

Executive Summary

ES-1 Introduction

The State Water Resources Control Board (State Water Board) prepared this Environmental Impact Report (EIR) in response to Pacific Gas and Electric Company's (PG&E's) application for a water quality certification for operation of its Upper North Fork Feather River Hydroelectric Project (UNFFR Project) under a new license from the Federal Energy Regulatory Commission (FERC). When the State Water Board considers issuing a water quality certification for a project, it evaluates whether the project will comply with the applicable water quality control plan (basin plan), in this case the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins* (Basin Plan) (Central Valley Regional Water Quality Control Board 2011). The State Water Board must protect water quality standards in any water quality certification it issues.

The UNFFR Project is located in the upper reaches of the North Fork Feather River watershed in Plumas County, California. The UNFFR Project was originally licensed by FERC in 1955 and is referenced in FERC documents as FERC Project No. 2105. Before FERC can issue a new license, PG&E must obtain a water quality certification from the State Water Board pursuant to Section 401 of the Clean Water Act (33 U.S.C. § 1341). The California Environmental Quality Act (CEQA) requires a public agency with discretionary authority to issue a certification, permit, or other approval to evaluate the environmental impacts of its action. The State Water Board has prepared this EIR to comply with CEQA (Pub. Resources Code, § 21000 et seq.) before acting on PG&E's application for water quality certification.

The State Water Board's determination of whether to issue a water quality certification for the operation of the UNFFR Project under a new license from FERC will be based on an evaluation of whether UNFFR Project operations are consistent with the Basin Plan. The Board must include in the certification any conditions necessary to ensure compliance with applicable water quality standards and other appropriate requirements. Among other things, the State Water Board must determine: (1) the extent to which UNFFR Project operations increase temperatures in the North Fork Feather River, and (2) the extent to which PG&E can reduce temperatures in the Upper North Fork Feather River by implementing reasonable temperature control measures. The State Water Board must also ensure that UNFFR Project operations, including any water quality measures designed to protect the beneficial uses in the North Fork Feather River, will not unreasonably affect water quality in Lake Almanor.

Although not required by CEQA, this EIR includes a discussion of the compliance of UNFFR Project operations with the Basin Plan, and the water quality benefits of two alternatives. The purpose of this discussion is to explain the basis for developing the two alternatives evaluated in this EIR. This discussion also serves to inform the public of the two separate and distinct responsibilities before the State Water Board—ensuring compliance with the Clean Water Act

and complying with CEQA —when considering whether to issue a water quality certification for the UNFFR Project, and what conditions to include in the certification.

As required by CEQA, this EIR discloses significant adverse impacts that may be caused by operation of the UNFFR Project under a new FERC license, including impacts that may be caused by conditions that the State Water Board may include in the water quality certification for the UNFFR Project in order to ensure compliance with the Basin Plan. The EIR also identifies mitigation measures to reduce the significance of identified impacts.

ES-2 Definition of the Proposed Project in This EIR

For the purposes of this EIR and in accordance with CEQA, a “project” is defined as “the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment” and that is “an activity involving issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies” (Cal. Code Regs., tit. 14, § 15378, subd. (a)(3)). Further, the “term ‘project’ refers to the activity which is being approved and which may be subject to discretionary approvals by one or more agencies subject to CEQA. The term ‘project’ does not mean each separate governmental approval” (Cal. Code Regs. tit. 14, § 15378, subd. (c)). In this EIR, PG&E’s Proposed Project is generally defined as the continued operation of the UNFFR Project under a new FERC license, as outlined in PG&E’s application to FERC, federal agencies’ mandatory conditions, and FERC’s Staff Alternative; further described in Chapter 3, PG&E’s Upper North Fork Feather River Project, of this EIR. Chapter 4, Project Alternatives, of the EIR identifies two alternative; Alternative 1 and 2 that were developed to address significant impacts identified through the scoping process.

Chapter 8, Alternatives Development, of the EIR provides a discussion of the No Project Alternative evaluated in this EIR and considers what would happen to the UNFFR Project if the State Water Board denies PG&E’s application for water quality certification for the UNFFR Project. In the event that the UNFFR Project water quality certification application is denied, FERC would not be able to issue a new license for the hydroelectric project. Some facilities would likely be removed or left unused, and uses of other facilities and lands would be altered.

ES-3 Overview of the UNFFR Project

The UNFFR Project is one of the upstream-most projects in a series of water resource development and hydroelectric projects in the North Fork Feather River watershed. The UNFFR Project is a resource that is important to the operation of PG&E’s Feather River hydroelectric system as a whole; it contributes to PG&E’s energy production portfolio and plays a part in meeting the electrical generation capacity requirements of both PG&E and the state of California. The UNFFR Project consists of the following existing facilities:

- three dams that form Lake Almanor, Butt Valley reservoir, and Belden forebay, respectively;
- five powerhouses (Butt Valley, Caribou No. 1, Caribou No. 2, Oak Flat, and Belden);

- tunnels and penstocks connecting the reservoirs to the powerhouses; and
- transmission, recreation, operations and maintenance, and access facilities.

Lake Almanor is the upstream-most reservoir on the North Fork Feather River within the UNFFR Project FERC boundary and has the largest usable storage capacity (1,134,016 acre-feet [AF]) upstream of Lake Oroville. The maximum water surface area is 27,000 acres, and the maximum normal water surface elevation is 4,494 feet (PG&E elevation datum). Lake Almanor is impounded by Canyon dam, an earth-filled structure 135 feet high by 1,400 feet wide at its base and 1,250 feet long across its crest. The dam has an outlet tower with multiple outlets that deliver water to a tunnel capable of releasing up to 2,100 cubic feet per second (cfs) to the North Fork Feather River (Seneca reach) directly below Canyon dam. Prattville intake in the western portion of the lake withdraws flow from Lake Almanor and discharges it into Butt Valley reservoir via a tunnel, penstock, and the Butt Valley powerhouse.

Butt Valley reservoir is south of Lake Almanor on Butt Creek, a tributary to the North Fork Feather River. Butt Valley reservoir has a usable storage capacity of 49,897 AF, a maximum water surface area of 1,600 acres, and a maximum normal water surface elevation of 4,132.1 feet (PG&E datum). Butt Valley reservoir is impounded by Butt Valley dam, an earth-filled structure 1,350 feet long, 74 feet high, and 850 feet wide at its base. While Butt Valley dam has a spillway, it has not been used since the dam was reconstructed in 1997 to address seismic concerns. Below Butt Valley dam, lower Butt Creek flows are reliant on a series of springs and localized runoff. Lower Butt Creek flows into the Seneca reach upstream of Belden forebay. The two Caribou intakes near the dam withdraw flow from the reservoir and discharge it into Belden forebay via tunnels, penstocks, and the Caribou powerhouses.

Belden forebay is on the North Fork Feather River downstream of Lake Almanor and about 2,000 feet in elevation below Butt Valley reservoir. In addition to flow from the Seneca reach of the Upper North Fork Feather River, it receives flow from Butt Valley reservoir via the Caribou Nos. 1 and 2 powerhouses. Belden forebay has a usable storage capacity of 2,421 acre-feet, a maximum water surface area of 42 acres, and a maximum normal water surface elevation of 2,975.0 feet (PG&E datum). Belden forebay is impounded by Belden forebay dam, a rock-filled structure that is 500 feet long, 152 feet high, and 603 feet wide.

The five powerhouses in the UNFFR Project are: Butt Valley powerhouse at the upper end of Butt Valley reservoir; Caribou Nos. 1 and 2 powerhouses and Oak Flat powerhouse in the immediate vicinity of Belden forebay; and Belden powerhouse at the downstream end of the Belden reach near the mouth of Yellow Creek and the confluence of the North Fork Feather River and East Branch North Fork Feather River. The powerhouses include eight hydroelectric generating units with a total nameplate capacity of 342.6 megawatts.

PG&E manages a number of recreation facilities associated with the UNFFR Project, including facilities on National Forest System lands, which are maintained by PG&E under a special use permit from the United States Department of Agriculture, Forest Service (USFS). The USFS also manages other recreation facilities in the vicinity of the UNFFR Project. Numerous campgrounds are located around Lake Almanor, Butt Valley reservoir, and along the North Fork Feather River. In addition, several day-use areas are located around Lake Almanor, including

the Marvin Alexander day use area near the Prattville intake and the Canyon Dam day use area with boat launch near Canyon dam. Commercial recreation developments also occur at various locations along the shoreline of Lake Almanor.

PG&E's license to operate the UNFFR Project expired in October 2004. In accordance with the Federal Power Act and FERC regulations, PG&E submitted an application to FERC for a new license on October 23, 2002 (Pacific Gas and Electric Company 2002). As part of its review of the PG&E application, FERC prepared the *Final Environmental Impact Statement (EIS) for the Upper North Fork Feather River Project* under the National Environmental Policy Act to evaluate the environmental consequences of operation of the UNFFR Project under a new license, including proposed measures from the *Project 2105 Relicensing Settlement Agreement (2004 Settlement Agreement)*, an agreement between most of the participants in the relicensing process that resolved most but not all of the issues pertaining to the continued operation of the UNFFR Project under a new license. State Water Board staff actively participated in the collaborative process in order to provide advice concerning the State Water Board's regulatory process, but the State Water Board was not a party to the 2004 Settlement Agreement and is not a signatory to it. The Final FERC EIS was completed in December 2005 (Federal Energy Regulatory Commission 2005). Since the UNFFR Project license expired in 2004, PG&E has continued to operate the UNFFR Project under annual extensions to the license and in accordance with some provisions of the 2004 Settlement Agreement.

ES-4 Project and Alternatives Evaluated in This EIR

The Proposed UNFFR Project, as described in Chapter 3, PG&E's Upper North Fork Feather River Project, of this EIR, is composed of the elements of PG&E's application to FERC along with modifications made in accordance with the 2004 Settlement Agreement, mandatory conditions, and the FERC staff alternative. Many of the potential impacts of the Proposed UNFFR Project have been evaluated in the Final FERC EIS. As allowed by Section 15150 of the CEQA Guidelines, the State Water Board incorporates, by reference, certain sections of the Final FERC EIS, including sections that analyze the impacts of the Proposed UNFFR Project.

In 2006, the United States Environmental Protection Agency (USEPA) listed the North Fork Feather River upstream of Lake Oroville as a water quality limited segment under Section 303(d) of the CWA. The listing was based on the State Water Board's determination that elevated water temperatures are impairing the cold freshwater habitat beneficial use of the North Fork Feather River. The State Water Board cited hydromodification and flow regulation as potential sources of the impairment (State Water Board Resolution No. 2006-0079). Water temperature was one of the issues identified in the 2004 Settlement Agreement as not being resolved.

In an effort to address unresolved water quality issues, the State Water Board used a tiered approach—known as levels 1, 2, and 3—to develop an array of measures that could reduce water temperatures in the North Fork Feather River below Canyon dam. Various measures were evaluated at each level to assess their feasibility and ability to meet specific screening criteria. Although many measures were determined to be potentially feasible, three of the measures (i.e., thermal curtains at the Prattville intake, thermal curtains at the Caribou intakes,

and increased Canyon Dam flow) were carried forward for analysis in the EIR. Two alternatives including these measures were created for the CEQA analysis:

- **Alternative 1:** Thermal curtains at Prattville intake and Caribou intakes with modifications to Canyon dam outlet structure and associated flows to the Seneca and Belden reaches, including the release of 250 cubic feet per second (cfs) to the Seneca reach between June 15 and September 15.
- **Alternative 2:** Thermal curtains at Prattville intake and Caribou intakes and associated flows to the Seneca and Belden reaches

In addition to the specified water quality measures, both alternatives evaluated modifications to the minimum flow schedules put forth in the 2004 Settlement Agreement. The purpose of the proposed modifications is to address the potential impacts of the 2004 Settlement Agreement flows. Under the 2004 Settlement Agreement, in certain months of certain water year types, the flows proposed are less than the flows required by the existing license. In an effort to maintain or enhance existing flows to improve water quality for beneficial uses, the flow schedules contained in Alternatives 1 and 2 reflect proposed modifications to the flow schedules presented in the Proposed UNFFR Project. The objective of these modifications is to provide greater flows later in the summer, when temperatures can rise. The adjustments for the Seneca reach would be water neutral for a given water year type. In other words, on an annual basis, no additional water would be required for these changes; instead, the adjustments would move water from the winter and spring months to the late summer months. For the Belden reach, these adjustments would all require the release of more water, thereby reducing the volume released through the Belden powerhouse. In an effort to mitigate impacts to water supply on an annual basis, the State Water Board excluded the provision in the 2004 Settlement Agreement that would have required pulse flows in normal and wet water years. This adjustment to the 2004 Settlement Agreement flow schedules would be water neutral. These flow modifications are described further in Chapter 4, Project Alternatives, of the EIR.

Alternative 1: Thermal Curtains at Prattville Intake and Caribou Intakes with Modifications to Canyon Dam Outlet Structure and Associated Flows to the Seneca and Belden Reaches

Alternative 1 includes a thermal curtain at the Prattville intake on Lake Almanor, modifications to the low-level gates on the Canyon dam outlet¹ structure to increase cold-water releases to the Seneca reach up to 250 cfs between June 15 and September 15, and a thermal curtain at the Caribou intakes on Butt Valley reservoir.

The Prattville intake thermal curtain would entail installation of a U-shaped thermal curtain around the Prattville intake structure on the west shore of Lake Almanor. To ensure maximum efficiency under fluctuating lake levels, two galvanized steel bin-type walls would be constructed, and the curtain would be attached to a trolley on the walls to allow it to move up and down as lake levels fluctuate. The purpose of the thermal curtain would be to create a barrier that prevents the flow of warm surface water into the Prattville intake. Warm water would be retained above the curtain while cool water would be drawn into the intake from the lake

¹ Canyon dam “intake” and Canyon dam “outlet” are synonymous.

bottom through the open area under the curtain. By itself, the curtain would not affect the Prattville intake with respect to volume or operation and would not require modifications to other components of the UNFFR Project.

Increased Canyon dam flow releases would require modification of the Canyon dam outlet structure to increase the cool water discharge into the Seneca reach to as much as 250 cfs between mid-June and mid-September. Modification of the outlet structure, which focuses on one of the low-level gates near the bottom of the facility, would ensure that the UNFFR Project has the ability to provide releases of cool water from Lake Almanor as needed to reduce water temperatures in the North Fork Feather River downstream of Canyon dam during the summer months. Modifications would involve installing a prefabricated steel bulkhead, approximately 5 feet wide by 10 feet tall, to the low-level gate 5. The bulkhead would allow controllable releases to be increased, as needed. The overall capacity of the outlet structure and tunnel would need to be maintained to allow up to 2,000 cfs to be released in an emergency. Increasing Canyon dam releases would require decreasing the Prattville intake flow commensurately to avoid lake level fluctuations or changes agreed to in the 2004 Settlement Agreement. The decrease in flows through the Butt Valley powerhouse would modify the volume and timing of water delivered to Butt Valley reservoir to varying degrees (more from June 15 to September 15) and subsequently made available to the Caribou intakes.

A fixed Γ -shaped thermal curtain would be installed near the Caribou No. 1 and No. 2 intakes at the downstream end of Butt Valley reservoir. Similar to the Prattville intake thermal curtain, the purpose of the thermal curtain would be to create a barrier that prevents the flow of warm surface water into either of the intakes. Warm water would be retained above the curtain while cool water would be drawn from the bottom of the reservoir into the intakes through the open area under the curtain. The Γ -shaped curtain would not affect flow to the spillway at Butt Valley dam in the event that the reservoir capacity is exceeded (which has never occurred). The installation and operation of the thermal curtain would not affect operation of the Caribou intakes and would not require modifications to other UNFFR Project operations.

While not separately evaluated as an alternative, increased releases from Canyon dam of up to 250 cfs between June 15 and September 15 could be implemented to reduce temperatures in the North Fork Feather River. The impacts of Canyon dam releases independent of the thermal curtains would be a subset of those identified for Alternative 1 (i.e., only impacts related to modification of the Canyon dam outlet and increased flows, not impacts related to construction and operation of the thermal curtains).

Alternative 2: Thermal Curtains at Prattville Intake and Caribou Intakes and Associated Flows to the Seneca and Belden Reaches

Alternative 2 consists of installation of thermal curtains at the Prattville intake on Lake Almanor and at the Caribou intakes on Butt Valley reservoir, as described for Alternative 1. It also includes the modified flow release schedule for both Seneca and Belden reaches, excluding the summertime release for 250 cfs from Canyon Dam as described in Chapter 4, Project Alternatives.

ES-5 Summary of Impacts and Mitigation Measures

A detailed analysis of environmental impacts associated with Proposed UNFFR Project and both Alternatives 1 and 2, including pertinent support data and mitigation measures if necessary, can be found in the specific resource sections in Chapter 6, Environmental Setting and Environmental Impacts, of the EIR. Table ES-1 summarizes the environmental impacts and mitigation measures for each resource area. The EIR identifies potentially significant impacts for the following resources:

- Land Use and Mineral Resources
- Geology, Geomorphology, and Soils
- Water Quality
- Fisheries
- Vegetation, Wildlife, and Sensitive Biological Resources
- Recreation
- Aesthetics
- Hazards and Hazardous Materials
- Cultural Resources
- Transportation and Traffic
- Air Quality
- Noise

All potentially significant impacts can be reduced to a less than significant level with implementation of mitigation measures, with the exception of Aesthetics. Aesthetics is identified as a significant and unavoidable impact under Alternatives 1 and 2, as further described in Chapter 6.9, Aesthetics, of the EIR. In the localized areas around the Prattville intake, the Prattville thermal curtain has the potential to detract from the existing scenic views of the surrounding forests and mountains or the overall visual quality of Lake Almanor in that area.

Cumulative impacts of the Proposed UNFFR Project and both alternatives with other reasonably foreseeable future projects in the vicinity of the UNFFR Project were also evaluated. The geographical scope of the cumulative impact analysis is the North Fork Feather River watershed, and the temporal scope is 30 to 50 years into the future, which correlates to the period of time requested by PG&E for a new FERC license for the UNFFR Project. No significant cumulative impacts are anticipated to result from the Proposed UNFFR Project or either alternative. Chapter 7, Cumulative Impacts and Other CEQA Considerations, of the EIR also provides a discussion of other considerations required in an EIR (e.g., growth inducing impacts). Implementation of the Proposed UNFFR Project or either alternative would not induce growth in the vicinity of the UNFFR Project.

ES-6 Areas of Known Controversy and Issues to be Resolved

The public scoping period held in the fall of 2005 generated a number of comments from federal, local and state agencies and representatives, Tribes, non-governmental organizations and other stakeholders concerning potential impacts, including comments related to: the installation of thermal curtains; and changes in water quality and impacts to beneficial uses in Lake Almanor, Butt Valley reservoir and the North Fork Feather River. The State Water Board

heard from many stakeholders regarding the effect of the thermal curtains on Lake Almanor and Butt Valley reservoir. Additional information concerning these areas of controversy and others can be found in the Scoping Report and transcripts from the CEQA Scoping Meeting held on September 27, 2005 in Chester, California (Appendix B). This EIR discloses the potential impacts of the thermal curtains and modifications to the flow schedule in the Seneca and Belden reaches and attempts to resolve concerns related to these issues. Many water quality measures were considered by the State Water Board to determine the most feasible measures to analyze further. For the reasons noted in Chapter 4, Project Alternatives, thermal curtains at the Prattville and Caribou intakes and modifications to the Canyon dam outlet structure were determined to be the most feasible. Based on a thorough evaluation of possible measures and the analyses presented in this EIR, issues raised during the scoping period have been addressed in this EIR.

Table ES-1. Summary of Impacts and Mitigation Measures

	PROPOSED UNFFR PROJECT	ALTERNATIVE 1	ALTERNATIVE 2
6.2 Land Use and Mineral Resources (LU)			
Impact LU-1: Construction activities associated with the UNFFR Project could disrupt other land uses in or near the activity areas.			
Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant
Impact LU-2: Implementation of the UNFFR Project could conflict with adjacent land uses.			
Mitigation Measures	None	Mitigation Measure LU-2: Relocation of the Marvin Alexander Beach Day Use Area	Mitigation Measure LU-2: Relocation of the Marvin Alexander Beach Day Use Area
Final Level of Significance	No impact	Less than significant with mitigation	Less than significant with mitigation
Impact LU-3: The UNFFR Project could be inconsistent with the goals, policies, and objectives of the Plumas County General Plan, County Zoning Ordinances, or the Lassen and Plumas National Forest Land and Resource Management Plans.			
Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant
Impact LU-4: Implementation of the UNFFR Project could disrupt locatable mining activities in the North Fork Feather River — Seneca and Belden Reaches.			
Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures

	PROPOSED UNFFR PROJECT	ALTERNATIVE 1	ALTERNATIVE 2
6.3 Geology, Geomorphology, and Soils (GGS)			
Impact GGS-1: Construction activities associated with the UNFFR Project could cause erosion in disturbed areas, resulting in increased sedimentation in the North Fork Feather River and reservoirs.			
Mitigation Measures	Mitigation Measure GGS-1: Approval of Construction Activities by the State Water Board (Turbidity and Total Suspended Solids)	Mitigation Measure GGS-1: Approval of Construction Activities by the State Water Board (Turbidity and Total Suspended Solids)	Mitigation Measure GGS-1: Approval of Construction Activities by the State Water Board (Turbidity and Total Suspended Solids)
Final Level of Significance	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation
Impact GGS-2: Implementation of the UNFFR Project could increase exposure of people and structures to geologic hazards, such as erosion, landslides, or rockslides.			
Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant
Impact GGS-3: Implementation of the UNFFR Project could modify the channel morphology of the North Fork Feather River as a result of changes in flow.			
Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant
Impact GGS-4: Implementation of the UNFFR Project could affect the location and severity of shoreline erosion along Lake Almanor.			
Mitigation Measures	Mitigation Measure GGS-4: Update and Implement Shoreline Management Plan and Shoreline Erosion Monitoring	Mitigation Measure GGS-4: Update and Implement Shoreline Management Plan and Shoreline Erosion Monitoring	Mitigation Measure GGS-4: Update and Implement Shoreline Management Plan and Shoreline Erosion Monitoring
Final Level of Significance	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation

Table ES-1. Summary of Impacts and Mitigation Measures

	PROPOSED UNFFR PROJECT	ALTERNATIVE 1	ALTERNATIVE 2
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6.4 Water Resources (WR)

Impact WR-1: Construction activities associated with the UNFFR Project could require use of water from Lake Almanor or Butt Valley reservoir that is not approved under existing water rights.

Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant

Impact WR-2: Implementation of the UNFFR Project could increase the potential for flooding along the Seneca and Belden reaches as a result of modified flows in the North Fork Feather River.

Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant

Impact WR-3: Implementation of the UNFFR Project could modify water deliveries from Lake Almanor, affecting existing water uses downstream.

Mitigation Measures	None	None	None
Final Level of Significance	No impact	No impact	No impact

6.5 Water Quality (WQ)

Impact WQ-1: Implementation of the UNFFR Project could affect water temperature in Lake Almanor.

Mitigation Measures	None	Mitigation Measure WQ-1: Implement Temperature Monitoring and Operations Coordination and Augment Stocking of Coldwater Fishery following Critically Dry Water Years	Mitigation Measure WQ-1: Implement Temperature Monitoring and Operations Coordination and Augment Stocking of Coldwater Fishery following Critically Dry Water Years
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Table ES-1. Summary of Impacts and Mitigation Measures

	PROPOSED UNFFR PROJECT	ALTERNATIVE 1	ALTERNATIVE 2
Final Level of Significance	Less than significant	Less than significant with mitigation	Less than significant with mitigation
Impact WQ-2: Implementation of the UNFFR Project could affect water temperature in Butt Valley reservoir.			
Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant
Impact WQ-3: Implementation of the UNFFR Project could affect water temperatures in the North Fork Feather River below Canyon dam and Belden dam.			
Mitigation Measures	None	None	None
Final Level of Significance	No impact	No impact (Beneficial)	No impact (Beneficial)
Impact WQ-4: Implementation of the UNFFR Project could affect dissolved oxygen levels in water discharged from Canyon dam and Butt Valley powerhouse.			
Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant
Impact WQ-5: Implementation of the UNFFR Project could cause water released from Canyon dam to have an undesirable taste or odor.			
Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant
Impact WQ-6: Implementation of the UNFFR Project could cause a change in the character or quantity of dissolved metal concentrations or other contaminants in Lake Almanor or the North Fork Feather River.			
Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant

Table ES-1. Summary of Impacts and Mitigation Measures

	PROPOSED UNFFR PROJECT	ALTERNATIVE 1	ALTERNATIVE 2
Impact WQ-7: Construction activities associated with the UNFFR Project could result in temporary increases in turbidity and total suspended solids in Lake Almanor, Butt Valley reservoir, and the North Fork Feather River.			
Mitigation Measures	Mitigation Measure GGS-1: Approval of Construction Activities by the State Water Board (Turbidity and Total Suspended Solids)	Mitigation Measure GGS-1: Approval of Construction Activities by the State Water Board (Turbidity and Total Suspended Solids)	Mitigation Measure GGS-1: Approval of Construction Activities by the State Water Board (Turbidity and Total Suspended Solids)
Final Level of Significance	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation
Impact WQ-8: Hazardous materials spills during construction activities associated with the UNFFR Project could cause contamination of Lake Almanor, Butt Valley reservoir, and the North Fork Feather River.			
Mitigation Measures	Mitigation Measure WQ-8: Approval of Construction Activities by the State Water Board (Hazardous Materials)	Mitigation Measure WQ-8: Approval of Construction Activities by the State Water Board (Hazardous Materials)	Mitigation Measure WQ-8: Approval of Construction Activities by the State Water Board (Hazardous Materials)
Final Level of Significance	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation

6.6 Fisheries (FS)

Impact FS-1: Construction activities associated with the UNFFR Project would affect fish populations in Lake Almanor, Butt Valley reservoir, and the North Fork Feather River through direct and indirect impacts on individuals or habitat.

Mitigation Measures	Mitigation Measure GGS-1: Approval of Construction Activities by the State Water Board (Turbidity and Total Suspended Solids) Mitigation Measure WQ-8: Approval of Construction Activities by the State Water Board (Hazardous Materials) Mitigation Measure FS-1: Minimum Instream Flows at Canyon Dam during Construction Activities	Mitigation Measure GGS-1: Approval of Construction Activities by the State Water Board (Turbidity and Total Suspended Solids) Mitigation Measure WQ-8: Approval of Construction Activities by the State Water Board (Hazardous Materials) Mitigation Measure FS-1: Minimum Instream Flows at Canyon Dam during Construction Activities	Mitigation Measure GGS-1: Approval of Construction Activities by the State Water Board (Turbidity and Total Suspended Solids) Mitigation Measure WQ-8: Approval of Construction Activities by the State Water Board (Hazardous Materials) Mitigation Measure FS-1: Minimum Instream Flows at Canyon Dam during Construction Activities
Final Level of Significance	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation

Impact FS-2: Implementation of the UNFFR Project would alter aquatic habitat conditions in Lake Almanor.

Mitigation Measures	None	Mitigation Measure WQ-1: Implement Temperature Monitoring and Operations Coordination and Augment Stocking of Coldwater Fishery following Critically Dry Water Years	Mitigation Measure WQ-1: Implement Temperature Monitoring and Operations Coordination and Augment Stocking of Coldwater Fishery following Critically Dry Water Years
Final Level of Significance	Less than significant	Less than significant with mitigation	Less than significant with mitigation

Table ES-1. Summary of Impacts and Mitigation Measures

	PROPOSED UNFFR PROJECT	ALTERNATIVE 1	ALTERNATIVE 2
Impact FS-3: Implementation of the UNFFR Project would alter aquatic habitat conditions in Butt Valley reservoir.			
Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant (Beneficial)	Less than significant (Beneficial)
Impact FS-4: Implementation of the UNFFR Project would alter cold freshwater habitat conditions in the North Fork Feather River over the long term.			
Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant (Beneficial)	No impact (Beneficial)
Impact FS-5: Implementation of the UNFFR Project would adversely affect the recreational fishery of Butt Valley reservoir as a result of reduced forage fish in the reservoir.			
Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant

6.7 Vegetation, Wildlife, and Sensitive Biological Resources (BR)

Impact BR-1: Construction activities associated with the UNFFR Project could affect special-status plants or their habitat through removal of individuals, habitat modification, or the spread of invasive plants.

Mitigation Measures	Mitigation Measure BR-1a: Prevent Weed Introduction Mitigation Measure BR-1b: Avoid Disturbance of Special-Status Plants	Mitigation Measure BR-1a: Prevent Weed Introduction Mitigation Measure BR-1b: Avoid Disturbance of Special-Status Plants	Mitigation Measure BR-1a: Prevent Weed Introduction Mitigation Measure BR-1b: Avoid Disturbance of Special-Status Plants
Final Level of Significance	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation

Table ES-1. Summary of Impacts and Mitigation Measures

	PROPOSED UNFFR PROJECT	ALTERNATIVE 1	ALTERNATIVE 2
Impact BR-2: Construction activities associated with the UNFFR Project could affect western pond turtles or their habitat through impacts on individuals, disturbance, or habitat modification.			
Mitigation Measures	Mitigation Measure BR-2: Avoid Disturbance of Western Pond Turtle Mitigation Measure GGS-1: Approval of Construction Activities by the State Water Board (Turbidity and Total Suspended Solids) Mitigation Measure WQ-8: Approval of Construction Activities by the State Water Board (Hazardous Materials)	Mitigation Measure BR-2: Avoid Disturbance of Western Pond Turtle Mitigation Measure GGS-1: Approval of Construction Activities by the State Water Board (Turbidity and Total Suspended Solids) Mitigation Measure WQ-8: Approval of Construction Activities by the State Water Board (Hazardous Materials)	Mitigation Measure BR-2: Avoid Disturbance of Western Pond Turtle Mitigation Measure GGS-1: Approval of Construction Activities by the State Water Board (Turbidity and Total Suspended Solids) Mitigation Measure WQ-8: Approval of Construction Activities by the State Water Board (Hazardous Materials)
Final Level of Significance	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation
Impact BR-3: Construction activities associated with the UNFFR Project could affect special-status bats or their habitat through impacts on individuals, disturbance, or habitat modification			
Mitigation Measures	Mitigation Measure BR-3: Avoid Disturbance of Special-Status Bat Roosts	Mitigation Measure BR-3: Avoid Disturbance of Special-Status Bat Roosts	Mitigation Measure BR-3: Avoid Disturbance of Special-Status Bat Roosts
Final Level of Significance	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation
Impact BR-4: Construction activities associated with the UNFFR Project could affect ringtail cats or their habitat through impacts on individuals, disturbance, or habitat modification.			
Mitigation Measures	Mitigation Measure BR-4: Avoid Disturbance of Ringtail Cats	Mitigation Measure BR-4: Avoid Disturbance of Ringtail Cats	Mitigation Measure BR-4: Avoid Disturbance of Ringtail Cats
Final Level of Significance	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation

Table ES-1. Summary of Impacts and Mitigation Measures

	PROPOSED UNFFR PROJECT	ALTERNATIVE 1	ALTERNATIVE 2
Impact BR-5: Construction activities associated with the UNFFR Project could result in adverse effects on federally protected wetlands.			
Mitigation Measures	Mitigation Measure BR-5: Implement Wetland Delineation and Construction Plan	Mitigation Measure BR-5: Implement Wetland Delineation and Construction Plan	Mitigation Measure BR-5: Implement Wetland Delineation and Construction Plan
Final Level of Significance	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation
Impact BR-6: Implementation of the UNFFR Project could restrict movement of wildlife species through the activity areas.			
Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant
6.8 Recreation (RE)			
Impact RE-1: Construction activities associated with the UNFFR Project could disrupt recreational activities at Lake Almanor and Butt Valley reservoir.			
Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant
Impact RE-2: Implementation of the UNFFR Project could reduce the quality of recreational opportunities at Lake Almanor or Butt Valley reservoir and create hazards for recreationists.			
Mitigation Measures	None	Mitigation Measure LU-2: Relocation of the Marvin Alexander Beach Day Use Area	Mitigation Measure LU-2: Relocation of the Marvin Alexander Beach Day Use Area
Final Level of Significance	Less than significant	Less than significant with mitigation	Less than significant with mitigation

Table ES-1. Summary of Impacts and Mitigation Measures

	PROPOSED UNFFR PROJECT	ALTERNATIVE 1	ALTERNATIVE 2
Impact RE-3: Implementation of the UNFFR Project could affect the quality of recreational fishing opportunities in the North Fork Feather River below Canyon dam by increasing flows in the Seneca and Belden reaches.			
Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant

6.9 Aesthetics (AE)

Impact AE-1: Construction activities associated with the UNFFR Project could temporarily degrade the visual quality of Lake Almanor or Butt Valley reservoir.

Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant

Impact AE-2: The UNFFR Project could degrade or obstruct scenic views from visual assessment units.

Mitigation Measures	None	Mitigation Measure LU-2: Relocation of the Marvin Alexander Beach Day Use Area	Mitigation Measure LU-2: Relocation of the Marvin Alexander Beach Day Use Area
Final Level of Significance	Less than significant	Significant and Unavoidable	Significant and Unavoidable

Impact AE-3: The UNFFR Project could substantially change the character of, or be disharmonious with, existing land uses and aesthetic features around Lake Almanor or Butt Valley reservoir or along the North Fork Feather River.

Mitigation Measures	None	Mitigation Measure LU-2: Relocation of the Marvin Alexander Beach Day Use Area	Mitigation Measure LU-2: Relocation of the Marvin Alexander Beach Day Use Area
Final Level of Significance	No impact	Significant and Unavoidable	Significant and Unavoidable

Table ES-1. Summary of Impacts and Mitigation Measures

	PROPOSED UNFFR PROJECT	ALTERNATIVE 1	ALTERNATIVE 2
Impact AE-4: The UNFFR Project could create a new source of light or glare at Lake Almanor or Butt Valley reservoir.			
Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant

6.10 Public Services and Utilities (PS)

Impact PS-1: Construction activities associated with the UNFFR Project could result in the temporary disruption of utility services in the area.

Mitigation Measures	None	None	None
Final Level of Significance	No impact	No impact	No impact

Impact PS-2: The UNFFR Project could create public safety hazards and increase the demand for emergency response services, resulting in the need for new or expanded facilities that could affect the environment.

Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant

6.11 Hazards and Hazardous Materials (HM)

Impact HM-1: Construction activities associated with the UNFFR Project could expose people or the environment to hazards associated with the use of hazardous materials.

Mitigation Measures	Mitigation Measure WQ-8: Approval of Construction Activities by the State Water Board (Hazardous Materials)	Mitigation Measure WQ-8: Approval of Construction Activities by the State Water Board (Hazardous Materials)	Mitigation Measure WQ-8: Approval of Construction Activities by the State Water Board (Hazardous Materials)
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Table ES-1. Summary of Impacts and Mitigation Measures

	PROPOSED UNFFR PROJECT	ALTERNATIVE 1	ALTERNATIVE 2
Final Level of Significance	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation

Impact HM-2: Implementation of the UNFFR Project could increase the potential for wildfires and expose people to hazards from wildfires.

Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant

6.12 Cultural Resources (CR)

Impact CR-1: Construction activities associated with the UNFFR Project could disturb or damage underwater historical or archaeological resources listed or eligible for listing in the National Register of Historic Places or California Register of Historic Resources.

Mitigation Measures	None	None	None
Final Level of Significance	No impact	Less than significant	Less than significant

Impact CR-2: Construction activities associated with the UNFFR Project could disturb or damage previously undiscovered historical or archaeological resources or human remains.

Mitigation Measures	Mitigation Measure CR-2a: Implement Treatment Measures and Record Previously Undiscovered Resources Mitigation Measure CR-2b: Implement Treatment Measures for Human Remains	Mitigation Measure CR-2a: Implement Treatment Measures and Record Previously Undiscovered Resources Mitigation Measure CR-2b: Implement Treatment Measures for Human Remains	Mitigation Measure CR-2a: Implement Treatment Measures and Record Previously Undiscovered Resources Mitigation Measure CR-2b: Implement Treatment Measures for Human Remains
Final Level of Significance	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation

Table ES-1. Summary of Impacts and Mitigation Measures

	PROPOSED UNFFR PROJECT	ALTERNATIVE 1	ALTERNATIVE 2
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6.13 Transportation and Traffic (TT)

Impact TT-1: Construction activities associated with the UNFFR Project would generate a short-term increase in traffic and could affect traffic flow on local highways and roads.

Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant

Impact TT-2: Construction activities associated with the UNFFR Project could increase traffic hazards and impede emergency access.

Mitigation Measures	Mitigation Measure TT-2: Implement Traffic Control Plan	Mitigation Measure TT-2: Implement Traffic Control Plan	Mitigation Measure TT-2: Implement Traffic Control Plan
Final Level of Significance	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation

6.14 Air Quality (AQ)

Impact AQ-1: Construction activities associated with the UNFFR Project would generate fugitive dust and contribute to local violations of particulate matter standards.

Mitigation Measures	Mitigation Measure AQ-1: Implement a Fugitive Dust and Emission Control Plan	Mitigation Measure AQ-1: Implement a Fugitive Dust and Emission Control Plan	Mitigation Measure AQ-1: Implement a Fugitive Dust and Emission Control Plan
Final Level of Significance	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation

Impact AQ-2: Construction traffic associated with the UNFFR Project would contribute to air pollution along access routes.

Mitigation Measures	None	None	None
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Table ES-1. Summary of Impacts and Mitigation Measures

	PROPOSED UNFFR PROJECT	ALTERNATIVE 1	ALTERNATIVE 2
Final Level of Significance	Less than significant	Less than significant	Less than significant
Impact AQ-3: The UNFFR Project could generate odors that would affect sensitive receptors at Lake Almanor and along the North Fork Feather River.			
Mitigation Measures	None	None	None
Final Level of Significance	No impact	Less than significant	No impact

6.15 Noise (NO)

Impact NO-1: Construction activities associated with the UNFFR Project could increase noise levels above acceptable standards and may expose sensitive receptors to excessive noise or groundborne vibrations.

Mitigation Measures	Mitigation Measure NO-1: Implement Noise Reduction Measures	Mitigation Measure NO-1: Implement Noise Reduction Measures	Mitigation Measure NO-1: Implement Noise Reduction Measures
Final Level of Significance	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation

Impact NO-2: Implementation of the UNFFR Project could increase ambient noise levels around Lake Almanor and Butt Valley reservoir or along the North Fork Feather River.

Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant

6.16 Climate Change (CC)

Impact CC-1: Implementation of the UNFFR Project could indirectly increase greenhouse gas emissions and conflict with policies adopted to reduce greenhouse gas emissions.

Mitigation Measures	None	None	None
Final Level of Significance	Less than significant	Less than significant	Less than significant