EXECUTIVE SUMMARY

APPLICATION FOR SURRENDER OF LICENSE
FOR
MAJOR PROJECT – EXISTING DAM

Kilarc-Cow Creek Hydroelectric Project, FERC Project No. 606
Pacific Gas and Electric Company (Licensee)

March 2009

ES.1 Overview

Pacific Gas and Electric Company (PG&E or Licensee) is filing with the Federal Energy Regulatory Commission (FERC) this application to surrender its license (License Surrender Application, or LSA) for its existing 5.0 megawatt installed capacity Kilarc-Cow Creek Hydroelectric Project, FERC Project No. 606 (Project) in compliance with Title 18 of the Code of Federal Regulations, Part 6 The LSA has been distributed to federal and state resource agencies, local governments, Indian tribes, non-governmental organizations, members of the public, and others likely to be interested in the license surrender proceeding (Interested Parties).

The Project is located on South Cow Creek and Old Cow Creek in Shasta County, California, and consists of two developments (Kilarc and Cow Creek developments), which collectively include 2 forebays and associated dams; 5 diversion dams; 20 canal sections, flumes, and tunnels, together with associated spillways; 1 siphon; 2 penstocks; 2 powerhouses with associated tailraces, switchyards and equipment; and transmission facilities. PG&E proposes to surrender its license to operate the Project and to decommission Project facilities, as described in the Proposed Decommissioning Plan (PDP) (Appendix A).

PG&E initially sought a new license for the Project, filing a Notice of Intent (NOI) to relicense the Project with FERC in 2002. However, after performing initial relicensing studies and consulting with resource agencies and other Interested Parties, PG&E ultimately concluded that the likely cost of providing the necessary level of protection, mitigation, and enhancement (PM&E) measures for the resources affected by the Project would outweigh the economic benefit of generation at the Project over the life of a new license, and would result in the Project no longer being an economical source of power for PG&E's electric customers. Additionally, PG&E recognized that a limited scope, cost-effective decommissioning could be achieved at about the same lifecycle economic cost to its customers as continuing the relicensing, but with the significant environmental benefits of improving habitat for anadromous fish. Consequently, in March 2005, PG&E entered into the Kilarc-Cow Creek Project Agreement (Agreement) with resource agencies and non-governmental organizations (Attachment 1 of Appendix A of this LSA). Pursuant to the Agreement, PG&E, among other things, agreed not to file an application for a new license by the statutory deadline of March 27, 2005, and instead agreed to support

decommissioning the Project. In exchange, the other signatories agreed to support a scope of decommissioning which would address specified subjects, but provide PG&E flexibility to address these subjects in the most cost effective manner (e.g., the subject of fish passage may be addressed by breaching Project diversion dams rather than completely removing them).

Decommissioning the Project will restore natural streamflows to Old Cow and South Cow Creeks, improving aquatic habitat and benefiting federally threatened steelhead trout and fall-run Chinook salmon. Decommissioning may improve riparian habitat, benefiting riparian-dependent birds, amphibians, and other species. Perennial flows will no longer be released to Hooten Gulch, and Kilarc Forebay, a local recreational facility, will be decommissioned. Project features that may have historic value will be documented. The Powerhouse structures will be secured and left in place during decommissioning; an option for the future reuse of the structures will be preserved. It is expected that PG&E will retain ownership of the Project facilities and land throughout the decommissioning.

The current estimated cost to decommission the Project, including implementation of the 31 resource management measures proposed in the LSA that will provide numerous environmental benefits, is approximately $14.5 million, which includes both the physical decommissioning and post-decommissioning monitoring. Given the importance of decommissioning this Project for fall-run Chinook salmon and steelhead, PG&E has developed its proposed resource management measures with resource agencies and Interested Parties (described further below) to assure adequate protection and reasonable enhancement of environmental resources. PG&E anticipates that the relevant proposed resource management measures will be included by the National Marine Fisheries Service (NMFS) in its Endangered Species Act (ESA) Biological Opinion (BO) for the protection and enhancement of Chinook salmon and steelhead. The proposed resource management measures focus on providing fish passage, and controlling erosion and managing sediment related to the physical decommissioning of the Project, including effects on stream banks, water quality, aquatic life, and stream geomorphology.

While PG&E considers the measures proposed in this LSA to be its formal proposal, PG&E will continue to consult with Interested Parties throughout the license surrender process. In addition, PG&E plans to file with FERC a Biological Assessment (BA) in mid-2009, which will address Chinook salmon and steelhead. The BA also will include an Essential Fish Habitat Assessment to meet the requirements of the Magnuson-Stevens Fishery Conservation and Management Act. Should additional consultation result in PG&E revising a PM&E measure proposed in this LSA, PG&E will file the revision with FERC.

PG&E has prepared this Executive Summary to describe and summarize the information contained in the LSA for the Project. The intent of this Executive Summary is to provide an overview of the major sections of the Application. For additional detail, the reader is directed to the individual sections of the LSA.

In developing the LSA, PG&E is required to file a PDP with FERC and to conduct extensive consultation with federal and state agencies and the public. The role of agency and public involvement during development of the PDP and LSA is described below.

ES.2 Proposed Decommissioning Plan

PG&E began development of its decommissioning plan by holding a series of public meetings during the spring and fall of 2007. During the initial meetings, PG&E solicited comments from Interested Parties to assist it in identifying issues with decommissioning the Project. PG&E used the comments received from Interested Parties, the framework set forth in the Agreement, and environmental, cultural, and recreational resource studies conducted during the initial phase of PG&E's relicensing process to develop its Preliminary PDP. PG&E presented the Preliminary PDP to the Interested Parties in meetings held in September 2007, followed by a 30-day public comment period. Further meetings with Interested Parties were held in November 2007 to discuss the scope of decommissioning and resource issues, including the scope of additional resource studies, to be addressed in this LSA. Based on these meetings, PG&E finalized its PDP, which is attached to the LSA as Appendix A.

The PDP is based on consultation with Interested Parties, including resource agencies and landowners; the results of resource studies; and the economic and liability considerations that underlay PG&E's decision to surrender the Project license. PG&E developed its PDP with two main objectives: 1) achieving specific "Desired Conditions" once decommissioning is complete, as identified in the Agreement; and 2) addressing potential resource issues associated with decommissioning the Project. Specific decommissioning actions were developed in consultation with affected landowners.

The PDP is organized as follows:

- **Section 1 – Introduction.** This section provides background information on the Project and the decommissioning process, including a summary of the development of the PDP and LSA.
- **Section 2 – Decommissioning Proposal.** This section describes the Project features and proposed decommissioning actions for each feature. The section also provides information on potential environmental effects associated with decommissioning activities and the final disposition of the facilities after decommissioning.

ES.3 Development of License Surrender Application

Following public and agency review of the PDP in late 2007, FERC held two public meetings in January 2008 to address public questions on the surrender application process and to elaborate further on PG&E's role in the process and FERC's license surrender rules and regulations. During the meetings, it was suggested by some local community members that another entity could potentially assume ownership of the Kilarc Forebay and Powerhouse for recreational purposes. In response to this suggestion, in March 2008, PG&E distributed to all Interested Parties Solicitation of Interest letters, the purpose of which was to learn whether there were in fact other entities interested in operating the facilities for recreational purposes. As part of this effort, PG&E developed and distributed to the Interested Parties two guidance documents to assist entities in understanding the various technical, financial and legal issues associated with operating Kilarc Forebay and Powerhouse as recreational facilities. No completed applications

were received by PG&E. One entity submitted a letter expressing interest, but focused largely on continuing to operate Project facilities for generation purposes and not solely for recreational and historical purposes. In addition, the entity did not adequately address any of the technical, financial, and legal issues associated with owning and operating the Project facilities.

PG&E consulted with federal and state resource agencies in the spring and summer of 2008, holding several meetings and conducting a site visit. On July 25 and August 21, 2008, PG&E distributed to all Interested Parties status update letters to inform them of the current Project status and proposed schedule for the Draft LSA. The Draft LSA was issued on September 4, 2008, and distributed to all Interested Parties. Public meetings were held on September 9 and 10, 2008 in Redding and Palo Cedro, California. The meeting on September 9 also began the 60-day comment period that ended on November 8, 2008. PG&E collected comments from Interested Parties and incorporated them, as appropriate, into the final LSA.

PG&E is continuing its consultations with NMFS, the United States Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG) and the State Water Resources Control Board (SWRCB). Appendix B includes a detailed description of the consultation activities conducted to date by PG&E during the license surrender process.

ES.4 Summary of Application

ES.4.1 Initial Statement

The Initial Statement presents PG&E's Application for Surrender of License for Major Project, and Statement Pursuant to 18 CFR Section 4.32. The Application for Surrender of License provides information required by FERC.

ES.4.2 Contents

The application is composed of one volume. The volume contains the following components:

- A Table of Contents, including a list of tables and figures.
- A Glossary of Terms, Abbreviations, and Acronyms that are used frequently in the application.
- This Executive Summary.
- An Initial Statement.
- Exhibit A – a description of the Project and PDP.
- Exhibit B – a description of Project operations and resource utilization.
- Exhibit C – a description of Project history and the proposed decommissioning schedule.
- Exhibit D – a statement of cost and financing.
- Exhibit E – the Environmental Report, which includes: a) an introduction; b) a description of the potentially affected environment by resource area; c) a description of

potential Project impacts by resource area; d) a description of environmental PM&E measures for the Project; and e) a list of cited literature and personal communications.

- Exhibit G – Project Maps.
- Appendix A – Proposed Decommissioning Plan (PDP)
  - Attachment 1 – Project Agreement
- Appendix B – Consultation Summary
- Appendix C – Exceedence Curve
- Appendix D – Unimpaired Monthly Flow
- Appendix E – Streamflow Data
- Appendix F – Rosgen Classification
- Appendix G – Kilarc Diversion Dam Geomorphic Assessment
- Appendix H – South Cow Creek Diversion Dam Geomorphic Assessment
- Appendix I – Water Quality Lab Reports
- Appendix J – Biological Resources Reports
  - Appendix J-1 – Botanical, and Terrestrial and Aquatic Wildlife Resources Report
  - Appendix J-2 – Aquatic Habitat and Fisheries Resources Report
- Appendix K – Habitat Assessment for the California Red-Legged Frog in the Kilarc-Cow Project Area
- Appendix L – 2008 Botanical Technical Report
- Appendix M – Cultural Report (Contains confidential information – Not for Public Release)
- Appendix N – Copper Analysis
- Appendix O – Response to Comments and Annotated Comment Letters for Draft License Surrender Application

ES.4.3 Glossary

The Glossary of Terms is provided after the Table of Contents in the LSA.

ES.4.4 Exhibit A – Project Description

The Project is located in Shasta County, California, approximately 30 miles east of the city of Redding, near the community of Whitmore. The Project consists of two developments constructed between 1904 and 1907: the Kilarc Development on Old Cow Creek and the Cow Creek Development on South Cow Creek. Old Cow and South Cow Creeks are part of the Cow Creek Watershed. Old Cow Creek is a tributary to South Cow Creek and South Cow Creek is a tributary to Cow Creek. Cow Creek drains to the Sacramento River. The Kilarc Development

diverts water from North and South Canyon Creeks and Old Cow Creek. The Cow Creek Development diverts water from Mill Creek and South Cow Creek.

Water diverted for power generation is conveyed to the Kilarc and Cow Creek forebays, where penstocks direct the water to the respective powerhouses. The Project comprises several small diversion dams, approximately 7 miles of water conveyance facilities, and two powerhouses with a total installed capacity of 5 megawatts.

Exhibit A summarizes the PDP which is included as Appendix A to this LSA.

In general, the proposed disposition of facilities in the PDP is as follows:

- Diversion dams will be removed to stop water diversions and to allow for free passage of fish and sediment.
- Some diversion dam abutments and foundations will be left in place to protect stream banks and provide grade control.
- Powerhouse structures will be secured and left in place during decommissioning; an option for future reuse of the structures will be preserved.
- Electric generators, turbines and other equipment will be removed.
- Forebays will be graded and filled.
- In consultation with affected landowners, canal segments will be left in place, breached, or filled. Metal and wood flume structures will be removed.

The PDP incorporates the "Desired Conditions" set forth in the Agreement. These Desired Conditions are intended to help frame how various issues are addressed in the decommissioning process (e.g., the disposition of canals). PG&E considered these Desired Conditions in developing its decommissioning plan for the Project facilities. PG&E also identified potential resource issues associated with decommissioning Project facilities that were not addressed in the Agreement and addresses those issues as well in its decommissioning plan. The Desired Conditions are summarized in Exhibit A by Project feature, and the potential resource issues are described in Exhibit E (Environmental Report). The PDP, which describes the detailed decommissioning of Project facilities, is intended to be accompanied by the PM&E measures in Exhibit E.

ES.4.5 Exhibit B – Project Operations and Resource Utilization

The Project is located in two separate drainage areas, Old Cow Creek (Kilarc development) and South Cow Creek (Cow Creek development). Kilarc Powerhouse is supplied with water diverted from North Canyon Creek, South Canyon Creek, and Old Cow Creek. Cow Creek Powerhouse is supplied with water diverted from Mill Creek and South Cow Creek. Both developments

operate as run-of-river facilities.[1] Water conveyance systems convey water to the forebays of the respective powerhouses where it flows into the penstocks and through the generating units of each powerhouse and is then returned to the creeks downstream.

The average yearly runoff at the Kilarc Main Canal Diversion Dam is 48,900 acre-feet, about 55 percent of which is diverted to the Kilarc Powerhouse. The average annual runoff at the Cow Creek Diversion Dam is 79,500 acre-feet, about 37 percent of which is diverted to Cow Creek Powerhouse.

The Project has a total installed capacity of 5 megawatts and an estimated dependable capacity[2] of 1.6 megawatts (1.2 megawatts from Kilarc, 400 kilowatts from Cow Creek). Annual energy production for the two developments averaged 31.1 million kilowatt-hours over the 25-year period from 1977 to 2001.

PG&E historically used Project power to meet the needs of its electric customers. The Project is an "eligible renewable energy resource" under California's Renewables Portfolio Standard (RPS), which requires that 20 percent of an electrical corporation's retail sales be procured from eligible renewable energy resources no later than December 31, 2010. In order to replace the electricity production of the Project, another source of renewable electrical energy will need to be obtained. Lower cost, emission-free, and RPS-eligible renewable energy is forecast to be available to replace it.

PG&E proposes to discontinue operating the Project in accordance with its PDP (Appendix A).

ES.4.6 Exhibit C – Project History and Proposed Decommissioning Schedule

The Northern California Power Company (NCPC) constructed the Kilarc Powerhouse between 1903 and 1904. Between 1903 and 1907, NCPC also constructed several canals, the penstock and forebay, and a 20-kilovolt wood pole line serving the powerhouse. Northern Light and Power Company (NLPC) constructed Cow Creek Powerhouse in 1907.

NCPC purchased NLPC in 1912 after it became part of the Sacramento Valley Power Company. PG&E acquired NCPC in 1919. PG&E has since operated and maintained the Project.

On March 23, 2007, PG&E filed a proposed Surrender Schedule with FERC, which approved it on June 11, 2007. The approved schedule requires PG&E to file a LSA with FERC, including a decommissioning plan, by March 26, 2009.

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[1] A type of hydrolelectric generation whereby the natural flow and elevation drop of a river is used to produce electricity. Power stations of this type are built on rivers with a consistent and steady flow, either natural or through the use of a large reservoir at the head of the river.

[2] Dependable capacity is based on the Project's load carrying ability during the critical hydrologic period (e.g., 1977) coincident with the PG&E's peak electric system load in July or August.

Upon acceptance of the LSA, FERC will undertake an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) and will consult with federal and state resource agencies under the federal ESA.

The SWRCB may initiate a California Environmental Quality Act (CEQA) review prior to issuing a Water Quality Certification pursuant to Section 401 of the federal Clean Water Act.

PG&E anticipates that the FERC EA, federal and state consultations, and the SWRCB CEQA processes will be completed within six months to two years after PG&E files its LSA. PG&E expects that FERC will issue an Order approving PG&E's LSA between 2009 and 2011. Based on this Order, PG&E will develop detailed engineering and management plans for decommissioning of the Project facilities. After FERC approves these plans and after PG&E obtains any other required permits, PG&E anticipates commencing decommissioning activities between 2010 and 2013. PG&E anticipates decommissioning the Project in phases beginning with either the Kilarc or Cow Creek development and then proceeding to decommission the other development. PG&E will continue operating the Project, or some portion thereof, until decommissioning activities make such operation infeasible. It is expected that removal of the Project facilities will take three years, followed by two years of maintenance and monitoring of the site restoration work overseen by FERC. Any additional monitoring required would be supervised by other agencies of jurisdiction.

The timing for decommissioning activities is presented below in Table ES-1.

Table ES-1. Decommissioning Activities

Description of Decommissioning Activity	Forecast Range of Dates	
	Start	End
PG&E files final LSA with FERC	03/2009	–
FERC prepares EA report SWRCB prepares CEQA report	03/2009	09/2009 to 03/2011
FERC issues order to decommission	12/2009 to 06/2011	–
PG&E develops detailed engineering plans PG&E develops detailed management plans PG&E obtains permits for decommissioning	12/2009 to 06/2011	06/2010 to 06/2013
PG&E decommissions Project and ceases generation	06/2010 to 06/2013	06/2013 to 06/2016
PG&E conducts post-decommissioning monitoring	06/2013 to 06/2016	06/2015 to 06/2018
FERC approves decommissioning	06/2015 to 06/2018	–

ES.4.7 Exhibit D – Statement of Project Cost and Financing

The net book value of the Project, which is the historical cost less accumulated depreciation, is estimated to be approximately $5 million.

The preliminary estimated cost for decommissioning the Project is $14.5 million. This figure includes costs associated with the preparation and filing of the LSA, decommissioning costs, and post-decommissioning monitoring costs. Once the Project is decommissioned and electricity production ceases, PG&E will purchase replacement power from the market. The 2009 20-year "Market Price Referent" (i.e., the long-term market price of electricity) is $0.11126 per kilowatt-hour.[3]

ES.4.8 Exhibit E – Environmental Report

ES.4.8.1 Introduction (Section E.1)

Exhibit E presents the Environmental Report for the LSA. The Environmental Report is divided into three major sections: Affected Environment (Section E.2), Project Impacts (Section E.3), and Protection, Mitigation, and Enhancement (PM&E) measures (Section E.4). Within each section, Project Area resources are addressed in the following order: geology and soils, hydrology and water resources, geomorphology, water quality, aquatic resources, wildlife resources, botanical resources, historical resources, archeological resources, recreation, aesthetics, and land use.

ES.4.8.2 Affected Environment (Section E.2)

The Affected Environment is briefly described in this section. For the purposes of this LSA, the "Project Area" is defined as the area within the defined FERC boundary where the Project decommissioning would occur. For some resources, the "Project vicinity" is used to describe areas within 5 miles of the Project Area depending on threshold guidelines.

Geology and Soils

The Project is in the Cascade Range geomorphic province and occupies the eastern half of the Cow Creek Watershed, including the headwaters of South Cow Creek and Old Cow Creek. In general, the soils in the vicinity of Project facilities are stony and rocky loam, typically composed of weathered volcanic or sedimentary rock.

Hydrology and Water Resources

Surface water flow in the Cow Creek Watershed is derived from snow falling in the upper reaches of the watershed and rainfall in the lower- and mid-watershed elevations. Water is diverted from the springs and creeks of the Cow Creek Watershed to serve agricultural, domestic, and power production needs. PG&E holds four pre-1914 water rights for power generation and domestic use in the Old Cow Creek Watershed for the Kilarc Development. PG&E holds two pre-1914 water rights for power generation in the South Cow Creek Watershed for the Cow Creek Development.

[3] CPUC Resolution E-412 (Dec. 18, 2008).

Geomorphology

Measurements of morphological parameters were made on Old Cow Creek, South Cow Creek, and Hooten Gulch during the 2003 relicensing studies. Within the Kilarc Development area, Old Cow Creek, South Cow Creek, and Hooten Gulch are A- and B-channel types with steep gradients and cobble, boulder, cobble-gravel, and boulder-cobble representing the dominant bed material. Most of Old Cow Creek, South Cow Creek, and Hooten Gulch were identified as predominantly alluvial channel types. Field observations frequently revealed short segments of the diverted reaches, usually less than 500 linear feet, dominated by bedrock interspersed between the alluvial reaches. Channel bank stability was high along South Cow Creek, moderate to low on Old Cow Creek, and moderate below the Cow Creek Powerhouse on Hooten Gulch below the respective diversions.

The frequency and amount of in-channel sediment storage was very low for all Project bypass reaches. Overall, the amount of fine sediment present in pools above and below the Kilarc Main Canal and South Cow Creek Diversion Dam was very low, whereas Hooten Gulch had a much greater amount of fine sediment covering the bed surface area. Most of the sediment stored behind the Kilarc Main Canal Diversion Dam and South Cow Creek Diversion Dam is gravel or cobble to boulder-sized material. Following removal of the dams, the total sediment volume that has the potential to be scoured and transported downstream is estimated at 580 cubic yards (0.36 acre-feet) and 1,400 cubic yards (0.87 acre-feet), respectively.

Water Quality

The *Fourth Edition of the Basin Plan for the Sacramento River and San Joaquin River Basins* (Basin Plan) identifies the following beneficial uses for the Cow Creek hydrologic area: agricultural irrigation, stock watering, power generation, contact-water recreation, other non-contact recreation, cold freshwater aquatic, and migration habitat, warm and cold water spawning habitat, and wildlife habitat. The Basin Plan also identifies municipal and industrial water supply, and canoeing and rafting as potential designated uses. Water quality in Old Cow Creek and South Cow Creek was found to have minor exceedances of the applicable fecal coliform standards, likely caused by cows, native mammals, or other animals with access to the stream. Measured metal, nutrient, PCBs, and mineral parameters did not exceed applicable water quality criteria. Sediment behind the Kilarc Main Canal Diversion Dam was found to exceed guidelines for copper aquatic toxicity (Threshold Effects Level or TEL), but was generally lower than the Probable Effect Level, or PEL) for copper, and release of these stored sediments to the stream is not likely to result in a water column copper concentration that would exceed the standard allowed under the California Toxics Rule.

In situ[4] water quality measurements yielded nominal exceedances for pH, but, specific conductance, dissolved oxygen, and turbidity were generally within acceptable ranges for both the Kilarc and Cow Creek developments. Mean daily temperatures generally remained below 18°C throughout the Old Cow Creek Project-affected bypass reach, even during the warmest part

[4] Meaning "in place" to confirm uniform functionality.

of the year (late July). Water temperatures were warmer in South Cow Creek, generally exceeding mean daily and maximum daily temperatures of 18°C and 24°C,[5] respectively, in the summer.

Aquatic Resources

The Cow Creek watershed supports populations of anadromous salmonids, as well as native and introduced resident species. Resident species common to Old Cow Creek and South Cow Creek are rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), and riffle sculpin (*Cottus gulosus*). South Cow Creek below Wagoner Canyon also supports numerous other native and introduced resident species. In addition, South Cow Creek supports several species of anadromous fish, including fall-run Chinook salmon (*Oncorhynchus tshawytscha*), steelhead (*O. mykiss*), and lamprey (species unknown, but likely Pacific lamprey, *Lampetra tridentata*). Two runs of anadromous salmonids that may occur within the Project Area are either listed or have been considered for listing under the federal ESA. These include the Central Valley Steelhead population unit, and Central Valley fall- and late fall-run Chinook salmon population units. Additionally, stray Central Valley Spring-Run Chinook salmon have been observed on Cow Creek, but Cow Creek and its tributaries are not known to support a population of this run. Critical habitat has been designated by NMFS in the Cow Creek Watershed for the Central Valley Steelhead population unit.

Wildlife Resources

Potentially suitable habitat for 31 special-status wildlife species exists within the Kilarc and Cow Creek developments. Special-status species observed during surveys in the Project Area, and/or habitat to support them, include the valley elderberry longhorn beetle *(Desmocerus californicus dimorphus)*, foothill yellow-legged frog (*Rana boylii*), and northwestern pond turtle (*Actinemys marmorata marmorata*). Raptors and migratory birds, such as osprey (*Pandion haliaetus*), bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), the American peregrine falcon (*Falco peregrinus americana*), and Lewis' woodpecker (*Melanerpes lewis*), may occur.

Botanical Resources

Twenty-nine special-status species could potentially be present in the Project Area. Two special-status species, mountain lady's slipper (*Cypripedium montanum*) and big-scale balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*) were observed within the Project Area during surveys. Butte County fritillary (*Fritillaria eastwoodiae*) may occur, but was not observed during surveys in the Project Area.

Historical Resources

The local history within the Area of Potential Effect (APE) and more broadly, within Shasta County, is characterized by the California gold rush and later copper mining, agriculture, and

[5] A mean daily temperature of 18ºC is an evaluation criterion for management of trout habitat, and a daily maximum temperature of 24ºC a criterion for short-term, high temperature exposure for trout.

hydroelectric power generation. The known architectural and historic resources in the APE include water system facilities and settlements. Based on record searches, historic research, field surveys, and resource evaluations conducted in support of the LSA, the Kilarc and Cow Creek powerhouses are eligible for listing in the National Register of Historic Places (NRHP) and the California Register of Historic Resources (CRHR). The other Project facilities have not retained sufficient integrity of design, setting, workmanship, materials, feeling, and association to be eligible for listing individually or as historic districts in the NRHP or CRHR.

Archaeological Resources

Archaeological evidence indicates that the prehistory of northeast California extends at least as far back as 12,000 to 13,000 years ago (McGuire, 2007). The Project Area lies within the territory occupied by the Central Yana people at the time of European contact. The record searches, archival research, field surveys, and resource evaluations conducted for the proposed Project identified archaeological resources such as lithic scatter sites in the APE, but none are recommended for inclusion on the NRHP or the CRHR.

Recreation

Within the Project Area, the Kilarc Forebay is the only location where developed formal recreation facilities are established (Kilarc Day Use Area). There are comparable recreation opportunities available at nearby reservoirs. The Kilarc Powerhouse has a grassy lawn that the public currently uses informally for picnicking and fishing access. Other areas within the Project vicinity are comprised of private lands not open to the general public and PG&E lands which are not easily accessible (e.g., no road access, heavily forested, steep hillsides); these lands do not have recreation facilities (e.g., restrooms, picnic tables) or attributes that draw recreation users (e.g., accessible creeks or reservoirs).

Aesthetics

The Project vicinity encompasses a range of scenery, varying from the narrow and steep river canyons and densely vegetated river banks with conifer forests in the upper watershed, to open rolling foothills with grasses and oak and pine trees with a sparse and scattered overstory in the lower watershed. The Kilarc Powerhouse and Kilarc Forebay are accessible by the public and contain visual resources. The Cow Creek Powerhouse and associated facilities are not accessible or easily viewed by the public and therefore have not been evaluated for aesthetic resources. No Project facilities are within the viewshed of officially designated or planned scenic highways.

Land Use

A total of 184.32 acres of land are located within the FERC Project boundary. These lands are owned primarily by PG&E (approximately 109.69 acres) and private landowners (approximately 72.76 acres). In addition, 1.87 acres are held in trust by the United States under the jurisdiction of the Bureau of Indian Affairs. Surrounding land uses outside of the Project Area currently include National Forest, hydroelectric project facilities, transportation systems, recreation, and conservation. Shasta County designates the Project Area as Timber Production, Exclusive

Agricultural, and Unclassified lands. Permitted uses include timber production, watershed management, recreation, agriculture, forest management, open space, and other uses. The Project Area is also classified as a "Very High" Fire Hazard Severity Zone.

ES.4.8.3 Project Impacts (Section E.3)

Potential impacts from Project decommissioning are summarized in this section.

Geology and Soils

Decommissioning of the diversion dams, canals, spillways, tunnels, and forebays may potentially result in stream bank erosion and subsequent sedimentation. Erosion of access roads and staging areas throughout the Kilarc and Cow Creek developments could also occur. The increased use of access roads or improvement of access roads for decommissioning could cause small landslides. Liquefaction is not expected to occur as a result of decommissioning activities.

Hydrology and Water Resources

Stream flow would increase below the Kilarc Main Canal and South Cow Creek diversion dams with the decommissioning of the Project features. The natural daily and seasonal flow regime would be restored to the bypass reaches downstream from the diversions. The full natural geomorphically-significant peak flows would be nearly the same as under past Project operations, increasing only slightly. Therefore, no impacts would be associated with restoring the peak flows or restoring the unimpaired daily and seasonal flow regime.

Following the decommissioning process, Hooten Gulch down to the confluence with South Cow Creek would be returned to an ephemeral channel condition and artificial flows from diversion of water to, and discharge of water from, Project facilities into Hooten Gulch would no longer occur. Water users who currently divert water discharged from the Cow Creek Powerhouse into Hooten Gulch would no longer be able to do so. These water users would have to develop alternate points of diversion. PG&E is consulting with water users potentially impacted by the cessation of artificial flows to Hooten Gulch regarding the development of potential alternate points of diversion.

There are 11 wells that were identified as being down-gradient of Kilarc Forebay. PG&E mailed questionnaires to well owners to document existing well conditions and received one response indicating that the well at issue was no longer in use. The groundwater wells in the vicinity of Kilarc Forebay do not have water rights to any artificial recharge water that may occur as a result of Project operations. However, PG&E is willing to consult with any well owners who can demonstrate effects on well levels or yields from discontinuation of Project operations.

Geomorphology

Although the stored sediment behind the Kilarc Main Canal and South Cow Creek diversion dams can be released from storage and allowed to naturally transport downstream without adversely impacting channel morphology over the long-term, there would likely be some short-term deposition of sediments in pools and across the channel bed immediately downstream of

each diversion dam. The only pools not expected to re-form are the plunge pools immediately downstream of each diversion dam. The remaining pools downstream would fill with sediment temporarily and would extend downstream from the respective dam locations for about 10 bankfull widths (approximately the first 400 to 600 feet downstream). There are no anticipated impacts associated with sediment disposition following the removal of the Mill Creek, North Canyon Creek, and South Canyon Creek diversions.

Localized bank erosion may occur following the removal of the South Cow Creek and Kilarc Main Canal diversion dams at the former dam sites. Dam removal would create a nickpoint in the channel bed at the former dam site, which could cause headward erosion and downstream transport of the formerly impounded sediments. The relative potential for adverse bank erosion associated with removal of the Kilarc Main Canal Diversion Dam is not significant. The most likely area where unstable banks and erosion could occur is nearer to the South Cow Creek Diversion Dam site where there is a maximum 8.5-foot sediment depth that would be transported downstream. Minimal bank erosion is expected at the North and South Canyon Creek Diversion Dams and at the Mill Creek Diversion Dam, but little to no adverse effects to vertical channel stability or to bank stability would likely occur.

Bank instability and erosion downstream from the Cow Creek Powerhouse in Hooten Gulch would most likely diminish following decommissioning. Cessation of augmented flows at the powerhouse would not alter the sediment recruitment process from streambanks/hillslopes above the powerhouse, or transport of sediments with episodic high flows. Therefore, no bank/channel stability impacts to Hooten Gulch would result from decommissioning.

Water Quality

The primary potential impact to water quality from Project decommissioning is from temporary increased turbidity in the streams as a result of the deconstruction activities, or from long-term erosion and sedimentation after deconstruction is completed. No other potentially adverse impacts to water quality are expected. The copper found within the fine sediments behind the Kilarc Main Diversion Dam is believed to be a result of natural weathering processes from soils and rock within the watershed and not from anthropogenic sources. Therefore, sediments could be allowed to remain in the channel to be naturally transported downstream after the Kilarc Main Canal Diversion Dam is removed. Temperature, turbidity and fecal coliform levels are expected to decrease with the increase in flow in South Cow Creek above the powerhouse.

Aquatic Resources

Deconstruction activities will likely cause short-term impacts to aquatic habitat and affect fish present during the deconstruction activities. However, the removal of Project features and the cessation of diversions from the Project streams will return the streamflows to a more natural state and result in long-term benefits for the aquatic species in Project streams.

Potential impacts include lethal effects from shockwaves associated with breaking down Project diversion dams and from crushing by heavy equipment in Project streams; sedimentation effects associated with the removal of diversion dams, gates and other headwork structures; and

potential fish passage impediments. The release of the sediment stored behind the diversion dams could potentially have short-term effects associated with the release of the fine sediment fraction of these sediments, and short- and long-term benefits associated with the release of spawning gravel-sized material.

Secondary impacts could result from removing the gunite protecting the bank adjacent to the Cow Creek Powerhouse, as removing the gunite would decrease velocities through this area and potentially create a barrier at some flows.

Wildlife Resources

Most potential Project-related impacts to wildlife resources are the loss of habitat associated with decommissioning Project features. Habitat for amphibians and turtles may potentially be lost with the decommissioning of the diversion dams and the Kilarc and Cow Creek forebays. Additionally, foraging and nesting habitat for raptors and nesting birds could be adversely impacted at the Kilarc and Cow Creek forebays. Bats could potentially be adversely impacted if they use Project tunnels or the Kilarc and Cow Creek powerhouses for roosting habitat. Decommissioning activities on access roads could potentially disturb nesting birds. Construction activities could result in injury (including from noise) or mortality to amphibians, turtles, nesting birds, bats, valley elderberry longhorn beetle, and Pacific fisher. No impacts to wildlife are expected from the decommissioning of Kilarc and Cow Creek penstocks.

Botanical Resources

Project-related impacts to vegetation communities are not expected to be adverse and would occur from temporary loss of vegetation associated with decommissioning of Project features. Small seeps and wetlands would be affected, but no substantial impacts are expected. The mountain lady's slipper population adjacent to the Kilarc Main Canal consisted of two plants growing at the base of an above-ground reach of the canal, at the top of a steep, bare slope failure. Decommissioning activities at this portion of the canal would cause unavoidable impacts to this population, but the loss of a few individuals of a watch list species is not considered an adverse impact. The population of big-scale balsamroot located adjacent to the access road in the Cow Creek Development could sustain minor impacts, although impacts could possibly be avoided.

Historical Resources

The Project would result in the decommissioning and disposition of the Kilarc and Cow Creek powerhouses, penstocks, water conveyance canals, diversion dams, flumes, forebays, and other ancillary buildings and structures within the Project APE. The Kilarc and Cow Creek powerhouses are the only structures and buildings eligible for the NRHP and the CRHR within the Project APE. Decommissioning of the Kilarc and Cow Creek powerhouses would cause a substantial adverse change in the significance of these NRHP- and CRHR-eligible structures.

Archaeological Resources

Five identified sites with prehistoric archaeological components and one historical archaeological site within the Project APE have not been evaluated for potential eligibility for listing in the NRHR or CRHR. The proposed decommissioning activities do not pose potential impacts to these resources except in the case of two newly identified lithic scatters along proposed access roads. However, there is a possibility of encountering previously undiscovered archaeological resources and having impacts due to ground disturbance. There is also the potential of encountering human remains either in association with prehistoric occupation sites or separately.

Recreation

Project facilities would be deconstructed with the affected areas allowed to naturally re-vegetate. With the removal of the Kilarc Forebay and its associated day use facilities, the site would no longer serve as a recreational resource. However, ample recreational alternatives exist at a variety of comparable sites. The loss of the land adjacent to the Kilarc Powerhouse as a recreational resource is considered a minimal impact due to the site's relatively low rates of visitation and lack of public facilities. Public access to the grassy terrace beside the building and along Old Cow Creek would remain intact during decommissioning.

Aesthetics

Two Key Observation Points (KOPs) were identified during Project Area field visits. KOP 1 is a point directly north of Kilarc Powerhouse on East Fern Road, from which the powerhouse and switchyard are clearly visible. KOP 2 overlooks the Kilarc Main Canal Diversion Dam and Forebay to the northwest from Kilarc Forebay Day Use Area. The decommissioning of the Project facilities described above would be visible from KOPs 1 and 2 and thus affect aesthetic resources associated with the Project, namely the Kilarc Powerhouse and the Kilarc Forebay. During the decommissioning, the Kilarc Powerhouse building structure would be secured by installing wire mesh or wooden boards across the windows to restrict public access to the building. Considering the building's location within the larger landscape and its visibility from KOP 1, this visual change would constitute a weak contrast with the existing condition. While the contrast of these changes with the existing conditions would be considered moderate to strong from KOP 2, the return of the area to a natural condition would improve the natural aesthetics of the forebay area. Furthermore, as access to Kilarc Forebay is through private property, Kilarc Forebay would no longer be publicly accessible and would no longer be considered an aesthetic resource.

Land Use

The Project facilities represent an established land use in the Project Area and do not conflict with any other developed or planned use. Decommissioning of Project facilities would not conflict with the General Plan, Zoning Plan, or other relevant plans and policies because Shasta County would not require a formal land use designation change with this application. The Shasta County General Plan (2004) and Zoning Plan (2003) have no specific policies or guidelines

regarding the Kilarc-Cow Creek Project facilities, and decommissioning the Project facilities presents no policy or physical land use conflicts with the General Plan or Zoning Plan. However, the use of construction equipment and temporary onsite storage of diesel fuel could conflict with CAL FIRE's Fire and Resource Assessment Program requirements unless the proper fire prevention measures are implemented.

In order to facilitate the disposition of a portion of the Cow Creek Penstock as proposed in the PDP, PG&E is exploring the option of acquiring the land rights associated with the 1.87 acres held in trust by the United States under the jurisdiction of the Bureau of Indian Affairs. No additional changes to land ownership are expected as a result of the decommissioning.

ES.4.8.4 Protection, Mitigation, and Enhancement (PM&E) Measures (Section E.4)

The Project's potential impacts and PG&E's proposed PM&E measures to address these impacts are listed in Table ES-2. The PM&E measures are meant to accompany the PDP in Appendix A.

ES.4.8.5 Literature Cited (Section E.5)

This section contains references cited in Exhibit E.

ES.4.9 Exhibit F

This section is not pertinent to the LSA and is not included.

ES.4.10 Exhibit G – Project Maps

Exhibit G provides Project maps that show the location of all Project facilities and features, the FERC Project boundary, and federal and non-federal lands within the Project boundary.

Table ES-2: Summary of Project Impacts and PM&E Measures

Potential Impact	Evaluation Conclusion	PM&E Measures
Geology and Soils		
Impacts from Liquefaction Liquefaction, or the loss of soil strength from ground shaking activity, is not expected to occur.	No Impact	No PM&E measures warranted
Streambank Erosion Impacts Streambank erosion might result from the removal of Project structures during and potentially after the construction period.	Potentially substantial; PM&E measures warranted	**PM&E Measure GEOL-1: Implement Soil Erosion and Sedimentation Control Best Management Practices** The Licensee shall identify and implement Soil Erosion and Sedimentation Control BMPs that address soil erosion impacts that may occur both during and after decommissioning construction work. The Licensee shall adhere to standard erosion control procedures, including applicable measures developed by USDA-FS and published in the Water Quality Management for Forest System Lands in California Best Management Practices (USDA-FS, 2000). Prior to construction, the Licensee shall identify all natural drainage paths along the canals and tunnel during pre-construction surveys. Slopes prone to instability shall be identified, and site specific BMPs shall be implemented to avoid potential slope erosion and increased sedimentation in streams during and after construction activities. During the construction period, the Licensee shall install BMPs in all areas where soil is disturbed and could result in an increase in sedimentation and/or erosion. The Licensee shall perform inspections after storm events and perform any necessary repairs, replacements and/or addition of BMPs. At the end of construction, the Licensee shall identify potential future erosion sites and install long-term BMPs. Specific areas to be addressed are listed below: • After removal of the canals, diversions, and impoundment structures, the Licensee shall implement BMPs such as restoration of natural drainage paths, and recontouring of slopes to match pre-existing slope morphology, as feasible. Revegetation shall be implemented to increase bank stability (See PM&E Measure BOTA-1). • The Licensee shall implement BMPs to address potential erosion of access roads and staging areas throughout the Kilarc and Cow Creek developments. Artificial swales, culverts, and/or other structures shall be designed to direct runoff away from disturbed areas based on the natural drainage features of the area. For any temporary access roads that are removed, the Licensee shall implement measures in accordance with BMP 2-26 Obliteration or Decommissioning of Roads, as

Table ES-2: Summary of Project Impacts and PM&E Measures

Potential Impact	Evaluation Conclusion	PM&E Measures
		defined in the USDA-FS Water Quality Management for Forest System Lands in California Best Management Practices (USDA-FS, 2000). To ensure the effectiveness of the long term BMPs, post-construction monitoring will be conducted for two years within the stream channel (See PM&E Measure GEOM-2) and for one year in all other construction areas. The post-construction inspections will be to ensure that BMPs installed at the end of construction are effective and/or to identify areas where installation of additional BMPs is necessary.
Impacts on Downstream Sedimentation and Erosion Access road and staging area use and construction during decommissioning may result in more downstream sedimentation and erosion.	Potentially substantial; PM&E measures warranted	**PM&E Measure GEOL-2: Implement Stormwater Pollution Prevention Best Management Practices** The Licensee shall identify all potential pollutant sources, including sources of sediment (e.g., areas of soil exposed by grading activities, soil/sediment stockpiles) and hazardous pollutants (e.g., from petroleum products leaked by heavy equipment or stored in maintenance areas). Also, the Licensee shall identify any non-storm water discharges and implement BMPs to protect streams from potential pollutants and minimize erosion of topsoil. The Licensee shall include a monitoring and maintenance schedule to ensure BMP effectiveness for sediment control, spill containment, and post-construction measures. The Licensee shall include a monitoring and reporting program, including pre- and post-storm inspections, to determine if BMPs are sufficient to protect streams and to identify any areas where stormwater can be exposed to pollutants. The monitoring program will include provisions for sampling and analysis to evaluate whether pollutants that cannot be visually observed are contributing to degradation of water quality.
Impacts from Potential Landslides Potential for on- or off-site landslides due to soil instability from access road construction activities.	Potentially substantial; PM&E measures warranted	**PM&E Measure GEOL-3: Professional Engineering Design Plans and Specifications** The Licensee shall develop detailed design plans and specifications after FERC orders the Project to be decommissioned. These plans shall consider the potential for landslides and shall include provisions to minimize this potential. The Licensee shall prepare engineering plans for new access roads or staging areas to minimize grades and cut and fill volumes, as well as to minimize any potential for landslides as a result of the grading work.
Hydrology and Water Resources		
Hydrologic Impacts Enhancement of stream flows in the bypass reaches would result from an increase in average monthly flows and by restoration of natural seasonal flows after Project decommissioning.	Beneficial Impact	No PM&E measures warranted
Peak Flow Impacts	No Impact	No PM&E measures warranted

Table ES-2: Summary of Project Impacts and PM&E Measures

Potential Impact	Evaluation Conclusion	PM&E Measures
There are no negative impacts associated with the negligible changes in the annual peak flow regime from the decommissioning of the Kilarc and Cow Creek developments.		
Impacts to Existing Drainage The existing drainage pattern of the site or area may change from either an alteration of water course or through an increase in the rate or amount of surface runoff.	Minor Impact	No PM&E measures warranted
Geomorphology		
Release of Stored Sediments Provide an aquatic habitat benefit by increasing the available supply of gravel-size material suitable for fish spawning.	Beneficial Impact	No PM&E measures warranted
Hooten Gulch Bank and Channel Stability No bank or channel stability impacts to Hooten Gulch would result from decommissioning. After decommissioning, augmentation from the powerhouse flows would cease, and the magnitude of episodic high flows would be lower	No Impact	No PM&E measures warranted
Channel Morphology Impacts The pulse of sediment released from removal of either the Kilarc Main Canal or South Cow Creek diversion dams would not persist over the long-term and would not alter channel morphology.	No Impact	No PM&E measures warranted

Table ES-2: Summary of Project Impacts and PM&E Measures

Potential Impact	Evaluation Conclusion	PM&E Measures
Impacts to Pools Short-term deposition of sediments in pools and across the channel bed immediately downstream of Kilarc Main Canal and South Cow Creek diversion dams would be minor. All pools would naturally scour and re-form over time, except for the plunge pools immediately downstream of each respective dam face.	Minor Impact	No PM&E measures warranted
Channel and Bank Stability Impacts at Small Diversions Minimal bank erosion is expected at the North and South Canyon Creek diversion dams and Mill Creek Diversion Dam, and little to no adverse effects to the vertical channel stability or to bank stability would likely occur.	Minor Impact	No PM&E measures warranted
Temporary Fish Passage Impacts As sediments are transported from the Kilarc Main Canal and South Cow Creek diversion dams, fish passage could be impaired until sediments have been disbursed downstream.	Potentially substantial; PM&E measures warranted	**PM&E Measure GEOM-1: Sediment Release Measures** Following removal of the South Cow Creek and Kilarc Main Diversion dams, the Licensee shall reshape the downstream face of the sediment wedge left in place at each diversion structure to an appropriate angle of repose. The Licensee shall also form a pilot thalweg to ensure temporary fish passage until the stored sediments have been transported by flow from the former impoundment sites and to help advance the processes of natural channel formation at the nickpoint created by the dam removal, by performing the following measures: • Excavate a pilot thalweg through the sediment wedge that connects with the existing thalweg at a nearby upstream point to the thalweg immediately downstream of the dam. • Shape the pilot thalweg on-site during the dam removal process. • Dimension the pilot thalweg so that it has at minimum a 6-foot bottom width, which is approximately 20 percent of the 30 foot bankfull channel width downstream from the dam.

Table ES-2: Summary of Project Impacts and PM&E Measures

Potential Impact	Evaluation Conclusion	PM&E Measures
		• Lay back the side slopes of the pilot thalweg to a natural, stable angle of repose. • Construct the thalweg channel so that the starting depth at the downstream end of the channel is approximately equivalent to the water surface elevation of the plunge pools immediately downstream from each of the respective dams. • Incorporate into the pilot thalweg channel, coarse bed-elements, or other techniques, to ensure appropriate depth and velocities for fish passage, as needed. The final design will be based on the best available information at the time prior to implementation, in consultation with NMFS and CDFG. The Licensee shall make adjustments to the thalweg dimensions and elevation if site-specific conditions make it infeasible to construct the pilot channel to the recommended dimensions at either of the dam sites. The Licensee shall allow the sediments remaining behind the diversions after excavation of the pilot channel to redistribute downstream during natural high flow events. The Licensee shall place sediments excavated from the South Cow Creek and Kilarc Main Canal diversion impoundments along channel margins for future recruitment during high flow events to downstream areas. The Licensee shall place these native sediments so they do not interfere with riparian vegetation. The Licensee shall not place non-native angular rock material (which may be found between the bin walls of South Cow Creek Dam) in the stream, but shall dispose of it locally at a suitable site (e.g. as canal fill). The Licensee shall monitor fish passage conditions along the pilot thalweg channels and for 10 channel widths downstream of the dams for two years following removal. The monitoring program is discussed under PM&E Measure AQUA-5. *Also see PM&E Measure AQUA-5*
Localized Bank Erosion at Dam Sites Localized bank erosion may occur following the removal of the South Cow Creek and Kilarc Main Canal diversion dams at the former dam sites and within the former sediment impoundment zone of each dam, as newly exposed banks could be unstable.	Potentially substantial; PM&E measures warranted	**PM&E Measure GEOM-2: Bank Erosion Measures** To minimize potential impacts associated with bank erosion, the Licensee shall conduct the following monitoring and mitigation: • The Licensee shall conduct a monitoring assessment after removal of the Kilarc Main Canal and South Cow Creek diversion dams. The monitoring shall consist of a visual assessment with photographic documentation of the impounded sediment wedge and streambanks adjoining the perimeter of the former sediment impoundment area. The monitoring shall be conducted after spring runoff, as soon as weather permits access to the sites and flows are low enough that the streambanks can be easily observed. The Licensee shall utilize the visual

Table ES-2: Summary of Project Impacts and PM&E Measures

Potential Impact	Evaluation Conclusion	PM&E Measures
		assessment to identify any areas of active erosion or undercutting, or areas that appear to be susceptible to erosion. The Licensee shall conduct the monitoring assessment for two years. • If during the monitoring assessment, the Licensee observes significant erosion or bank undercutting, then the Licensee shall implement and install erosion control measures, as feasible, in the channel. The Licensee shall adhere to standard erosion control procedures, including applicable measures developed by the USDA-FS and published in the Water Quality Management for Forest System Lands in California Best Management Practices (USDA-FS, 2000). *Also see PM&E Measure GEOL-1*
Water Quality		
Increased Stream Flow Beneficial effects of water temperature reduction, decreased turbidity and fecal coliform levels might result from the removal of Project diversions at Kilarc and Cow Creek due to increase in stream flow.	Beneficial Impact	No PM&E measures warranted
Release of Metals in Stored Sediment Release of sediment stored behind Kilarc Main Canal Diversion Dam is not likely to result in exceedance of water quality standards for dissolved copper.	No Impact	No PM&E measures warranted
Stormwater Runoff Impacts Water quality might be affected as a result of potential stormwater runoff from heavy equipment fuels and engine fluids during construction activities.	Potentially substantial; PM&E measures warranted	*Implement PM&E Measures GEOL-1 and GEOL-2*
Water Quality Objectives The Basin Plan water quality objectives and/or other water quality	Potentially substantial; PM&E measures warranted	*Implement PM&E Measures GEOL-1 and GEOL-2*

Table ES-2: Summary of Project Impacts and PM&E Measures

Potential Impact	Evaluation Conclusion	PM&E Measures
criteria could be exceeded as a result of Project decommissioning.		
Turbidity Impacts Potential for increased turbidity in streams from sedimentation that might result during the decommissioning of Project facilities at Kilarc and Cow Creek.	Potentially substantial; PM&E measures warranted	*Implement PM&E Measures GEOL-1 and GEOL-2*
Erosion and Sedimentation Impacts Erosion and sedimentation might degrade water quality during decommissioning activities and after deconstruction is completed.	Potentially substantial; PM&E measures warranted	*Implement PM&E Measure GEOL-1 and GEOL-2*
Accidental Release of Oil or Hazardous Materials Fish and wildlife resources could be affected by accidental release of oil or hazardous materials associated with construction activities.	Potentially substantial; PM&E measures warranted	*Implement PM&E Measure GEOL-2*
Aquatic Resources		
Impacts to Fish Passage Barriers Fish passage would be improved following the removal of Project diversions.	Beneficial Impact	No PM&E measures warranted
Impacts from Gravel-sized Material Gravel-sized material released from behind the dam would be a beneficial source of spawning gravel for resident and anadromous salmonids.	Beneficial Impact	No PM&E measures warranted
Impacts from Water Temperatures Cooler water temperatures resulting from decommissioning would be more favorable to salmonids	Beneficial Impact	No PM&E measures warranted

Table ES-2: Summary of Project Impacts and PM&E Measures

Potential Impact	Evaluation Conclusion	PM&E Measures
throughout the bypass reaches.		
Impacts from Removal of Gunite in Hooten Gulch Removal of gunite from Hooten Gulch could improve fish passage conditions.	Beneficial Impact	No PM&E measures warranted
Impacts from Filling Pools Temporary filling of pools immediately downstream of the dam might impact aquatic resources.	Minor Impact	No PM&E measures warranted
Turbidity Impacts Turbidity may be increased slightly during one or more high flow seasons as fine sediments stored behind dams are released.	Minor Impact	No PM&E measures warranted
Impacts from Shockwaves Shockwaves from breaking down the dam structures might result in lethal effects to aquatic resources. **Impacts from Heavy Equipment** Aquatic resources might be crushed from the operation of heavy equipment in the stream. **Sedimentation Impacts** Aquatic resources might be impacted from sedimentation effects resulting from the removal of dam material and the removal of gates and other headwork structures. **Impacts from Filling the Kilarc Tailrace** Filling the Kilarc Tailrace might result in fish being buried and	Potentially substantial; PM&E measures warranted	**PM&E Measure AQUA-1: Isolate Construction Area** To minimize the deconstruction impacts at the five diversion dams and the Kilarc Tailrace (where instream construction would be required), the Licensee shall isolate the construction area from the active stream using coffer dams or other such barriers. The Licensee shall route water around the construction area in pipes or by removing the dam in two or more phases, allowing the flow to move down the other portion of the stream, while the isolated portion of the dam is removed. **PM&E Measure AQUA-2: Conduct Fish Rescue in Instream Work Area** After a work area is isolated, the Licensee shall conduct a fish rescue to remove any fish trapped in the work area. The Licensee shall relocate these fish to an area of suitable habitat within Old Cow Creek or South Cow Creek downstream of the work area. **PM&E Measure AQUA-3: Avoid Sensitive Periods for Steelhead and Chinook Salmon for the Removal of South Cow Creek Diversion Dam** The Licensee shall conduct decommissioning work at South Cow Creek Diversion Dam from July through September when adult anadromous salmonids are not present in South Cow Creek.

Table ES-2: Summary of Project Impacts and PM&E Measures

Potential Impact	Evaluation Conclusion	PM&E Measures
sedimentation in downstream areas.		
Impacts from Cutoff Walls Retention of the cutoff walls under the South Cow Diversion Dam may result in a fish barrier after decommissioning	Potentially substantial; PM&E measures warranted	**PM&E Measure AQUA-4: Meet NMFS Passage Guidelines for Anadromous Salmonids** If the South Cow Creek Diversion Dam cutoff walls become fish passage barriers, the Licensee shall modify these cutoff walls or implement other appropriate measures to meet NMFS passage guidelines (drop, velocity, depth, roughened channel and other site specific factors) for anadromous salmonids. The Licensee shall consult with NMFS on designs to provide adequate fish passage. *Also see PM&E Measure GEOL-2*
Impacts on Upstream Migration Upstream migration might be impeded by stored sediment behind the dam, until natural flows remove some portion of the sediment.	Potentially substantial; PM&E measures warranted	**PM&E Measure AQUA-5: Monitor Passage Conditions Following Removal of Kilarc Main Canal and South Cow Creek Diversion Dams** To assess the efficacy of PM&E Measure GEOM-1 and monitor for any potential development of long-term barriers, the Licensee shall monitor fish passage conditions from upstream of the current sediment accumulations above the dam to a point approximately 10 channel widths downstream of the dam after the diversions are removed. The Licensee shall conduct monitoring for two years after decommissioning of each diversion dam. In each year of monitoring, the Licensee shall conduct monitoring once after the first major runoff event (as access conditions and staff safety allows) and once again later in the year, during the low-flow season, when the condition of the streambed can be more easily assessed. A biologist with experience in assessing fish passage shall conduct the monitoring. The biologist shall walk the stream segment described above and visually assess for any passage challenges arising from sediment movement (i.e., shallow riffles or bars) and obtain depth and velocity measurements at critical high elevation points. The Licensee shall provide notification to resource agencies prior to monitoring so that agency staff may participate in this survey. The Licensee shall provide a summary of monitoring results at the conclusion of each year of monitoring to FERC, NMFS, CDFG, USFWS, and SWRCB. If, during the monitoring, a long-term passage impediment is identified as a result of the diversions being removed, the Licensee will consult with CDFG and NMFS and the USACE under the Section 404 permit to determine appropriate measures to remedy the situation. *Also see PM&E Measure GEOM-1*

Table ES-2: Summary of Project Impacts and PM&E Measures

Potential Impact	Evaluation Conclusion	PM&E Measures
Impacts of Dewatering Canals Fish could be stranded when flows to Project canals are cut off. **Impacts from Dewatering Forebays** Dewatering or filling Kilarc and Cow Creek forebays could result in fish mortality.	Potentially substantial; PM&E measures warranted	**PM&E Measure AQUA-6: Consult with CDFG** The Licensee shall consult with CDFG on fish management options (including reduced stocking, increased catch limits and other measures) to reduce the number of fish in Kilarc Forebay prior to decommissioning, with the intent of minimizing the number of fish needing to be rescued. **PM&E Measure AQUA-7: Conduct Fish Rescue in Canals and Forebays, as Needed** The Licensee shall conduct fish rescues in the Kilarc Main Canal and Forebay to rescue any fish that remain in these waters during the decommissioning process. These fish shall be relocated to suitable areas to be determined in consultation with CDFG and NMFS. The Licensee shall consult with CDFG and NMFS with regard to the need to conduct fish rescues in South Cow Creek Main Canal and Cow Creek Forebay. If consultation determines that a fish rescue is required for Cow Creek Canal or Forebay, the Licensee shall target salmonids and lamprey for rescue. Non-native fish, such as golden shiner, will not be rescued. The North Canyon Creek and South Canyon Creek diversions shall be decommissioned after diversions cease (these diversions have been out of service for several years), so that the channels are dry and cannot support fish. If the area is not dry, the Licensee shall conduct fish rescues as described for Kilarc Main Canal and relocate the rescued fish to an area to be determined in consultation with CDFG and NMFS. **PM&E Measure AQUA-8: Retain Fish Screen in South Cow Creek Main Canal** The Licensee shall retain the fish screen in South Cow Creek Main Canal until after any fish rescue, if needed (see PM&E Measure AQUA-7), is complete and the canal is closed off so fish can no longer enter the canal. Once the fish rescue has been accomplished, the Licensee shall close off the head of the canal before the screens are removed.
Impact to flow in Hooten Gulch Fish might be stranded or trapped in isolated pools at Hooten Gulch when the Cow Creek Powerhouse is taken off-line.	Potentially substantial; PM&E measures warranted	**PM&E Measure AQUA-9: Discontinue Cow Creek Powerhouse Operations in Spring** The Licensee shall discontinue Cow Creek Powerhouse operations in the spring when natural flow is present upstream of the powerhouse.
Impact from Gunite Removal and Bank Stabilization in Hooten Gulch Bank stabilization in Hooten Gulch could create potential issues with increased turbidity and contamination from gas, oil and other substances associated with heavy equipment.	Potentially substantial; PM&E measures warranted	**PM&E Measure AQUA-10: Remove Hooten Gulch Gunite and Implement Bank Stability Measures during the Dry Season** The Licensee shall remove the gunite in Hooten Gulch and install any replacement bank stabilization measures during the summer when the gulch is dry.

Table ES-2: Summary of Project Impacts and PM&E Measures

Potential Impact	Evaluation Conclusion	PM&E Measures
Wildlife Resources		
Impacts on Habitat of Foothill Yellow-legged Frog Increases in summer flows may be beneficial to foothill yellow-legged frog breeding habitat in South Cow Creek.	Beneficial Impact	No PM&E measures warranted
Impacts at Penstocks No impacts to wildlife species are expected from work at penstocks.	No Impact	No PM&E measures warranted
Impacts to Upland Habitat Small areas of upland habitat would be temporarily affected by the construction of new access roads, by the improvement of existing roads, and by the decommissioning of canals, flumes, and siphons.	Minor Impact	No PM&E measures warranted
Impacts from Sediment Release Sediment release during removal of the Kilarc Main Canal and South Cow Creek diversion dams could have a short-term negative impact on frogs and turtles if they occur in close proximity to dam sites. **Impacts from Eliminating Backwater Pools** The northwestern pond turtle and other pool-dwelling species might be impacted when backwater pools are eliminated when diversion structures are removed.	Potentially substantial; PM&E measures warranted	**PM&E Measure WILD-1**: **Conduct Pre-Construction Surveys for Amphibians, Pond Turtles and Nesting Birds and Implement Avoidance and Protection Actions for Species Present** The Licensee shall conduct pre-construction surveys for amphibians (foothill yellow-legged frog and California red-legged frog) reptiles (pond turtles), and any other individual at risk prior to construction activities at the diversions, forebays, and powerhouse tailraces, using standard protocols, including USFWS species-specific protocols. The Licensee shall capture and relocate to suitable habitat any individuals of these species observed in the construction area. The Licensee shall install exclusion fencing around the construction area. The Licensee shall have a biological monitor on-call throughout the construction phase to identify and relocate, if necessary, any individual animals found in the construction area. If a California red-legged frog is found, the Licensee shall stop construction work and notify USFWS; construction activity will recommence upon USFWS approval. The Licensee shall conduct pre-construction surveys for nesting birds if vegetation removal is scheduled during the breeding period (generally March 1 - September 1). The Licensee shall use biologists with experience in conducting breeding bird surveys to conduct the surveys. These biologists shall conduct the surveys between dawn and 10 am. If an active nest occupied by a special-status species or by other species protected by the Migratory Bird

Table ES-2: Summary of Project Impacts and PM&E Measures

Potential Impact	Evaluation Conclusion	PM&E Measures
Impacts at Hooten Gulch Seasonal habitat at Hooten Gulch, due to reduced flows, could be affected after decommissioning. **Nesting Bird Impacts** Nesting birds, including raptors, could be impacted by decommissioning activities including noise disturbance and construction lights.		Treaty Act is found, the Licensee shall avoid the area and construction activities shall be restricted to an appropriate distance to avoid nest disturbance until nestlings have fledged. **PM&E Measure WILD-2: Conduct Environmental Training for Construction Personnel** The Licensee shall conduct environmental tailboard sessions with construction personnel to provide information on special-status-species potentially present in the area and the avoidance/minimization measures to be implemented. The Licensee's biological monitor shall be responsible for conducting worker environmental awareness training for all construction personnel (including new, added, and/or replaced workers) prior to the onset of active construction. The training shall include a brief description of the special-status species that potentially occur at the site and distribution of a brochure or pamphlet that describes the species to all workers. Workers shall be instructed to drive carefully and look for amphibians, reptile or mammal in the path of their vehicles. In the event that an amphibian of any species is observed, workers shall stop their equipment immediately until such a time that the onsite biological monitor has identified it, relocated it if necessary or it moves from the active construction area by its own initiative. *Also see PM&E Measure AQUA-9*
Impacts at Forebay Facilities Amphibians and/or turtles might be impacted as the Kilarc and Cow Creek forebay facilities are decommissioned and removed. **Impacts to Raptors** Raptors that forage at the forebays could be impacted when forebays are drained.	Potentially substantial; PM&E measures warranted	**PM&E Measure WILD-3: Conduct Pre-Construction Surveys for Raptors and Implement Avoidance and Protection Actions for Species Present** The Licensee shall conduct pre-construction surveys for raptors at protocol or standard distances (0.5 mile for peregrine falcons, 0.75 mile for goshawk, 660 feet for bald eagle, and 300 feet for other raptors) from the deconstruction area (Call, 1978; Fuller and Mosher, 1987; Cade, et. al., 1996, PBRG 2007, USFWS 2007). For peregrine falcon, the Licensee shall conduct pre-construction surveys no earlier than 14 days prior to start of construction during the protocol survey period (March 15 to August 15). For northern goshawk, the Licensee shall conduct dawn acoustical surveys if the surveys must be done from February to April, or implement intensive search surveys from late June to fall. If goshawks are detected, the Licensee shall conduct a brief search of the detection area during the late incubation or nestling stage to determine the location of an active nest. For bald eagle, the Licensee shall conduct an initial survey from late February through March (Jackman and Jenkins, 2004). If necessary, the Licensee shall conduct additional surveys in mid-nesting

Table ES-2: Summary of Project Impacts and PM&E Measures

Potential Impact	Evaluation Conclusion	PM&E Measures
		season (late April through May) and late in the season (early June to early July). Surveys may be conducted on foot, or with terrestrial vehicles, or aircraft. If an active raptor nest is found within the survey area, the Licensee shall avoid the nest and deconstruction activities shall be restricted to an appropriate distance to avoid nest disturbance until nestlings have fledged. *Also see PM&E Measures WILD-1, WILD-2, and AQUA-9*
Impacts to VELB through Elderberry Shrub Removal Valley elderberry longhorn beetle could be affected by removal or disturbance of elderberry shrubs near South Cow Main Canal.	Potentially substantial; PM&E measures warranted.	**PM&E Measure WILD-4: Conduct Pre-Construction Surveys for Elderberry Shrubs and Implement Existing Mitigation Measures** The Licensee shall conduct protocol pre-construction elderberry surveys within 100 feet of any deconstruction activities that could affect vegetation. If an elderberry shrub with one or more stems greater than 1 inch in diameter could be directly or indirectly affected by the activities, the measures provided in the Biological Opinion covering the Licensee's service area in the range of the VELB (USFWS, 2003) shall be implemented. *Also see PM&E Measure WILD-2*
Impacts to Bats Bats may be impacted if they use Project tunnels or the Kilarc and Cow Creek Powerhouses for roosting habitat.	Potentially substantial; PM&E measures warranted	**PM&E Measure WILD-5: Conduct Pre-Construction Surveys for Bats** If deconstruction activities are initiated between March 1 and September 30, the Licensee shall conduct pre-construction surveys for bats at the tunnels and powerhouses. For the surveys, during the day, the Licensee shall search these facilities for bats or bat sign such as guano, staining, and culled insect parts. Internal surveys shall consist of surveying the interiors of tunnels and powerhouses. External surveys shall consist of surveying the external features of structures that could be used for roosting. Nighttime surveys in or near the facilities shall consist of counting bats as they exit to forage in the evening, assessing use of facilities to roost in at night, and acoustic monitoring with ultrasonic equipment in conjunction with computer software and visual observation. At its discretion, the Licensee may conduct limited capture of bats using nets to facilitate species identification (captures shall be conducted by a qualified bat biologist). If deconstruction activities occur between October 1 and February 28 (non-breeding season) the Licensee shall not be required to conduct pre-construction surveys for bats unless existing facilities with known (previously documented through monitoring surveys or historic observations) or potential hibernation roost sites will be disturbed. **PM&E Measure WILD-6: Exclude Wildlife from Tunnels** The Licensee shall seal off Project tunnels at both ends for public safety, which will exclude wildlife (i.e., bats) from entry or habitation. The Licensee shall verify that the tunnels are uninhabited through pre-construction surveys (see PM&E Measure WILD-5). If bats are

Table ES-2: Summary of Project Impacts and PM&E Measures

Potential Impact	Evaluation Conclusion	PM&E Measures
		present, the Licensee shall install one-way exclusion devices prior to the breeding season before construction begins, in order to allow bats to leave the tunnels, but not return. The exclusion devices shall be placed at all active entry points and shall remain in place for at least five to seven days. These devices shall be removed after the bats are excluded, and then exclusion points shall be sealed (BCI, 2008). *Also see PM&E Measure WILD-2*
Nesting Bird Impacts from Roads Nesting birds could be impacted by the construction of new access roads and improvement of existing roads.	Potentially substantial; PM&E measures warranted	*Implement PM&E Measures WILD-1, WILD-2, and WILD-3*
Impacts to the Pacific Fisher Pacific fisher could be directly affected by traffic related decommissioning activities.	Potentially substantial; PM&E measures warranted	**PM&E Measure WILD-7: Speed Limit on FERC Project and Temporary Access Roads** The Licensee shall implement a speed limit of 15 miles per hour on FERC Project roads and temporary access roads while decommissioning activities are conducted. *Also see PM&E Measure WILD-2*
Botanical Resources		
Habitat Impacts along Penstocks Kilarc and Cow Creek penstocks would be left in place. Impacts to habitat along the penstocks would be avoided	No Impact	No PM&E measures warranted
Vegetation Impacts from Penstocks Plugging the ends of the Kilarc and Cow Creek penstocks would result in temporary loss of small areas of vegetation.	Minor Impact	No PM&E measures warranted
Impacts to Wetland Vegetation Removal of the North Canyon Creek Canal would not affect the function of the upslope riparian wetland and only limited effects to wetland vegetation are expected at canals, tunnels, flumes, and/or siphons in the Kilarc and Cow Creek developments.	Minor Impact	**PM&E Measure BOTA-1: Prepare and Implement a Mitigation and Monitoring Plan (MMP)** The Licensee shall prepare and implement an MMP for impacts to riparian and wetland vegetation as part of the permitting process. The MMP shall be developed in consultation with the USACE, CDFG, and SWRCB. The Licensee's MMP shall include mitigation areas (e.g., South Cow Creek Diversion Dam, Kilarc and Cow Creek forebays), goals, the species to be assessed, as well as methods and performance criteria in the MMP. Riparian and wetland vegetation requiring restoration or mitigation shall be monitored by the Licensee under FERC's authority for two years following decommissioning.

Table ES-2: Summary of Project Impacts and PM&E Measures

Potential Impact	Evaluation Conclusion	PM&E Measures
		The Licensee shall include restoration of abandoned or temporary roadbeds as part of the MMP, including compaction issues, seeding, mulching, and planting, and shall develop the MMP in consultation with the private landowners, where appropriate. The Licensee shall re-seed other disturbed areas, including temporary work areas, filled and graded areas, and roads requiring rehabilitation, and consult with private landowners, where appropriate. If straw is used for temporary erosion control, it shall be certified weed-free. Native plants shall be used for re-seeding and other revegetation on the Licensee's property, and on private property unless the private landowner specifies the use of other materials. If the use of native seed is intended, but sufficient supplies are not available, then cereal seed shall be used for temporary erosion control. Cereal seed used for erosion control shall be seed for sterile cereal, if available. If seed for sterile cereal is not available, then other cereal seed may be used.
Impacts to Vegetation from Decommissioning Features Temporary loss of vegetation may occur when features are decommissioned, including forebays, canals, and diversions.	Minor Impact	No PM&E measures warranted
Impacts to Vegetation from Road Construction Construction of new access roads and/or the improvement of existing roads would impact limited areas of vegetation.	Minor Impact	*Implement PM&E Measure BOTA-1.*
Wetland and Small Seep Impacts Potential, but not substantial, impacts may occur at small seeps and wetlands	Minor Impact	**PM&E Measure BOTA-2: Conduct Pre-Construction Surveys** The Licensee shall conduct pre-construction surveys for special-status plants in all areas that will be disturbed by decommissioning activities. *Also see PM&E Measure BOTA-1.*
Potential Loss of Special-status Species Unavoidable impacts would occur to the population of mountain lady's slipper located on the Kilarc Main Canal.	Potentially substantial; PM&E measures warranted	**PM&E Measure BOTA-3: Avoid Special-Status Plants to the Extent Possible and Restore Habitat Conditions** The Licensee shall avoid any identified populations of special-status plants to the extent practical. If decommissioning activities will result in temporary disturbance to part of a population, the Licensee shall stockpile the top 10 inches of soil from the disturbed area, protect the soil from exposure to weed seeds, and replace the soil when the decommissioning activities are complete.

Table ES-2: Summary of Project Impacts and PM&E Measures

Potential Impact	Evaluation Conclusion	PM&E Measures
The population of big-scale balsamroot located adjacent to the access road in the Cow Creek Development could be affected. Impacts could potentially occur to other special status plant species if any emerge in the disturbance area prior to construction.		*Also see PM&E Measures BOTA-1 and BOTA-2.*
Historical Resources		
Impacts to NRHP- and CRHR-eligible Buildings Decommissioning activities could cause a substantial adverse change in the significance of NRHP- and CRHR-eligible buildings due to the long term deterioration, fire or vandalism.	Potentially substantial; PM&E measures warranted	**PM&E Measure HIST-1: Documentation** The Licensee shall prepare an MOA to address the unanticipated discovery of human remains and the long-term management and treatment of the architecturally and historically significant powerhouses. As will be stipulated in the MOA, the Licensee shall prepare photographic, architectural and written documentation that meets HABS and HAER standards prior to commencing decommissioning activities. **PM&E Measure HIST-2: Securing Buildings** The Licensee shall secure the two powerhouse structures from unwanted entry, provide adequate ventilation to the interiors, shut down or modify the existing utilities and mechanical systems, and employ maintenance and monitoring measures for the buildings.
Archaeological Resources		
Impacts to Five Identified Archaeological Resources Adverse changes could be caused in the integrity of the five identified archaeological resources that have not been evaluated for NRHP- or CRHR-eligibility.	Potentially substantial; PM&E measures warranted	**PM&E Measure ARCH-1: Archaeological Resources Summary** The Licensee shall avoid all ground disturbing activities in the vicinity of the five archaeological sites. A qualified Licensee or consulting archaeologist shall monitor Project activities if they occur within 50 feet of these identified resources. If the Licensee cannot avoid ground disturbing activities at or near the five sites, the Licensee shall conduct formal evaluations of the sites' eligibility for listing in the NRHP and CRHR.
Impacts to other Archaeological Resources Archaeological materials, including buried historic features and Native American archaeological materials, may potentially be disturbed.	Potentially substantial; PM&E measures warranted	**PM&E Measure ARCH-2: Unanticipated Archaeological Sites** If archaeological resources are accidentally disturbed during decommissioning activities, the Licensee shall stop all work within the immediate vicinity until a qualified Licensee or consulting archaeologist can evaluate the discovery and provide recommendations, if an archaeological monitor is not already present. Table E.4.9-1 summarizes recommendations for archeological resources identified within the APE.

Table ES-2: Summary of Project Impacts and PM&E Measures

Potential Impact	Evaluation Conclusion	PM&E Measures
Impacts to Human Remains Potential disturbances of human remains might occur during decommissioning activities.	Potentially substantial; PM&E measures warranted	**PM&E Measure ARCH-3: Encountering Human Remains** If human remains are encountered as a result of decommissioning activities, the Licensee shall stop all work in the vicinity and immediately contact the County Coroner. In addition, a qualified Licensee or consulting archaeologist shall be contacted immediately to evaluate the discovery, if a monitor is not already present. If the human remains are Native American in origin, then the Licensee shall request that the Coroner notify the NAHC within 24 hours of this identification.
Recreation		
Impacts to Recreational Resources Regional recreational resources at the Kilarc Forebay and Day Use Area and Kilarc Powerhouse would be minimally impacted after decommissioning.	Minor Impact	No PM&E measures warranted
Aesthetics		
Impacts to Forebay Area Returning Kilarc Forebay to its natural condition would improve the natural aesthetics of the forebay area.	Beneficial Impact	No PM&E measures warranted
Scenic Resources Impacts No scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings would be damaged within a scenic route or highway.	No Impact	No PM&E measures warranted
Impacts to Visual Character or Quality Existing visual character or quality could be minimally degraded at the Kilarc Forebay site and its surrounding.	Minor Impact	No PM&E measures warranted

Table ES-2: Summary of Project Impacts and PM&E Measures

Potential Impact	Evaluation Conclusion	PM&E Measures
Land Use		
Policy and Regulation Impacts Decommissioning would cause no conflicts with any land management or land ownership policies or regulations.	No Impact	No PM&E measures warranted
Wildland Fire Risk Impacts The use of construction equipment and temporary onsite storage of diesel fuel could pose a wildland fire risk and conflict with the Fire and Resource Assessment Program.	Potentially substantial; PM&E measures warranted	**PM&E Measure FIRE-1: Spark Arrestors** The Licensee shall equip earthmoving and portable equipment with internal combustion engines with a spark arrestor to reduce the potential for igniting a wildland fire. **PM&E Measure FIRE-2: Fire Suppression Equipment** The Licensee shall maintain appropriate fire suppression equipment during the highest fire danger period – from April 1 to December 1. **PM&E Measure FIRE-3: Flammable Materials** On days when a burning permit is required, the Licensee shall remove flammable materials to a distance of 10 feet from any equipment that could produce a spark, fire, or flame, and the Licensee shall maintain the appropriate fire suppression equipment. **PM&E Measure FIRE-4: Portable Gas-Powered Tools** On days when a burning permit is required, the Licensee shall not use portable tools powered by gasoline fueled internal combustion engines within 25 feet of any flammable materials.

Notes:
BMPs = Best Management Practices
CDFG = California Department of Fish and Game
CRHR = California Register of Historic Resources
HABS = Historic American Building Survey
HAER = Historic American Engineering Record
MMP = Mitigation Monitoring Plan
MOA = Memorandum of Agreement
NMFS = National Marine Fisheries Service
NRHP = National Register of Historic Places
PM&E = Protection, Mitigation and Enhancement (measures)
RWQCB-CVR = Regional Water Quality Control Board
SWRCB = (California) State Water Resources Control Board
USACE = U.S. Army Corps of Engineers
USDA-FS = U.S. Department of Agriculture, Forest Service
USFWS = U.S. Fish and Wildlife Service
VELB = Valley elderberry longhorn beetle