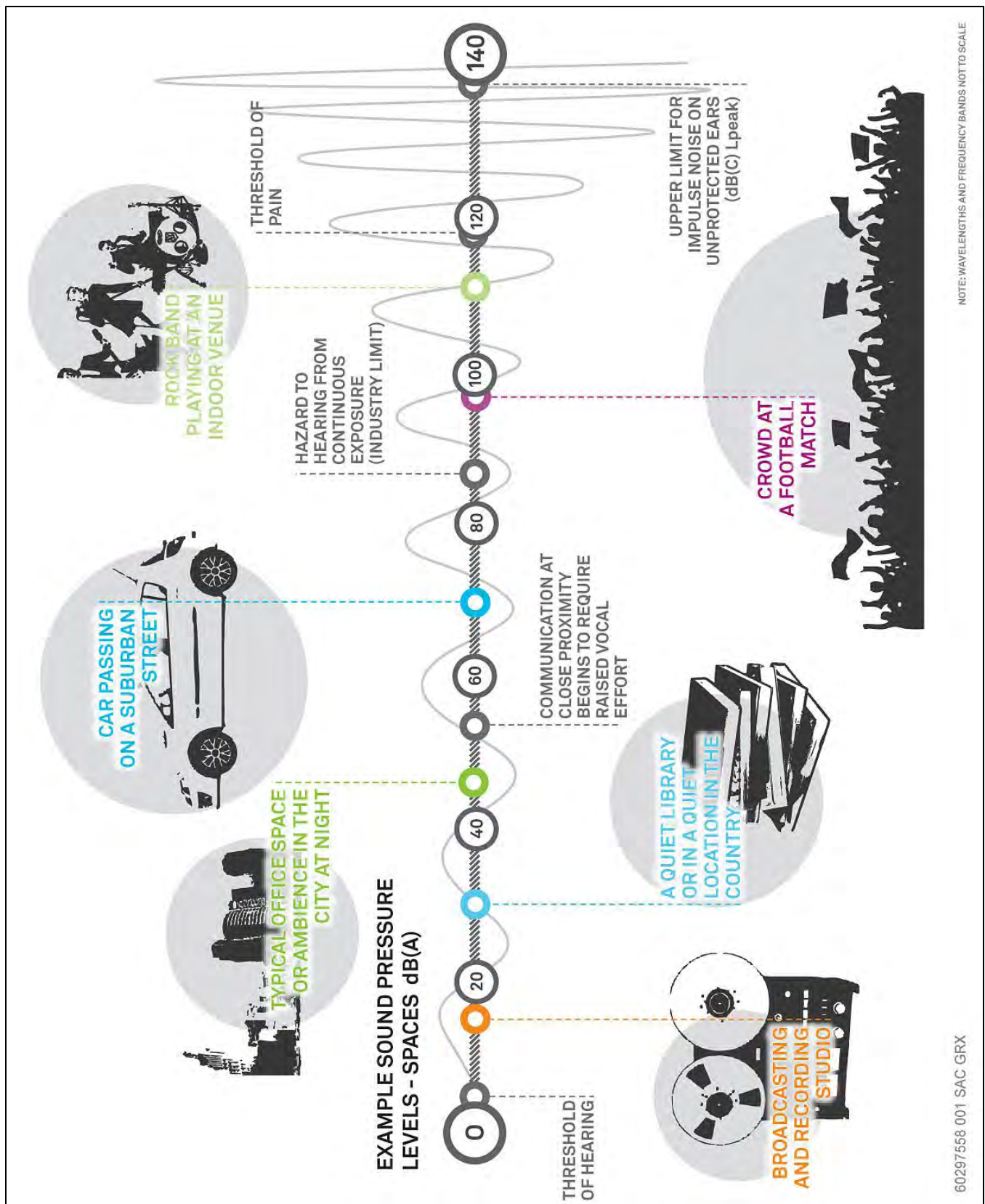
A-WEIGHTED DECIBELS

Exhibit 1 illustrates sound levels associated with common sound sources. The perceived loudness of sounds is dependent on many factors, such as sound pressure level and frequency content. However, within the usual range of environmental sound levels, perception of loudness is relatively predictable, and can be approximated by filtering frequencies using the standardized A-weighting network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard descriptor for environmental noise assessment. All noise levels reported in this section are in terms of A-weighting.

HUMAN RESPONSE TO CHANGES IN NOISE LEVELS

As previously discussed, doubling sound energy results in a 3-dB increase in sound. However, given a change in sound levels measured with precise instrumentation, the subjective human perception of a doubling of loudness will usually differ from what is measured.

Under controlled conditions in a laboratory setting, the trained, healthy human ear can discern 1-dB changes in sound levels when exposed to steady, single-frequency (“pure-tone”) signals in the mid-frequency range (1,000–



Source: Caltrans 2009, adapted by AECOM in 2013

Exhibit 1

Reference Sound Levels for Common Sources

8,000 Hz). In typical noisy environments, noise-level changes of 1–2 dB are generally not perceptible. However, it is widely accepted that people can begin to detect 3-dB increases in typical noisy environments. Furthermore, an increase of 5 dB is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness. Therefore, a doubling of sound energy that would result in a 3-dB increase in sound pressure level would generally be perceived as barely detectable (Table 4).

Table 4	
Approximate Relationship between Increases in Environmental Noise Level and Human Perception	
Noise Level Increase, dB	Human Perception (Typical)
Up to about 3	Not perceptible
About 3	Barely perceptible
About 6	Distinctly noticeable
About 10	Twice as loud
About 20	Four times as loud

Source: Egan 1988

NOISE-SENSITIVE LAND USES

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Noise-sensitive land uses typically include residences, hospitals, schools, transient lodging, libraries, and certain types of recreational uses. Noise-sensitive residential receivers are found throughout the study area.

NOISE DESCRIPTORS

Noise in our daily environments fluctuates over time. Some fluctuations are minor, but some are substantial. Some noise levels occur in regular patterns; others are random. Some noise levels fluctuate rapidly, others slowly. Some noise levels vary widely, but others are relatively constant.

Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors that are most commonly used in environmental noise analysis, and may be applicable to this study:

- ▶ **Equivalent Sound Level (L_{eq}):** An average of the sound energy occurring over a specified time period. In effect, the L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour, A-weighted equivalent sound level ($L_{eq[1h]}$) is the energy average of A-weighted sound levels occurring during a 1-hour period, and is the basis for noise abatement criteria used by Caltrans and the Federal Highway Administration (FHWA).
- ▶ **Maximum Sound Level (L_{max}):** The highest instantaneous sound level measured during a specified period.
- ▶ **Day-Night Average Level (L_{dn}):** The energy average of A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to A-weighted sound levels occurring during nighttime hours (10 p.m.–7 a.m.). The L_{dn} is often noted as the DNL.

SOUND PROPAGATION

Sound from a localized source (i.e., point source) propagates uniformly outward in a spherical pattern; therefore, this type of propagation is called spherical spreading. The sound level attenuates (decreases) at a rate of 6 dB for each doubling of distance from a point/stationary source as its energy is continuously spread out over a spherical surface (Exhibit 2).

Roadways and highways and, to some extent, moving trains consist of several localized noise sources on a defined path; hence these are treated as “line” sources, which approximate the effect of several point sources (Exhibit 3). Noise from a line source propagates over a cylindrical surface, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. Therefore, noise from a line source attenuates less with distance than noise from a point source with increased distance.

VIBRATION

Generally speaking, vibration is energy transmitted in waves through the ground. Because energy is lost as energy is transferred from one particle to another, the vibratory energy is reduced with increasing distance from the source. Vibration attenuates at a rate of approximately 50% for each doubling of distance from the source. This approach takes into consideration only the attenuation from geometric spreading. Because additional factors reduce vibration over distance (e.g., damping from soil condition), this approach tends to provide for a conservative assessment of vibration level at the receiver.

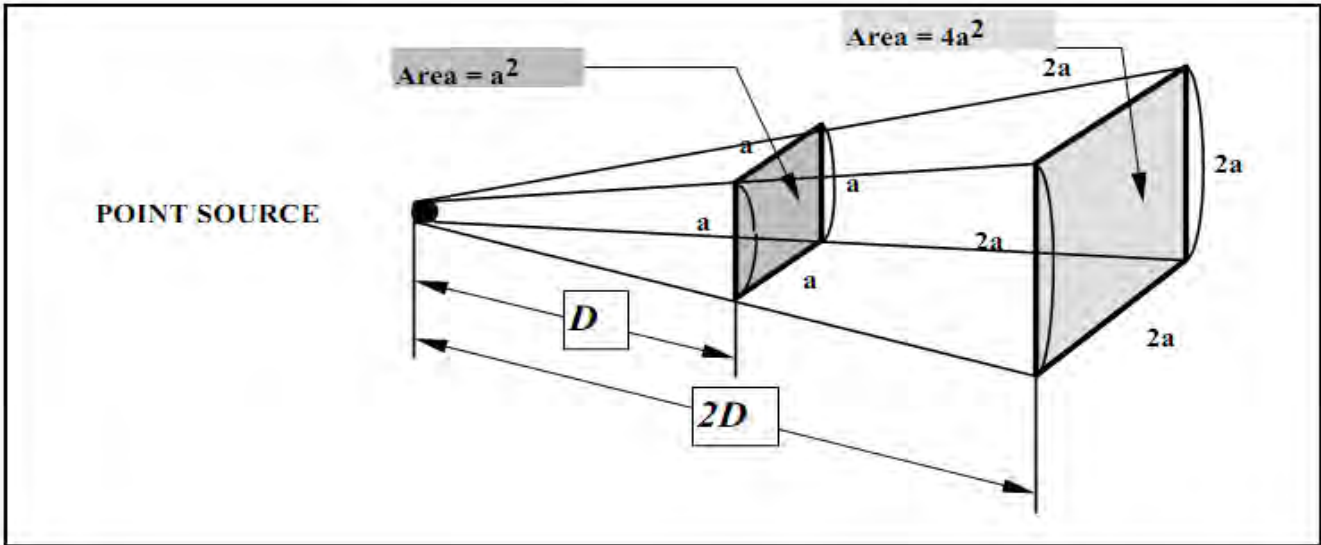
Vibration is an oscillatory motion that can be described in terms of the displacement, velocity, or acceleration. Vibration is typically described by its peak amplitude and its root-mean-square (RMS) amplitude. The RMS value can be considered an average value over a given time interval. The peak vibration velocity is the same as the “peak particle velocity” (PPV), generally presented in units of inches per second (in/sec). Peak particle velocity is defined as the maximum instantaneous positive or negative peak of the vibration signal, and PPV is generally used to assess the potential for damage to buildings and structures. The RMS amplitude is typically used for assessing human annoyance to vibration.

1.3 PHYSICAL ENVIRONMENTAL SETTING

The Project site is located in El Dorado County and the community of Pollock Pines north of U.S. Highway 50 (U.S. 50). El Dorado Forebay (Forebay) is surrounded by rural residential uses and is located adjacent to Craig Escobar Field (baseball) to the northeast.

1.3.1 NOISE-SENSITIVE RECEPTORS

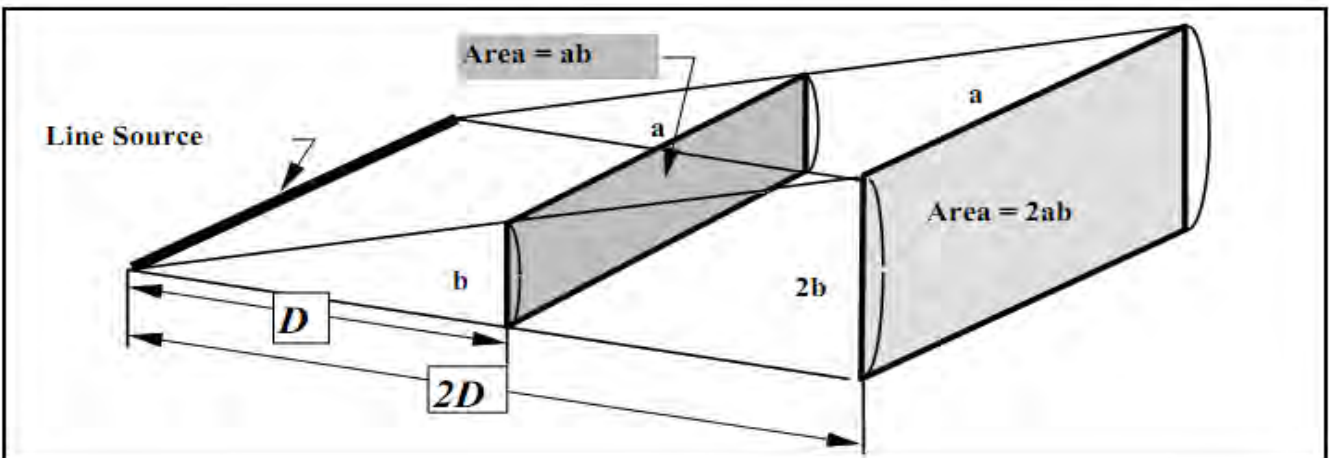
Noise-sensitive receptors generally are defined as locations where people reside or where the presence of unwanted sound (noise) may adversely affect the designed use of the land. Typically, noise-sensitive land uses include residences, hospitals, places of worship, libraries, and schools, as well as nature and wildlife preserves, recreational areas, and parks. For this Project, the primary noise-sensitive receptors are rural residential uses. The primary sensitive receptors near the Project area include single-family homes—some located near the primary construction areas, and others located along the Project’s construction-access roadways.



Source: Caltrans 2009

Exhibit 2

Point Source Attenuation with Distance



Source: Caltrans 2009

Exhibit 3

Line Source Attenuation with Distance

1.3.2 AMBIENT NOISE AND VIBRATION

Noise and vibration in the Project vicinity are dominated by vehicular traffic on local area roadways (including U.S. 50), community activities, and nature sources.

Long-term (48-hour) measurements of ambient noise levels were completed in the Project vicinity on July 9–10, 2013. These measurement sites were selected to represent the nearest residential receivers to Project construction and operations. Table 5 summarizes the results of the measurements. As shown, average daytime noise levels in the Project area were in the range of 39–45 dB (L_{eq}), depending on location. Average nighttime noise levels in the Project area were in the range of 38–43 dB (L_{eq}), depending on location. The average day-night average noise level was measured and calculated to be in the range of 45–50 dB (L_{dn}). This is a relatively quiet noise environment, as expected in a rural mountain setting.

**Table 5
Summary of Ambient Noise Level Measurements—July 9–10, 2013**

Measurement Site	Location	Average L_{eq} , dB (Range)		Average L_{dn} , dB (Range)
		Daytime	Nighttime	
1 (LT)	Terrace Drive (front yard)	39 (29–46)	41 (28–44)	47 (42–49)
2 (LT)	Forebay Road (back yard)	45 (40–50)	43 (35–48)	50 (47–51)
3 (LT)	Drop Off Road (back yard)	42 (32–53)	38 (30–44)	45
4 (ST)	Southwest corner of Blair Road and Forebay Road	55	--	--
5 (ST)	Forebay Road south of Sherman Way	48	--	--
6 (ST)	Northwest of Drop Off Road	41	--	--
7 (ST)	Northeast corner of Deep Haven Road and Forebay Road	55	--	--

Notes: dB = decibels; L_{dn} = day-night average level; L_{eq} = equivalent sound level; -- = not applicable.
 Long-term (LT) measurement results represent the 48 hours of July 9–10, 2013. Short-term (ST) measurement results represent 15-minute durations, and were recorded between 12 noon and 2:30 p.m. on July 9, 2013. "Daytime" refers to the hours of 7 a.m. to 10 p.m. "Nighttime" refers to the hours of 10 p.m. to 7 a.m.
 Source: Data compiled by AECOM in 2013

Supplementary short-term (15-minute) measurements of ambient noise levels were completed in the Project vicinity on July 9, 2013, from 12 noon to 2:30 p.m. Measurements were completed at four locations in residential areas that would be directly adjacent to Project construction and operations. Table 5 summarizes the results of the measurements. As shown, average measured noise levels ranged from 41 to 55 dB (L_{eq}). These levels were somewhat higher than those measured at the long-term sites because of their locations nearer to public roadways.

Noise level measurements were completed using Larson-Davis Laboratories (LDL) Model 820 (long-term) and Model 824 (short-term) precision integrating sound level meters. The meters were calibrated before the measurements using an LDL Model CAL200 acoustical calibrator. The meters were programmed to record A-weighted sound levels using a "slow" response. The equipment used complies with all pertinent requirements of the American National Standards Institute for Class 1 sound level meters (ANSI S1.4).

2 ANALYSIS

2.1 METHODOLOGY

Noise associated with on-site Project construction activities was analyzed using FHWA's Roadway Construction Noise Model and heavy equipment/equipment usage factors for assumed worst-case construction operations. Noise levels associated with on-site construction were compared to the noise level limits in the *El Dorado County General Plan*. Project construction noise levels were also compared to the measured ambient noise levels in the project area, and a significant impact was defined as a 5+ dB increase; a 5+ dB increase would likely be noticeable to existing noise-sensitive uses in the Project area.

Noise from various construction activities, equipment, and sources was estimated using the number of vehicles or pieces of equipment that might contribute to a specific noise event. For example, the estimate of noise emanating from timber harvesting assumes two chain saws, one dozer, and one haul truck. This equipment and these vehicles were specified to portray the noise sources and associated noise levels expected at a single location. The reference to a limited number of vehicles and pieces of equipment for this calculation is not intended to limit the number of vehicles and pieces of equipment on-site. Additional chain saws, dozers, and trucks might operate on-site as part of timber-harvesting activities.

Noise from off-site traffic associated with Project construction was analyzed using FHWA's Traffic Noise Prediction methodology (FHWA-RD-77-108) and hourly traffic volume data compiled by AECOM for the primary construction traffic route. Project construction traffic noise levels were compared to the existing traffic noise levels in the project area, and a significant impact was defined as a 5+ dB increase; a 5+ dB increase would likely be perceptible to existing noise-sensitive uses in the Project area.

Levels of ground vibration at the closest residential receivers attributable to on-site construction operations were assessed based on known reference vibration levels for heavy construction equipment operation and standard ground attenuation calculations. A vibration was determined to be substantial if expected levels would exceed 0.100 PPV/88 vibration decibels (VdB).

Specifically, Project-related noise and/or vibration would be substantial and adverse if:

- ▶ Project-related groundborne vibration levels from operations of heavy construction equipment would exceed 0.100 in/sec PPV/88 VdB at the closest residential building facades
- ▶ Implementing the Project would increase the permanent background noise level by 5 dB or more (perceptible change) or
- ▶ Project-related construction noise (both on-site and off-site [from traffic]) would exceed the measured hourly ambient noise level (L_{eq}) by 5 dB or more at the closest residential receivers

Project-related construction noise levels at the closest residential receivers were compared to the *El Dorado County General Plan* limits presented in Table 3. However, these comparisons were not used to assess noise; rather, they are provided for informational purposes and to assist with CEQA review.

2.2 PROJECT NOISE

As presented in Table 3 above, El Dorado County has established a daytime construction noise level limit of 50 dB L_{eq} at rural residential properties. This limit is approximately 5–10 dB higher than existing ambient conditions observed in the Project vicinity (Table 5), and is considered to be appropriate given the ambient noise environment.

2.2.1 CONSTRUCTION-RELATED NOISE ASSESSMENT

STATIONARY CONSTRUCTION NOISE SOURCES (NONTRANSPORTATION)

The noisiest Project construction activities would involve harvesting trees and preparing the primary and secondary material borrow areas west-northwest of the dam site; excavating aggregate materials from the borrow areas for use at the dam site; clearing, excavating, backfilling, and constructing the dam stability buttress and embankment; and conducting construction at the reservoir inlet.

Table 6 presents the estimated noise levels associated with these various construction activities at a residential receiver (anticipated point of perception) along with the approximated distance of the receiver from the point of generation. The effects of these activities on noise levels are described separately in the following discussion.

Table 6 Summary of Construction Noise Level Calculations	
Residential Receiver Location	Noise Level—dB L_{eq}
Tree Harvesting and Development in the Borrow Area(s)	
East-northeast of construction—150 feet—Terrace Drive and El Camino Drive	73
South-southwest of construction—575 feet—Forebay Road	61
West of construction—575 feet—Forebay Road	61
Mining of the Borrow Area(s)	
East-northeast of construction—150 feet—Terrace Drive and El Camino Drive	70
South-southwest of construction—575 feet—Forebay Road	59
West of construction—575 feet—Forebay Road	59
Dam Stability Buttress Work	
North of construction—375 feet—Forebay Road	64
West of construction—950 feet—Forebay Road	56
South-southeast of construction—500 feet—Polaris Street/Drop Off Road	62
Reservoir Inlet Channel Work	
East of construction—375 feet—Forebay Road	64
Notes: dB = decibels; L _{eq} = equivalent sound level.	
Source: Data compiled by AECOM in 2013	

Tree Harvesting and Development in the Borrow Area(s)

Harvesting trees in and clearing the borrow area(s) are anticipated to require timber fallers with chain saws, loaders, skidders, dozers, a fuel/mechanic’s truck, pickup trucks, and logging trucks. Of this equipment, the chain saws, dozers, and haul trucks would be expected to produce most of the construction noise.

Construction noise levels produced by simultaneous use of two chain saws, one dozer, and one haul truck were calculated at the closest noise-sensitive residential receivers to the east-northeast (along Terrace Drive and El Camino Drive) and the south-southwest/west (along Forebay Road). These residential receivers were located approximately 150 feet and 575 feet, respectively, from the closest potential construction activities. Construction noise levels were calculated to be approximately 73 dB L_{eq} and 61 dB L_{eq}, respectively, at these residential

receivers to the east-northeast and south-southwest/west. These noise levels exceed the applicable El Dorado County daytime limit of 50 dB L_{eq} . Additionally, these noise levels exceed the existing daytime ambient noise level by more than 5 dB (average daytime ambient noise level assumed to be 43 dB L_{eq} in the Project area). Therefore, this noise exposure would be substantial and adverse.

Excavation of the Borrow Area(s)

Excavation of aggregate materials from the Project borrow area(s) is anticipated to include simultaneous use of excavators, front-end loaders, and haul trucks. Construction noise levels produced by the concurrent use one excavator, one front-end loader, and one haul truck were calculated at the closest noise-sensitive residential receivers. These are the same receivers as described above for tree harvesting and development, located approximately 150 feet and 575 feet from the closest potential construction activities. Construction noise levels were calculated to be approximately 70 dB L_{eq} and 59 dB L_{eq} , respectively, at the closest existing residential receivers to the east-northeast and south-southwest/west (Table 6). These noise levels exceed the applicable El Dorado County daytime limit of 50 dB L_{eq} . Additionally, these noise levels exceed the existing daytime ambient noise level by more than 5 dB (average daytime ambient noise level assumed to be 43 dB L_{eq} in the Project area). Therefore, this noise exposure would be substantial and adverse.

Dam Stability Buttress Installation

Clearing, excavating, backfilling, and construction of the dam stability buttress are anticipated to include simultaneous use of dozers, excavators, front-end loaders, and haul trucks. Construction noise levels produced by the concurrent use of one dozer, one excavator, one front-end loader, and one haul truck were calculated at the closest noise-sensitive residential receivers to the north (on Forebay Road), west (on Forebay Road), and south-southeast (on Polaris Street/Drop Off Road). These residential receivers were located approximately 375 feet, 950 feet, and 500 feet, respectively, from the closest potential construction activities. Construction noise levels were calculated to be approximately 64 dB L_{eq} , 56 dB L_{eq} , and 62 dB L_{eq} , respectively, at the closest existing residential receivers to the north, west, and south-southeast (Table 6). These noise levels exceed the applicable El Dorado County daytime limit of 50 dB L_{eq} . Additionally, these noise levels exceed the existing daytime ambient noise level by more than 5 dB (average daytime ambient noise level assumed to be 43 dB L_{eq} in the Project area). Therefore, this noise exposure would be substantial and adverse.

Reservoir Inlet Channel Work

Clearing, excavating, backfilling, and construction associated with the reservoir inlet are estimated to include the simultaneous use of dozers, excavators, front-end loaders, and haul trucks. Construction noise levels produced by the concurrent use of one dozer, one excavator, one front-end loader, and one haul truck were calculated at the closest noise-sensitive residential receivers to the east (on Forebay Road). These residential receivers were located approximately 375 feet from the closest potential construction activities. The estimated construction noise level at these receivers was calculated to be approximately 64 dB L_{eq} (Table 6). This noise level exceeds the applicable El Dorado County daytime limit of 50 dB L_{eq} . Additionally, this noise level exceeds the existing daytime ambient noise level by more than 5 dB (average daytime ambient noise level assumed to be 43 dB L_{eq} in the Project area). Therefore, this noise exposure would be substantial and adverse.

Construction Staging and Laydown Areas

It is expected that Project construction equipment could be tested and maintained at designated construction staging and laydown areas on the west and east sides of the Forebay. It is estimated that operations of heavy construction equipment (e.g., dozers, excavators) and stationary equipment needed for heavy equipment maintenance (i.e., generators, air compressors) in the staging and laydown areas could generate noise levels as high as 80 dB L_{eq} (hourly) at a distance of 100 feet. Assuming standard spherical spreading loss (-6 dB per doubling of distance), noise levels from these operations could exceed the county's 50 dB L_{eq} criterion at noise-sensitive uses within 3,200 feet of the staging and laydown areas. Within 4,000 feet, noise levels from construction staging and laydown areas could exceed the measured ambient noise level (43 dB L_{eq}) by 5 dB or more. This noise exposure would be substantial and adverse.

CONSTRUCTION TRAFFIC NOISE

Project construction would temporarily add traffic to area roadways, increasing exposure to traffic noise at existing noise-sensitive uses in the Project vicinity. Specifically, Forebay Road north of Pony Express Trail, Blair Road south of Forebay Road, and Polaris Street/Drop Off Road north of Pony Express Trail were analyzed for Project traffic-related noise production using the Federal Highway Administration Model and traffic volume and distribution information provided in the Public Services and Transportation/Traffic Technical Report prepared for the Project (Appendix G).

It was assumed that most Project construction traffic would access the construction areas via Forebay Road (90%), with the remainder using Blair Road (5%) and Polaris Street/Drop Off Road (5%). This traffic would include construction worker vehicles and heavy trucks (haul trucks, materials and equipment transport). The traffic speed was assumed to be 25 miles per hour for all studied roadway segments. Project construction traffic was assessed independently of existing (2012) traffic for the assumed a.m. peak-hour traffic condition to assess worst-case, Project-related traffic noise changes. The results of the modeling of traffic noise exposure are summarized in Table 7.

Roadway	Segment	Noise Level 50 Feet from C.L., dB L_{eq}			Change, dB
		Existing	Project	Existing + Project	
Forebay Road	Sherman Way to Blair Road	47	55	56	+9
Blair Road	South of Forebay Road	43	40	46	+3
Forebay Road	West of Blair Road	45	43	47	+2
Forebay Road	Sherman Way to Pony Express Trail	48	55	56	+7

Notes:
 C.L. = roadway centerline; dB = decibels; L_{eq} = equivalent sound level.
 A Project construction traffic noise assessment was not completed for Polaris Street/Drop Off Road because no traffic volume information was available at the time of this study. Project construction traffic for this roadway is expected to be similar to Blair Road south of Forebay Road.
 Source: Data compiled by AECOM in 2013

The existing noise levels shown in Table 7 differ from those shown in Table 5 because they were taken at different locations and under different circumstances. These values are being used for purposes of comparing with calculated future noise levels.

As shown in Table 7, Project construction-related traffic noise levels during the a.m. peak-hour traffic condition would likely exceed El Dorado County's daytime noise level limit of 50 dB L_{eq} at residences adjacent to Forebay Road between Pony Express Trail and Blair Road. As shown, implementing the Project would increase noise on Sherman Way by more than 5 dB. This is considered a substantial increase above ambient conditions.

Project construction would not include operations that could damage nearby buildings structurally or cosmetically; however, construction-related vibration could be strongly perceptible at nearby residences, and could be considered significant. Based on the Caltrans guidelines presented in Table 1, vibration levels in excess of 0.100 in/sec PPV/88 VdB at the closest residences may be "strongly perceptible" and would be considered significant.

In the worst case, Project construction vibration may result from the use of heavy earth-moving equipment for area clearing, temporary roadway grading, and excavation. These activities would produce a vibration level of approximately 87 VdB (0.089 in/sec PPV) at a distance of 25 feet (which is the reference vibration level for operation of a large bulldozer [FTA 2006; Caltrans 2004]). Because Project construction activities using heavy equipment would not occur within 25 feet of acoustically sensitive uses (there will be a minimum 100-foot buffer between construction and residential uses), levels of construction-related ground vibration would not be expected to exceed the established threshold of significance of 88 VdB (0.100 in/sec PPV) at these sensitive uses.

As shown in Table 5, average daytime ambient noise levels at residential properties in the Project area ranged from approximately 39 to 45 dB hourly L_{eq} , depending on location. Assuming an average ambient daytime noise level of about 43 dB L_{eq} in the Project area, a substantial, short-term construction noise change would be expected if Project-related noise levels were to exceed 53 dB L_{eq} (i.e., 10 dB above ambient noise levels).

2.2.2 POST-PROJECT OPERATIONS NOISE ASSESSMENT

A reinforced concrete conduit would be constructed to extend the existing 14-mile-long tunnel to El Dorado Forebay. This conduit would take the place of a portion of open channel at the reservoir inlet, which currently generates some water noise from a series of high-gradient riffles and cascades. Filling the reservoir from this improved inlet may create additional or relocate existing water noise in the area of the tunnel outlet depending on reservoir level. However, this source of noise would be more than 400 feet distant from the closest residential receivers. Additionally, the average elevation change between the inlet and the new reservoir surface would be reduced as a result of the dam height increase, minimizing noise production from the filling of the reservoir.

Overall, post-Project operations- or water-related noise levels at existing residential receivers in the Project area would likely decrease as a result of implementing the Project.

2.3 PROPOSED MITIGATION MEASURES

2.3.1 IMPLEMENT MEASURES TO REDUCE CONSTRUCTION NOISE LEVELS

To limit the nuisance effect of Project construction noise, EID and its construction contractor will implement the following measures:

- ▶ Avoid conducting heavy equipment use and noisy construction activities outside of construction hours from 7:00 a.m.- to one-half hour after sunset local time.
- ▶ Turn off construction equipment when not in use (i.e., avoid long-term idling of heavy construction equipment).
- ▶ Position all construction staging and laydown areas as far from neighboring residents as practical. For equipment that emits loud noise levels and will be operated for extended periods at staging or laydown areas, install portable construction noise barriers, where reasonable and feasible, to mitigate the effects of noise exposure at neighboring residences.
- ▶ Fit all heavy construction equipment with available, manufacturer-specified noise-level reduction components where reasonable and feasible. Maintain all heavy construction equipment in good working order during all operations.

Timing: Throughout Project construction

Responsibility: EID and contractor

3 REFERENCES

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FTA. *See* Federal Transit Administration.

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APPENDIX G

Public Services and Transportation/Traffic Technical Report: El Dorado
Forebay Dam Modification Project

Public Services and Transportation/Traffic
Technical Report
El Dorado Forebay Dam Modification Project

Prepared for:



El Dorado Irrigation District

AECOM

October 2013

Public Services and Transportation/Traffic
Technical Report

El Dorado Forebay Dam Modification Project

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Attachment

A	Raw Traffic Count Data	
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ACRONYMS AND OTHER ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ADT	Average Daily Traffic
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
EDCTA	El Dorado County Transit Authority
EID	El Dorado Irrigation District
EMT	emergency medical technician
Forebay	El Dorado Forebay
LOS	level of service
mph	miles per hour
PCE	passenger car equivalent
Project	El Dorado Forebay Dam Modification Project
RTP	regional transportation plan
SACOG	Sacramento Area Council of Governments
TCR	transportation concept report
U.S. 50	U.S. Highway 50
V/C	volume-to-capacity

1 INTRODUCTION

The El Dorado Irrigation District (EID) is proposing to implement modifications to the existing El Dorado Forebay Dam. As part of this proposal, EID is undertaking the preparation of environmental studies and impact assessment in compliance with the California Environmental Quality Act (CEQA) and other applicable state and federal statutes.

This technical report presents background information necessary to support the public services and transportation/traffic analyses presented in the El Dorado Forebay Dam Modification Project (Project) Environmental Impact Report. This report describes the public services provided in the Project area and discusses the relationship between the Project and existing adopted federal, state, and regional and local laws, regulations, and planning goals and policies related to public services.

This technical report also assesses changes to traffic volumes associated with implementing the Project. The analysis addresses changes expected during Project construction because traffic generated by continued operation of the Project would not change. Proposed mitigation measures are included in this report.

1.1 REGULATORY BACKGROUND

1.1.1 FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

No federal plans, policies, regulations, or laws related to public services and transportation/traffic apply to the Project.

1.1.2 STATE PLANS, POLICIES, REGULATIONS, AND LAWS

No state plans, policies, regulations, or laws related to public services apply to the Project. State plans, policies, regulations, or laws related to traffic and transportation are described below.

CALIFORNIA DEPARTMENT OF TRANSPORTATION

The California Department of Transportation (Caltrans) is responsible for planning, designing, constructing, operating, and maintaining all state-owned roadways. The nearest state-owned roadway is U.S. Highway 50 (U.S. 50), which is located about 0.8 mile from the Project site.

Caltrans prepares various planning documents for its transportation facilities throughout the state. The goals established for specific highways are documented in transportation concept reports (TCRs). A TCR is a system planning document and tool that also presents an analysis of a transportation corridor. It establishes a 20-year transportation planning concept consistent with Caltrans' goals as set forth in the applicable district system management plan.

Operation of the roadway system is typically described in terms of level of service (LOS). It is designated by the letters A through F, with A corresponding to the lowest levels of congestion and F corresponding to the highest level of congestion. At LOS A, traffic is free-flowing at or above the speed limit. At LOS F, traffic is very slow, and each vehicle moves only when traffic around it moves. Traffic frequently slows and stops.

A TCR also establishes the future concept LOS for segments along the route and broadly identifies the nature and extent of the improvements needed to attain a particular LOS. A need for improvement occurs when the actual LOS falls below the concept LOS. Operating conditions for each corridor are projected for 10- and 20-year horizons. Beyond the 20-year planning period, the TCR identifies the ultimate transportation corridor to ensure that adequate right-of-way is preserved for future transportation facility projects.

The *Transportation Corridor Concept Report: United States Highway 50* (Caltrans 2010) describes the 20-year improvement concept for U.S. 50. The concept presented for Segment 13, the segment closest to the Project site, is a four-lane rural freeway. Segment 13 extends from the Cedar Grove exit to the point 0.67 mile east of Sly Park Road in El Dorado County. This segment currently operates at LOS D. The concept LOS is F for this segment.

1.1.3 REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

METROPOLITAN TRANSPORTATION PLAN/SUSTAINABLE COMMUNITIES STRATEGY 2035

The Sacramento Area Council of Governments (SACOG) is an association of local governments in the six-county Sacramento region that provides transportation planning and funding for the region. It is composed of El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba Counties and 22 cities. In addition to preparing the region's long-range transportation plan, SACOG approves the distribution of affordable housing in the region and assists in planning for transit, bicycle networks, clean air, and airport land uses.

SACOG is the metropolitan planning organization responsible for developing the state-required and federally required metropolitan transportation plan every 4 years. The *Metropolitan Transportation Plan/Sustainable Communities Strategy 2035* (SACOG 2012) is the federally mandated long-range planning document for identifying and programming roadway improvements throughout the Sacramento region. The *Metropolitan Transportation Plan/Sustainable Communities Strategy 2035* was also adopted by the El Dorado County Transportation Commission to serve as the county's regional transportation plan (RTP). An RTP is a planning document developed by regional transportation planning agencies, such as the El Dorado County Transportation Commission, in cooperation with Caltrans and other stakeholders.

EL DORADO COUNTY GENERAL PLAN

Government Code Section 53091 states that building and zoning ordinances do not apply to “construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency.” Public utility projects that serve the facilities described above would not be subject to local plans, policies, regulations, or ordinances. The following local goals and policies related to public services and to transportation/traffic resources are provided for informational purposes and to assist with CEQA review.

Public Services and Utilities Element

The following policy from the Public Services and Utilities Element of the *El Dorado County General Plan* regarding public services applies to the Project (El Dorado County 2004):

- **Policy 5.1.2.2:** Provision of public services to new discretionary development shall not result in a reduction of services below minimum established standards to current users, pursuant to [Table 1].

Table 1 Minimum Levels of Service		
	Community Region	Rural Center and Rural Region
County and State road circulation system	[Level of Service] E	[Level of Service] D
Schools	As determined appropriate by the school districts	As determined appropriate by the school districts
Parks	Specific plan for new communities or Quimby Fee/dedication program for tentative maps	Quimby Fee/dedication program for tentative maps
Fire district response	8-minute response to 80% of the population	15- to 45-minute response
Sheriff	8-minute response to 80% of the population	No standard
Ambulance	10-minute response to 80% of the population	20-minute response in Rural Regions and “as quickly as possible” in wilderness areas*
Note: *In accordance with State standards. [The table has been modified by AECOM.]		

The following Levels of Service shall apply to the review of discretionary projects.

Public Health, Safety, and Noise Element

The following policies from the Public Health, Safety, and Noise Element of the *2004 El Dorado County General Plan* (El Dorado County 2009a) address public services:

- **Policy 6.2.2.1:** Fire Hazard Severity Zone Maps shall be consulted in the review of all projects so that standards and mitigation measures appropriate to each hazard classification can be applied. Land use densities and intensities shall be determined by mitigation measures in areas designated as high or very high fire risk.
- **Policy 6.2.3.1:** As a requirement for approving new development, the County must find, based on information provided by the applicant and the responsible fire protection district that, concurrent with development, adequate emergency water flow, fire access, and fire fighting personnel and equipment will be available in accordance with applicable State and local fire district standards.
- **Policy 6.2.3.2:** As a requirement of new development, the applicant must demonstrate that adequate access exists, or can be provided to ensure that emergency vehicles can access the site and private vehicles can evacuate the area.
- **Policy 6.2.3.4:** All new development and public works projects shall be consistent with applicable State Wildland Fire Standards and other relevant State and federal requirements.

Transportation and Circulation Element

The following goals and policies from the Transportation and Circulation Element of the *2004 El Dorado County General Plan* (El Dorado County 2009b) address transportation/traffic resources:

Goal TC-1: To plan for and provide a unified, coordinated, and cost-efficient countywide road and highway system that ensures the safe, orderly, and efficient movement of people and goods.

- **Policy TC-1a:** The County shall plan and construct County-maintained roads as set forth in Table TC-1. Road design standards for County-maintained roads shall be based on the American Association of State Highway and Transportation Officials (AASHTO) standards, and supplemented by California Department of Transportation (Caltrans) design standards and by County Department of Transportation standards. County standards include typical cross sections by road classification, consistent with right-of-way widths summarized in Table TC-1.
- **Policy TC-1b:** In order to provide safe, efficient roads, all roads should incorporate the cross sectional road features set forth in Table TC-1.
- **Policy TC-1w:** New streets and improvements to existing rural roads necessitated by new development shall be designed to minimize visual impacts, preserve rural character, and ensure neighborhood quality to the maximum extent possible consistent with the needs of emergency access, on street parking, and vehicular and pedestrian safety.
- **Policy TC-1x:** To reduce heavy truck traffic in residential areas and near noise sensitive land uses associated with discretionary projects, the County will review truck routes to ensure traffic noise impacts are minimized.

Goal TC-X: To coordinate planning and implementation of roadway improvements with new development to maintain adequate levels of service on County roads.

- **Policy TC-Xd:** Level of Service (LOS) for County-maintained roads and state highways within the unincorporated areas of the county shall not be worse than LOS E in the Community Regions or LOS D in the Rural Centers and Rural Regions except as specified in Table TC-2. The volume to capacity ratio of the roadway segments listed in Table TC-2 shall not exceed the ratio specified in that table. Level of Service will be as defined in the latest edition of the Highway Capacity Manual (Transportation Research Board, National Research Council) and calculated using the methodologies contained in that manual. Analysis periods shall be based on the professional judgment of the Department of Transportation which shall consider periods including, but not limited to, Weekday Average Daily Traffic (ADT), AM Peak Hour, and PM Peak hour traffic volumes.
- **Policy TC-Xe:** For the purposes of this Transportation and Circulation Element, “worsen” is defined as any of the following number of project trips using a road facility at the time of issuance of a use and occupancy permit for the development project:

A. A 2 percent increase in traffic during the a.m. peak hour, p.m. peak hour, or daily, or

B. The addition of 100 or more daily trips, or

C. The addition of 10 or more trips during the a.m. peak hour or the p.m. peak hour.

Goal TC-4: To provide a safe, continuous, and easily accessible non-motorized transportation system that facilitates the use of the viable alternative transportation modes.

- **Policy TC-4a:** The County shall implement a system of recreational, commuter, and inter-community bicycle routes in accordance with the County's Bikeway Master Plan. The plan should designate bikeways connecting residential areas to retail, entertainment, and employment centers and near major traffic generators such as recreational areas, parks of regional significance, schools, and other major public facilities, and along recreational routes.
- **Policy TC-4b:** The County shall construct and maintain bikeways in a manner that minimize conflicts between bicyclists and motorists.
- **Policy TC-4f:** The County shall sign and stripe Class II bicycle routes, in accordance with the County's Bikeway Master Plan, on roads shown on Figure TC-1, when road width, safety, and operational conditions permit safe bicycle operation.
- **Policy TC-4i:** Within Community Regions and Rural Centers, all development shall include pedestrian/bike paths connecting to adjacent development and to schools, parks, commercial areas and other facilities where feasible. In Rural Regions, pedestrian/bike paths shall be considered as appropriate.

Goal TC-5: To provide safe, continuous, and accessible sidewalks and pedestrian facilities as a viable alternative transportation mode.

1.2 ENVIRONMENTAL SETTING

1.2.1 PUBLIC SERVICES SETTING

The Project site is located in an unincorporated area of El Dorado County, north of U.S. 50, within Pollock Pines. Access to the site would be provided by established roads, including U.S. 50, Sly Park Road, Forebay Road, Blair Road, Polaris Street, Drop-Off Road, and Pony Express Trail (EID 2013).

FIRE PROTECTION

The community of Pollock Pines, including the Project site, is served by Fire Station 17 of the El Dorado County Fire Protection District. Station 17 is located at 6426 Pony Express Trail in Pollock Pines. The station is staffed 24 hours a day, 7 days a week by an engine company and a medic unit. The engine is staffed with one captain-emergency medical technician (EMT) or captain-paramedic, one firefighter-EMT or firefighter-paramedic and an apprentice firefighter. The medic unit is staffed with a firefighter-paramedic and either a second firefighter-paramedic or a firefighter-EMT. Volunteers and off-duty personnel staff other apparatus housed at Station 17 when there is a need for additional response (El Dorado County Fire District 2013).

POLICE SERVICES

The Project site is served by the El Dorado County Sheriff's Office (EID 2013). The Main Office of the El Dorado County Sheriff's Office is located at 300 Fair Lane in Placerville, approximately 17 miles west of the El Dorado Forebay (Forebay).

SCHOOLS

The Project site is located in Pollock Pines Elementary School District and El Dorado Union High School District (EID 2013). The nearest school, Pinewood Elementary, is located approximately 0.2 mile south of the Project site. Direct access to the school does not use Forebay Road; however, Pinewood Elementary school bus routes use Blair and Forebay Roads (EID 2013).

PARKS

A public baseball field and Pollock Pines Recreation Park are located adjacent to the Project site to the east. The main day use area and fishing access area are public recreation areas. The primary recreational area in the Pollock Pines region is the Sly Park Recreation Area (EID 2013).

1.2.2 TRANSPORTATION/TRAFFIC SETTING

The environmental setting for transportation/traffic addresses existing traffic conditions and the various roadway, bicycle facilities, and public transit in the Project area.

ROADWAY OPERATIONS

As stated earlier, operation of the roadway system is typically described in terms of LOS. LOS is a quantitative indication of the level of delay and congestion experienced by motorists. The methodology used to analyze the operational conditions of roadway segments focuses on peak-hour traffic volumes as compared to the peak-hour traffic volume capacity of the roadway facility. Capacity is the volume of traffic that the segment can accommodate in a day and remain at an acceptable LOS. Table 2 presents the peak-hour traffic volume LOS thresholds based on the classification of the roadway. The LOS is calculated using recent traffic count data from the El Dorado County Department of Transportation, Caltrans, and traffic data collected on June 27, 2013, by National Data & Surveying Services (NDS) at several locations in the Project area (NDS 2013). Traffic count data collected by NDS are presented in Attachment A of this report.

Table 3, "Existing Traffic Operations," presents a summary of the operational assessment of the regional and local roadways. All roadways currently operate acceptably based on Caltrans and El Dorado County LOS standards.

Table 2 Roadway Segment Level of Service Criteria					
Operational Class	Peak-Hour LOS Capacity Thresholds (vehicles per hour)				
	A	B	C	D	E
Minor two-lane highway	90	200	680	1,410	1,740
Major two-lane highway	120	290	790	1,600	2,050
Four-lane, multilane highway	1,070	1,760	2,530	3,280	3,650
Two-lane arterial	—	—	970	1,760	1,870
Four-lane arterial, undivided	—	—	1,750	2,740	2,890
Four-lane arterial, divided	—	—	1,920	3,540	3,740
Six-lane arterial, divided	—	—	2,710	5,320	5,600
Eight-lane arterial, divided	—	—	3,720	7,110	7,470
Two freeway lanes ¹	1,110	2,010	2,880	3,570	4,010
Two freeway lanes plus auxiliary lane ¹	1,410	2,550	3,640	4,490	5,035
Three freeway lanes ¹	1,700	3,080	4,400	5,410	6,060
Three freeway lanes plus auxiliary lane ¹	2,010	3,640	5,180	6,350	7,100
Four freeway lanes ¹	2,320	4,200	5,950	7,280	8,140

Notes:
¹ LOS capacity threshold is for one direction.
LOS = level of service.
— = LOS is not achievable because of the type of facility.
Source: El Dorado County 2003

Table 3 Existing Traffic Operations					
Roadway	Location	Peak-Hour Traffic Volume	Roadway Capacity	V/C Ratio	LOS¹
U.S. 50 eastbound	West of Sly Park Road	1,095	4,010	0.27	A
U.S. 50 westbound	West of Sly Park Road	2,260	4,010	0.56	C
Blair Road	Between Forebay Road and Quick Silver Road	30	1,740	0.02	A
Forebay Road	Between Pony Express Trail and Wheel Street	200	1,740	0.11	B
	Between Sherman Way and Deep Haven Road	95	1,740	0.05	B
	Between Blair Road and Sherman Way	65	1,740	0.04	A
	West of Blair Road	30	1,740	0.02	A
Pony Express Trail	Between Sly Park Road and Hub Street	490	1,740	0.28	C
Sly Park Road	Between Pony Express Trail and Ridgeway Drive	735	1,740	0.42	D

Notes:
V/C = volume-to-capacity.

LOS = level of service.

¹ LOS A represents free-flow travel with an excellent level of comfort and convenience and the freedom to maneuver.

LOS B has stable operating conditions, but the presence of other road users causes a noticeable, though slight, reduction in comfort, convenience, and maneuvering freedom.

LOS C has stable operating conditions, but the operation of individual users is significantly affected by the interaction with others in the traffic stream.

LOS D represents high-density, but stable flow. Users experience severe restriction in speed and freedom to maneuver, with poor levels of comfort and convenience.

LOS E represents operating conditions at or near capacity. Speeds are reduced to a low but relatively uniform value. Freedom to maneuver is difficult with users experiencing frustration and poor comfort and convenience. Unstable operation is frequent, and minor disturbances in traffic flow can cause breakdown conditions.

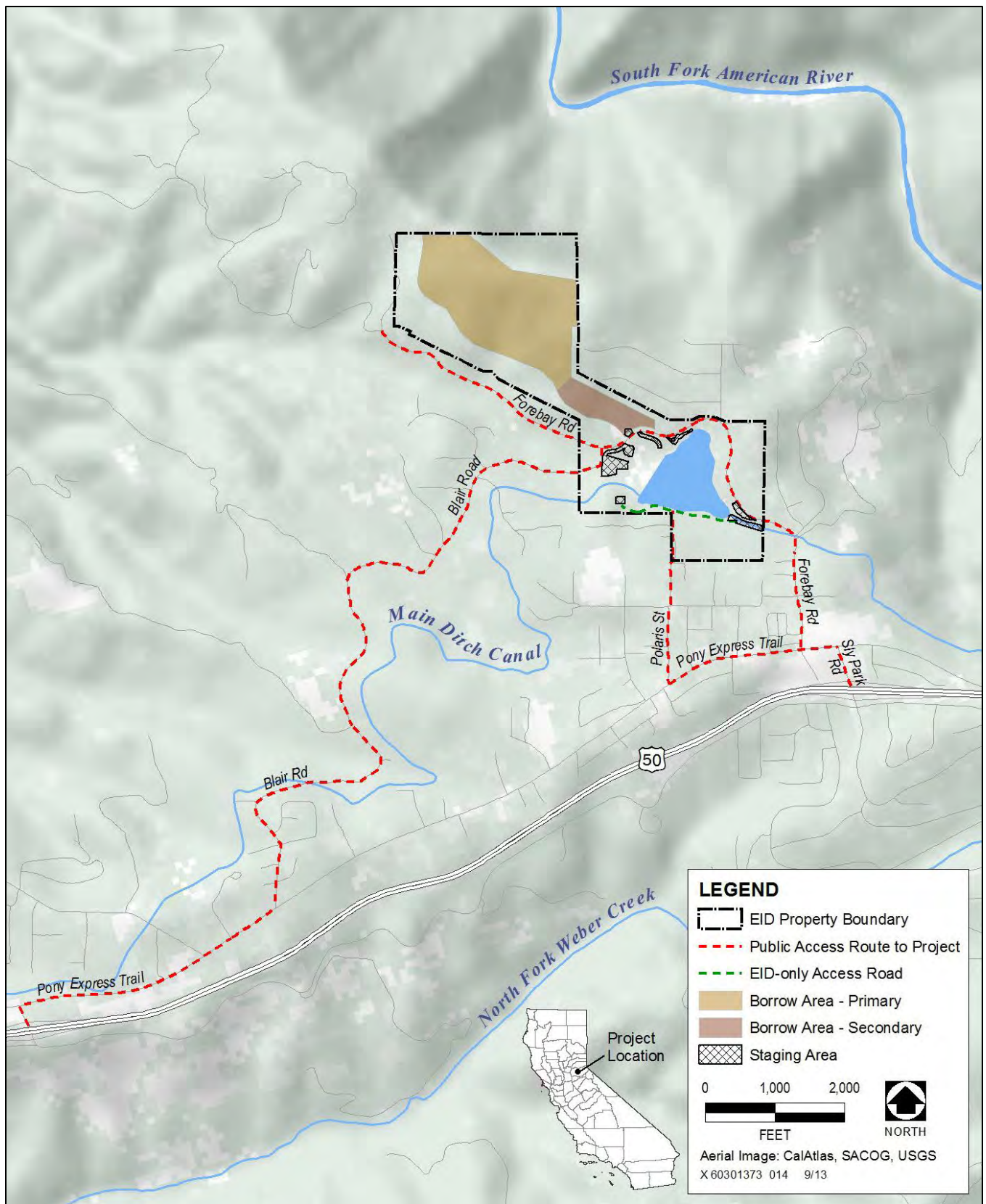
LOS F is used to define forced or breakdown conditions. This condition exists wherever the volume of traffic exceeds the capacity of the roadway. Long queues can form behind these bottleneck points with queued traffic traveling in a stop-and-go fashion.

Sources: Traffic count data compiled by AECOM in June 2013; El Dorado County 2013; Caltrans 2012.

ROADWAYS

The key roadways in the Project area that are likely to be affected by Project-related traffic are listed below and shown in Exhibit 1:

- ▶ **U.S. 50** provides regional access to the Project site via the interchange with Sly Park Road. It provides connections to Sacramento County to the west and Nevada to the east. In the vicinity of the Project site, U.S. 50 is a four-lane freeway. The annual average daily traffic on U.S. 50 near Sly Park Road is approximately 16,200 vehicles (Caltrans 2012).
- ▶ **Pony Express Trail** runs in an east-west direction between Carson Road and Bend Court. West of Sly Park Road, Pony Express Trail has two lanes with a two-way center left-turn lane and paved shoulders. West of North Street, it has two lanes and paved shoulders. The posted speed limit along the roadway varies between 35 and 45 miles per hour (mph). The roadway primarily serves retail and residential development. The observed LOS was A, free-flow travel.
- ▶ **Forebay Road** begins at Pony Express Trail and continues north past the Project site. Forebay Road has two lanes and has no curb, gutter, or sidewalk on either side of the roadway. It is 26 feet wide with 13-foot travel lanes. West of Blair Road, Forebay Road continues as a narrow road with no centerline markings and no curb, gutter, or sidewalk on either side of the roadway. The posted speed limit along the roadway is 25 mph. The observed LOS was A, free-flow travel.
- ▶ **Sly Park Road** has two lanes and runs between Pony Express Trail and Mt. Aukum Road. North of the U.S. 50/Sly Park Road interchange, Sly Park Road has no shoulder, curb, gutter, or sidewalk on either side of the roadway. South of the U.S. 50/Sly Park Road interchange, Sly Park Road has paved shoulders but no curb, gutter, or sidewalk on either side of the roadway. The posted speed limit along the roadway is 35 mph. The observed LOS was B, stable operating conditions.



Source: EID 2013

Exhibit 1

Project Area Roadways

- ▶ **Blair Road** runs in a north-south direction between Forebay Road and Pony Express Trail. It has two lanes with no shoulder, curb, gutter, or sidewalk on either side of the roadway. Blair Road is 22 feet wide with 11-foot travel lanes. There is no posted speed limit along the roadway; however, the California speed limit for residential areas is 25 mph, unless otherwise indicated. The observed LOS was A, free-flow travel.
- ▶ **Polaris Street** begins at Pony Express Trail and continues north through Pollock Pines. It has one travel lane with no curb, gutter, or sidewalk on either side of the roadway. Polaris Street is 22 feet wide with no posted speed limit. North of Primrose Lane, Polaris Street is also known as Drop-Off Road. Drop-Off Road is an unpaved roadway located on EID property with a width of 9 feet. The observed LOS was A, free-flow travel.

BICYCLE AND PEDESTRIAN FACILITIES

Bikeways are classified as Class I (bike paths), Class II (bike lanes), and Class III (bike routes). Bikeway classifications are defined as follows:

- ▶ **Class I (Bike Paths)**—A Class I bikeway is a facility that is physically separated from a roadway and designated primarily for the use of bicycles. Cross flows by pedestrians and motorists are to be minimized.
- ▶ **Class II (Bike Lanes)**—A Class II bikeway is a facility featuring a striped lane on the paved area of a road for preferential use by bicycles. It is located along the edge of the paved area outside the motor vehicle travel lanes.
- ▶ **Class III (Bike Route)**—A Class III bikeway is a facility typically identified by green and white “Bike Route” guide signing only. There are usually no special lane designations, and vehicle parking in the route may be permitted.

According to the *El Dorado County Bicycle Transportation Plan* (El Dorado County Transportation Commission 2010), bikeways are planned in the Project area along Sly Park Road, Pony Express Trail, Ridgeway Drive, and Carson Road.

No pedestrian facilities are provided on public roadways; only soft shoulders are present along the paved roads.

PUBLIC TRANSIT

The El Dorado County Transit Authority (EDCTA) provides transit service in El Dorado County. It provides fixed-route service with routes in El Dorado County and commuter routes to Sacramento County. EDCTA also provides dial-a-ride service every day of the week to seniors and passengers with disabilities.

The Pollock Pines local transit route is located in the Project area. Public transit along the route operates in the eastbound and counterclockwise westbound direction between the Missouri Flat Transfer Center and Safeway Plaza, located on Pony Express Trail. The route extends along Carson Road, Pony Express Trail, and Sanders Drive in the vicinity of the Project site. Transit services operate Monday through Friday between 6:30 a.m. and 5:25 p.m. with 1-hour headways (El Dorado Transit 2013).

2 ANALYSIS

2.1 PUBLIC SERVICES METHODOLOGY

The analysis methodology for public services consisted of a literature review of appropriate documents and review of aerial photography using Google Earth to understand the current setting of public services in the Project vicinity. Information from the review was then used to determine changes on public services. The initial study provided by EID was used primarily to determine whether further analysis of change was needed in this EIR. The following documents were reviewed:

- ▶ *El Dorado Forebay Modification Project: Project Description/Initial Study Checklist* (EID 2013)
- ▶ Public Services and Utilities Element of the *El Dorado General Plan* (El Dorado County 2004)
- ▶ Public Health, Safety, and Noise Element of the *El Dorado General Plan* (El Dorado County 2009a)

2.2 TRANSPORTATION/TRAFFIC METHODOLOGY

Changes to transportation/traffic resulting from implementing the Project are identified in the following discussion. Changes are identified for both short-term construction and long-term operation of the Project. Implementing the Project would not introduce any new land uses or activities in the Project area that would generate long-term increases in traffic volume. Potential traffic increases would be limited to temporary construction-related activities associated with the Project.

This analysis relies on available information, roadway characteristics, and data collected in June 2013. Changes to traffic and circulation that would result from increases in traffic volumes or loss of or reduction in travel lanes and potential safety effects associated with construction and operation were considered. Construction characteristics, including estimated construction crew size and equipment requirements and daily use, information on the location of staging yards, and information on the roadways to be used during construction were provided by EID.

Traffic generated by construction of the Project would be added to existing Project area roadway traffic volumes. To assess the effect of truck trips generated by construction of the Project, a heavy-vehicle factor known as a passenger car equivalent (PCE) value was applied to the Project-generated truck traffic. This heavy-vehicle factor is used to account for the additional space occupied, reduced speed, and reduced maneuverability associated with having these vehicles, rather than standard automobiles, on the roadway. A PCE value of 2.0 was applied to the construction equipment truck trip generation estimates as recommended by the *Highway Capacity Manual 2000* (Transportation Research Board 2000).

Assessment of the effects that Project construction traffic could have on local and regional roads includes review of existing peak-hour traffic volumes and consideration of both the addition of Project construction traffic to existing peak-hour traffic levels and the capacity of the road to handle the additional traffic.

2.3 PROJECT PUBLIC SERVICES

2.3.1 EMERGENCY ACCESS

EID will follow the adopted Emergency Action Plan for the El Dorado Hydroelectric Project 184 and any other measures required by El Dorado County. These actions would ensure that all safety measures are in place if an emergency occurs (EID 2013). However, because short-term lane closures or detours during construction have the potential to interfere with implementation of emergency response or emergency evacuation plans, this effect would be substantial. Post-Project operations would not affect emergency access routes or response times.

2.3.2 FIRE PROTECTION

During construction, demand for fire protection services would potentially increase by increasing fire risk associated with the presence of personnel on-site and construction activities. This increased risk would be short term and would occur only during construction activities. Operation activities would not contribute to population growth or induce land use modifications that would increase the long-term need for fire protection services (EID 2013).

2.3.3 POLICE PROTECTION

During construction, the potential increased risk of vandalism and theft of equipment and supplies from construction areas would increase demand for police protection services. This increased risk would be short term and would occur only during construction activities. Post-Project operations would not contribute to population growth or induce land use modifications that would increase the long-term need for police protection services (EID 2013).

2.3.4 SCHOOLS

Implementing the Project would not affect any school facilities, and it would not contribute to any change in population or other land use modifications that would affect local school districts. Access to Pinewood Elementary would not be directly affected by the Project; however, Pinewood Elementary buses use Blair and Forebay Roads, which could be affected by delays related to construction traffic. Post-Project operations would not contribute to population growth, induce long-term land use modifications that would affect schools, or create traffic delays.

2.3.5 RECREATION FACILITIES

During some phases of construction, construction-related traffic would temporarily affect access to the baseball field adjacent to the Forebay. However, delayed access to the baseball field would be temporary, and the field would remain open during construction of the Project (EID 2013). The main day-use area and fishing access area would be closed to the public for safety reasons. However, the Forebay recreation areas are not the primary recreation areas for the Pollock Pines community. The Sly Park Recreation Area is the primary recreational destination in the vicinity. Closures of the Forebay recreation areas would be short term and would occur only during construction. Post-Project operations would not limit access to or require closure of any recreation areas.

2.4 PROJECT TRAFFIC/TRANSPORTATION

Construction of the Project is expected to begin in April 2015. During the construction phase, traffic would be generated by personnel traveling to and from the Project site, export of timber from the Project site, and the delivery of equipment and imported materials (e.g., aggregate, riprap, concrete, pipe). Based on the current available information, a total of 3,000 highway truck trips, 6,250 materials delivery trips, and 25,000 crew commuter trips would be required to complete construction of the Project. These trips would be distributed over an estimated 380 construction work days. Table 4 itemizes the estimated trips on public roadways associated with constructing the Project.

Table 4 Construction-Generated Traffic	
Activity	Off-Site Trips (Average Daily)
Rock, bedding, and aggregate hauling	22
Timber hauling	16
Materials delivery	50
Construction crews	100
Total	188
Peak-hour total	19

Source: Eymann, pers. comm., 2013

Cumulatively, construction-related traffic, including crew vehicles, and on-road trucks would add approximately 200 total daily trips to area roadways.

Based on the anticipated construction phasing, up to 50 construction workers would be required on-site each day. Construction worker commuting is estimated to add approximately 100 total daily trips to area roadways. About 25 on-road trucks and other vehicles would be required each day for the delivery of materials, fuel, equipment, and other needs. These trucks would make an average of 50 daily trips. Approximately 22 rock and aggregate haul truck trips would be generated daily with the import of these materials from off-site sources. The removal of commercial timber from the Project site would generate additional truck traffic over portions of the construction period. It is expected that during periods when timber is being removed, an additional 16 truck trips would be generated each day.

The highway truck trips would be associated with mobilization; delivery of commercial quarried materials, construction materials, concrete, and pipe; waste disposal; and timber harvesting. Necessary aggregate and riprap materials would be obtained from a commercial sand and gravel operation. The on-site haul trips include the transport of local borrow and excavated materials.

Construction of the Project would require establishing temporary staging areas. Staging areas would be used as a worker reporting location, for vehicle and equipment parking, and for material storage. The staging areas that would be used during construction are shown in Exhibit 1.

Although the origin of construction workers and material delivery trips is unknown, it is assumed that 100% of highway trips would originate from the west along U.S. 50. After construction traffic exits U.S. 50, the local roads of Sly Park Road, Pony Express Trail, Forebay Road, and Blair Road would be used to access the Project area. A secondary access route to the western portion of the reservoir and the dam left abutment would be via Pony Express Trail, Polaris Street, and Drop-Off Road.

On-site haul trips would be made between the borrow area and Forebay Dam using a constructed haul route. This route would cross Forebay Road near the existing penstock crossing. An access road would be constructed from Forebay Road to the dam base, and a second road would be constructed from Forebay Road to the embankment above the penstock for construction of the upper portion of embankment. Access would also be provided using the existing roadway through the northshore day-use area onto the Forebay dam crest.

Traffic on existing freeways and local roadways would be affected by vehicles transporting construction workers, delivery trucks, and other vehicles carrying materials, supplies, and equipment to and from the Project area. As stated above, it is estimated that up to 188 daily commute and truck trips would be generated during Project construction.

Because the traffic analysis focuses on peak-hour traffic levels, the maximum number of peak-hour trips generated by Project construction is estimated to be 19 trips. The 19 peak-hour trips assume that the delivery of concrete or other construction materials from outside sources, and removal of timber from the borrow area would be spread evenly throughout the workday.

For purposes of this analysis, the 19 peak-hour trips generated by Project construction includes the trips made by construction workers even though they may occur outside peak hour periods. Table 4 provides a summary of the resulting LOS when construction traffic is added to existing roadway traffic volumes.

As shown in Table 5, all roadways would continue to operate at an acceptable LOS with the addition of Project construction traffic according to El Dorado County and Caltrans policies and standards. Implementing the Project would not cause roadway capacities to be exceeded or degrade the LOS to any roadway during critical peak hour periods.

2.4.1 PROJECT-RELATED TRAFFIC HAZARDS

The maneuvering of Project construction vehicles and equipment among the general-purpose vehicles on local roads could cause safety hazards. Haul trucks and other on-road vehicles used during the construction of the Project could increase the hazard risk on existing roadways. Off-road earth-moving equipment transporting soil from the borrow area to the Forebay Dam would cross Forebay Road.

Traffic safety hazard risk could increase because of conflicts where construction vehicles enter a public right-of-way from the Project work site; conflicts where road width is narrowed or a roadway is closed during construction activities, which could result in delays to emergency vehicles passing through the Project area; or increased truck traffic (and the slower speed and wider turning radius of the trucks) during construction.

In addition to these changes, the use of large trucks to transport equipment and material to and from the work site could affect road conditions on the access routes by increasing the rate of road wear. The degree to which this

**Table 5
Construction Traffic Effects on Regional and Local Roadways**

Roadway	Location	Peak-Hour Traffic Volume	Construction Peak-Hour Traffic Trips Added	Existing plus Construction Peak-Hour Traffic Volume	Roadway Capacity	V/C Ratio	LOS
U.S. 50 eastbound	West of Sly Park Road	1,095	9	1,104	4,010	0.28	A
U.S. 50 westbound	West of Sly Park Road	2,260	9	2,269	4,010	0.57	C
Blair Road	Between Forebay Road and Quick Silver Road	30	4	34	1,740	0.02	A
Forebay Road	Between Pony Express Trail and Wheel Street	200	15	215	1,740	0.12	C
	Between Sherman Way and Deep Haven Road	95	15	110	1,740	0.06	B
	Between Blair Road and Sherman Way	65	15	80	1,740	0.05	A
	West of Blair Road	30	0	30	1,740	0.02	A
Pony Express Trail	Between Sly Park Road and Hub Street	490	19	509	1,740	0.29	C
Sly Park Road	Between Pony Express Trail and Ridgeway Drive	735	19	754	1,740	0.43	D
Notes:							
V/C = volume-to-capacity.							
LOS = level of service.							
Sources: Traffic count data compiled by AECOM in June 2013; El Dorado County 2013; Caltrans 2012							

effect would occur would depend on the design (pavement type and thickness) and the existing condition of the road. Major arterials and collectors are designed to accommodate a mix of vehicle types, including heavy trucks. The potential changes are expected to be negligible on those roads. However, lower capacity roadways could be substantially affected if construction equipment uses them.

Because of the temporary disruption to traffic flow, roadway wear and tear, the removal or reduction of lanes, the presence of construction equipment in the public right-of-way, and the localized increase in traffic congestion, drivers would be presented with unexpected driving conditions and obstacles, which could result in an increased occurrence of automobile or haul truck accidents.

2.4.2 PROJECT PUBLIC TRANSIT, BICYCLE, OR PEDESTRIAN FACILITIES

The Project would not involve changes in policies or programs regarding public transit, bicycle, or pedestrian facilities, and it would not involve construction of facilities in locations where future alternative transportation facilities are planned. In addition, implementing the Project would not permanently eliminate existing alternative transportation corridors or facilities (e.g., bike paths, lanes, bus turnouts). However, construction activities would temporarily eliminate access to the crest of the dam during construction, which is used by pedestrians for

recreational purposes. El Dorado County Goal TC-4 requires a safe, continuous, and easily accessible nonmotorized transportation system.

In addition, the influx of construction traffic during the construction period might decrease the performance of the existing EDCTA Pollock Pines local bus route, which travels along Pony Express Trail. Post-Project operations would be unchanged from existing conditions relative to public transit, bicycle, or pedestrian facilities. Therefore, Project operations would not conflict with adopted policies, plans, or programs regarding alternative modes of transportation, nor would they decrease the performance of transportation facilities. No adverse effect would occur as a result of post-Project operations.

2.4.3 PROPOSED MITIGATION MEASURES

PREPARE AND IMPLEMENT A TRAFFIC CONTROL PLAN

Before construction begins, EID and/or its contractor will prepare and implement a traffic control plan to minimize construction-related traffic safety hazards on the affected roadways and ensure adequate access for emergency responders. EID and/or its contractor will coordinate development and implementation of this plan with jurisdictional agencies (e.g., El Dorado County), as appropriate. The traffic control plan would, at minimum:

- ▶ Include a discussion of work hours, haul routes, work area delineation, traffic control, and flagging.
- ▶ Determine the need to require workers to park personal vehicles at an approved staging area and take only necessary Project vehicles to the work sites.
- ▶ Develop and implement a plan for notifications and a process for communication with affected residents and landowners before the start of construction. Public notification will include posting of notices and appropriate signage of construction activities. The written notification will include the construction schedule, the exact location and duration of activities on each street (e.g., which roads/lanes and access points/driveways would be blocked on which days and for how long), and contact information for questions and complaints.
- ▶ Ensure that appropriate warning signs are posted in advance of construction activities, alerting bicyclists and pedestrians to any closures of nonmotorized facilities.
- ▶ Provide notification to the public regarding alternative routes that may be available to avoid delays.
- ▶ Provide notification to administrators of police and fire stations, ambulance service providers, and recreational facility managers of the timing, location, and duration of construction activities and the locations of detours and lane closures, where applicable. Maintain access for emergency vehicles in and/or adjacent to roadways affected by construction activities at all times.
- ▶ Require the repair and restoration of affected roadway rights-of-way to their original condition after construction is completed.

Timing: Before and during construction activities, as appropriate

Responsibility: EID and contractor

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ATTACHMENT A

Raw Traffic County Data

Prepared by NDS/ATD

Volumes for: Thursday, June 27, 2013

City: Pollock Pines

Project #: 13-7374-001

Location: Forebay Road between Blair Road and Sherman Way.

Start Time	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	0	9			0	6				
12:15	1	3			0	6				
12:30	0	2			1	5				
12:45	0	7	1	21	0	13	1	30	2	51
1:00	0	6			1	9				
1:15	0	7			0	5				
1:30	0	7			0	8				
1:45	0	2	0	22	0	4	1	26	1	48
2:00	0	6			0	6				
2:15	0	10			1	2				
2:30	0	12			0	2				
2:45	0	4	0	32	0	10	1	20	1	52
3:00	0	9			0	5				
3:15	0	6			0	8				
3:30	0	8			0	9				
3:45	0	6	0	29	0	4	0	26	0	55
4:00	1	10			0	3				
4:15	0	2			1	16				
4:30	2	3			0	8				
4:45	0	9	3	24	0	11	1	38	4	62
5:00	1	3			1	5				
5:15	3	4			1	8				
5:30	2	3			1	10				
5:45	4	1	10	11	0	5	3	28	13	39
6:00	3	6			1	8				
6:15	6	3			2	2				
6:30	4	5			3	7				
6:45	5	3	18	17	2	7	8	24	26	41
7:00	5	3			5	3				
7:15	8	5			6	6				
7:30	7	3			4	3				
7:45	5	2	25	13	4	2	19	14	44	27
8:00	5	7			3	3				
8:15	7	3			4	3				
8:30	5	2			3	2				
8:45	3	1	20	13	8	2	18	10	38	23
9:00	5	2			4	5				
9:15	8	0			8	5				
9:30	8	0			7	6				
9:45	8	1	29	3	5	0	24	16	53	19
10:00	8	0			1	0				
10:15	5	0			5	2				
10:30	7	0			4	0				
10:45	8	0	28	0	3	1	13	3	41	3
11:00	5	0			4	2				
11:15	3	0			6	0				
11:30	7	0			4	0				
11:45	11	0	26	0	4	0	18	2	44	2
Total	160	185	160	185	107	237	107	237	267	422
Combined Total	345		345		344		344		689	
AM Peak	9:15 AM				8:45 AM					
Vol.	32				27					
P.H.F.	1.000				0.844					
PM Peak	2:15 PM				4:15 PM					
Vol.	35				40					
P.H.F.	0.729				0.625					
Percentage	46.4%	53.6%			31.1%	68.9%				

Volumes for: Thursday, June 27, 2013

City: Pollock Pines

Project #: 13-7374-002

Location: Blair Road south of Forebay Road.

Start Time	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	0	3			0	4				
12:15	1	1			0	2				
12:30	0	0			0	3				
12:45	0	6	1	10	0	4	0	13	1	23
1:00	0	2			0	4				
1:15	0	2			1	3				
1:30	0	4			0	6				
1:45	0	1	0	9	0	2	1	15	1	24
2:00	0	3			0	6				
2:15	0	6			0	2				
2:30	0	1			0	1				
2:45	0	3	0	13	0	3	0	12	0	25
3:00	0	3			0	2				
3:15	0	4			0	4				
3:30	0	6			0	7				
3:45	0	2	0	15	0	1	0	14	0	29
4:00	1	4			0	1				
4:15	0	1			1	7				
4:30	1	1			0	3				
4:45	0	5	2	11	0	7	1	18	3	29
5:00	2	2			0	1				
5:15	1	3			1	4				
5:30	1	1			1	3				
5:45	1	0	5	6	0	0	2	8	7	14
6:00	2	2			0	8				
6:15	4	3			0	2				
6:30	1	0			1	1				
6:45	1	2	8	7	1	3	2	14	10	21
7:00	1	2			0	1				
7:15	2	1			1	3				
7:30	1	2			1	2				
7:45	3	1	7	6	3	1	5	7	12	13
8:00	3	4			2	3				
8:15	3	0			3	1				
8:30	3	1			2	3				
8:45	2	0	11	5	2	1	9	8	20	13
9:00	4	1			3	2				
9:15	5	0			2	5				
9:30	3	0			2	1	0			
9:45	1	1	13	2	3	0	10	8	23	10
10:00	2	1			1	0				
10:15	2	0			3	0				
10:30	6	0			1	0				
10:45	2	0	12	1	1	0	6	0	18	1
11:00	1	0			2	0				
11:15	1	0			0	0				
11:30	2	0			1	0				
11:45	6	0	10	0	2	0	5	0	15	0
Total	69	85	69	85	41	117	41	117	110	202
Combined Total	154		154		158		158		312	
AM Peak	8:30 AM				11:45 AM					
Vol.	14				11					
P.H.F.	0.700				0.688					
PM Peak	2:45 PM				4:00 PM					
Vol.	16				18					
P.H.F.	0.875				0.643					
Percentage	44.8%	55.2%			25.9%	74.1%				

Prepared by NDS/ATD

Volumes for: Thursday, June 27, 2013

City: Pollock Pines

Project #: 13-7374-003

Location: Forebay Road west of Blair Road.

Start Time	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	0	5			0	2				
12:15	0	2			0	4				
12:30	0	1			1	2				
12:45	0	2	0	10	0	10	1	18	1	28
1:00	1	3			1	4				
1:15	0	7			0	3				
1:30	0	2			0	1				
1:45	0	1	1	13	0	3	1	11	2	24
2:00	0	4			0	1				
2:15	0	5			1	1				
2:30	0	10			0	0				
2:45	0	3	0	22	0	7	1	9	1	31
3:00	0	7			0	4				
3:15	0	2			0	7				
3:30	0	3			0	3				
3:45	0	3	0	15	0	2	0	16	0	31
4:00	0	6			0	2				
4:15	0	1			0	9				
4:30	1	3			0	2				
4:45	0	3	1	13	0	5	0	18	1	31
5:00	0	1			1	3				
5:15	2	3			1	6				
5:30	3	0			0	5				
5:45	2	2	7	6	0	6	2	20	9	26
6:00	2	4			1	3				
6:15	0	1			2	0				
6:30	4	7			2	8				
6:45	3	0	9	12	1	4	6	15	15	27
7:00	4	2			5	2				
7:15	6	3			5	1				
7:30	6	1			2	1				
7:45	4	1	20	7	2	2	14	6	34	13
8:00	3	5			1	0				
8:15	4	2			1	3				
8:30	4	2			2	0				
8:45	1	1	12	10	6	1	10	4	22	14
9:00	3	1			2	3				
9:15	3	0			8	1				
9:30	3	0			6	4				
9:45	7	0	16	1	2	0	18	8	34	9
10:00	5	0			0	1				
10:15	3	0			3	2				
10:30	2	0			3	1				
10:45	6	0	16	0	2	0	8	4	24	4
11:00	3	0			3	2				
11:15	3	0			7	0				
11:30	5	0			3	0				
11:45	6	0	17	0	3	0	16	2	33	2
Total	99	109	99	109	77	131	77	131	176	240
Combined Total	208		208		208		208		416	
AM Peak	7:00 AM				8:45 AM					
Vol.	20				22					
P.H.F.	0.833				0.688					
PM Peak	2:15 PM				2:45 PM					
Vol.	25				21					
P.H.F.	0.625				0.750					
Percentage	47.6%	52.4%			37.0%	63.0%				

Volumes for: Thursday, June 27, 2013

City: Pollock Pines

Project #: 13-7374-004

Location: Forebay Road east of Sherman Way.

Start Time	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	0	15			0	11				
12:15	2	10			1	13				
12:30	0	5			1	6				
12:45	0	11	2	41	0	18	2	48	4	89
1:00	0	14			1	13				
1:15	0	13			0	8				
1:30	0	6			0	11				
1:45	0	6	0	39	0	9	1	41	1	80
2:00	0	11			0	7				
2:15	0	12			1	5				
2:30	0	17			0	14				
2:45	0	11	0	51	0	13	1	39	1	90
3:00	0	8			0	9				
3:15	2	5			0	12				
3:30	0	10			0	13				
3:45	0	11	2	34	0	9	0	43	2	77
4:00	2	15			0	9				
4:15	0	7			1	20				
4:30	2	5			0	9				
4:45	2	12	6	39	1	17	2	55	8	94
5:00	3	9			0	9				
5:15	3	6			1	18				
5:30	4	7			1	11				
5:45	6	5	16	27	0	16	2	54	18	81
6:00	5	9			1	11				
6:15	5	7			3	11				
6:30	5	5			3	14				
6:45	6	9	21	30	4	16	11	52	32	82
7:00	6	10			6	8				
7:15	8	14			3	11				
7:30	10	6			3	8				
7:45	8	5	32	35	8	10	20	37	52	72
8:00	6	16			4	7				
8:15	7	5			5	5				
8:30	9	8			5	7				
8:45	9	5	31	34	8	3	22	22	53	56
9:00	13	3			8	7				
9:15	9	0			10	7				
9:30	12	1			11	7				
9:45	5	2	39	6	7	0	36	21	75	27
10:00	15	0			7	1				
10:15	4	0			6	3				
10:30	15	0			7	1				
10:45	10	0	44	0	10	2	30	7	74	7
11:00	15	0			10	2				
11:15	4	0			11	0				
11:30	13	0			8	0				
11:45	14	0	46	0	6	0	35	2	81	2
Total	239	336	239	336	162	421	162	421	401	757
Combined Total	575		575		583		583		1158	
AM Peak	11:30 AM				10:45 AM					
Vol.	52				39					
P.H.F.	0.867				0.886					
PM Peak	2:00 PM				5:15 PM					
Vol.	51				56					
P.H.F.	0.750				0.778					
Percentage	41.6%	58.4%			27.8%	72.2%				

APPENDIX H

Mitigation Monitoring and Reporting Program

Mitigation Monitoring and Reporting Program
El Dorado Forebay Dam Modification Project

Prepared for:



El Dorado Irrigation District

AECOM

October 2013

Mitigation Monitoring and Reporting Program
El Dorado Forebay Dam Modification Project

Prepared for:



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October 2013

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MITIGATION MONITORING AND REPORTING PROGRAM

INTRODUCTION

In accordance with the California Environmental Quality Act (CEQA), El Dorado Irrigation District (EID) has prepared an environmental impact report (EIR) that identifies adverse environmental impacts related to the implementation of the El Dorado Forebay Dam Modification Project (Project). The EIR also identifies mitigation measures that will be implemented to reduce potential significant impacts to a less-than-significant level.

Section 21081.6 of the California Public Resources Code and Sections 15091(d) and 15097 of the State CEQA Guidelines require public agencies “to adopt a reporting and monitoring program for changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment.” A mitigation monitoring and reporting program (MMRP) is required for the Project because the EIR identifies potentially significant and significant adverse impacts related to construction and operation activities, and mitigation measures have been identified to mitigate those impacts.

EID is the lead agency that must adopt the MMRP for the Project. Adoption of this MMRP will occur along with approval of the Project.

PURPOSE OF MITIGATION MONITORING AND REPORTING PROGRAM

This MMRP has been prepared to ensure that all required mitigation measures are implemented and completed according to schedule and maintained in a satisfactory manner during the construction and operation of the Project. The MMRP may be modified by EID during project implementation, as necessary, in response to changing conditions or other refinements. Table 1 has been prepared to assist the responsible parties in implementing the MMRP. The table identifies individual mitigation measures, monitoring/mitigation timing, the person and/or agency responsible for implementing the measure, and space to confirm implementation of the mitigation measures. The numbering of mitigation measures follows the numbering sequence found in the EIR.

ROLES AND RESPONSIBILITIES

EID is responsible for taking all actions necessary to implement the mitigation measures according to the specifications provided for each measure and for demonstrating that the action has been successfully completed. EID, at its discretion, may delegate implementation responsibility or portions thereof to a licensed contractor or other designated agent as long as EID maintains final responsibility for ensuring that the actions are taken.

EID will be responsible for overall administration of the MMRP and for verifying that EID staff members and/or the construction contractor has completed the necessary actions for each measure. EID will designate a project manager to oversee the MMRP. The project manager will be charged with the following duties:

- ▶ Ensure that routine inspections of the construction site are conducted by appropriate EID staff; check plans, reports, and other documents required by the MMRP; and conduct report activities
- ▶ Serve as a liaison between EID and other responsible agencies (where necessary), and the construction contractor regarding mitigation monitoring issues

- ▶ Complete forms and maintain reports and other records and documents generated by the MMRP
- ▶ Coordinate and ensure that corrective actions or enforcement measures are taken, if necessary

The responsible party for implementation of each item will identify the staff members responsible for coordinating with EID on the MMRP.

MITIGATION MONITORING PLAN

EID will verify the implementation of mitigation measures. Table 1 provides a template that EID can use to monitor and report on the implementation of mitigation measures.

The column categories identified in Table 1 are described below:

- ▶ **Mitigation Measure**—This column lists the mitigation measures according to the number in the EIR and provides the text of the mitigation measures identified in the EIR.
- ▶ **Timeframe for Implementation**—This column lists the time frame in which the mitigation will take place.
- ▶ **Party Responsible for Monitoring**—This column identifies the entity responsible for complying with the requirements of the mitigation measure.
- ▶ **Monitoring Compliance**—This column is for verifying compliance. The column is to be dated and initialed by the project manager or his/her designee, based on the documentation provided by the construction contractors, its agents (qualified individuals), or through personal verification by EID.

Table 1 Summary of Mitigation Measures, Responsible Parties, and Timing			
Mitigation Measure	Party Responsible for Monitoring	Timeframe for Implementation	Monitoring Compliance (Provide Name/Date)
3.3 Air Quality			
<p>3.3-2: Reduce Construction-Related Emissions of Fugitive Dust.</p> <p>EID will comply with EDCAQMD Rule 202, Visible Emissions; Rule 205, Nuisance; Rule 223, Fugitive Dust – General Requirements; and Rule 223-1 Fugitive Dust – Construction, Bulk Material Handling, Blasting, Other Earthmoving Activities, and Carryout and Trackout Prevention. In compliance with Rule 223.1, EID will require the contractor to submit a Fugitive Dust Plan that includes the following key elements:</p> <ul style="list-style-type: none"> ▶ Apply water to dry areas during grading and earthmoving activities ▶ Install temporary covers over open storage piles ▶ Apply water to unpaved haul and access roads ▶ Apply water on disturbed surfaces to form a visible crust, and restrict vehicle access to maintain the crust during inactive operations 	EID and contractor	During all Project construction phases	
3.4 Biological Resources			
<p>3.4-1: Implement Measures to Avoid, Restore, and Compensate for the Loss of Wetlands and Riparian Vegetation.</p> <p>EID will avoid, minimize, and/or compensate for damage and/or loss of wetlands and riparian vegetation resulting from Project construction by implementing one or more of the following measures:</p> <p>Through regulatory authorization for fill of waters of the United States under Nationwide Permit 3 (maintenance), implement specific agency-required mitigation for direct and indirect impacts on wetlands and riparian vegetation to achieve no net loss of habitat under CWA jurisdiction. This could include, but not be limited to, developing on-site mitigation and/or paying in lieu mitigation fees to compensate for loss of wetlands and riparian areas.</p> <p>The loss of wetlands around the reservoir could be partially or wholly mitigated by creation of new inundated areas that would develop the same qualities as the existing areas that would be lost</p>	EID and contractor	Consultation with agencies will occur before construction, fencing and avoidance zones will be marked before and during construction, and new wetlands and riparian areas will be created following construction during raising of the water level of the Forebay.	

**Table 1
Summary of Mitigation Measures, Responsible Parties, and Timing**

Mitigation Measure	Party Responsible for Monitoring	Timeframe for Implementation	Monitoring Compliance (Provide Name/Date)
<p>(in-kind mitigation). Purchase off-site mitigation credits from an appropriate mitigation bank or other available preserve. If wetland and riparian areas can be avoided during construction, these areas would be identified as avoidance areas and delineated with construction fencing or other methods.</p>			
<p>3.4-3a: Minimize Impacts on Nesting Birds on the Project Site during Construction Activities. EID will implement one or more of the following measures, depending on consultation with CDFW and/or USFWS as appropriate, to minimize impacts on nesting birds on the Project site during construction activities. The specific measure(s) implemented will depend on the species observed, nature of nesting activities, location of nest relative to construction activities, and nature of construction activities. When feasible, Project-related construction activities, including tree and vegetation removal, will be initiated or occur during the nonnesting season (August 16 through January 31). If construction activities, including noise-generating activities, ground-disturbing construction, or vegetation trimming or removal, cannot be initiated prior to the avian nesting season (February 1 through August 15), the use of feasible proactive deterrence measures will be initiated prior to nesting season to discourage birds from nesting in the area. These measures could include, but would not be limited to, the use of sound deterrents (e.g., broadcast of predator or distress calls or other sounds to approximate the noise conditions during construction), physical deterrents (e.g., bird netting in strategic locations), or visual deterrents (e.g., owl decoys, reflective tape, lightweight reflective turbines), if appropriate. If Project-related construction activities, including tree and vegetation removal, must occur during the avian nesting season (February 1 through August 15), a preconstruction survey for nesting birds shall be conducted by a qualified biologist not more than 30 days prior to the start of noise-generating activities, ground-disturbing construction, or vegetation trimming or removal activities.</p>	<p>EID and contractor.</p>	<p>Avoidance or buffer zones will be marked before construction begins. Worker training will be conducted before work begins, and new workers will be trained before initiating on-site work.</p>	

**Table 1
Summary of Mitigation Measures, Responsible Parties, and Timing**

Mitigation Measure	Party Responsible for Monitoring	Timeframe for Implementation	Monitoring Compliance (Provide Name/Date)
<p>Trees with raptor nests shall be evaluated by a qualified biologist to determine whether the raptor nest is active. If active raptor nests are found during preconstruction surveys, a site evaluation will be conducted by a qualified biologist to determine what avoidance zone is appropriate based on the observed sensitivity of the nesting birds in question and other site specific features (e.g., topographical characteristics that obstruct line of sight from construction activities). Requests to remove trees with active raptor nests will be reviewed in coordination with CDFW.</p> <p>No additional measures will be implemented if active nests are more than the following distances from the nearest work site: (a) 500 feet for raptors or (b) 250 feet for passerine birds. Buffers shall not apply to construction-related traffic using existing roads that is not limited to Project-specific use (e.g., county roads, highways, farm roads).</p> <p>Buffer Size Reduction</p> <p>The specified buffer sizes for birds may be reduced on a case-by-case basis if, based on compelling biological or ecological reasoning (e.g., the biology of the bird species, concealment of the nest site by topography, land use type, vegetation, and level of Project activity) and as determined by a qualified biologist that implementation of a specified smaller buffer distance will still avoid Project-related “take” (as defined by Fish and Game Code Section 86). Requests to reduce standard buffer size will be submitted to CDFW and/or USFWS, as appropriate. Requests to reduce buffer size will identify the species, location, size, and expected duration of proposed buffer reduction, reason for the buffer reduction, and the name and contact information of the qualified biologist(s) who recommends the buffer size reduction.</p> <p>Non-special-status species found building nests within the standard size buffer zone after specific Project construction activities begin shall be assumed tolerant of that specific Project activity, and such nests will be protected by an appropriately sized buffer (as determined by the qualified biologist). Such nests shall be monitored during construction activities by a qualified biologist until it is determined that the young have fledged, the young are no longer dependent on parental care, or construction within the buffer zone ceases (whichever occurs first).</p>			

**Table 1
Summary of Mitigation Measures, Responsible Parties, and Timing**

Mitigation Measure	Party Responsible for Monitoring	Timeframe for Implementation	Monitoring Compliance (Provide Name/Date)
<p>If nesting birds show signs of distress within a reduced buffer zone that appears to be caused by construction activities, the qualified biologist shall reinstate the standard-sized buffers. The recommended buffers may be subsequently reduced, following the process described above, only after the qualified biologist has determined that the nesting birds are no longer exhibiting signs of stress.</p> <p>Monitoring and Reporting</p> <p>A monthly written monitoring report shall be submitted to CDFW and/or USFWS as appropriate. Monthly reports shall include all the information included in buffer reduction requests in addition to duration of buffer reduction and outcomes for nests, eggs, young, and adults during construction within a reduced buffer. No reporting will be required if construction activities do not occur within a reduced buffer during any calendar month. A final report shall be submitted to CDFW and USFWS at the end of each nesting season, summarizing monitoring results and outcomes observed in the prior season.</p> <p>To prevent impacts on northern rough-winged swallows and/or their nests, excavation of banks along the eastern inlet canal will be performed during nonbreeding season (September 1 through February 1).</p>			
<p>3.4-3b: Develop Worker Environmental Awareness Program.</p> <p>To reduce direct mortality of wildlife on the Project site during construction, EID will develop a Worker Environmental Awareness Program (WEAP). The program will identify the special-status species found on the Project site and identify the Project features and best management practices incorporated to prevent impacts to those species. The WEAP will initially be presented to the construction team and workers at Project kickoff. Printed handouts and other materials, if deemed appropriate, will be distributed and used for future reference by the construction team. Following Project kickoff, the Contractor construction foreman, or predetermined alternate Contractor designee, will be responsible for making sure that other workers on the Project receive WEAP training as they come onto the Project. A roster of WEAP-trained construction workers will be maintained in the Project construction office and made available for review by regulatory agencies if needed. Other measures to</p>	<p>EID and contractor</p>	<p>Avoidance or buffer zones will be marked before construction begins. Worker training will be conducted before work begins, and new workers will be trained before initiating on-site work.</p>	

**Table 1
Summary of Mitigation Measures, Responsible Parties, and Timing**

Mitigation Measure	Party Responsible for Monitoring	Timeframe for Implementation	Monitoring Compliance (Provide Name/Date)
<p>be addressed in the WEAP training include the following: Remove litter and other debris that might attract animals from the Project site daily, and store it in enclosed containers. Exclude pets from the Project site, including access roads and staging areas.</p>			
<p>3.4-4b: Conduct Surveys for Pleasant Valley Mariposa Lily and Stebbins’ phacelia, and Establish Avoidance Zones</p> <ul style="list-style-type: none"> ▶ <i>Conduct Species-Specific Surveys.</i> Before construction, the location of special-status plant species will be determined through surveys conducted according to CNPS protocol. Surveys will be conducted on lands with appropriate microhabitat characteristics (e.g., sunny openings on Josephine-series soils) and be timed between May and July. Known reference populations for each species will be visited prior to Project surveys to confirm the species is blooming where known to occur. ▶ <i>Establish Avoidance Zones.</i> Qualified biologists will locate and field-mark special-status plant populations found during surveys before construction activities begin. If deemed appropriate, avoidance zones might be established around special-status plants, and orange construction fencing, pin flags, or other highly visible methods used to clearly demarcate areas for avoidance. Immediately prior to construction, biologists will inspect areas with known special-status plant populations to ensure that barrier fencing, stakes, flagging, and setback buffers (if required) are in place. Avoidance measures and buffer distances might vary between species and the specific avoidance zone distance will be determined in coordination with appropriate resource agencies. <p>If rare special-status plant species are found on the Project site and avoidance of the species is not possible, then additional measures such as seed collection and/or translocation might be developed in consultation with the appropriate agencies.</p>	<p>EID and contractor</p>	<p>Surveys will be conducted during the bloom period for each species and avoidance zones marked before construction begins; WEAP training will occur before construction and as needed; biological monitoring will occur as needed in sensitive habitats; and seed collection/translocation, if needed, will occur immediately before ground clearance.</p>	
<p>3.4-5b: Initiate Western Pond Turtle Relocation. Mitigation to reduce the impact of the Project on western pond turtle will involve consultation with CDFW, trapping of turtles</p>	<p>EID and contractor</p>	<p>Breeding-size pond turtles will be captured and translocated before egg deposition. Nonbreeding turtles will be</p>	

**Table 1
Summary of Mitigation Measures, Responsible Parties, and Timing**

Mitigation Measure	Party Responsible for Monitoring	Timeframe for Implementation	Monitoring Compliance (Provide Name/Date)
<p>and relocation off-site, and opportunistic capture during water drawdown.</p> <p>Beginning in April 2015, trapping for breeding-size adult turtles will commence. Captured turtles will be relocated to a suitable nearby water body subject to CDFW prior approval. Trapping will be performed by a qualified biologist operating under an active California state Scientific Collecting Permit. This action will have the effect of removing egg-laying females from the reservoir prior to egg deposition (late April through early August) in 2015 and 2016, thus eliminating the potential for drowning of eggs or hatchlings in nests when water is raised to its new elevation in December 2016.</p> <p>Although hatchling and small size-class turtles are notoriously difficult to trap and are usually underrepresented in trap efforts (Bury et al. 2012), the use of specialized traps (i.e., altered, floating minnow traps) deployed in shallow water at the drinking water intake, emergency spillway channel, and along the southern edge of the reservoir might be deployed to capture small turtles with some success. As with for breeding adults, captured small-sized turtles will be relocated to a preapproved recipient site.</p> <p>Despite the aforementioned trapping efforts, smaller nonbreeding individuals will likely remain after the cessation of trapping. As a result, a qualified biological monitor will be retained and will be on-site during drawdown of the reservoir. The monitor will collect turtles opportunistically as they are exposed by receding water and will relocate them to a preapproved recipient site.</p> <p>No action will be taken to restock the Forebay with pond turtles because it is believed that colonization will take place naturally.</p>		<p>captured and removed opportunistically during reservoir drawdown (October 2015) and relocated to a recipient site. Habitat assessments and biological surveys will be performed for bats and ringtail as necessary before construction, and preconstruction surveys for bats and ringtail at identified microhabitats will be performed within 14 days before vegetation clearance. Preconstruction surveys will occur as specified above. WEAP training and consultation with agencies will occur as needed.</p>	
<p>3.4-5c: Conduct Habitat Assessment and Implement Other Protective Measures for Special-Status Bat Species.</p> <p>EID will conduct a habitat assessment of the Project site to identify potential habitat for bat maternity roosts (e.g., human-made structures, large-diameter trees, snags). Removal of potential roost habitat identified during the assessment will be avoided during the bat maternity season (May through mid-August). If removal of potential roost habitat occurs outside of the maternity season, no further mitigation will be required.</p>	<p>EID and contractor</p>	<p>Breeding-size pond turtles will be captured and translocated before egg deposition. Nonbreeding turtles will be captured and removed opportunistically during reservoir drawdown (October 2015) and relocated to a recipient site. Habitat assessments and biological</p>	

**Table 1
Summary of Mitigation Measures, Responsible Parties, and Timing**

Mitigation Measure	Party Responsible for Monitoring	Timeframe for Implementation	Monitoring Compliance (Provide Name/Date)
<p>If removal of potential roost habitat must be conducted during the maternity season, preconstruction inspections for bats will be conducted using appropriate methods (e.g., camera inspection, exit survey with night optics, acoustic survey) within 14 days of vegetation removal. If bats are found during inspections, removal of that roost feature will be delayed until the end of the maternity season or until a qualified bat biologist has determined that the young are capable of flight.</p>		<p>surveys will be performed for bats and ringtail as necessary before construction, and preconstruction surveys for bats and ringtail at identified microhabitats will be performed within 14 days before vegetation clearance. Preconstruction surveys will occur as specified above. WEAP training and consultation with agencies will occur as needed.</p>	
<p>3.4-5d: Conduct Preconstruction Surveys for Ringtail in Riparian Zones and Areas of Rocky Outcrops.</p> <p>Large snags and rocky outcrops on the Project site will be surveyed and evaluated by a qualified biologist for the presence of ringtail within 14 days of vegetation removal. Occupied dens will be flagged, and ground-disturbing activities within 200 feet will be avoided. If occupied dens could not be avoided, ringtails might be evicted by a qualified biologist with a Memorandum of Understanding from CDFW, after agency coordination and after early pup-rearing season (May through June) is past.</p>	<p>EID and contractor</p>	<p>Breeding-size pond turtles will be captured and translocated before egg deposition. Nonbreeding turtles will be captured and removed opportunistically during reservoir drawdown (October 2015) and relocated to a recipient site. Habitat assessments and biological surveys will be performed for bats and ringtail as necessary before construction, and preconstruction surveys for bats and ringtail at identified microhabitats will be performed within 14 days before vegetation clearance. Preconstruction surveys will occur as specified above. WEAP training and consultation with agencies will occur as needed.</p>	

**Table 1
Summary of Mitigation Measures, Responsible Parties, and Timing**

Mitigation Measure	Party Responsible for Monitoring	Timeframe for Implementation	Monitoring Compliance (Provide Name/Date)
<p>3.4-6a: Implement Mitigation Measures for Fishery Management at Forebay</p> <p>To reduce impacts on fish species, EID will implement the following measures, which have been developed in coordination with CDFW:</p> <ul style="list-style-type: none"> ▶ Cessation of ongoing fish-stocking activities will take place before planned dewatering activities. ▶ EID will advertise and notify the public of nonrestricted fishing opportunities consistent with CDFW regulations at the Forebay to remove game and nongame fish before construction. ▶ Conduct visual surveys to monitor condition of fish at Forebay during and immediately following reservoir drawdown. ▶ Based on observations from visual surveys and if deemed appropriate, EID will develop a plan for a fish salvage operation in consultation with CDFW to further minimize fish loss. 	EID	Cessation of fish stocking and advertisement of fishing opportunities will occur before water diversion and drawdown. Monitoring will occur during water drawdown, and a fish salvage plan, if needed, will be developed in consultation with CDFW during drawdown.	
3.5 Cultural Resources			
<p>3.5-1: Cease Work If Cultural Resources Are Encountered during Project-Related Ground-Disturbing Activities, Assess the Significance of the Resource, and Implement Appropriate Avoidance or Treatment Measures.</p> <p>If archaeological resources (e.g., unusual amounts of shell, midden, animal bone, bottle glass, ceramics, or structure/building remains) are encountered during Project-related ground-disturbing activities, all work within 100 feet of the find shall cease until the find can be evaluated by a qualified archaeologist. If the archaeologist determines that the resources are significant, the archaeologist shall notify EID and the resource shall be avoided if feasible. Preservation in place is the preferred manner of mitigating impacts on an archaeological site. Preservation in place may be accomplished by planning construction to avoid archaeological sites; incorporating sites within parks, green space, or other open space; covering archaeological sites; or deeding a site into a permanent conservation easement.</p> <p>If avoidance is infeasible, a treatment plan that documents the</p>	EID	During construction	

**Table 1
Summary of Mitigation Measures, Responsible Parties, and Timing**

Mitigation Measure	Party Responsible for Monitoring	Timeframe for Implementation	Monitoring Compliance (Provide Name/Date)
<p>research approach and methods for data recovery shall be prepared and implemented in consultation with EID and the appropriate Native American representatives (if the resources are prehistoric or Native American). Work may proceed on other parts of the Project site while treatment is being carried out.</p> <p>It may be feasible to cover and preserve an archaeological site; however, if a site is discovered during construction, it is likely that the depth of excavation necessary would preclude covering and protecting a site. Further, the avoidance measures listed above are likely infeasible once construction has begun; thus, preparing a treatment plan and conducting data recovery would be the most feasible mitigation option. Given the likely infeasibility of preservation in place for discovered sites, data recovery would likely be the superior mitigation option.</p>			
<p>3.5-2: Stop Potentially Damaging Work If Human Remains Are Uncovered during Construction, Assess the Significance of the Find, and Pursue Appropriate Management.</p> <p>If human remains are discovered, all work shall stop in the immediate vicinity of the find and the El Dorado County Coroner shall be notified in accordance with Section 7050.5 of the California Health and Safety Code. If the remains are determined to be Native American, the NAHC shall be notified and procedures outlined in State CEQA Guidelines Section 15064.5(e) shall be followed.</p>	EID	During construction	
3.6 Geology, Soils, and Seismicity			
<p>3.6-5: Prepare and Implement a Storm Water Pollution Prevention Plan (SWPPP) and Best Management Practices (BMPs).</p> <p>EID will implement measures specified the State Water Resources Control Board National Pollutant Discharge Elimination System stormwater permit for general construction activity (Order 2012-0006-DWQ), including preparation and implementation of a project-specific SWPPP at the time the Notice of Intent to Discharge is filed. The SWPPP and other appropriate plans shall identify and specify the following:</p> <ul style="list-style-type: none"> ▶ The use of an effective combination of robust erosion and sediment control BMPs and construction techniques for use 	EID and contractor	Submittal of the State Construction General Permit NOI and SWPPP before the start of construction activities and implementation throughout Project construction	

**Table 1
Summary of Mitigation Measures, Responsible Parties, and Timing**

Mitigation Measure	Party Responsible for Monitoring	Timeframe for Implementation	Monitoring Compliance (Provide Name/Date)
<p>on the Project site at the time of construction that shall reduce the potential for runoff and the release, mobilization, and exposure of pollutants; these may include but would not be limited to temporary erosion control and soil stabilization measures, sedimentation ponds, inlet protection, perforated riser pipes, check dams, and silt fences</p> <ul style="list-style-type: none"> ▶ The implementation of approved local plans, nonstormwater management controls, permanent postconstruction BMPs, and inspection and maintenance responsibilities ▶ The pollutants that are likely to be used during construction that could be present in stormwater drainage and nonstormwater discharges, including fuels, lubricants, and other types of materials used for equipment operation ▶ The means of waste disposal in a manner that would prevent discharges to surface waterways or groundwater ▶ Spill prevention and contingency measures, including measures to prevent or clean up spills of hazardous waste and of hazardous materials used for equipment operation, and emergency procedures for responding to spills ▶ Personnel training requirements and procedures that shall be used to ensure that workers are aware of permit requirements and proper installation methods for BMPs specified in the SWPPP and ▶ The appropriate personnel responsible for supervisory duties related to implementation of the SWPPP. <p>Where applicable, BMPs identified in the SWPPP shall be in place and functional during all site work and construction/demolition activities and shall be used in all subsequent site development activities. BMPs may include, but are not limited to, the following measures:</p> <ul style="list-style-type: none"> ▶ Implementing temporary erosion and sediment control measures in disturbed areas to minimize discharge of sediment into nearby drainage conveyances, in compliance with state and local standards in effect at the time of construction; these measures may include silt fences, staked straw bales or wattles, sediment/silt basins and traps, geofabric, sandbag dikes, and temporary vegetation 			

**Table 1
Summary of Mitigation Measures, Responsible Parties, and Timing**

Mitigation Measure	Party Responsible for Monitoring	Timeframe for Implementation	Monitoring Compliance (Provide Name/Date)
<ul style="list-style-type: none"> ▶ Establishing permanent vegetative cover to reduce erosion in areas disturbed by construction by slowing runoff velocities, trapping sediment, and enhancing filtration and transpiration ▶ Using drainage swales, ditches, and earth dikes to control erosion and runoff by conveying surface runoff down sloping land, intercepting and diverting runoff to a watercourse or channel, preventing sheet flow over sloped surfaces, preventing runoff accumulation at the base of a grade, and avoiding flood damage along roadways and facility infrastructure 			
3.8 Hazards and Hazardous Materials			
<p>3.8-1: Reduce Exposure Risk from Lead-Based Paint Exposure.</p> <p>Lead-based paint was identified on the exterior wood siding of the A-18 Control Building and A-18 Weir Building; wooden eaves and door jams of the A-18 Control Building and A-18 Weir Building; interior drywall of the A-18 Control Building and A-18 Weir Building; and piping in the Penstock Valve Building. The paint on the exterior of the A-18 Control Building and A-18 Weir Building was found to be deteriorated and flaking.</p> <p>Because of the positive initial lead determination, the EID or its contractor will prepare a Lead Hazard Control Plan (LHCP) to address worker safety. The LHCP must be prepared by a certified Lead Supervisor or Designer and must address measures to prevent worker exposure, management and disposal of contaminated materials, steps taken to document handling procedures, and other measures required to comply with occupational health and safety requirements.</p>	EID and contractor	During construction activities, as appropriate	

**Table 1
Summary of Mitigation Measures, Responsible Parties, and Timing**

Mitigation Measure	Party Responsible for Monitoring	Timeframe for Implementation	Monitoring Compliance (Provide Name/Date)
<p>3.8-2: Store and Handle Hazardous Materials More Than 0.25 Mile from Pinewood Elementary School Whenever Feasible, and Prepare and Implement an Emergency Response Plan.</p> <p>Whenever feasible, hazardous materials storage and handling facilities will be located more than 0.25 mile from the Pinewood Elementary School boundary. These facilities could include fueling stations, equipment repair or maintenance facilities, or other facilities where hazardous materials may be handled during Project construction. An emergency response plan will be prepared and implemented to control, contain, and clean up hazardous materials accidentally released on the Project site during construction. The plan shall identify roles, responsibilities, actions, and reporting requirements for the management of hazardous materials that may be accidentally released, including notification of school officials that an event within 0.25 mile had occurred. In addition, EID and the construction contractor will direct hazardous materials delivery and disposal vehicles to only use Forebay Road for ingress and egress to the Project site.</p>	EID and contractor	Before and during construction activities, as appropriate	
<p>3.8-4b: Prepare a Fire Protection and Prevention Plan.</p> <p>Implementing a Fire Protection and Prevention Plan containing the following provisions will effectively minimize the risk of wildfire or threat to workers, property, and the public:</p> <ul style="list-style-type: none"> ▶ Implement provisions found in 29 CFR 1926.150 for practices and measures for fire protection, prevention, and control addressing the following topics: <ul style="list-style-type: none"> • Dispensing of flammable/combustible liquids • Welding and cutting • Use, storage, and transport of compressed gas cylinders • Management of open and enclosed storage yards or facilities • Fire prevention measures • Fire emergency response 	EID and contractor	Before and during construction activities, as appropriate	

Table 1 Summary of Mitigation Measures, Responsible Parties, and Timing			
Mitigation Measure	Party Responsible for Monitoring	Timeframe for Implementation	Monitoring Compliance (Provide Name/Date)
3.9 Hydrology and Water Quality			
<p>3.9-1a: Implement Water Diversion and Control Plan. EID will develop a water diversion and control plan before the start of construction activities. The water diversion and control plan will identify implementation measures necessary to mitigate potential construction-related impacts on water quality from dewatering activities for the removal and diversion of surface waters, seepage, springs, and groundwater from foundations and other working surfaces. Such measures will include discharging accumulated stormwater, groundwater, or other water from excavations or temporary containment facilities into the Main Ditch, which carries water to the Reservoir 1 Water Treatment Plant and is not connected with surface waters. EID will implement measures identified in the water diversion and control plan according to regulatory requirements.</p> <p>EID will operate and maintain the water treatment system to provide for settling of suspended solids in the discharge from any sumping, dewatering well, or wellpoint system. Implementation of the water diversion and control plan will reduce impacts from drainage alterations and the potential for erosion and siltation to occur on- or off-site.</p>	EID and contractor	Before the start of construction, during construction, and until final stabilization requirements are met	
<p>3.9-1b: Implement NPDES General Permit and SWPPP. EID will prepare a SWPPP before the start of construction activities. As required under the NPDES General Permit, the SWPPP will identify implementation measures necessary to mitigate potential construction-related impacts on water quality. These measures identified in the SWPPP will include BMPs and other standard pollution prevention actions such as erosion and sediment control measures, proper control of nonstormwater discharges, and hazardous-spill prevention and response. The SWPPP will also include requirements for BMP inspections, monitoring, and maintenance. The following items are examples of BMPs that will be implemented during construction:</p> <ul style="list-style-type: none"> ▶ Erosion-control BMPs, such as the use of mulches or hydroseeding to prevent detachment of soil, that follow guidance presented in the <i>California BMP Handbooks—Construction</i>. A detailed site map will be included in the SWPPP outlining specific areas where soil disturbance may 	EID and contractor	Before the start of construction, during construction, and until final stabilization requirements are met	

**Table 1
Summary of Mitigation Measures, Responsible Parties, and Timing**

Mitigation Measure	Party Responsible for Monitoring	Timeframe for Implementation	Monitoring Compliance (Provide Name/Date)
<p>occur, and the drainage patterns associated with excavation and grading activities. In addition, the SWPPP will provide plans and details for the BMPs to be implemented before and during construction to prevent erosion of exposed soils and to treat sediments before they are transported off-site.</p> <ul style="list-style-type: none"> ▶ Sediment control BMPs such as silt fencing or detention basins that trap soil particles. ▶ Construction staging areas designed so that stormwater runoff during construction will be collected and treated in a BMP such as a detention basin. ▶ Management of hazardous material and wastes to prevent spills. ▶ BMPs for vehicle and equipment fueling so these activities will occur only in designated staging areas with appropriate spill controls. ▶ Maintenance checks of equipment and vehicles to prevent spills or leaks of liquids of any kind. <p>Measures to control on-site spills will be included in the SWPPP. In addition to the spill prevention and control BMPs presented above, the SWPPP will contain a visual monitoring program and a chemical monitoring program for nonvisible pollutants, to be implemented if there is a failure of BMPs.</p> <p>Materials storage and handling and equipment servicing will occur only in designated areas. If a spill occurs, local regulatory agencies will be informed appropriately and a spill response program will be implemented as outlined in the SWPPP. The following BMPs will be implemented as part of the SWPPP and spill response program:</p> <ul style="list-style-type: none"> ▶ All hydraulic hoses and lines will be regularly inspected for cracks and leaks and maintained appropriately to prevent contamination. ▶ Drilling activities will not use ammonium nitrate fuel oil because it dissolves in water and releases ammonia and nitrates. ▶ Contractors will submit plans for containment measures for drilling fluids caused by hose breaks and other sources, and for shutdown and cleanup of spills. 			

Table 1 Summary of Mitigation Measures, Responsible Parties, and Timing			
Mitigation Measure	Party Responsible for Monitoring	Timeframe for Implementation	Monitoring Compliance (Provide Name/Date)
<ul style="list-style-type: none"> ▶ All refueling and servicing will occur at designated locations that are at least 100 feet from the reservoir’s high-water mark and at least 50 feet away from sensitive water features and wetlands, with appropriate containment measures in place to control hazardous materials 			
3.10 Noise			
<p>3.10-4: Implement Measures to Reduce Construction Noise Levels.</p> <p>To limit the nuisance effect of Project construction noise, EID and its construction contractor will implement the following measures:</p> <ul style="list-style-type: none"> ▶ Avoid conducting heavy equipment use and noisy construction activities outside of construction hours from 7:00 a.m. until one-half hour after sunset local time. ▶ Turn off construction equipment when not in use (i.e., avoid long-term idling of heavy construction equipment). ▶ Position all construction staging and laydown areas as far from neighboring residents as practical. For equipment that emits loud noise levels and that would be operated for extended periods at staging or laydown areas, install portable construction noise barriers, where reasonable and feasible, to mitigate the effects of noise exposure at neighboring residences. ▶ Fit all heavy construction equipment with available, manufacturer-specified noise-level reduction components where reasonable and feasible. Maintain all heavy construction equipment in good working order during all operations. 	EID and contractor	Throughout Project construction	

**Table 1
Summary of Mitigation Measures, Responsible Parties, and Timing**

Mitigation Measure	Party Responsible for Monitoring	Timeframe for Implementation	Monitoring Compliance (Provide Name/Date)
3.13 Transportation			
<p>3.13-2: Prepare and Implement a Traffic Control Plan. Before construction begins, EID and/or its contractor would prepare and implement a traffic control plan to minimize construction-related traffic safety hazards on the affected roadways and ensure adequate access for emergency responders. EID and/or its contractor would coordinate development and implementation of this plan with jurisdictional agencies (e.g., El Dorado County), as appropriate. The traffic control plan would, at minimum:</p> <ul style="list-style-type: none"> ▶ Include a discussion of work hours, haul routes, work area delineation, traffic control, and flagging. ▶ Determine the need to require workers to park personal vehicles at an approved staging area and take only necessary Project vehicles to the work sites. ▶ Develop and implement a plan for notifications and a process for communication with affected residents and landowners before the start of construction. Public notification would include posting of notices and appropriate signage of construction activities. The written notification would include the construction schedule, the exact location and duration of activities on each street (e.g., which roads/lanes and access points/driveways would be blocked on which days and for how long), and contact information for questions and complaints. ▶ Provide notification to the public advising them of alternative routes that may be available to avoid delays. ▶ Ensure that appropriate warning signs are posted in advance of construction activities, alerting bicyclists and pedestrians to any closures of nonmotorized facilities. ▶ Provide notification to administrators of police and fire stations, ambulance service providers, and recreational facility managers of the timing, location, and duration of construction activities and the locations of detours and lane closures, where applicable. Maintain access for emergency vehicles in and/or adjacent to roadways affected by construction activities at all times. 	EID and contractor	Before and during construction activities, as appropriate	

Table 1 Summary of Mitigation Measures, Responsible Parties, and Timing			
Mitigation Measure	Party Responsible for Monitoring	Timeframe for Implementation	Monitoring Compliance (Provide Name/Date)
▶ Require the repair and restoration of affected roadway rights-of-way to their original condition after construction is completed.			

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