

RECLAMATION

Managing Water in the West

FINDING OF NO SIGNIFICANT IMPACT

Stanislaus Afterbay Dam Removal Project

Calaveras and Tuolumne Counties, California

CCAO-FONSI-11-7

Recommended by:

Patti Clinton

Date: 2/1/2012

Patti Clinton
Natural Resources Specialist
Central California Area Office

Concurred by:

Melissa Vignau

Date: 2/1/2012

Melissa Vignau
Chief, Resources Management Division
Central California Area Office

Approved by:

Michael R Finnegan

Date: 2/1/2012

Michael R Finnegan
Area Manager
Central California Area Office



U.S. Department of the Interior
Bureau of Reclamation
Central California Area Office

August 2011

In accordance with section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969, as amended, the Mid-Pacific Region of the Bureau of Reclamation (Reclamation) finds that the Stanislaus Afterbay Dam Removal project is not a major federal action that will significantly affect the quality of the human environment and an environmental impact statement is not required. This Finding of No Significant Impact (FONSI) is supported by Reclamation's Environmental Assessment (EA) for the "Stanislaus Afterbay Dam Removal" and is hereby incorporated by reference.

Background

The dam is part of the Spring Gap-Stanislaus Project, Federal Energy Regulatory Commission (FERC) No. 2130 (FERC Final Environmental Impact State Stanislaus River Projects, Office of Energy Projects FERC/FEIS - 0171F, 2005) a power and water supply project owned and operated by Pacific Gas & Electric Company (PG&E). The dam is located on the main stem of the Stanislaus River.

The proposed action is to demolish and remove the dam in a controlled manner that is protective of the environment and human health and safety, and will comply with applicable permits and regulatory requirements. A construction contractor will demolish and remove all timber, steel and concrete buttresses. The dam foundation will be removed to the elevation of the downstream riverbed substrate at a time when streamflow is sufficiently low to allow equipment access, maintain construction worker and public safety, and control hydrology and water quality. PG&E proposes to complete the dam removal by conducting the following tasks:

- Remove the timber facing and steel buttresses.
- Remove the concrete wing walls and regrade the river banks with native soil to match flush with adjacent ground (down to elevation 1,003.5 feet).
- Excavate the riverbed materials accumulated in front (upstream) of the dam as necessary to expose the existing structural concrete dam foundation and remove the foundation to an elevation flush with the riverbed substrate (primarily gravel and cobble [approximate elevation of 993 feet]).
- Remove the top section of the concrete center gravity section (elevation 1,013 feet) to the riverbed elevation (elevation 1,003.5 feet), leaving the existing large rock feature exposed.
- Remove the existing concrete slab foundation to an elevation flush with the existing riverbed.
- Haul and dispose of or recycle the riverbed substrate, timber, steel, concrete and other debris.
- Restore the site to preconstruction conditions, including removing the temporary access road, restoring disturbed areas to preconstruction elevations and restoring native vegetation.

The purpose of the proposed action is to remove the dam to protect public safety. The dam no longer fulfills its intended function and has been abandoned in place. In compliance with Article

302 of the Spring Gap – Stanislaus Project’s operating license, PG&E will remove the dam to enhance public safety and improve the aesthetic character of the watershed as well as to increase fish passage and accessibility for recreation.

The final schedule and construction depend on PG&E obtaining flow management agreements with upstream FERC licensees, as well as acquisition of regulatory approvals and permits. PG&E’s preferred flow level to complete the dam removal efficiently and with the least environmental effects is 300 to 400 cubic feet per second (cfs) or less. The Proposed action may be deferred to 2012 or later when agreements have been implemented and low streamflow levels minimize biological and water quality impacts and are safe for construction.

Findings

An EA was prepared to disclose potential environmental impacts, which are summarized below. A number of protective measures have been incorporated into the proposed action that will minimize environmental impacts, avoid impacts, or further reduce impacts to the extent possible.

Air Quality

Air quality impacts will be intermittent and short term. Emissions will be generated by the construction equipment used to remove dam components, vehicles traveling to and from the site, and other construction equipment (e.g., generators). The contractor will minimize generation of dust from breaking up concrete by spraying water on the work area.

Tailpipe emissions from diesel-fueled demolition equipment, heavy-duty trucks, and other diesel and gas-fueled equipment (e.g., generators and pumps) will result in temporary increases of PM₁₀ and ozone precursor concentrations in ambient air. Diesel exhaust from heavy equipment could accumulate in the area; however, winds and exhaust velocities and temperatures will augment dispersal of pollutants in tailpipe emissions. Ground-level concentrations of pollutants near the construction site will have only minor, short-term impacts on air quality.

Construction vehicles and equipment will also generate greenhouse gases (GHG). The total GHG emissions associated with the proposed action were estimated at 404 metric tons of CO₂-equivalent based on the construction schedule and the types of equipment and fuels needed for construction. GHG emissions will also be minor, short-term and well below the Council on Environmental Quality’s threshold of 25,000 metric tons per year, above which a quantitative evaluation of carbon emissions is recommended.

Biological Resources

Construction would have short-term effects on waters of the U.S., riparian habitat, and open water habitat. However, removal of the dam will have long-term beneficial impact on these resources by restoring natural conditions. Dam removal will have beneficial effects on fish passage and habitat.

Dam removal will have no direct or indirect impact on any of the threatened or endangered species potentially occurring in the region. The dam removal will also have no impact on habitat for any of these species because no suitable habitat for these species exists at or near the project

area. Reclamation determined that the proposed action will have “no effect” on the valley elderberry longhorn beetle, California red-legged frog, fisher, or California tiger salamander.

Surface Water

Short-term adverse impacts on water quality will be minor. Water quality impacts may include redistribution and deposition of materials downstream as the river’s hydrology and geomorphology equilibrate following the dam’s removal. Impacts from erosion will be minimized by installing stormwater best management practices (BMP). The proposed action will have a local beneficial effect on surface-water hydrology. Dam removal will eliminate impoundment of water that occurs during part of the year. The river’s hydrologic and geomorphic process will return to a more natural condition.

Groundwater

The proposed action will have the potential to result in minor, local adverse groundwater impacts. Construction activities on site will have a limited potential to affect groundwater resources adjacent to the river. Accidental release of oil or gas used in construction equipment could affect shallow groundwater; however, any risk of groundwater contamination will be minor because of the small quantities of fuel that will be kept on site and the limited number of vehicles required. Risks of contamination will be minimized through implementation of pollution prevention BMPs. Because no groundwater supply wells are located in the general vicinity, no groundwater supplies will be affected. Therefore, groundwater impacts from the proposed action will be minor.

Cultural and Historic Resources

A cultural resources inventory to identify historic properties (cultural resources eligible for listing on the National Register of Historic Places) was completed for this proposed action. The cultural resources investigation included a records search, Tribal consultation, and pedestrian surveys. Two historic properties and one NRHP Archaeological District were identified within the project area: the New Melones Archaeological District (NMAD), Camp Nine town site and old powerhouse (CA-TUO-665H), and Camp Nine Road (CA-CAL-1872H). PG&E evaluated the dam and determined that it was not eligible for listing on the NRHP. The historic features associated with these historic properties will be avoided by project design; therefore, the proposed action will result in no adverse effects to historic properties. Since no historic properties will be affected, no cultural resources will be impacted as a result of implementing the proposed action.

Reclamation consulted with the California State Historic Preservation Officer (SHPO) on July 20, 2011 regarding this determination. Reclamation received the SHPO letter of concurrence dated August 10, 2011. SHPO concurred with Reclamations’ determination and findings on August 10, 2011.

Indian Trust Assets

Reclamation determined that the nearest Indian Trust Assets (ITA) is Tuolumne Reservation, located approximately 13 miles southeast of the project site. Therefore, implementation of the proposed action will have no impact on ITA.

Environmental Justice

There will be no disproportionate impact on minority populations. Similarly, there will be no disproportionate impact on populations with incomes below the poverty level. Therefore, implementation of the proposed action will not affect minority or low-income populations disproportionately.

Health and Safety

Health and safety effects from the proposed action will include a relatively low risk to construction workers from industrial accidents. A slight increase in risk of traffic accidents will occur for the public during the anticipated construction period (specifically during times of heavier vehicle traffic, such as when demolition debris is transported to off-site facilities) and a negligible increase during field operations. Adherence to relevant safety regulations of the Occupational Safety and Health Administration, Reclamation, and the California Occupational Safety and Health Regulations will reduce the probability of construction accidents. The presence of large equipment during demolition, and movement of large, heavy pieces of the dam that will require removal, will represent risks to worker health and safety. However, risks to workers during dam removal will be short term and minor given compliance with regulations and worker training. Leaving the dam in place in its current condition, however, may cause loss of life, serious injury and damage to boats used for recreation in the waterway. Removing the dam will eliminate public health and safety concerns regarding dam failure for recreational users downstream of the dam.

Land Use

Short-term, temporary disruptions may occur to recreational activities near the site. However, once the dam has been removed, there will be no hazard to boating activities associated with the submerged dam from high streamflow conditions. Thus the proposed action will have a beneficial impact on recreation and land use by eliminating a public safety hazard.

Socioeconomics

The proposed action will have a minor beneficial effect on the economies of Calaveras and Tuolumne counties during construction. Construction expenditures on equipment and supplies and services from local area vendors will result in some minor, short-term economic benefits.

The proposed action will not have any direct growth-inducing effects. The majority of construction workers will likely temporarily relocate from larger population centers outside these counties or will be available within the two counties; therefore, the proposed action will not result in local or regional population impacts, or demand for new permanent housing or community services. Implementation of the proposed action will have short-term beneficial economic effects and no long-term socioeconomic effects.

Soils and Geology

Short-term impacts on soils located in the equipment staging areas, as well as on the river banks will include increased risk of erosion due to vegetation removal caused by the use of heavy equipment and use of gravel surfacing. To minimize soil impacts, soil disturbance and grading will be minimized. Regrading of the slopes surrounding the river channel will be completed during site restoration and stabilization, as necessary. Soil erosion BMPs will minimize soil

erosion and any impacts will be minor and short term. Long-term impacts on geologic and soil resources will be beneficial as a result of creating a more natural distribution of riverbed substrate within the Stanislaus River channel.

Traffic

The proposed action will increase traffic volumes on Camp Nine Road, Parrotts Ferry Road, State Highway 4 at Vallecito and State Highway 49 (between Angels Camp and the Carson Hill Rock Quarry) during dam removal activities. These increases will result from movement of construction-related workers, equipment and materials to and from the site for dam removal and the transport of dam debris to off-site solid waste landfill or recycling facilities.

Construction-related traffic will not conflict with existing traffic or existing uses. Measures will be taken to control traffic during demolition, such as scheduling truck traffic to avoid commuting periods. There will be a very small increase in the traffic levels on State Highway 4, State Route 49 and Parrotts Ferry Road. The increase in traffic levels occurring at any one time will not exceed road capacity. Therefore, any effects from implementation of the proposed action will be minor and short term, returning to pre-construction levels once demolition and waste removal are complete.

Noise

The proposed action will generate noise at the dam removal site, as well as on the construction access roads. Demolition will include nighttime work; however, truck traffic noise will only occur between 7:00 a.m. and 6:00 p.m. Because of the dam's remote location, any noise impacts associated with dam and substrate removal will be minor. Truck traffic on Camp Nine Road will result in increased noise for adjacent residential receptors; however, predicted time-integrated noise levels will not exceed Calaveras County's daytime noise thresholds. Trucks will depart the dam site in groups several times per day during off peak times to shorten the duration of truck noise. Therefore, any noise impacts associated with the increased construction traffic will be of short duration, condensed into two to four incidences per day when haul trucks leave the site, and below established noise thresholds. Vibration impacts will also be of short duration and below Federal Transportation Administration thresholds and therefore minor.

Visual Resources

The proposed action will consist of the short-term visual intrusion from demolition and removal activities, including constructing a temporary access road, removing the timber facing and steel buttresses, excavating riverbed substrate, hauling and disposing of debris, and restoring the banks to preconstruction conditions. The impacts from dam demolition and removal will also include the visual intrusion of vehicles and equipment. This activity will result in a local, short-term, minor, adverse effect on scenic resources in the viewshed of the dam.

The deteriorating condition of the dam detracts from views of the natural landscape. Removal of the existing dam will result in a local, long-term beneficial effect on scenic resources in the affected viewshed by returning the project area to a more natural condition.

Wildfire

Demolition activities will introduce several potential ignition sources to the site, including cutting torches and equipment. The possibility of igniting a wildfire on site will be temporarily increased under the proposed action. However, the overall potential for a substantial wildfire

during demolition will be low because the contractor will supply fire suppression equipment and shut-off devices. The contractor will also adopt a no-smoking policy. Risks to the public will be minimal because of the limited public use of the area. Given the remote location, limited vegetation, season and availability of fire-fighting equipment, any risk of wildfire will be minor and short term.

Waste Management

The proposed action will not generate hazardous waste. Solid waste disposal impacts for the 1,000 cubic yards of excavated material as well as the concrete, wood and steel portions of the dam will be minimized by recycling. The dam does not contain hazardous building materials such as lead or asbestos. The only hazardous waste that may be generated during demolition is slag (from any torch cutting), which will be containerized for off-site disposal. Through maximizing recycling and proper disposal of minor quantities of construction-generated hazardous waste, the proposed action will not have substantial adverse effects on waste management.

Cumulative Effects

No individually or cumulatively significant impacts were identified for the proposed action. Because of the dam's isolated location, any cumulative impacts on air quality, wildlife, cultural resources, soils, noise or traffic will be inconsequential. Considered together with the recent removal of the Old Camp Nine Bridge, the proposed action will result in long-term beneficial cumulative impacts on fish migration and habitat, geomorphology, public health and safety, land use, recreation, socioeconomics, and visual quality.

Permitting

Prior to construction, PG&E will obtain the following regulatory and agency approvals and permits:

- Clean Water Act Section 404, Nationwide Permit Nos. 27 and 33 from the United States Army Corp of Engineers (USACE).
- Lake and Streambed Alteration Agreement (Section 1601) from the California Department of Fish and Game.
- 401 Water Quality Certification from the State Water Resources Control Board (SWRCB). (The SWRCB has already issued the Water Quality Certification for this project pursuant to Section 401 of the Clean Water Act as part of its CEQA review for relicensing Spring Gap – Stanislaus Project.)
- Construction General Permit for stormwater discharges from the State Water Resources Control Board.
- FERC approval of the sequence of activities, plans and specifications; Public Safety Plan; Waste Disposal Plan; Soil Erosion and Sediment Control Plan; and Quality Control and Inspection Program.
- Reclamation's concurrence with the proposed action description.
- Section 106 NHPA SHPO concurrence.

Environmental Commitments

PG&E will implement avoidance and minimization measures to reduce or eliminate potential minor adverse construction impacts. These measures are beyond the design features incorporated

into the proposed action, such as conducting the removal at low streamflow. These measures are summarized below.

Air Quality

Fugitive dust control measures will be installed in compliance with the Stormwater Pollution Prevention Plan (SWPPP).

Biological Resources

After placing the water-fill diversion dams, and before and during dewatering, a qualified biologist will capture any stranded fish with dip nets and move them to an area downstream of the dam. Workers will be trained regarding the potential presence of special-status species and how to move fish to downstream areas, if encountered. The area used for the temporary access road from the spur road to the riverbed will be restored to preconstruction conditions. Native trees and shrubs will be flagged and avoided to the extent practicable, trimmed back as needed, and removed, if necessary. Portions of removed willow trees will be salvaged to make willow stakes to re-establish the species in disturbed areas. To prevent the introduction of non-native species, construction equipment will be cleaned prior to mobilization to the site. Disturbed areas will be reseeded with a certified weed-free native seed mix, and willow stakes will be used to re-establish trees in the disturbed riparian areas.

Surface Water

The contractor will install stormwater and fugitive dust control BMPs, according to the SWPPP, to minimize erosion and protect water quality. The only regrading required will be on the river banks in the area occupied by the wing walls. This area will be restored to its original grade and revegetated consistent with the SWPPP to minimize potential erosion.

A silt curtain and oil containment boom will be installed downstream of the dam prior to construction to minimize migration of any turbidity or fuel leaks from construction equipment. Any surface water or extracted groundwater from above the dam will be diverted to a sedimentation pond, treated at the site using a sand filter to meet regulatory standards, and released to the downstream side of the dam. Flows discharged to the downstream side of the dam will be dissipated using riprap gathered on site to minimize turbidity according to action-specific permit conditions.

Cultural and Historic Resources

To ensure protection of existing cultural resources, PG&E cultural resources specialists or a qualified archaeological consultant will train construction crews prior to initiating construction to ensure avoidance of cultural resources and respond appropriately in the event of an unanticipated discovery. The contractor will avoid impacts on the hand-laid rock walls associated with the former Old Camp Nine Bridge. This area will be fenced, marked on the construction drawings and avoided during dam removal.

Health and Safety

Access by recreationists who may boat or walk into the construction area will be controlled by posting signs upstream and downstream of the dam, depending on lake elevation and the level of public use of the area at the time of the demolition.

Safety “tailgate” meetings will be held at the start of each workday to discuss potential hazards that might be encountered for that day and lessons learned from previous days. A site specific Health and Safety Plan (HASP) will be developed and all workers will be required to read and acknowledge their understanding of the HASP.

Workers will be protected with air-purifying respirators or supplied air respirators in accordance with the HASP when performing torch cutting and waste collection activities that could result in exposure to toxic fumes. When heavy equipment is used to move large structures, alarms will be sounded to ensure that all workers vacate these areas and move to designated safe areas.

Traffic

Signage regarding truck traffic will be placed on Camp Nine Road and a Traffic Control Plan will be prepared to facilitate trucking of excavated materials and debris. On-site traffic will be limited to the dam and construction storage areas.

During the demolition period, warning signs will be posted near the site access road and any staging areas to alert passing traffic of demolition activities and associated traffic. During material hauling, a sentry or flagger will be placed at the bridge near the job site and at the intersection of Camp 9 Road and Parrot’s Ferry Road to alert oncoming traffic.

Waste Management

Any fine-grained material remaining in the sedimentation pond, as well as the sand filter medium will be disposed offsite.

Fire Prevention

The contractor will provide fire suppression equipment and shutdown devices to work crews and a no smoking policy will be implemented to minimize fire risk.

Site preparation and construction will not take place during the normal fire season. Further, conditions adjacent to the site are not conducive to fire. However, the contractor will prepare a Fire Prevention Plan for validation by the local fire control agency. During dam removal, potential sources of fire will include construction vehicles and sparks. Separation of steel, wood and concrete components may require torches and saws. The construction contractor will provide fire suppression equipment and shutdown devices, and a no smoking policy will be implemented during construction to minimize fire risk.

The work will be conducted so that potential sources of ignition (e.g., hot surfaces and/or exhaust vents from equipment, tools, vehicles and other sources) do not contact potentially combustible materials (e.g., dry vegetation, combustible demolition debris and other on-site flammable materials). Smoking on site will be restricted to a designated area. Fire extinguishers will be installed in all areas with potential sources of ignition. Because the site is located next to a river, a sump pump equipped with a fire hose with an adequate extension will be available to be used as the primary fire suppression and control equipment. During fire hazard conditions, workers will use fire-proof blankets and work areas will be sprayed with water to minimize fire hazards. Prior to mobilization, the contractor will train crews in fire prevention, and construction crews and vehicles will have the following equipment:

- One shovel, one axe and one or more UL-rated 4BC extinguisher on each pickup truck, crew truck and personal vehicle.
- One shovel with each tractor, backhoe or other heavy equipment.
- One shovel and one five-gallon water-filled backpack pump with each welder.
- One shovel and one fully charged chemical fire extinguisher at a point not greater than 25 feet from the work site for each gasoline-powered tool, including chain saws and rock drills. Fire extinguishers will be of the type and size set forth in the California Public Resources Code, Section 4431 and the California Administrative Code, Title 14, Section 1234.
- Shovels will be a type “O,” with an overall length of not less than 46 inches. Axes or pulaskis will have a 2.5-pound or larger head and an overall length of not less than 28 inches.

Hazardous Material Management

PG&E will maintain material safety data sheets for all substances (e.g., fuels, hydraulic fluids) used on site and at the job headquarters in Angels Camp, as required by the Hazard Communication Law, General Industry Safety Orders, Sec. 5194. Hazardous wastes, such as grease cartridges and oil absorbents, will be placed in proper containers and transported from the site to an authorized hazardous waste collection site.

Trucks and equipment will be refueled as required from 110-gallon-capacity diesel tanks carried in the back of pickup trucks or from a lube truck that will visit the site daily. Fuel transfer areas will be protected (e.g., 10 mil plastic buried below 4 inches of soil). No fuel storage tanks will be placed on site.

Stanislaus Afterbay Dam Removal

Environmental Assessment



Stanislaus Afterbay Dam Removal

Environmental Assessment

Mission Statement

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.



U.S. Department of the Interior
Bureau of Reclamation

August 2011

Table of Contents

	Page
Acronyms and Abbreviations	vii
Chapter 1 – Purpose and Need for Action	1
1.1 Introduction	1
1.2 Background	1
1.3 Description of Existing Facility	5
1.4 Purpose and Need	5
1.5 Proposed Action Overview	7
1.6 Previous Documents Incorporated by Reference	8
Chapter 2 – Alternatives	10
2.1 No Action Alternative	10
2.2 Proposed Action Alternative (Dam Removal)	10
2.2.1 Site Access and Access Control	11
2.2.2 Mobilization and Site Preparation	12
2.2.3 In-Stream Work (River Left)	14
2.2.4 In-Stream Work (River Right)	16
2.2.5 Site Restoration and Demobilization	18
2.2.6 Riverbed Substrate and Dam Debris Disposal	18
2.2.7 Construction Equipment	20
2.2.8 Demolition Schedule and Hours	21
2.3 Alternatives Considered and Eliminated from Detailed Analysis	23
2.3.1 Dam Removal to the Subsurface Foundation	23
2.3.2 Removal Using Explosives	23
2.3.3 Partial Dam Removal	23
Chapter 3 – Affected Environment and Environmental Consequences	25
3.1 Regional Setting	25
3.2 Environmental Assessment Methodology	26
3.3 Summary of Impacts	27
3.4 Air Quality	29
3.4.1 Affected Environment	29
3.4.2 Environmental Consequences	30
3.4.2.1 No Action Alternative	30
3.4.2.2 Proposed Action Alternative	30
3.5 Biological Resources	32
3.5.1 Federal- and State-Regulated Waters and Wetlands	33

Table of Contents

3.5.1.1	Affected Environment	33
3.5.1.2	Environmental Consequences	33
3.5.2	Vegetation	34
3.5.2.1	Affected Environment	34
3.5.2.2	Environmental Consequences	39
3.5.3	Wildlife	41
3.5.3.1	Affected Environment	41
3.5.3.2	Environmental Consequences	48
3.5.4	Fisheries	50
3.5.4.1	Affected Environment	50
3.5.4.2	Environmental Consequences	52
3.6	Surface Water	54
3.6.1	Affected Environment	54
3.6.1.1	Water Quality	56
3.6.1.2	Geomorphology	57
3.6.2	Environmental Consequences	58
3.6.2.1	No Action Alternative	58
3.6.2.2	Proposed Action Alternative	59
3.7	Groundwater	61
3.7.1	Affected Environment	61
3.7.2	Environmental Consequences	62
3.7.2.1	No Action Alternative	62
3.7.2.2	Proposed Action Alternative	62
3.8	Cultural and Historic Resources	62
3.8.1	Affected Environment	63
3.8.1.1	Ethnographic Background	63
3.8.1.2	Prehistory and History	64
3.8.1.3	Previous Studies	65
3.8.1.4	Field Survey	66
3.8.1.5	Coordination and Consultation	67
3.8.2	Environmental Consequences	69
3.8.2.1	No Action Alternative	69
3.8.2.1	Proposed Action Alternative	70
3.9	Indian Trust Assets	71
3.9.1	Affected Environment	71
3.9.2	Environmental Consequences	72
3.9.2.1	No Action Alternative	72
3.9.2.2	Proposed Action Alternative	72

3.10	Environmental Justice	73
3.10.1	Affected Environment	73
3.10.2	Environmental Consequences	74
3.10.2.1	No Action Alternative	74
3.10.2.2	Proposed Action Alternative	75
3.11	Health and Safety	75
3.11.1	Affected Environment	75
3.11.2	Environmental Consequences	76
3.11.2.1	No Action Alternative	76
3.11.2.2	Proposed Action Alternative	76
3.12	Land Use	77
3.12.1	Affected Environment	77
3.12.2	Environmental Consequences	78
3.12.2.1	No Action Alternative	78
3.12.2.2	Proposed Action Alternative	78
3.13	Socioeconomics	79
3.13.1	Affected Environment	79
3.13.2	Environmental Consequences	80
3.13.2.1	No Action Alternative	80
3.13.2.2	Proposed Action Alternative	81
3.14	Soils and Geology	81
3.14.1	Affected Environment	81
3.14.2	Environmental Consequences	83
3.14.2.1	No Action Alternative	83
3.14.2.2	Proposed Action Alternative	84
3.15	Traffic	84
3.15.1	Affected Environment	84
3.15.2	Environmental Consequences	86
3.15.2.1	No Action Alternative	86
3.15.2.2	Proposed Action	87
3.16	Noise	88
3.16.1	Affected Environment	88
3.16.2	Environmental Consequences	89
3.16.2.1	No Action	89
3.16.2.2	Proposed Action	90
3.17	Visual Resources	92
3.17.1	Affected Environment	92
3.17.2	Environmental Consequences	93

Table of Contents

3.17.2.1	No Action Alternative	93
3.17.2.2	Proposed Action Alternative	93
3.18	Wildfire	94
3.18.1	Affected Environment	94
3.18.2	Environmental Consequences	94
3.18.2.1	No Action Alternative	94
3.18.2.2	Proposed Action Alternative	95
3.19	Waste Management	95
3.19.1	Affected Environment	95
3.19.2	Environmental Consequences	97
3.19.2.1	No Action Alternative	97
3.19.2.2	Proposed Action Alternative	97
3.20	Cumulative Effects	98
3.20.1	Air Quality	99
3.20.2	Biological Resources	99
3.20.3	Cultural and Historic Resources	100
3.20.4	Health and Safety	101
3.20.5	Land Use	101
3.20.6	Noise	102
3.20.7	Socioeconomics	102
3.20.8	Soils and Geology	103
3.20.9	Traffic	103
3.20.10	Visual Resources	104
3.20.11	Waste Management	104
3.20.12	Water Resources	105
Chapter 4	– Consultation and Coordination	106
4.1	Agency Coordination	106
4.1.1	U.S. Army Corps of Engineers	106
4.1.2	U.S. Fish and Wildlife Service	107
4.1.3	California Department of Fish and Game	108
4.1.4	Central Valley Regional Water Quality Control Board	108
4.1.5	California Air Resources Board	108
4.1.6	California State Historic Preservation Office	109
4.1.7	Tribal Consultation	110
Chapter 5	- List of Preparers and Reviewers	111
Chapter 6	- References	112

Tables

Table 1	Potential Solid Waste Landfills	19
Table 2	Construction Schedule	22
Table 3	Summary of Environmental Impacts by Resource	27
Table 4	USFWS T&E Plant Species that May Occur in Calaveras or Tuolumne Counties	35
Table 5	California Special-Status Plant Species with the Potential to Occur in Calaveras and Tuolumne Counties and Their Habitat and Status	37
Table 6	USFWS Threatened, Endangered and Candidate Species with the Potential to Occur in Murphy's, Stanislaus, Columbia and Columbia SE Quads	42
Table 7	CNDDB Special-Status Species with the Potential to Occur at the Site	45
Table 8	USFWS Threatened, Endangered and Candidate Fish Species Possibly Occurring on Site	51
Table 9	Monthly Flow (cfs) Statistics for the Stanislaus River near the Stanislaus Afterbay Dam ¹	55
Table 10	Applicable State Water Quality Objectives for the Stanislaus River	57
Table 11	Block Groups of Residents within 1 Mile of the Proposed Action	73
Table 12	Cumulative Racial Characteristics of Block Groups ¹	73
Table 13	Population Living below Poverty Level in 2000	74
Table 14	Calaveras and Tuolumne Counties Population Estimates and Trends between 2000 and 2020	79
Table 15	Characteristics of Site Soils	83
Table 16	Typical Construction Equipment Maximum Noise Levels	90
Table 17	2007 and 2010 Stanislaus Afterbay Dam Sediment Analysis Results	96
Table 18	List of Preparers	111

Maps

Map 1	Proposed Action Location Map	2
Map 2	Project Location Map	3
Map 3	Project Area Roadways	4
Map 4	Property Ownership and Construction Storage Areas	13

Figures

Figure 1	Existing Dam Condition	6
Figure 2	Conceptual Illustration of Dam and Sediment Removal Process – Site Preparation, In-Stream Work (River Left), In-Stream Work (River Right)	15
Figure 3	Proposed Removal of Dam Concrete and Riverbed Elevation	17

Appendices

- A List of Environmental Commitments
- B Correspondence and Background Information
- C Draft Environmental Assessment Distribution List

Acronyms and Abbreviations

AADT	annual average daily traffic
APCD	air pollution control district
APE	Area of Potential Effect
BA	Biological Assessment
BCC	USFWS Birds of Conservation Concern
BIA	U.S. Bureau of Indian Affairs
BLM	U.S. Bureau of Land Management
BMP	Best Management Practice
CalEPA	California Environmental Protection Agency
CARB	California Air Resources Board
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDOT	California Department of Transportation
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CNDDDB	California Natural Diversity Database
CNEL	community noise exposure level
CO2	carbon dioxide
CRLF	California red-legged frog
CSSC	California Species of Special Concern
CTS	California tiger salamander
cy	cubic yard(s)
dam	Stanislaus Afterbay Dam
dBA	decibel, A-weighted, same as dB with A-weighting applied
DOI	U.S. Department of the Interior
EA	Environmental Assessment
EIS	New Melones Management Plan Environmental Impact Statement
ESA	Endangered Species Act of 1973
FERC	U.S. Federal Energy Regulatory Commission
FR	Former Forest Route
ft2	square foot (feet)
FTA	U.S. Federal Transit Administration
FYLF	Foothill yellow-legged frog
GHG	greenhouse gas
HASP	Health and Safety Plan

Acronyms and Abbreviations

HPMP	Historic Properties Management Plan
ITA	Indian Trust Assets
Leq	equivalent noise energy as the total amount of the time-varying noise levels over a set period of time
Lmax	maximum noise level
MCAB	Mountain Counties Air Basin
MCV	Manual of California Vegetation
mg/kg	milligrams per kilogram
mm	millimeters
MTBE	methyl tertiary-butyl ether
NCPA	Northern California Power Agency
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMLRA	New Melones Lake Resource Area
NOAA	U.S. National Oceanographic and Atmospheric Administration
NPS	U.S. National Park Service
NRHP	National Register of Historic Places
NTU	nephelometric turbidity unit
NWP	nationwide permit
PG&E	Pacific Gas & Electric Company
PM2.5	particulate matter less than 2.5 micron in size
PM10	particulate matter less than 10 microns in size
ppt	parts per thousand
Reclamation	U.S. Bureau of Reclamation
ROI	region of influence
RWQCB	Regional Water Quality Control Board
SHPO	State Historic Preservation Office
ST	state threatened
STLC	Soluble Threshold Limit Concentration
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
T&E	threatened and endangered
TSS	total suspended solids
TTLC	Total Threshold Limit Concentration
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

Acronyms and Abbreviations

VdB	decibel of vibration, unit that denotes 20 times the logarithm of the ratio of the measured particle velocity to a reference particle velocity (usually 10 ⁻⁸ m/s)
VELB	valley elderberry longhorn beetle
°F	degrees Fahrenheit

Chapter 1 – Purpose and Need for Action

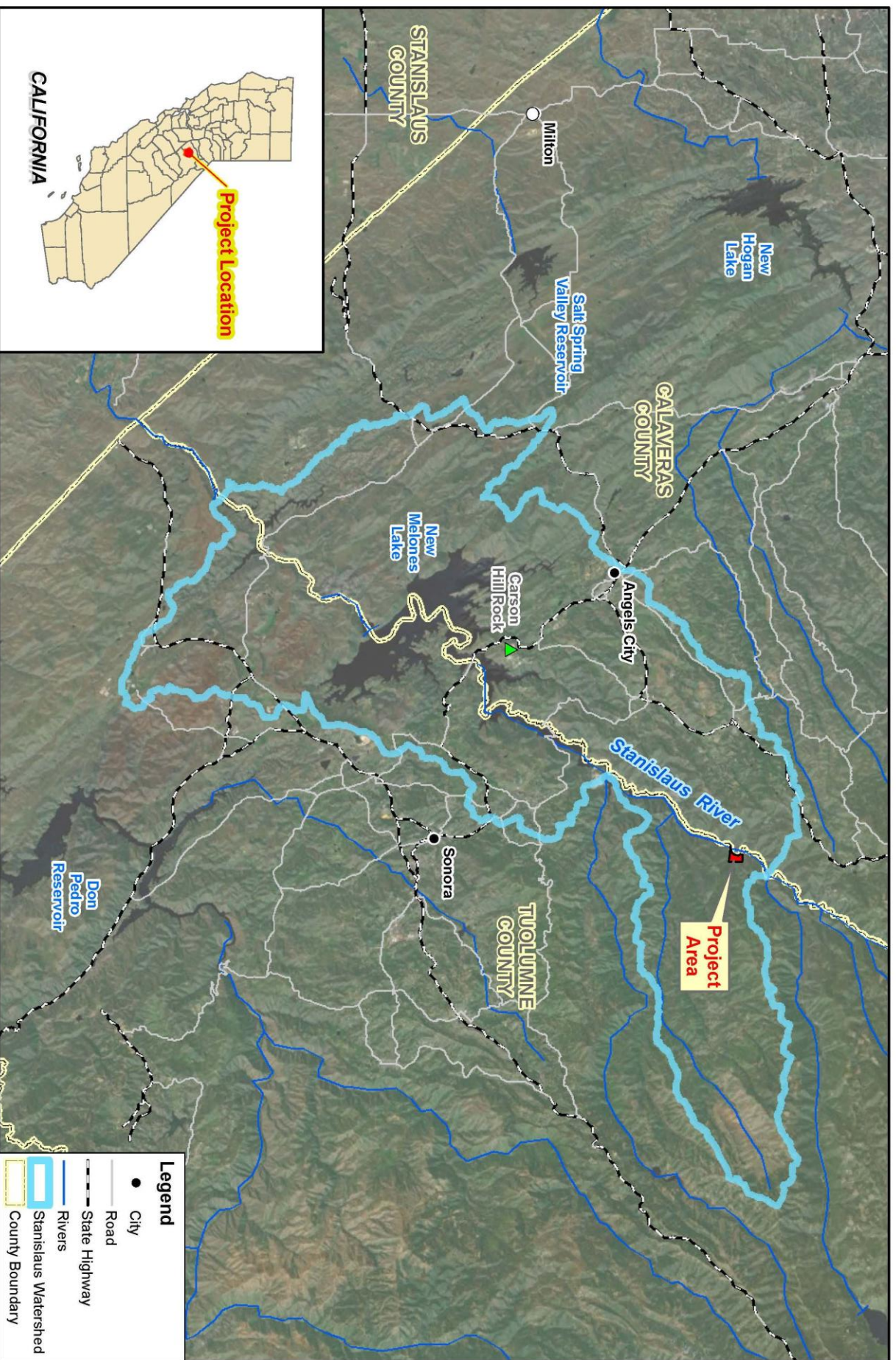
1.1 Introduction

This Environmental Assessment (EA) has been prepared in compliance with the National Environmental Policy Act (NEPA) to evaluate potential environmental issues and impacts associated with removal of the Stanislaus Afterbay Dam (dam). The U.S. Bureau of Reclamation (Reclamation) is the lead Federal agency responsible for the preparation of this EA and will use the analysis to help to determine impacts of removal of the dam.

1.2 Background

The dam is part of the Spring Gap-Stanislaus Project, Federal Energy Regulatory Commission (FERC) No. 2130, a power and water supply project owned and operated by Pacific Gas & Electric Company (PG&E). The dam is located on the main stem of the Stanislaus River, which forms the county line between Calaveras and Tuolumne counties. The dam is 12 air-miles east of Angels Camp, California on land managed by Reclamation (Section 12, T3N, R14E [Mt. Diablo Meridian] in the Murphys 7½-minute quadrangle). The driving route is via State Highway 4 to Vallecito and Parrots Ferry Road, Camp Nine Road and Forest Service Road 3N03. The site is at an elevation of approximately 1,047 feet. Map 1 provides a regional location map.

The dam is located on the border of Calaveras and Stanislaus counties approximately 0.4 mile downstream of the Stanislaus Powerhouse (Map 2) on the Stanislaus River and approximately 200 feet upstream of the location of the former Old Camp Nine Bridge. The bridge, constructed during 1906 and 1907, was abandoned with construction of the New Melones Reservoir in 1982. The bridge was in disrepair and was removed for public safety reasons in 2008 (Reclamation 2008a). Map 3 depicts the project access roads including Highway 4, Parrots Ferry Road, and Camp Nine Road. Map 3 also depicts the location of the new, concrete reinforced bridge (New Camp Nine Bridge) constructed by the U.S. Army Corps of Engineers (USACE) approximately 1 mile downstream of the dam. This bridge is now used by all vehicles to cross the Stanislaus River to Former Forest Route (FR) 3N03 and by PG&E to access its upstream power facilities.



Stanislaus Afterbay Dam Removal EA Project

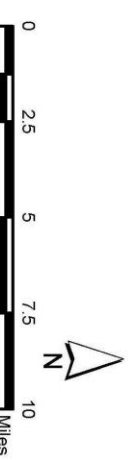
Map 1

Proposed Action Location Map

Calaveras and Tuolumne Counties, California

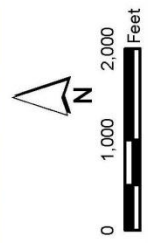
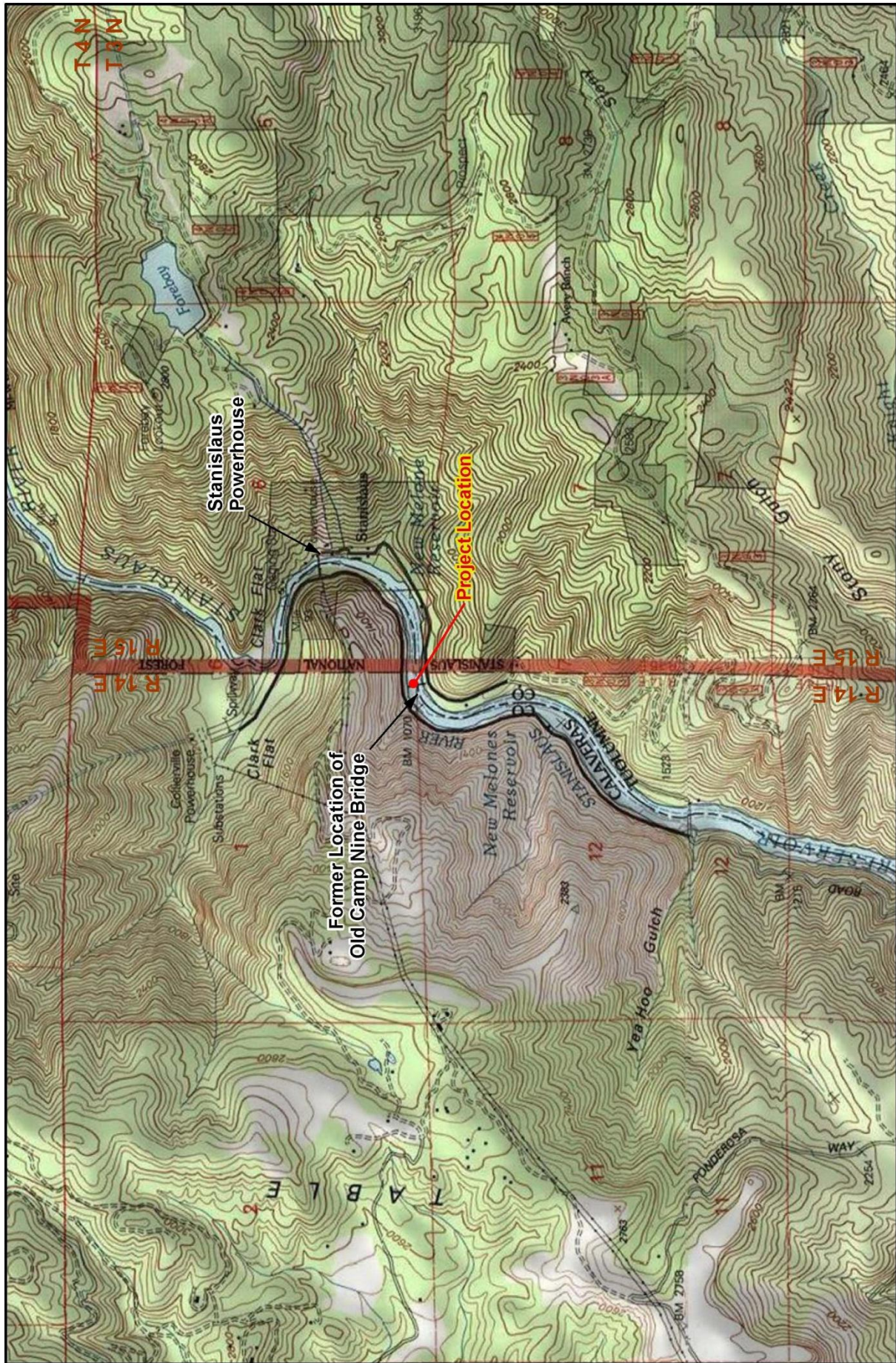
Notes:

Source of aerial backgrounds:
Main Map: Digital Globe, photo date 06/21/2009.



Legend

- City
- Road
- State Highway
- Rivers
- Stanislaus Watershed
- County Boundary



Notes:
 Source of topographic background: NGS USA Topographic Maps serviced by ESRI ArcGIS Online, accessed 02/28/2011.
 (corresponding to USGS quadrangles: Murphys, Stanislaus, Columbia, and Columbia SE, California).

Stanislaus Afterbay Dam Removal EA Project
Map 2
Project Location Map
 Calaveras and Tuolumne Counties, California





Stanislaus Afterbay Dam

New Camp Nine Bridge

Forest Route 3M03

T3N & R14E
T3N & R15E

Legend

- Two-Lane Road
- One-Lane Road

Stanislaus Afterbay Dam Removal EA Project

Map 3

Project Area Roadways

Calaveras and Tuolumne Counties, California



Notes:
Source of topographic background: NGS USA Topographic Maps serviced by ESRI ArcGIS Online, accessed 02/28/2011.
(corresponding to USGS quadrangles: Murphys, Stanislaus, Columbia, and Columbia SE, California).

0 1,000 2,000 3,000 Feet

N

1.3 Description of Existing Facility

The Stanislaus Afterbay Dam is a timber-faced, steel-buttress dam supported on concrete slabs up to 30 feet wide (Figure 1). The dam was constructed in 1962. Its crest is approximately 194 feet long and it has a maximum height of 18 feet from its lowest opening. The timber-faced steel buttress varies in height from 9 feet 6 inches to 13 feet. An approximate 13-foot-wide concrete gravity section is located approximately 40 feet from the left abutment. A 4-foot-wide by 5-foot-high opening near the center of the dam, with an invert elevation of 995 feet, permits in-stream flow releases during periods of low flow. Four hydraulically operated slide gates, with inverts at elevation 1,047 feet (USGS), were provided to control flows. At flows greater than 800 cubic feet per second (cfs), the dam is overtopped. The dam has been damaged by accumulated debris, including logs and tree branches.

Figure 1 depicts the existing dam. Photo A of the figure, details the dam's timber facing and steel buttresses. Photo B of the figure shows the top of the dam's center concrete gravity section and the left buttress. Photo C of the figure highlights the dam's dilapidated condition caused by flowing debris and extended periods of inundation (see Section 1.4). Photo D of the figure depicts the dam's damaged right buttress.

1.4 Purpose and Need

The Stanislaus Afterbay Dam must be removed for the following reasons:

- The dam no longer fulfills its function due to increased flows from upstream and increased water levels downstream. The New Melones Dam was built in the early 1980s as part of Reclamation's Eastside Division of the Central Valley Project. Initial filling of the reservoir began in 1983. Prior to construction of New Melones Reservoir in 1982, the dam was used to attenuate rapid changes in streamflow caused by upstream power generation releases. In addition to PG&E's facilities, streamflow in this reach was also affected by the Northern California Power Agency's (NCPA's) construction of the upstream Collierville Powerhouse (FERC Project No. 2409) in 1990. Whereas the Stanislaus Powerhouse's maximum discharge is 830 cfs, the Collierville Powerhouse could discharge flows up to approximately



Stanislaus Afterbay Dam Removal EA Project
Figure 1
Stanislaus Afterbay Dam -
Existing Dam Condition
Calaveras and Tuolumne Counties, California

Notes:
Photo (A): Timber Facing and Steel Buttresses
Photo (B): Top of the Center Concrete Gravity Section and Left Buttress
Photo (C): Degraded Timbers
Photo (D): Right Buttress



1,600 cfs, substantially increasing streamflow and dam overtopping. However, with the 1982 construction of New Melones Reservoir, the maximum surface-water levels of the New Melones Reservoir in winter and spring submerge the upstream reach of the North Fork Stanislaus River and inundate the dam from downstream.

- Recent changes in reservoir operations have resulted in higher water levels, leading to longer periods of inundation, accumulation of debris and furthering the dam's dilapidated condition (see Figure 1).
- The gates are no longer operational and the top 3 feet of timber planks have been removed from portions of the right side buttresses.
- The dam no longer fulfills its function as a structure that buffers flows from the upstream powerhouse. This dam has not been used for its intended purpose since 1981.

Because of these changes, the dam is obsolete and no longer provides its intended function. The FERC recognized the need to remove the dam in Article 302 of the Spring Gap – Stanislaus Project's operating license (FERC 2009). PG&E must comply with license requirements.

The purpose of the proposed action is to remove the dam to protect public safety and to meet the other needs for dam removal. In compliance with Article 302 of the Spring Gap – Stanislaus Project's operating license (FERC 2009), PG&E proposes to remove the dam to enhance public safety and improve the aesthetic character of the watershed (FERC 2005) as well as to increase fish passage and accessibility for recreation, in a manner that minimizes impacts on water quality, biological resources and the human environment. Following dam removal and after obtaining Reclamation concurrence, PG&E would file a request with the FERC to remove the dam site from the existing Spring Gap-Stanislaus Project (FERC No. 2130) project boundary.

1.5 Proposed Action Overview

PG&E proposes to address the FERC's requirement by demolishing and removing the dam. The proposed action must be scheduled when streamflow is sufficiently low to allow equipment access, maintain construction worker and public safety, and control hydrology and water quality. The proposed action is scheduled to coincide with the annual maintenance outages of PG&E's Spring

Gap-Stanislaus and Tri-Dam's Beardsley-Donnells hydroelectric projects in fall 2011. In addition, an Agreement must be reached with the NCPA to reduce flows from its Collierville Powerhouse during construction periods. The construction schedule and potential contingencies related to streamflow are presented in Chapter 2 of this EA. PG&E proposes to complete the dam removal by conducting the following tasks:

- Remove the timber facing and steel buttresses.
- Remove the concrete wing walls and regrade the river banks with native soil to match flush with adjacent ground (down to elevation 1,003.5 feet).
- Excavate the riverbed materials accumulated in front (upstream) of the dam as necessary to expose the existing structural concrete dam foundation and remove the foundation to an elevation flush with the riverbed substrate (primarily gravel and cobble [approximate elevation of 993 feet]).
- Remove the top section of the concrete center gravity section (elevation 1,013 feet) to the riverbed elevation (elevation 1,003.5 feet), leaving the existing large rock feature exposed.
- Remove the existing concrete slab foundation to an elevation flush with the existing riverbed.
- Haul and dispose of or recycle the riverbed substrate, timber, steel, concrete and other debris.
- Restore the site to preconstruction conditions, including removing the temporary access road, restoring disturbed areas to preconstruction elevations and restoring native vegetation.

Construction would be completed within the FERC project boundary on lands managed by Reclamation. Map 4 depicts the ownership of lands near the dam as well as nearby staging areas along Camp 9 Road and at the nearby Stanislaus Powerhouse.

1.6 Previous Documents Incorporated by Reference

This EA incorporates the New Melones Resource Management Plan/Environmental Impact Statement (RMP/EIS) (Reclamation 2010) by reference. Specifically, the affected environment for biological resources

(Chapter 5, Affected Environment) is incorporated by reference in this EA. The dam is within the New Melones Lake Area and river and habitat conditions are similar to those analyzed in the RMP/EIS (Reclamation 2010). In particular, the biological and cultural resources, existing river operations and hydrology, regional geography, land use, recreational use, and socioeconomic conditions described in the RMP/EIS describe the same area potentially affected by the proposed action. The RMP/EIS is available at the following Reclamation internet sites:

- http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=2536
- <http://www.usbr.gov/mp/ccao/newmelones/rmp.html>

The RMP/EIS was published on February 5, 2010 and the Record of Decision was signed on June 18, 2010. These documents can be viewed at the Reclamation office at the New Melones Lake Visitor Center, 6850 Studhorse Flat Road, Sonora, California.

Chapter 2 – Alternatives

This chapter presents two alternatives (No Action and Proposed Action) for the Stanislaus Afterbay Dam Removal. Under the No Action Alternative, the dam would remain abandoned and in place. Under the Proposed Action Alternative, the dam would be demolished and removed. This chapter describes both alternatives. Section 2.3 describes several potential options that were not evaluated in detail due to technical infeasibility or public or agency unacceptability.

2.1 No Action Alternative

Under this alternative, the dam would be left in place. The No Action Alternative would not require access roads, dam demolition, or removal of demolition debris and riverbed substrate. The No Action Alternative would not require the use of heavy equipment on the streambed or placement of water-fill dams, access bridges, staging areas or construction equipment.

Because the dam is essentially abandoned, its physical condition would continue to decline. Without maintenance or repair, and with longer inundation periods, all of, or major portions of, the dam's timber components would likely eventually collapse, leaving only the dam's steel and concrete components. Protruding steel components would present an increasingly greater public health and safety hazard for hikers and other recreational users trying to cross the river and a greater underwater hazard to navigation. Broken and splintered wooden portions of the dam would be carried downstream into New Melones Reservoir and may pose a physical hazard to boaters and other recreational activities. Without its timber face, the dam would only retain water at the river's lowest flows; thus, the dam would have even less function than it currently does.

In addition, a No Action Alternative would be in direct violation of the Federal License (FERC No. 2130) and PG&E could be issued a Notice of Violation (NOV) which carries monetary consequences.

2.2 Proposed Action Alternative (Dam Removal)

The Proposed Action Alternative would demolish and remove the dam in a controlled manner that is protective of the environment and human health and

safety, and complies with applicable permits and regulatory requirements. Under the Proposed Action Alternative, a contractor would demolish and remove all timber, steel and concrete buttresses. The dam foundation would be removed to the elevation of the downstream riverbed substrate.

Dam removal would be completed according to the following tasks:

- Site Access and Access Control
- Mobilization and Site Preparation
- In-Stream Work (River Left)
- In-Stream Work (River Right)
- Riverbed Substrate and Dam Debris Disposal
- Construction Equipment
- Demolition Schedule and Hours
- Hazardous Material Management
- Health and Safety

Appendix A outlines environmental commitments that would be implemented before, during and after construction, to prevent and reduce the impacts of the proposed action.

2.2.1 Site Access and Access Control

Camp Nine Road provides the primary access to the site from the nearest major highway, East Highway 4 (Map 3). The majority of Camp Nine Road was built as an asphalt-concrete-paved, one-lane road with unpaved shoulders for passing traffic. The Camp Nine Road pavement is in good condition for allowing construction-related traffic to access the area. However, the narrow, winding road condition would likely restrict the vehicle length to no longer than 40 feet and no wider than the minimum passing width of the road.

Vehicular access to the east side of the site would be via the new Camp Nine Bridge through Former FR 3N03 and the smaller existing access road leading to the left (south) side of the dam. Both Former FR 3N03 and the access roads are paved one-lane roads. Former FR 3N03 also provides access to the

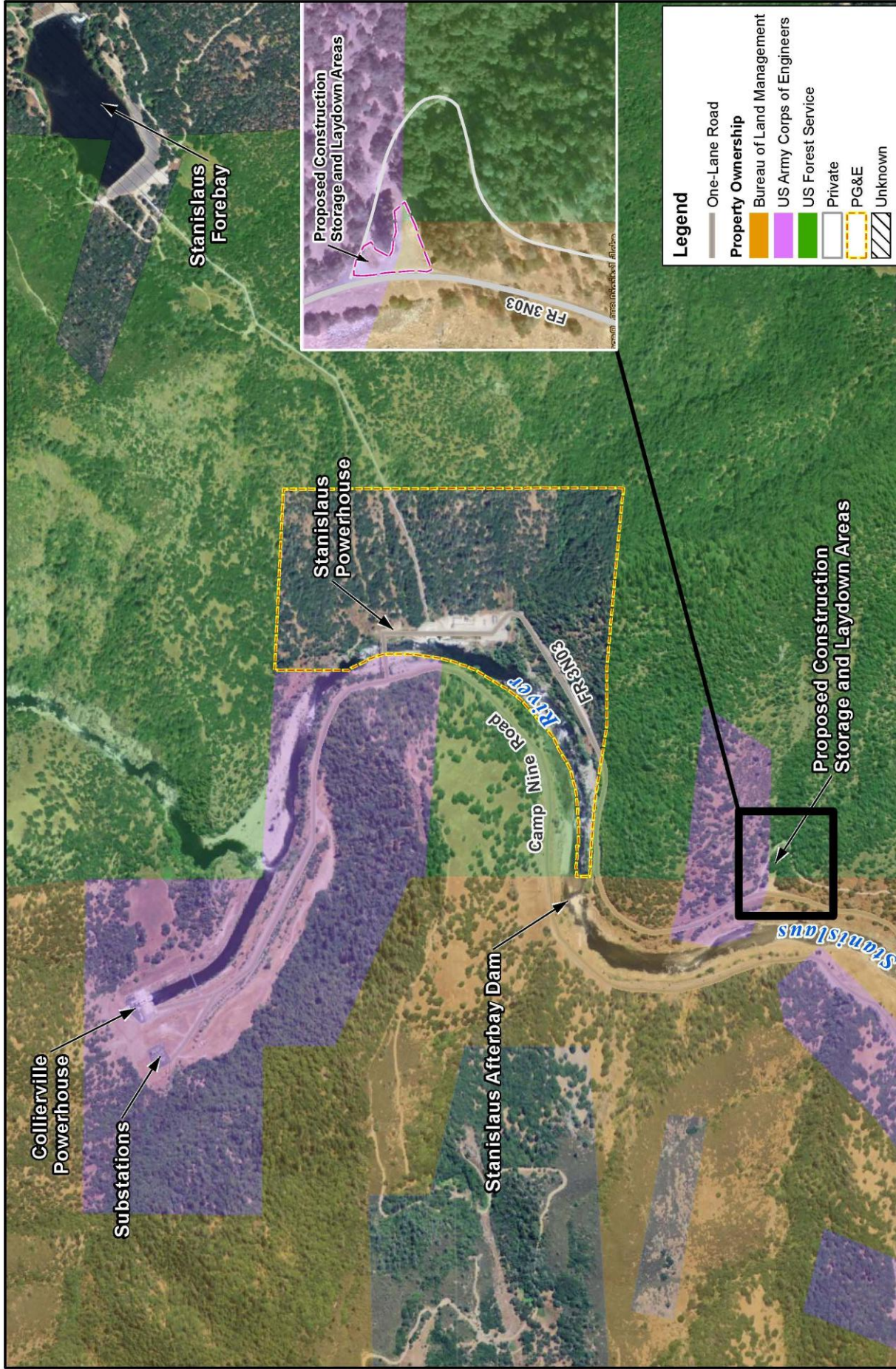
Stanislaus Powerhouse, which is operated by PG&E approximately 0.5 mile north and upstream of the dam. The pavement on the spur access road is in fair condition and would be maintained to prevent any further deterioration during construction. Because of the tight turning radius from Former FR 3N03 to the east access road, larger vehicles would proceed north approximately 0.5 mile to the Stanislaus Powerhouse to turn around (see Map 4).

Camp Nine Road would remain open for public, power plant, and emergency traffic. The peak recreation season ends September 30, but use continues as long as the weather is warm; therefore, construction vehicles would share this narrow road with recreational traffic. During construction, traffic flow near the site would be carefully controlled. Signs would be posted near the site access road and staging areas to alert passing traffic and “flaggers” would be used in some cases to restrict flow to one direction only when trucks are hauling excavated material. Public access would be controlled by posting signs upstream and downstream of the dam.

2.2.2 Mobilization and Site Preparation

The contractor would complete the following steps to prepare the area, provide access, and place pre-construction minimization measures, such as erosion and turbidity control measures.

- *Establish Construction Storage Areas.* A temporary office and storage area for construction equipment and materials would be established on the parking area adjacent to the Stanislaus Powerhouse Switchyard on PG&E fee-owned land (see Map 4). The staging area would be used for parking and equipment and material storage. In addition, a temporary riverbed gravel, cobble and demolition debris storage and handling site (approximately 1/3 acre [150 by 100 feet]) would be set up near the intersection of Camp Nine Road and Forest Service Road 3N03. This area would be used to load dump trucks for transport off site.
- *Prepare and Mobilize Equipment.* Construction equipment would be transported to the construction site. All equipment would be pressure steam washed and inspected for noxious weeds before transport. Prior to arrival on site, hydraulic oil would be replaced with biodegradable products. Construction equipment transport would follow State Highway 4 from Angels Camp to Parrots Ferry Road to Camp Nine Road. The dam is approximately 9 miles from Parrots Ferry Road (Map 3).



Legend

- One-Lane Road
- Property Ownership
 - Bureau of Land Management
 - US Army Corps of Engineers
 - US Forest Service
 - Private
 - PG&E
 - Unknown

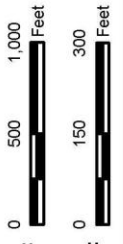
Stanislaus Afterbay Dam Removal EA Project
 Map 4
 Property Ownership and
 Construction Storage Areas
 Calaveras and Tuolumne Counties, California



Notes:

Source of aerial backgrounds:
 Main Map: Digital Globe, photo date 06/21/2009.
 Inset Map: Digital Globe, photo date 08/01/2008.
 Property Ownership: Parcel data from Calaveras County and Tuolumne County, accessed on 03/15/2011.

Scales



- *Provide Riverbed Access.* The contractor would install a new, temporary access road from the existing asphalt spur road leading from Camp Nine Road to the south side of the dam. The new access road would begin at the end of the asphalt on the spur road, directly south of the dam, and would traverse the riverbank approximately 80 to 90 feet to the edge of the river (Figure 2). This road would allow access to the riverbed and would require vegetation and debris clearing and placing approximately 400 cubic yards (cy) of clean, 3- to 6-inch angular rock.
- *Install Best Management Practices (BMPs).* Before commencing ground-disturbing activities, the contractor would install erosion control and fugitive dust control BMPs in accordance with an action-specific Stormwater Pollution Prevention Plan (SWPPP) as required by the State Water Resources Control Board (see Sections 2.3 and 2.4).
- *Install Water Quality Protection.* A silt curtain and oil boom would be installed downstream of the dam to minimize downstream turbidity and contain any oil releases from construction equipment (Figure 2).

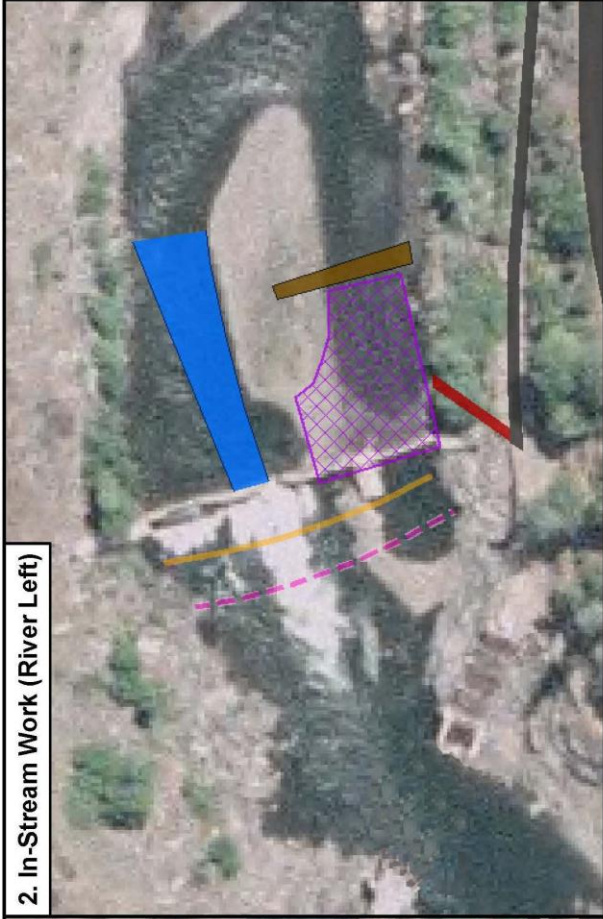
2.2.3 In-Stream Work (River Left)

Removal of the dam would be accomplished in two steps. First, the contractor would access the river from the left bank on an area of bedrock that extends from the shoreline into the streambed. Streamflow would be diverted to river right by excavating a channel through the existing gravel bar (substrate that would later be removed) and installing a temporary water-fill dam to maintain channelized flow. Concrete blocks would be used to reinforce the water-fill dam. Figure 2 depicts how the water-fill dams would be used to divert flow. Channel excavation would begin on the downstream end to minimize the flow of river water through the freshly excavated channel. If needed, the contractor would install pumps to reduce the volume of turbid water in the excavated channel. Any surface water or extracted groundwater would be treated and released (see Appendix A).

1. Site Preparation



2. In-Stream Work (River Left)



3. In-Stream Work (River Right)



Legend

- Oil Boom
- Silt Curtain
- Temporary Folding Bridge
- Existing Road
- Dam Access Road
- Excavated Channel
- Remove Sediments and Dam Component
- Water-Fill Dam
- Clear and Restore Riparian Vegetation



Stanislaus Afterbay Dam Removal EA Project

Figure 2

Conceptual Illustration of Dam And Sediment Removal Process - Site Preparation, In-Stream Work (River Left), In-Stream Work (River Right)

Calaveras and Tuolumne Counties, California

Notes:
Source of aerial background:
2002 Aerial from Calaveras County,
Photoshop edited by ARCADIS to
remove the demolished Old Camp 9
Bridge.



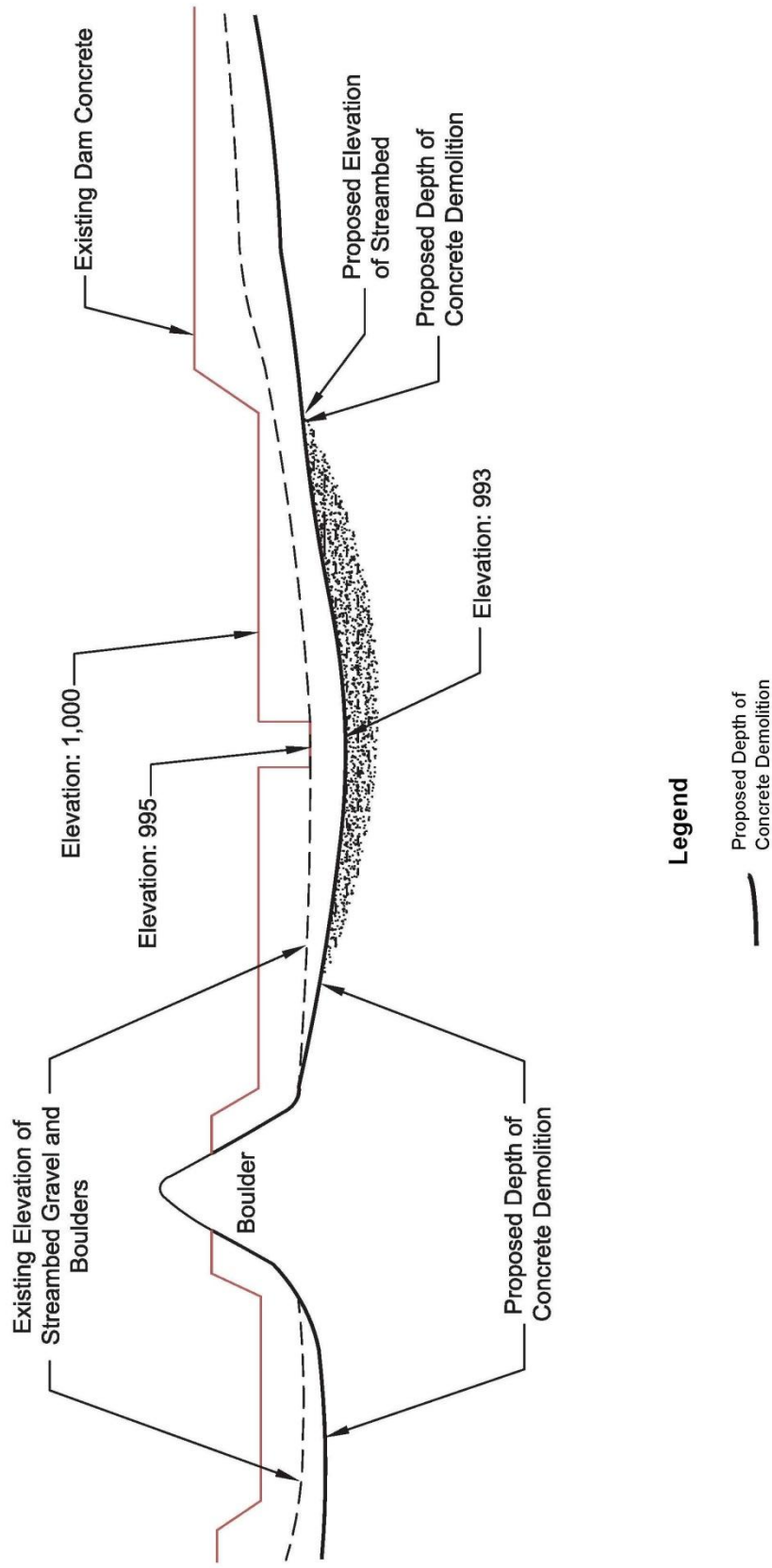
After flow is diverted, the contractor would dewater the area on the left side of the dam, treat the water to reduce turbidity, and release the water to the dam's downstream side. The contractor would then excavate approximately 250 cy of substrate that has accumulated against the upstream face of the dam (hatched portion of second photo on Figure 2). The substrate would be "clean dredged" (i.e., not temporarily stockpiled within the riverbed). An excavator would place the material directly into rubber-tracked dump trucks for transport ¼ mile to the temporary storage and handling site. From there, the material would be reloaded into trucks for transport to an off-site reuse or disposal facility (see Section 2.2.6).

Using an excavator with a claw or "thumb," the contractor would remove the timber facing and steel support buttresses from the concrete wing wall to the gravity section, exposing the concrete foundation (Figure 3). If needed, cutting torches would be used to separate steel from wooden and concrete components. The concrete wing wall on river left would be removed entirely and the soil would be graded and stabilized.

The contractor would break the concrete into manageable-sized pieces using hydraulic hoe rams mounted on excavators. The center gravity section would be similarly broken up and removed, exposing a large boulder in the streambed. The contractor would then remove the structural concrete base slab down to the riverbed elevation. All concrete debris would be transported to the staging area for transport off site.

2.2.4 *In-Stream Work (River Right)*

The process described above would be repeated for the right side of the dam. Construction equipment would be moved to the right side of the streambed at the lowest possible streamflow elevation in coordination with the operating hydroelectric generating plants and review of 24-hour operating logs. The equipment would be transported across a temporary folding bridge pushed into place by a tractor and supported by concrete blocks (Figure 2).



Legend

— Proposed Depth of Concrete Demolition

Notes:

1. All elevations are in feet above mean sea level.
2. All elevations are representative of conditions along the upstream dam face.
2. Not to scale, illustration only.

Stanislaus Afterbay Dam Removal EA Project

Figure 3

Proposed Removal of Dam Concrete and Riverbed Elevation

Calaveras and Tuolumne Counties, California



The contractor would channelize flows from the right to the left side of the riverbed to create a dry area on the dam's right side (Figure 2). As described above, channel excavation would begin on the downstream end to minimize turbidity. If needed, the contractor would install pumps to reduce the volume of turbid water in the excavated channel. Any surface water or extracted groundwater would be treated and released.

The water-fill dam and reinforcements would then be repositioned to maintain the excavated channel in the left side of the river (Figure 2). After flow is diverted, the contractor would follow the same steps described above, including removing approximately 500 to 750 cy of riverbed substrate, disassembling and removing the dam to its foundation, and removing the right wing wall.

2.2.5 Site Restoration and Demobilization

The contractor would complete the following tasks to restore the area, demobilize and install post-construction minimization measures:

- *Remove Equipment.* After all dam and riverbed material removal work is complete, the contractor would remove the temporary bridge and water-fill dams while minimizing turbidity.
- *Perform Site Restoration.* The temporary gravel access road would be removed, the river's left bank would be restored to preconstruction elevations and the bank's vegetation would be restored with a native seed mix and plantings. The silt curtain and oil boom would be removed in a manner that would minimize turbidity and final erosion control measures would be installed in disturbed areas in accordance with the SWPPP.
- *Repair Asphalt Spur Road.* The existing asphalt spur road, which branches off of the Camp Nine Road to the dam, would be barricaded with large boulders and any damaged asphalt would be repaired to at least pre-construction condition before demobilization.

2.2.6 Riverbed Substrate and Dam Debris Disposal

The demolished dam and removed riverbed substrate would be stored at the temporary storage site where it would be stockpiled and dried. Stockpiled bed material, as well as the demolished steel, wood and concrete dam components

would be hauled off site for disposal. Dam components would be transported to a recycling facility or an appropriate solid waste landfill.

Based on preliminary testing, the material that has accumulated behind the dam consists of gravel, cobble and sand, is not contaminated, and would not require handling and disposal as hazardous waste. Final testing would be completed, if required, prior to construction. Clean riverbed substrate (approximately 1,000 cy total) would be trucked to Carson Hill Rock, a local sand and gravel operation south of Angels Camp (18 miles from the site) where the material would be processed and recycled for the manufacture of concrete or landscaping (Map 1). Carson Hill Rock may also accept asphalt and concrete for recycling. The steel components would be transported to the staging area for subsequent transfer to an off-site steel recycling facility for final disposal. Any material that is determined not suitable for commercial reuse would be transported to a solid waste landfill. Trucks would haul the material to Parrots Ferry Road and on Highway 4 to the nearest freeway (Map 3). Potential solid waste landfills are listed in Table 1 on the following page.

Any material that does not pass testing requirements and is classified as hazardous waste would require disposal at a hazardous waste landfill. Although not expected, any hazardous waste generated (e.g., asbestos, lead-based paint chips) would be transported to a licensed hazardous waste facility, such as the Chemical Waste Management Facility at Kettleman Hills in Kettleman City, California, or to an out-of-state facility.

Table 1 Potential Solid Waste Landfills

Landfill	Address	Owner
Rock Creek Landfill	12021 Hunt Road Milton, CA 95230	Calaveras County
Forward Landfill, Inc.	9999 S. Austin Road Manteca, CA 95336	Forward, Inc./Allied Waste North America
Foothill Sanitary Landfill	6484 North Waverly Road Linden, CA 95236	San Joaquin County
North County Landfill	17900 East Harney Lane Victor, CA 95240	San Joaquin County

Source: CalRecycle 2011, San Joaquin County 2011

Transport of removed material would require a total of approximately 134 truck trips to remove the riverbed substrate and dam components and a maximum of approximately 12, 18-cy haul trucks per day. Haul trucks would enter the area via Camp Nine Road in the morning, load and leave the site in groups of three trucks. Each group of trucks would be escorted and a sentry would be deployed to the bridge to alert oncoming traffic. The contractor would coordinate with the residents along Camp Nine Road regarding the timing of excavated material transport.

PG&E estimates that dam components requiring recycling or disposal would include 10,600 board feet of four by 12 inch wooden timbers, nine tons of structural steel, 850 cy of concrete and approximately 1,000 cy of riverbed substrate. Nonhazardous materials would not require any special transport permits. High-side dump trucks, such as 18-wheeler end-dump trucks, would be used to haul the majority of the material, concrete and other demolition debris. Based on nine truck trips per day and use of 18 cy dump trucks, hauling would be completed in approximately 15 days.

The majority of the Camp Nine Road is isolated and has no local residential traffic, with the exception of the first three miles off Parrots Ferry Road. Because the dam would be removed in October and November, recreational traffic would be minimal. Signs would be posted at the intersection of Parrots Ferry Road and Camp Nine Road indicating truck traffic activities during the hauling period.

The timing of haul activities would be coordinated with local hydroelectric plant operators to minimize the potential for vehicle conflicts. The local residents and power plant operators who may be impacted by truck traffic would be notified when construction begins and also at least 48 hours prior to commencement of hauling. Each truck driver would be equipped with a two-way (citizen's band) C-B radio for instant communication in areas with C-B radio signals. In areas without C-B radio signals and in narrow sections of the road (dangerous passing areas), manual traffic control with walkie-talkie radio communications would be implemented.

2.2.7 Construction Equipment

The contractor would use a variety of light construction vehicles and other equipment during construction, including:

- pickup trucks (four)
- crew trucks (four)
- Cat 330 excavator with thumb (one)
- Cat 345 excavator with hoe ram (two)
- Cat 950 loader (one)
- Mooroka rubber-tracked dump trucks (four)
- Polaris 6x6 all-terrain vehicle (one)
- lighting towers (five)
- water truck or wagon (one)
- compressor (185 cubic feet per minute) (one)
- generator (25 kilowatt) (one)
- various electric submersible pumps

The types and numbers of equipment listed above are approximate and may change depending on site conditions. For example, in addition to generators required to supply power for lighting, additional generators or a larger generator may be needed to dewater the work areas.

2.2.8 *Demolition Schedule and Hours*

In-stream work would be completed in fall 2011, during low-flow conditions. However, the construction schedule would depend on streamflow. As a design feature to minimize effects on water quality and worker safety, the contractor will conduct the dam removal when streamflow is low enough to allow equipment access and dewatering prior to excavation. The contractor may schedule activities so that the deepest substrate is excavated while flows are at the lowest possible levels. Completing the dam removal when streamflow and water levels are not at their lowest levels would result in more turbid conditions because it would require heavier equipment and more intrusive methods to divert streamflow, create work areas, and dewater the area around the dam to facilitate removal. Therefore, as part of this design feature, construction would be scheduled during annual maintenance of upstream hydroelectric facilities.

The final schedule and construction hours would depend on obtaining flow management agreements with upstream FERC licensees (e.g., NCPA on the Northern Fork of the Stanislaus River), as well as acquisition of regulatory approvals and permits. PG&E's preferred flow level to complete the dam removal efficiently and with the least environmental effects is 300 to 400 cfs or less. Because these agreements have not been signed, the proposed action may be deferred to 2012 or later, when agreements have been implemented and low streamflow levels minimize biological and water quality impacts and are safe for construction. If the flows are greater than 600 cfs, PG&E may defer the dam removal to a subsequent year. This would allow the contractor to perform the in-stream work under safe conditions.

Final sediment testing would be completed, if required by the FERC, of the sediments to be removed approximately 2 months prior to the start of construction. Testing would verify the suitability of the materials for recycling or disposal as solid waste.

Assuming the dam removal proceeds in 2011, PG&E would proceed with construction as presented in Table 2.

Table 2 Construction Schedule

Task	Start	Finish
Pre-Activities		
Material testing (If required by FERC)	August 2011	August 2011
Mobilization		
Import equipment Establish staging areas	October 10, 2011	October 16, 2011
Construction		
Site preparation, install erosion control, access road	October 17, 2011	October 20, 2011
Dam and substrate removal	October 21, 2011	November 20, 2011
Site Restoration and Demobilization		
Remove access road, restore vegetation	November 21, 2011	November 28, 2011
Final equipment demobilization	November 26, 2011	November 30, 2011

Source: Decarlo 2011

This schedule assumes work would be completed using two 10-hour shifts and allows for some variability in flow releases from upstream power generation. Daytime shifts would be staffed by approximately 12 workers. If flow

management agreements are reached and streamflow can be maintained below 400 cfs for 24 hours per day, PG&E's contractor would work additional shifts (up to 24 hours per day) to take advantage of favorable conditions and potentially complete construction ahead of schedule. If the contractor continues work at night, activity would be limited to the immediate area of the dam and staging areas. Nighttime shifts would also require approximately 12 workers. No excavated material or dam debris would be transported outside of the staging areas, outside of Calaveras and Tuolumne County noise ordinance limits (7 a.m. to 6 p.m.) during the night shift.

2.3 Alternatives Considered and Eliminated from Detailed Analysis

Reclamation considered three alternatives to the proposed action that were eliminated from further analysis. Because the dam would be removed as a condition of relicensing, the three alternatives considered and eliminated were variations on dam removal: complete dam removal, removal using explosives and partial dam removal.

2.3.1 *Dam Removal to the Subsurface Foundation*

The alternative to remove the dam was evaluated, including the entire subsurface foundation versus removal down to the riverbed elevation. Due to environmental concerns, it was determined the removal of the subsurface foundation would require considerable excavation in the riverbed and use of heavier equipment, including a crane and (potentially) explosives. Such activities would not meet the purpose of the proposed action, which is to "remove the dam... in a manner that minimizes impacts on water quality, biological resources and the human environment" (Section 1.4).

2.3.2 *Removal Using Explosives*

Use of explosives could expedite the dam removal process; however, this option was rejected because of potential risks to the environment and worker health and safety.

2.3.3 *Partial Dam Removal*

The alternative to remove only the timber and steel portions of the dam and leaving the concrete portions intact was evaluated. However, it was

determined that partial dam removal would not sufficiently address public safety needs for recreational users; therefore, this alternative was eliminated from further analysis.

Chapter 3 – Affected Environment and Environmental Consequences

This chapter describes the existing physical, biological and socioeconomic features of the area and the potential environmental consequences of each alternative. Sections 3.1, 3.2 and 3.3 present the regional setting, environmental assessment methodology and impacts, respectively. This chapter then describes the affected environment and environmental consequences of the alternatives on the following resources:

- Air quality
- Biological resources
- Water resources
- Cultural and historic resources
- Environmental justice
- Indian Trust Assets (ITAs)
- Health and safety
- Land use
- Socioeconomics
- Soils and geology
- Traffic and noise
- Visual resources

3.1 Regional Setting

The dam is located within the Sierra Nevada Mountain Range of north-central California. The site location typically experiences warm, dry summers and cool, wet winters, with temperatures ranging from 85 to 105 degrees Fahrenheit (°F) in the summer and 25 to 45 °F in the winter. The mean precipitation in this area (New Melones Reservoir) is 31.72 inches, most of which occurs as rainfall from December to April. Air quality is excellent, and the area experiences a generally moderate eastward wind and weather flow pattern. The deeply

incised Stanislaus River Canyon dominates the topography, with elevation differences of as much as 2,000 feet from the ridge top to the river. Most of the river basin (including the area surrounding the site) is forested, and major land uses include recreation, conservation, logging and grazing.

3.2 Environmental Assessment Methodology

This section describes the methodology used to assess potential environmental impacts. Impacts are analyzed by evaluating the Proposed Action and No Action alternatives, including the type and magnitude of the effect on each resource. Specifically, the magnitude or type and degree of impacts are analyzed by evaluating the following factors:

- Type (beneficial or adverse, direct or indirect)
- Context (site-specific, local, regional)
- Duration and timing (short- or long-term)
- Intensity (negligible, minor, moderate or major)

For the environmental impact analysis, the following definitions were applied to characterize environmental impacts or effects (the terms impact and effect are used interchangeably):

- *Beneficial impact* – an improvement in the condition or appearance of the resource or a change that would move the resource toward a desired condition.
- *Adverse impact* – a change in the resource that would be detrimental or move the resource away from a desired condition or detract from its appearance or condition.
- *Direct impact* – an effect that would result from an action and would occur at the same time and place.
- *Indirect impact* – an effect that would occur later in time or at a different location, but would be reasonably foreseeable.
- *Short-term impact* – an effect that, within a short period, would no longer be detectable because the resource would return to its pre-disturbance condition or appearance within several years.

- *Long-term impact* – a change in a resource or its condition that would not return the resource to pre-disturbance condition or appearance within several years and would essentially be permanent.
- *Site-specific impact* – the action would only affect areas on site.
- *Local impact* – the action would affect areas on and adjacent to the site.
- *No effect* – the action would have no measurable detrimental or beneficial effect on the resource.

3.3 Summary of Impacts

Table 3 summarizes the overall environmental impacts for each resource evaluated in this chapter.

Table 3 Summary of Environmental Impacts by Resource

Resource Area	No Action	Proposed Action
Air Quality	No effect.	Minor, short-term adverse impacts from construction.
Biological Resources	No effect.	Minor, short-term, local adverse impact on waters of the U.S. and on riparian areas from construction. Long-term beneficial impact from restoring to natural conditions.
Wetlands	No effect.	Minor, short-term, local adverse impact due to disturbance from construction. Minor, long-term beneficial impact from removing wing walls and restoring riparian vegetation. No impact on special-status species.
Vegetation	No effect.	Minor, short-term local adverse impact on common wildlife species from construction. No impact on valley elderberry longhorn beetle (VELB), foothill yellow-legged frog, golden eagle or bald eagle. Minor, short-term impact on spotted bat and pallid bat, if present.
Wildlife	No effect.	Minor, short-term adverse impact on resident fish populations from construction. No substantial adverse effect on fish passage. Beneficial long-term impact from improved fish passage and habitat condition. No impact on federal- or state-listed species.
Fisheries	Continued intermittent barrier to resident fish movement. Would not achieve the benefits of dam removal.	

Table 3 Continued

Resource Area	No Action	Proposed Action
Surface water	No short-term effect. Potential long-term adverse impact if dam fails.	Minor, short-term adverse impacts on water quality from construction. Beneficial long-term impacts from restoration of natural hydrology and geomorphology.
Groundwater	No effect.	Minor, short-term local adverse groundwater impacts could potentially occur from spills during construction.
Cultural resources	Existing conditions would remain the same and there would be no impacts to cultural resources.	No adverse effects to historic properties by the project pursuant to 36 CFR Part 800.5(b), no cultural resources will be impacted as a result of removing the dam.
Indian Trust Assets	No effect.	No effect.
Environmental justice	No effect.	No effect.
Health and Safety	Potential long-term adverse impact if dam fails.	Minor direct public health and safety risks during dam removal. Long-term beneficial impacts from removal of a hazard.
Land Use/Recreation	Potential short-term adverse impact if dam fails.	Minor, local, short-term impacts during construction. Long-term beneficial impact from removal of a public safety hazard.
Socioeconomics	No effect.	Beneficial short-term impacts from construction. No long-term effects.
Soils and Geology	No effect.	Minor, long-term impacts on soils from dam removal.
Traffic	No effect.	Minor, short-term impacts during construction.
Noise	No effect.	Minor, short-term impacts during dam removal and material hauling.
Visual	Long-term adverse impacts from dam deterioration and potential failure.	Minor, local, short-term adverse impact during construction. Long-term beneficial impact from dam removal.
Wildfire	No effect.	Minor, short-term risk during construction.
Waste management	No effect.	Minor, short-term adverse impact during construction.

3.4 Air Quality

3.4.1 *Affected Environment*

The region of influence (ROI) in which potential air quality impacts may occur is within the immediate vicinity, staging areas and access roads, all of which are located within Calaveras and Tuolumne counties.

California is divided into air basins that are defined generally by their meteorological and topographical characteristics. The dam is located in Tuolumne and Calaveras counties, both of which are within the Mountain Counties Air Basin (MCAB). Air quality management programs in California are the responsibility of local air pollution control districts (APCDs), the California Air Resources Board (CARB) and the U.S. Environmental Protection Agency (USEPA). The local APCDs for the dam include the Calaveras County APCD and the Tuolumne County APCD.

Air quality issues in the MCAB include periodic elevated ozone levels and suspended particulate matter. Other air pollutants generally do not occur in concentrations high enough to constitute an air quality problem (National Park Service [NPS] 2007).

While air quality is typically determined by emission sources within the MCAB, it can also be affected by pollutants transported from upwind air basins by prevailing winds. For instance, the California Environmental Protection Agency (CalEPA) concluded that all instances where ozone exceeded air quality standards in 1995 in the southern portion of the MCAB (i.e., Tuolumne and Mariposa Counties) were caused by transport of ozone and ozone precursors from the San Joaquin Valley Air Basin (CalEPA 1996b, in NPS 2007). Air quality in the MCAB is also affected by pollutants transported from the metropolitan Sacramento and San Francisco Bay areas (NPS 2007).

The state area designations maps are updated annually, as required by the Health and Safety Code Section 39608. The CARB has established state area designations for 10 criteria pollutants: ozone, suspended particulate matter (PM₁₀), fine suspended particulate matter (PM_{2.5}), carbon monoxide, nitrogen dioxide, sulfur dioxide, sulfates, lead, hydrogen sulfide and visibility-reducing particles. Both Calaveras and Tuolumne counties are nonattainment for ozone, and Calaveras County is nonattainment for PM₁₀ (CARB 2010).

The USEPA has established national area designations for five criteria pollutants: ozone (1- and 8-hour standards), PM₁₀, carbon monoxide, nitrogen dioxide and sulfur dioxide. Both counties are nonattainment for 8-hour ozone (CARB 2010).

Air monitoring is conducted for ozone at the San Andreas-Gold Strike Road Site in San Andreas, Calaveras County and at the Sonora-Barretta Street Site in Sonora, Tuolumne County. In addition, the San Andreas-Gold Strike Road Site monitors for PM_{2.5} and PM₁₀ (CARB 2010).

According to the CARB 2008 Estimated Annual Average Emissions Almanac Projection Data (CARB 2010) for Tuolumne and Calaveras counties, the main sources of air pollutants in these counties are area-wide sources (including construction and demolition, paved and unpaved road dust, and fugitive dust), and mobile sources (including on-road motor vehicles).

Greenhouse gases (GHGs) are pollutants of concern for air quality and climate change. GHGs include carbon dioxide (CO₂), methane, nitrogen oxides and several chlorofluorocarbons. The largest global source of GHG emissions is the combustion of fossil fuels such as coal, oil and gas in power plants, automobiles, industrial facilities and other sources.

In February 2010, the Council on Environmental Quality (CEQ) provided draft NEPA guidance for the consideration of GHG emissions and climate change effects. Specifically, the guidance identified an annual value of 25,000 metric tons or more of CO₂-equivalent GHG emissions as a threshold for completing a more quantitative assessment.

3.4.2 *Environmental Consequences*

3.4.2.1 No Action Alternative

Under the No Action Alternative, the dam would not be removed and impacts on air quality would not occur. Therefore, implementation of the No Action Alternative would have no effect on air quality.

3.4.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, air quality impacts would be intermittent and short term. The dam would be removed over an approximate

two and a half-month period. The process would include removal of the timber facing and steel buttresses, excavation of riverbed substrate, removal of the concrete center gravity section, hauling and disposal/ recycling of material, contouring upstream substrate, and restoring the site to preconstruction conditions. Emissions associated with these activities would be generated by the construction equipment used to remove dam components, vehicles traveling to and from the site, and other construction equipment (e.g., generators). Dam removal would generate particulate emissions (PM_{10} and $PM_{2.5}$) from the fracture of concrete and timber material associated with the dam components. The contractor would minimize generation of dust from breaking up concrete by spraying water. Dam removal would result in only minor, short-term impacts on air quality.

Vehicles accessing the site would include pickup trucks, crew trucks, all-terrain vehicles, dump trucks and water trucks. Tailpipe emissions from these vehicles would temporarily increase concentrations of PM_{10} , $PM_{2.5}$ and precursors to ozone in ambient air, and would generate GHG emissions. In addition, truck travel over unpaved roads would generate fugitive dust (PM_{10} and $PM_{2.5}$) emissions. As discussed above, a temporary access road would be installed from the existing asphalt spur road to the riverbed. The new temporary access road would be unpaved; however, the vehicles that would travel the riverbed access road would be limited to haul trucks traveling at very low speeds that would not generate dust that is conveyed off site. Further, the riverbed access road would be watered and kept wet by haul trucks. Therefore, fugitive dust emissions and re-entrained dust would have only minor, short-term impacts on air quality.

Tailpipe emissions from diesel-fueled demolition equipment, heavy-duty trucks, and other diesel and gas-fueled equipment (e.g., generators and pumps) would result in temporary increases of PM_{10} and ozone precursor concentrations in ambient air. In addition, these activities would generate GHGs from the combustion of fuel. Diesel exhaust from heavy equipment could accumulate in the area; however, winds and exhaust velocities and temperatures would augment dispersal of pollutants in tailpipe emissions. Ground-level concentrations of pollutants near the construction site would have only minor, short-term impacts on air quality.

Overall, impacts on air quality are anticipated to be low, intermittent and short term. Emissions of PM_{10} and $PM_{2.5}$ from the dam material removal would be mitigated using controlled removal techniques. Tailpipe emissions, including

precursors to ozone, would be minimal during the anticipated two and a half-month construction period due to the small number of vehicles and truck trips. Additionally, PM₁₀ and PM_{2.5} emissions associated with vehicle travel along the unpaved access road would be minimal and limited to the two and a half-month period. Therefore, any adverse effects on air quality from the proposed action would be minor and short term. Further, the total GHG emissions associated with the proposed action were estimated at 404 metric tons of CO₂-equivalent¹ based on the construction schedule and the types of equipment and fuels needed for construction. GHG emissions would also be minor, short-term and well below the Council on Environmental Quality's threshold of 25,000 metric tons per year for completing a quantitative evaluation of carbon emissions.

3.5 Biological Resources

This section addresses the affected environment and environmental consequences of the alternatives on biological resources: federal and state regulated waters and wetlands, vegetation, wildlife, and fisheries. The ROI for biological resources is the area affected directly by construction as well as downstream aquatic habitat. River and habitat conditions in the ROI are similar to those analyzed in the RMP/EIS (Reclamation 2010).

Site reconnaissance was conducted on February 17, 2011, to confirm the existing vegetation communities or botanical resources at the dam, access routes and staging areas and to provide information for the impact assessment.

¹ CO₂-equivalent is a metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP). The GWP factors for methane and nitrous oxide are 21 and 310, respectively. The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP.

3.5.1 Federal- and State-Regulated Waters and Wetlands

3.5.1.1 Affected Environment

The site was assessed for the presence of jurisdictional wetlands during a site visit conducted on February 17, 2011. Because of the steep river banks present in the canyon, federal jurisdictional wetlands, as defined by the USACE (2011), do not exist along the Stanislaus River at the dam. Some wetland plant species were observed at the dam, but other factors, such as hydrology and soils, did not meet the USACE wetland criteria. However, the Stanislaus River is a jurisdictional water as defined by the USACE.

3.5.1.2 Environmental Consequences

3.5.1.2.1 No Action Alternative

The No Action Alternative would have no effect on wetlands and waters of the U.S.

3.5.1.2.2 Proposed Action Alternative

Dam and substrate removal would result in temporary impacts on the jurisdictional waters of the river. The Proposed Action Alternative would involve the excavation of diversion channels in the upstream gravel bar to divert the river around active construction areas. The excavated material from the temporary diversion channels would be part of an estimated 1,000 cy of material in the area immediately upstream of the dam that would be excavated and transported off site for recycling or disposal. The concrete portions of the dam would be removed down to the stream bed elevation. Substrate removal would temporarily affect approximately 130 linear feet and 18,750 square feet (ft²) of streambed. However, restoration of the riverbed would have long-term beneficial impacts by returning the area to more natural conditions.

The Proposed Action Alternative would involve the construction of a temporary access road that would disturb approximately 1,050 ft² of riparian vegetation. In addition, dam removal would disturb riparian vegetation on both banks of the river. The area of disturbance would extend 20 feet upstream and downstream on river's right bank. On the left bank, disturbance would be within the area temporarily disturbed by construction of the dam access road. The Proposed Action Alternative would disturb a total of approximately 1,550 ft² of riparian vegetation. Restoration of the area occupied by the dam would result in a small

increase (approximately 100 ft²) in riparian habitat. Disturbed riparian areas would be graded to match existing contours, stabilized following BMPs detailed in the SWPPP and planted with riparian vegetation. Therefore, the Proposed Action Alternative would have a minor, short-term, impact on riparian areas following restoration to preconstruction conditions, and a minor long-term beneficial impact.

3.5.2 Vegetation

3.5.2.1 Affected Environment

According to the Manual of California Vegetation (MCV; Sawyer and Keeler-Wolf 1995), two major vegetation communities are present. The ordinary high water mark (OHWM), as defined by the USACE (USACE 2011), forms the dividing line between the two communities. The vegetation community above the OHWM is the Foothill Pine series, and the community below the OHWM is an atypical riparian community not readily described in the MCV. The RMP/EIS (Reclamation 2010) describes these communities. The Foothill Pine series consists primarily of foothill pine (*Pinus sabiniana*) and canyon live oak (*Quercus chrysolepsis*). The riparian community at the site consists of willows, sedges, rushes and grasses.

3.5.2.1.1 Federal-Listed Plant Species

The USFWS Sacramento Office maintains a list of potentially occurring threatened and endangered (T&E) and candidate species, as well as species with designated critical habitat that can be queried by county for lands under its jurisdiction (USFWS 2011a). The site lies within Calaveras and Tuolumne counties; the five T&E plant species that have the potential to occur within these counties are presented in Table 4.

Table 4 USFWS T&E Plant Species that May Occur in Calaveras or Tuolumne Counties

Common Name	Scientific Name	Habitat	Federal Status	Potential to Occur on Site
lone Manzanita	<i>Arctostaphylos myrtifolia</i>	lone chaparral, cismontane woodland	T	U
Chinese Camp brodiaea	<i>Brodiaea pallida</i>	Valley and foothill grassland, serpentine soils	T	U
Succulent owl's clover	<i>Castilleja campestris ssp. succulenta</i>	Lower foothills, margins of vernal pools and swales, some seasonal wetlands	T	U
Layne's butterweed (ragwort)	<i>Senecia layneae</i>	Dry pine or oak woodlands in serpentine soils	T	U
Red Hills (California) vervain	<i>Verbena californica</i>	Margins of perennial streams or moist areas; cismontane woodlands, valley and foothill grasslands; serpentine soils	T	U

Sources: CDFW 2011, Reclamation 2010, USFWS 2011

Notes:

T = Threatened U = Unlikely to occur

The RMP/EIS (Reclamation 2010) described the T&E plant species and suitable habitat in the New Melones Lake Area (NMLA), including the site, which is located in the northeast portion of the NMLA in the Camp Nine Area. In addition to the species listed in Table 4, the RMP/EIS (Reclamation 2010) also considered the federal-listed (threatened) Hartweg's golden sunburst (*Pseudobahia bahifolia*) in the group of potentially occurring T&E species in the area. Based on specific habitat requirements, historical and current occurrence data, and the results of plant surveys conducted in the NMLA, the RMP/EIS (Reclamation 2010) concluded that no suitable habitat for any of these six species is present on site or in the broader Camp Nine Area (Reclamation 2010). A review of current records in the California Natural Diversity Database (CNDDB), a database of federal- and state-listed and special-status species

observations maintained by the CDFG, found no records of these species on the site or vicinity.

3.5.2.1.2 Federal-Designated Critical Habitat for Plants

Designated critical habitat is present in Tuolumne County for four T&E plant species: Succulent owl's clover, Hoover's spurge (*Chamaesyce hooveri*), Colusa grass (*Neostapfia colusana*) and Greene's tuctoria (*Tuctoria greeni*) (USFWS 2011b). Designated critical habitat for these species is present as a small band on the western edge of the county outside of the New Melones Lake Resource Area (NMLRA; Reclamation 2010). With the exception of Succulent owl's clover, these species have not been identified in Tuolumne County (USFWS 2011c-e, Calflora 2011a-d).

3.5.2.1.3 State-Listed and Special-Status Species

The CNDDDB was queried on February 15, 2011 for a list of special-status plant species with the potential to occur in Calaveras and Tuolumne counties (CDFG 2011a). Results are presented in Table 5.

The CNDDDB has no record of special-status plant species in or adjacent to the site (CDFG 2011a, 2011b). The closest recorded occurrences are a population of Tuolumne fawn lily approximately 2 miles to the south and yellow-lip pansy monkey flower approximately 3 miles to the northwest of the site (CDFG 2011b).

The RMP/EIS (Reclamation 2010) summarizes special-status plants in the NMLRA. Special-status plant species are known to occur in the Peoria Wildlife Management Area, on Table Mountain and in areas adjacent to the NMLA boundaries. Other areas of the NMLA may contain suitable habitat for special-status plant species, but have not been surveyed. Surveys conducted as part of the Spring-Gap Stanislaus Project (PG&E 2002b) found no special-status plant species on site.

Table 5 California Special-Status Plant Species with the Potential to Occur in Calaveras and Tuolumne Counties and Their Habitat and Status

Common Name	Scientific Name	Community/Habitat	Status: State/ CNPS
Jepson's onion	<i>Allium jepsonii</i>	Foothill woodland, yellow pine forest, serpentine soils.	1B.2
Three-bracted onion	<i>Allium tribracteatum</i>	Chaparral, red fir forest, yellow pine forest; 4,000 to 8,000 feet.	1B.2
Rawhide Hill onion	<i>Allium tuolumnense</i>	Foothill woodland, serpentine soils.	1B.2
Yosemite onion	<i>Allium yosemitense</i>	Chaparral, foothill woodland, yellow pine forest, mixed evergreen forest.	1B.3
Nissenan Manzanita	<i>Arctostaphylos nissenana</i>	Chaparral, closed cone pine forest; 1,500 to 3,000 feet.	1B.2
Big-scale balsamroot	<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i>	Valley grassland, foothill woodland.	1B.2
Common moonwort	<i>Botrychium lunaria</i>	Lodgepole pine forest, subalpine forest, wetland/ riparian; 7,000 to 1,000 feet.	2.3
Bolander's brachia	<i>Bruchia bolanderi</i>	5,500 to 9,100 feet.	2.2
Pleasant Valley mariposa-lily	<i>Calochortus clavatus</i> var. <i>avius</i>	Yellow pine forest.	1B.3
Hoover's calycadenia	<i>Calycadenia hooveri</i>	Valley grassland, foothill woodland.	1B.3
Red Hills soaproot	<i>Chlorogalum grandiflorum</i>	Chaparral foothill woodland, yellow pine forest, serpentine soils.	1B.2
Small's southern clarkia	<i>Clarkia australis</i>	Foothill woodland, yellow pine forest.	1B.2
Mariposa clarkia	<i>Clarkia biloba</i> ssp. <i>australis</i>	Chaparral, foothill woodland, yellow pine forest.	1B.2
Beaked clarkia	<i>Clarkia rostrata</i>	Valley grassland, foothill woodland.	1B.3
Subalpine cryptantha	<i>Cryptantha crymophila</i>	Subalpine forest; 9,000 to 9,500 feet.	1B.3
Mariposa cryptantha	<i>Cryptantha mariposae</i>	Chaparral, serpentine soils; 0 to 2,000 feet.	1B.3
Tahoe draba	<i>Draba asterophora</i> var. <i>asterophora</i>	Subalpine forest, alpine fell-fields.	1B.2
Subalpine fireweed	<i>Epilobium howellii</i>	Subalpine forest, wetlands, meadows.	4.3

Table 5 Continued

Common Name	Scientific Name	Community/Habitat	Status: State/ CNPS
Jack's wild buckwheat	<i>Eriogonum luteolum</i> var. <i>saltuarium</i>	Grassland, chaparral, foothill woodland, serpentine and granitic soils.	1B.2
Yosemite woolly sunflower	<i>Eriophyllum nubigenum</i>	Chaparral, lodgepole pine forest; 5,000 to 9,000 feet.	1B.3
Tuolumne button-celery	<i>Eryngium pinnatisectum</i>	Foothill woodland, yellow pine forest, wetlands, riparian; 1,000 to 3,000 feet.	1B.2
Delta button-celery	<i>Eryngium racemosum</i>	Valley grasslands, wetlands, riparian.	E / 1B.1
Spiny-sepaed button-celery	<i>Eryngium spinosepalum</i>	Valley grasslands, vernal pools, wetlands.	1B.2
Pilot Ridge fawn lily	<i>Erythronium taylorii</i>	4,400 to 4,600 feet.	1B.2
Tuolumne fawn lily	<i>Erythronium tuolumnense</i>	Chaparral, foothill woodland, yellow pine forest; 1,000 to 2,000 feet.	1B.2
Delicate bluecup	<i>Githopsis tenella</i>	3,600 to 6,200 feet.	1B.3
Parry's horkelia	<i>Horkelia parryi</i>	Chaparral, foothill woodland; 0 to 1,000 feet.	1B.2
Short-leaved hulsea	<i>Hulsea brevifolia</i>	Red fir forest; 6,000 to 8,000 feet.	1B.2
Tuolumne iris	<i>Iris hartwegii</i> ssp. <i>columbiana</i>	Foothill woodland, yellow pine forest.	1B.2
Ahart's dwarf rush	<i>Juncus leiospermus</i> var. <i>ahartii</i>	Valley grassland, vernal pools, wetlands.	1B.2
Congdon's lomatium	<i>Lomatium congdonii</i>	Chaparral, foothill woodland, serpentine soils; 1,500 to 2,500 feet.	1B.2
Stebbins' lomatium	<i>Lomatium stebbinsii</i>	Chaparral, yellow pine forest.	1B.1
Slender lupine	<i>Lupinus gracilentus</i>	Subalpine forest; 8,000 to 10,500 feet.	1B.3
Shaggyhair lupine	<i>Lupinus spectabilis</i>	Chaparral, foothill woodland, serpentine soils; 800 to 2,000 feet.	1B.2
Slender-stemmed monkeyflower	<i>Mimulus filicaulis</i>	3,600 to 5,200 feet.	1B.2
Yellow-lip pansy monkeyflower	<i>Mimulus pulchellus</i>	Foothills, vernal pools.	1B.2

Table 5 Continued

Common Name	Scientific Name	Community/Habitat	Status: State/ CNPS
Whipple's monkeyflower	<i>Mimulus whipplei</i>	Wet areas.	1A
Veiny monardella	<i>Monardella douglasii</i> ssp. <i>Venosa</i>	Valley grassland.	1B.1
Pincushion navarretia	<i>Navarretia myersii</i> ssp. <i>Myersii</i>	66 to 1,083 feet.	1B.1
Red Hills ragwort	<i>Senecio clevelandii</i> var. <i>heterophyllus</i>	Foothill woodland, seeps, wetlands, serpentine soils.	1B.2
Masonic Mountain jewel-flower	<i>Streptanthus oliganthus</i>	Pinyon-juniper woodland.	1B.2

Notes:

State

E = Endangered

CNPS (California Native Plant Society)

List 1A = Presumed extinct in California

List 1B = Plants that are rare, threatened or endangered in California and elsewhere

List 2 = Plants that are rare, threatened or endangered in California, but more common elsewhere

List 4 = Plants of limited distribution

3.5.2.2 Environmental Consequences

3.5.2.2.1 No Action Alternative

There is no suitable habitat for listed T&E plant species on site, so leaving the dam in place would have no environmental effect on T&E species. Leaving the dam in place would also have no effect on special-status plant species because the area does not provide suitable habitat and none have been identified during previous surveys. The continued presence of the dam or its continued deterioration and eventual failure would have no effect on listed T&E or special-status plant species off site because the dam's influence is limited to the river channel. Therefore, the No Action Alternative would have no impacts on vegetative habitat or special-status botanical resources.

3.5.2.2.2 *Proposed Action Alternative*

3.5.2.2.2.1 General Vegetation Communities

Construction of the temporary access road from the dam access road to the riverbed and demolition of the dam would temporarily affect riparian and upland vegetation. Vegetation would be trimmed back or removed as part of construction activities. The proposed riverbed access road area is dominated by non-native species (blackberry) in the upland portion. The vegetation below the OHWM and in the upland area on the bank on river left has a higher proportion of native species, including shrubs and willow trees.

The two staging areas are both previously disturbed areas. The area adjacent to the substation is covered with gravel and minimal weedy vegetation. The site along Camp Nine Road west of the dam is dominated by weedy species and non-native grasses. Use of these areas could encourage the establishment or spread of invasive species. To minimize the potential for spreading invasive species, the staging areas would be cleared of invasive species prior to use. Following completion of construction, exposed surface soils in the staging areas would be replanted, as appropriate, with a certified weed-free native seed mix.

The temporary road would be removed and the area restored using erosion control BMPs. To curtail introduction of non-native species, construction equipment would be cleaned prior to mobilization.

Native trees and shrubs would be avoided to the extent possible, trimmed back as needed and removed if necessary. The trimming or removal of native vegetation and soil disturbance associated with the temporary access road construction and dam removal would have a minor, short-term, impact. Disturbed areas would be reseeded with a certified weed-free native seed mix and the riparian over story (willows) would be re-established with salvaged willow stakes. Removing the dam would have a minor, long-term, beneficial impact because native species would have a higher potential to colonize the previously disturbed areas as a result of reseeding efforts. Native vegetation typically provides better quality wildlife cover and forage than invasive species; therefore, an increase in native species cover would be beneficial to wildlife in the area.

3.5.2.2.2 Federal-Listed Species

Removing the dam would not directly or indirectly impact any of the listed T&E species discussed above because no suitable habitat for any of the species exists at or near the site. Implementation of the Proposed Action Alternative would have no impacts on federally listed species.

3.5.2.2.3 State-Listed Special-Status Species

Dam removal would not result in a direct or indirect adverse impact on any special-status plant species. The site contains little suitable habitat and no special-status plants have been observed during previous surveys and none were observed during site reconnaissance on February 17, 2011. Therefore, it is unlikely that special-status species are present (PG&E 2002b, Reclamation 2007) adjacent to the dam and the Proposed Action Alternative would have no impacts on state-listed special-status plant species.

3.5.3 Wildlife

3.5.3.1 Affected Environment

The RMP/EIS (Reclamation 2010) describes the wildlife resources in the NMLA (specifically, the Camp Nine Planning Area). The NMLRA supports a diverse range of wildlife habitats typical of the lower Sierra Nevada foothills, such as the riverine, riparian and woodland communities present at the dam site as well as bird, mammal, reptile, amphibian and invertebrate species. Sections 3.4.3.1.1 and 3.4.3.1.2 describe the federal- and state-listed species with the potential to occur in the general area, the construction area and potential impacts of construction activities.

3.5.3.1.1 Federal-Listed Species

On February 4, 2011, the USFWS Sacramento Office provided a list of T&E species that have the potential to occur in the four USGS quadrangles surrounding the area: Murphy's, Stanislaus, Columbia and Columbia SE (USFWS 2011a). Table 6 lists the potentially occurring T&E and candidate species in those quadrangles, their habitats and federal status.

Table 6 USFWS Threatened, Endangered and Candidate Species with the Potential to Occur in Murphy’s, Stanislaus, Columbia and Columbia SE Quads

Common Name	Scientific Name	Habitat	Federal Status	Potential to Occur on Site
California tiger salamander; central population	<i>Ambystoma californiense</i>	Cismontane woodland, valley and foothill grassland, vernal pool, wetlands	T	U
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	Riparian scrub, Cismontane woodland, lower montane coniferous forest	T	P
Fisher	<i>Martes pennanti</i>	North coast coniferous forest, old growth, riparian forest	C	U
California red-legged frog	<i>Rana draytonii</i>	Flowing or standing waters, wetlands, riparian areas, marsh and swamp	T	U

Notes:

T = Threatened

C = Candidate for federal listing

U = Unlikely to occur in the construction area

P = Potential to occur on site; however,

species has not been identified previously

in the area

The RMP/EIS (Reclamation 2010) considered all T&E species with the potential to occur in Calaveras or Tuolumne counties, including Yosemite toad (*Bufo canorus*; candidate), Mountain yellow-legged frog (*Rana muscosa*; candidate), Sierra Nevada yellow-legged frog (*R. sierra*; candidate), Giant garter snake (*Thamnophis gigas*; threatened), Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*; candidate), Xantus’s murrelet (*Synthliboramphus hypoleucus*; candidate), and San Joaquin kit fox (*Vulpes macrotis mutica*; endangered). VELB and California red-legged frog (CRLF) have the potential to occur in the NMLA. It is unlikely that the other federally listed species occur in the NMLA.

The VELB occurs only in the Central Valley of California, in association with elderberry shrubs (*Sambucus sp.*) (USFWS 2011f). The RMP/EIS (Reclamation 2010) determined that the VELB potentially occurs in the NMLA because suitable habitat is present and the species has been documented nearby. PG&E conducted VELB surveys for the Spring-Gap Stanislaus Project relicensing studies (PG&E 2002b) and identified elderberry plants at eight locations along Camp Nine Road, between Vallecito and the Stanislaus Powerhouse. However, no elderberry plants were observed within 100 feet of the proposed action area during the February 17, 2011 biological reconnaissance survey.

The CRLF occurs in lowlands and foothills in or near permanent sources of deep, still or slow-moving water with dense shrubby or emergent riparian vegetation (USFWS 2011g). The range of CRLF extends from Mendocino County along the Coast Range to Riverside County, and inland to the Sierra Nevada from Calaveras County to Butte County (USFWS 2011g). The RMP/EIS (Reclamation 2010) concluded there is a low probability that the CRLF occurs in the NMPLA for the following reasons:

- Suitable habitat is present, but scarce.
- The NMLA is at the limits of CRLF range.
- No CRLF observations have been recorded in the NMLA.

The Stanislaus River at the site does not provide suitable habitat such as permanent deep water, or appropriate vegetation. In addition, the frequent water-level changes and high flow rates in the river preclude CRLF presence.

The fisher occurs in intermediate to large-tree stages of coniferous forests and deciduous-riparian habitat with a high percent of canopy closure. It is an uncommon permanent resident of the Sierra Nevada, Cascades and Klamath Mountains, and is also found in a few areas in the North Coast Ranges (USFWS 2011h). Although conifers are present on site, canopy cover is low and tree density is sparse. Based on the habitat types present in and around the site and the current distribution of the fisher, the site and surrounding vicinity do not provide suitable habitat for this species.

The RMP/EIS (Reclamation 2010) provides a detailed description and life history of the California tiger salamander (CTS), which is found primarily in

annual grassland habitat. CTSs require seasonal or permanent pools for breeding (USFWS 2011i; Reclamation 2007). Because no suitable breeding habitat (vernal pools or seasonal ponds) is found near the site and the steep-walled river valley does not provide suitable habitat, CTSs would not occur at the dam site and are not evaluated further.

In summary, the RMP/EIS (Reclamation 2010) found that other T&E and candidate species potentially occurring in Calaveras and Tuolumne counties are not likely to occur in the NMLA because of lack of suitable habitat. Field surveys completed on February 17, 2011 at the dam site confirmed that the probability of T&E species is very low and no T&E species, including VELB, were observed at the site.

3.5.3.1.2 State-Listed Special-Status Species

The CNDDDB was queried on January 21, 2011 for state-listed special-status species with the potential to occur in the four USGS quads surrounding the site: Murphy's, Stanislaus, Columbia and Columbia SE (CDFG 2011a). The resulting list of potentially occurring special-status species is presented in Table 7, along with status, habitat information and the probability of occurring on site.

Table 7 CNDDDB Special-Status Species with the Potential to Occur at the Site

Common Name	Scientific Name	Status	Habitat	Potential to Occur on Site
<i>Amphibians</i>				
Foothill yellow-legged frog	<i>Rana boylei</i>	CSSC	Streams and rivers with rocky substrate, sometimes in isolated pools, backwaters. In chaparral, woodlands, forests.	U – appropriate habitat absent
California red-legged frog	<i>Rana draytonii</i>	CSSC	Slow-moving streams or still bodies of water for breeding; uses a variety of habitat types.	U – appropriate habitat absent
<i>Reptiles</i>				
Western pond turtle	<i>Emys marmorata</i>	CSSC	Permanent or near permanent water bodies with logs, vegetation or exposed banks for basking.	U – appropriate habitat absent
<i>Birds</i>				
Northern Goshawk	<i>Accipiter gentilis</i>	CSSC	Mature and old growth forests with relatively dense canopies.	U – appropriate habitat absent
Tricolored blackbird	<i>Agelaius tricolor</i>	BCC/ CSSC	Marsh vegetation or vegetation near small bodies of water.	U – appropriate habitat absent
Great grey owl	<i>Strix nebulosa</i>	SE	Old growth conifer forests.	U – appropriate habitat absent
<i>Mammals</i>				
Pallid bat	<i>Antrozous pallidus</i>	CSSC	Open areas, woodlands; roosts in caves, and crevices and cracks in rocks and trees.	P – roosting habitat may be present

Table 7 Continued

Common Name	Scientific Name	Status	Habitat	Potential to Occur on Site
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	CSSC	Roosts in caves.	U – roosting habitat absent
Spotted bat	<i>Euderma maculatum</i>	CSSC	Roosts in caves, and crevices and cracks in cliff faces.	P – roosting habitat may be present
Western mastiff bat	<i>Eumops perotis californicus</i>	CSSC	Roost in high locations, cliffs, trees.	U – roosting habitat absent
Western red bat	<i>Lasiurus blossevillii</i>	CSSC	Roosts in trees and shrubs adjacent to open areas, lower elevations.	U – roosting habitat absent

Sources: CDFG 2011a, Reclamation 2010, CDFG 2011c-f, USFWS 2008.

*Breeding has not been recorded in California since before 1940.

CSSC = California Species of Special Concern

BCC = USFWS Birds of Conservation Concern

SE = State Endangered

U = Unlikely to occur on site

P = Potentially occurring

The RMP/EIS (Reclamation 2010) evaluated 88 special-status species with the potential to occur in Tuolumne and Calaveras counties. Of the 88 species, 23 were confirmed to occur in the NMLRA (Reclamation 2010). The 23 confirmed special-status species in the RMP/EIS includes the species listed in Table 7. Additional species evaluated in the RMP/EIS potentially occurring in the area include golden eagle (*Aquila otus*; CSSC), bald eagle (*Haliaeetus leucocephalus*; BCC, FP), foothill yellow-legged frog, pallid bat and spotted bat (*Euderma maculatum*).

Foothill yellow-legged frog (FYLF) is a ranid frog species that historically occurred in most Pacific stream drainages from central Oregon to the San Gabriel River in California (CDFG 1994). FYLF are predominantly found in small to medium size permanent streams, in shallow flowing water with at least

some cobble substrate. Egg deposition occurs on the downstream side of cobbles and boulders as water levels fall after the spring freshet (CDFG 1994). FYLF were identified in the Middle Fork Stanislaus River during visual encounter surveys as part of the relicensing studies for the Spring Gap-Stanislaus Project (PG&E 2002b, ECORP 2004). All of the FYLF locations recorded during the surveys were upstream of the NCPA's Collier Powerhouse and PG&E's Stanislaus Powerhouse, which are both located upstream of the site. The site is within the high water area of New Melones Lake and water levels are typically high during the breeding season as the lake captures water from the spring freshet. Combined with the frequent and extreme changes in surface-water elevations caused by releases from the Collierville and Stanislaus powerhouses (both peaking power plants), results in the site being unsuitable as FYLF habitat. However, the dispersion of young-of-the-year FYLF may result in their occasional presence in or near the Stanislaus Afterbay despite the lack of suitable habitat to support the species.

The golden eagle is protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (USFWS 2007k) and is a CDFG fully protected species (CDFG 2011c). The golden eagle is a large, powerful raptor that has a broad distribution across the northern hemisphere, and is found in mountainous areas throughout the western and northern continental U.S. The golden eagle prefers mountainous areas with open areas for hunting and cliffs for nesting; nesting also occurs in tall trees, manmade structures and in some cases on the ground. The golden eagle preys on a broad range of terrestrial vertebrates, and will feed on carrion when game is scarce. Breeding starts in late January and nests can be active for up to 6 months (CDFG 2011d). Suitable nesting and foraging habitat is present in the Camp Nine Area, and golden eagles may forage in or near the site.

Although the bald eagle was removed from the endangered species list in June 2007, it is still protected by the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act (USFWS 2007k), and is a California fully protected species (CDFG 2011c). An adult bald eagle was observed in 2007 during biological site reconnaissance for the Old Camp Nine Bridge Removal (Reclamation 2008b). The bald eagle is common in the NMLRA during the nesting season (Reclamation 2007) and may nest and forage near the site.

The spotted bat is a California species of special concern. The spotted bat is one of the largest vespertilionid bats and is distributed throughout the western U.S., from southern Canada into Mexico. Spotted bats are found in a variety of

habitats from desert scrub to montane coniferous forests, but typically in rough dry terrain. Spotted bats are associated with areas with rock cliffs, which are used for roosting (CDFG 2011e). Rock cliffs are present near the site and the concrete block retaining walls that are present on the upslope and downslope sides of the dam access road have an interlocked block construction with gaps that could provide roosting habitat. Therefore, spotted bats may forage and roost on site.

The pallid bat is a California species of special concern. The pallid bat is readily identifiable from other vespertilionid bats by its relatively large size and light tan coloration. Pallid bats are found throughout the western and southwestern U.S. and into Mexico and Cuba. Pallid bats form colonies in the spring that stay together until October. In California, this species is found in a wide range of habitats, including oak woodlands and mid- to high-elevation coniferous forests. Pallid bats are a crevice-roosting species and use rock crevices, mines, caves, hollow trees and manmade structures as roosts (CDFG 2011e). Pallid bats forage in open woodlands, but also in forested canyons such as those on site. The concrete block retaining walls present adjacent to the dam access road may provide roosting habitat.

3.5.3.2 Environmental Consequences

3.5.3.2.1 No Action

Suitable habitat is not present for the listed T&E species that may occur on site. The No Action Alternative would leave the dam in place and would have no environmental effect on these species. Special-status species and other non-listed species that might be present on site would continue to use the habitat around the dam. Therefore, implementation of the No Action Alternative would have no impacts on wildlife resources.

3.5.3.2.2 Proposed Action Alternative

3.5.3.2.2.1 General Wildlife Communities

Bird and mammal species currently using the habitat in the proposed project area may be temporarily displaced during demolition and removal activities, resulting in a temporary, short-term impact. Suitable similar habitat exists adjacent to the dam and proposed staging areas, which may be used by displaced species until project activities are complete. Therefore, the Proposed

Action Alternative would have only a minor, local impact on common wildlife species.

3.5.3.2.2.2 Federal-Listed Species

Removing the dam would not directly or indirectly impact any of the listed T&E species discussed within this chapter because no suitable habitat for any of the species exists at or near the project area.

Implementation of the proposed action would have “no effect” on the Valley Elderberry Longhorn Beetle, California Red-Legged Frog, Fisher, or California tiger salamander.

3.5.3.2.2.3 State-Listed, Special-Status Species

Removal of the dam would have no effect on the FYLF because habitat for this species is absent from the site and removal of the dam would not create new FYLF habitat.

Golden eagle would not be affected in the short term by the Proposed Action Alternative because construction is scheduled to occur prior to the nesting season (January through August) and no nest sites (which are reused from year to year) have been identified in the surrounding area (CDFG 2011a, Reclamation 2007). Golden eagle avoidance of the site during construction would not result in a loss of foraging habitat because the construction footprint is small (two acres) and ample foraging areas are available in the surrounding landscape. Overall the Proposed Action Alternative would have no appreciable impact on golden eagles.

In the short term, bald eagles would not be impacted by dam demolition and removal activities because these activities would be completed prior to the normal migratory return of bald eagles to the area and subsequent nest building. In the long term, bald eagles that do use the area may benefit from the dam removal in that it could provide additional foraging habitat free of man-made structures. Overall, the Proposed Action Alternative would have no impact on bald eagles.

The cliffs and block retaining walls in and adjacent to the site may provide roosting habitat for spotted bat and pallid bat. Most bat species have several roost locations that are used in different temperature regimes, or to reduce parasite loading. If present, bats may temporarily relocate from roosts in the

walls or cliffs to an alternate roost location as a result of construction noise disturbance, resulting in a short-term impact. However, construction is scheduled to commence after the conclusion of the maternity season (late spring to early fall) when bats are particularly sensitive to disturbance. Therefore, the Proposed Action Alternative would have only minor, short-term impacts on spotted bat and pallid bat. The cliffs and block retaining walls would remain in place and continue to provide roosting habitat in the long term.

3.5.4 Fisheries

3.5.4.1 Affected Environment

3.5.4.1.1 General Fish Communities

The RMP/EIS (Reclamation 2010) describes fisheries in the area, including cold and warm water sportfish. Salmon and steelhead that historically migrated up the Stanislaus River are now blocked by downstream dams. Numerous native and introduced freshwater fish species may inhabit the Stanislaus River near the dam, including Kokanee salmon (*Oncorhynchus nerka*), brown trout (*Salmo trutta*) and native rainbow trout (*Oncorhynchus mykiss*). Kokanee salmon were introduced to New Melones Lake in 1997 and move upstream into the Stanislaus River to spawn (Reclamation 2007). The dam does not present a migration barrier because Kokanee salmon currently move past the dam, unimpeded. Depending on the genetic stock and water temperatures, Kokanee salmon spawn between September and February (CDFG 2011f).

3.5.4.1.2 Federal-Listed Species

On February 4, 2011, the USFWS Sacramento Office provided a list of T&E fish species that have the potential to occur in the four USGS quadrangles surrounding the area: Murphy's, Stanislaus, Columbia and Columbia SE (USFWS 2011a). The T&E species are listed in Table 8 and are described on the following page.

Table 8 USFWS Threatened, Endangered and Candidate Fish Species Possibly Occurring on Site

Common Name	Scientific Name	Habitat	Federal Status	Potential to Occur on Site
Delta smelt	<i>Hypomesus transpacificus</i>	Estuarine, rivers, tidally influenced backwater sloughs	T	U
Central Valley steelhead	<i>Oncorhynchus mykiss</i>	Marine, estuarine, rivers, streams	T	U

Notes:

T = Threatened

U = Unlikely to occur in the area

3.5.4.1.2.1 Delta Smelt (*Hypomesus transpacificus*)

Delta smelt are endemic to the Sacramento River delta and spend most of their lives in a saltwater-freshwater interface (USFWS 2011l). Designated critical habitat for Delta smelt has been established in Alameda, Contra Costa, Sacramento, San Joaquin, Solano and Yolo Counties (USFWS 2011b). Delta smelt use freshwater portions of the delta for spawning, including portions of the Sacramento and San Joaquin Rivers. The Stanislaus River is the largest tributary of the San Joaquin River; however, it is well outside the recognized range of the Delta smelt. In addition, barriers constructed in the Stanislaus River (e.g., Goodwin Dam, Tulloch Dam and New Melones Dam) prevent any upstream fish migration. Currently, delta smelt are not found in Calaveras and Tuolumne Counties. Therefore, Delta smelt do not occur in the Stanislaus River and are not evaluated further in this EA.

3.5.4.1.2.2 Central Valley Steelhead (*Oncorhynchus mykiss*)

The California Central Valley steelhead (*Oncorhynchus mykiss*) includes all naturally spawned populations of steelhead in the Sacramento and San Joaquin Rivers and their tributaries, excluding steelhead from San Francisco and San Pablo Bays and their tributaries. The Stanislaus River has designated critical habitat for the Central Valley steelhead downstream of Tulloch Lake (NOAA 2005). Goodwin dam is downstream of Tulloch Lake and dam, and is a fish passage barrier that blocks anadromous fish (including steelhead) from entering the upper reaches of the Stanislaus River. The site is located upstream of several fish passage barriers including Goodwin Dam, Tulloch

Dam and New Melones Dam; therefore, steelhead have no access to the main stem of the Stanislaus River where the site is located.

3.5.4.1.3 State-Listed, Special-Status Species

The CNDDDB has no records of state-listed or special-status fish species in the four USGS quads surrounding the site (CDFG 2011a). The RMP/EIS (Reclamation 2010) lists two California special-status species that have the potential to occur in Calaveras and Tuolumne counties: San Joaquin roach (*Lavinia symmetricus* ssp.1; CSSC) and Red Hills roach (*Lavinia symmetricus* ssp.3; CSSC). The RMP/EIS (Reclamation 2010) lists the San Joaquin roach as unlikely to occur within the New Melones Lake Area, and the third (the Red Hills roach) as possibly occurring. San Joaquin roach, which is a stream-dwelling species (CDFG 1995), has not been identified in any of the streams in the New Melones Lake Area. Red hills roaches are known to exist in several streams in serpentine soils near Sonora, California (CDFG 1995) that discharge into the Stanislaus River or New Melones Lake. Therefore, no California special-status species occur near the proposed action area because of a lack of suitable habitat.

3.5.4.2 Environmental Consequences

3.5.4.2.1 No Action Alternative

The dam is not a migration barrier to resident fish passage under most flow conditions. However, it potentially constrains upriver passage of resident fishes at low flows when insufficient water flows across the gravity section, or during high flows when water velocities through openings in the dam may exceed the ability of some species to pass the dam. The No Action Alternative would leave the dam in place and the dam would continue to affect resident fish migration during these flow conditions. Therefore, the continued presence of the dam under the No Action Alternative would present an intermittent barrier to resident fish movement and would not achieve the short- and long-term benefits associated with removal for fish access and habitat.

3.5.4.2.2 Proposed Action Alternative

General Fish Communities

The Proposed Action Alternative could have a minor impact on resident fish populations. The construction schedule coincides with the Kokanee salmon spawning period because fall is the only time when water levels are sufficiently

low to allow work in the riverbed to proceed safely. Kokanee salmon may be spawning along stretches of the river, upstream and downstream of the dam. Spawning redds are not present at the dam, but are present upstream near the Collierville Powerhouse (Reclamation 2008b). However, because flows would be maintained through an excavated channel and the gravity portion of the dam, fish would have access to upstream areas during construction. Fish passage may be affected during removal of concrete portions of the dam; however, the duration of this activity would be limited and would not have a significant adverse effect on fish passage.

The removal and gradual redistribution of riverbed substrate trapped behind the dam would not have an adverse effect on downstream fish spawning habitat. Adverse effects on salmonid spawning habitat can occur when the gravels suitable for spawning are smothered or the interstitial spaces between the gravels are filled with fine-grained sediment. Sampling in 2010 found that the material trapped behind the dam comprises primarily coarse-grained material; surface material comprises three percent or less of sand or finer (silt) sediment and sampled subsurface materials contained no silt or clay (Katzel 2010). A portion of the trapped riverbed substrate (approximately 1,000 cy) would be removed. During construction activities, BMPs would be implemented to prevent the discharge of fine-grained sediment and water quality would be monitored to protect aquatic resources downstream. The cobble and gravel that comprise 97 percent of the streambed material at the dam would tend to remain in place, except during future high flows when bed materials are naturally transported. The redistribution of bed materials downstream during high flows may result in riverbed changes; however, negative impacts on downstream spawning habitat are unlikely to occur due to the predominantly coarse-grained material. In the long term, dam removal would result in beneficial effects including enhanced fish passage upstream and the potential for added spawning habitat in the area currently occupied by the dam and accumulated substrate.

Federal-Listed Species

Delta Smelt

Implementation of the Proposed Action Alternative would have “no effect” on the delta smelt or its designated critical habitat due to the lack of suitable habitat and the fact that the species have not been confirmed in the resource area.

Central Valley Steelhead

Implementation of the Proposed Action Alternative would have “no effect” on the Central Valley steelhead or its designated critical habitat due to the lack of suitable habitat and the fact that the species have not been confirmed in the resource area.

State-Listed, Special-Status Species

The Proposed Action Alternative would have no impact on state-listed species. The three species listed in the RMP/EIS (Reclamation 2010) are unlikely to occur on site due to the presence of downstream fish passage barriers (dams) and lack of suitable habitat. Therefore, dam demolition and removal would have no impact on state-listed fish species.

3.6 Surface Water

3.6.1 Affected Environment

The ROI for surface-water resources includes the Stanislaus River from the Stanislaus Powerhouse (located 0.5 miles upstream of the dam) downstream to its confluence with New Melones Reservoir (located 11.5 miles downstream).

The dam is located on the main stem of the Stanislaus River, approximately two miles downstream from the confluence of the North Fork and Middle Fork of the Stanislaus River. The Stanislaus River at the dam has a drainage area of 630 square miles and forms the border between Calaveras and Tuolumne counties (FERC 2005). The site is in the Upper Stanislaus River watershed, Hydrologic Unit Code 180040010. The Upper Stanislaus River watershed is bounded by the Mokelumne River watershed on the north and the Tuolumne River watershed on the south. The Stanislaus River headwaters are located east of the site, in the Sierra Nevada mountain range of north-central California within the Emigrant and Carson-Iceberg Wildernesses of the Stanislaus National Forest. Peak elevations in the headwaters area average approximately 10,000 feet, and springs that supply flow to the river are prominent. The river elevation at the dam is approximately 1,070 feet (USGS 1948). The river flows to the southwest to its confluence with the San Joaquin River, just west of the City of Modesto in the Central Valley region of California. The Stanislaus River runs through a deeply-incised canyon with a steep gradient, which averages approximately 70 feet per mile (OARS 2007). The

channel is confined by outcrops of resistant bedrock, and the riverbed is predominantly composed of boulders and cobbles (Reclamation 2007, FERC 2005). The steep river gradient, steep banks and bedrock outcroppings impede the development of a meandering river pattern and floodplain.

The climate at the site is characterized by warm dry summers and wet winters, with most precipitation occurring in the spring, especially at the river's headwaters. Precipitation varies greatly in the area, but is directly correlated to elevation. Mean annual precipitation is approximately 31.72 inches, most of which occurs in the form of rainfall from late fall to early spring. The hydrograph of the Stanislaus River peaks in late spring/early summer, coincident with peak snowmelt. Snowmelt within the Stanislaus River watershed accounts for approximately 90 percent of the yearly runoff, of which approximately 70 percent occurs between April 1 and July 31 (FERC 2005). Baseflows generally occur in late summer/early fall. Smaller hydrograph peaks are typically observed in the late fall, corresponding with fall storms moving inland from the Pacific Ocean. Mean annual flow of the Stanislaus River at the dam is approximately 1,000 cfs or 730,000 acre-feet per year. Mean monthly flow peaks of more than 2,000 cfs occur in May and June. The lowest monthly average flows of approximately 250 cfs occur in November. Monthly flow statistics are shown in Table 9 (FERC 2005).

Table 9 Monthly Flow (cfs) Statistics for the Stanislaus River near the Stanislaus Afterbay Dam¹

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	372	249	396	1051	892	1271	1311	2281	2247	1120	487	444
Median	298	206	213	287	747	1254	1238	2082	1789	541	405	425
Maximum	1214	1163	6248	34553	4656	8432	8907	20666	8115	5962	1747	1310
Minimum	89	59	57	57	62	70	157	91	89	89	89	90
10 percent exceedance	719	444	880	2056	2115	2355	2226	4637	5800	3301	1057	823
90 percent exceedance	96	66	69	68	66	179	424	226	174	163	110	109

Source: FERC 2005

Note:

- ¹ Statistics shown in this table were calculated using a combination of USGS gage data for stations 11295250 Collierville Powerhouse near Hathaway Pines, CA and 11295300 North Fork of Stanislaus River below Beaver Creek near Hathaway Pines, CA; adjusted for drainage area differences, period of record

Table 9 Note Continued

February 1, 1990 to September 30, 2002; added to gage stations 11293200 Middle Fork of the Stanislaus River below Sandbar Diversion dam near Avery, CA (prorated by a factor of 1.0873), added to USGS gage station 11295500 Stanislaus tunnel at outlet, CA (1974-1993), and USGS gage station 11295505 Stanislaus Powerhouse.

3.6.1.1 Water Quality

Water quality in the Stanislaus River at the dam is generally of superior quality and within applicable water quality objectives (FERC 2005). The Stanislaus River and its tributaries have been impounded to provide hydroelectric power for nearby population centers in California. The New Melones Reservoir provides water supply, flood control and hydroelectric power generation. Beneficial uses of the Stanislaus River include municipal and domestic water supply, irrigation, stock watering, contact and noncontact recreation, power production, warm and cold freshwater habitat, and wildlife water supply (Central Valley RWQCB 1998, FERC 2005). None of the surface waters in the Upper Stanislaus River watershed are classified as impaired under Section 303(d) of the Clean Water Act (USEPA 2007).

River water samples collected and analyzed in 2000 and 2001 had TSS and total settleable solids concentrations below analytical detection limits. Turbidity measurements ranged from 0.2 to 74.5 NTUs, with the mean of most readings below 9 NTUs (FERC 2005). These concentrations are below State of California objectives for turbidity and TSS, which are listed in Table 10 (Central Valley RWQCB 1998, FERC 2005). This is consistent with the granitic geology of the Stanislaus River watershed, which would not be subject to substantial erosion. Despite steep slopes above the river, the river substrate contains little to no silt or clay. Area soils are coarse grained and the river channel has a large amount of exposed, resistant bedrock and consists largely of cobble and gravel. In general, TSS levels are very low during low flow conditions. Impoundments created for power generation act effectively as sediment traps. As described above, a substantial volume of sediment has been trapped upstream of the dam.

Table 10 Applicable State Water Quality Objectives for the Stanislaus River

Water Quality Parameter	State Objective
Turbidity	Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits: 0 to 5 nephelometric turbidity units (NTUs) not to exceed 1 NTU 0 to 50 NTU increases not to exceed 20 percent 50 to 100 NTU not to exceed 10 NTU 100 NTU not to exceed 10 percent
Sediment	Suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause a nuisance or adversely affect beneficial uses.

Source: Central Valley RWQCB 1998, FERC 2005

3.6.1.2 Geomorphology

Surface and subsurface material was characterized in the bar immediately upstream of the dam face on October 23, 2010 at low flow by conducting pebble counts (Katzel 2010) according to standard geomorphic protocols (Wolman 1954). Surface material was composed primarily of cobbles (74.5 to 93.2 millimeters [mm]), with a smaller proportion of boulders (greater than 93.2 mm). Finer material consisted of gravel, with small proportions of sand (2 mm and finer). Subsurface material was generally composed of a finer-grained, heterogeneous mix of gravel and cobble, with a smaller proportion of sand and no silts or clays. Whereas the bar surface is armored with cobbles and boulders, subsurface material is more reflective of transported material (Katzel 2010).

Upstream geomorphic features include several large cobble-gravel bars similar to the bar just upstream of the dam. Material present in downstream bars was better sorted, with gravel and cobble at the upstream end and cobble and boulder downstream. The wetted channel area consisted of boulders and cobble (Katzel 2010). Although silt and sand were not observed within the wetted channel, it is likely that small volumes of these finer materials have been deposited immediately upstream of the dam face (Katzel 2010).

The presence of moderately well-rounded boulders and cobbles on multiple bars near the site indicates that the natural flow regime of the Stanislaus River is strong enough to transport large material as bedload. As reservoir elevations rise, flow rates decrease and the dam is inundated. Therefore, under existing conditions, the natural flow regime of the Stanislaus River is likely most closely approximated during high flow conditions that occur prior to a rise in reservoir elevations.

3.6.2 *Environmental Consequences*

3.6.2.1 No Action Alternative

Under the No Action Alternative, no surface-water impacts would occur in the short term; however, eventual dam failure could result in hydrologic, geomorphic and water quality changes. In the short term, the dam would remain in place and no sediment would be removed. The dam would continue to affect river hydrology by impounding water during the summer months when reservoir water levels are low and the dam is not inundated. Future degradation of the dam and potential future dam failure could have short-term effects on water quality from the sudden release of impounded water and redistribution of riverbed substrate. However, the dam's condition would likely degrade slowly, resulting in gradual changes in flow and short-term effects on water quality. If the dam failed entirely, scouring of riverbed substrate and local water quality impacts could occur.

Impounding of Stanislaus River flows at the New Melones Reservoir causes the dam to be inundated during periods of high flows and during high reservoir conditions. During such conditions, the dam abutments are subject to direct erosion by the river and from large woody debris that accumulates on the banks and behind the dam. If left in place, the dam would continue to restrict streamflow and the river's natural hydrologic and geomorphic processes. Hydrologic impacts from dam's collapse would most likely be local and short term in nature. After the timber and steel portions of the dam are gone, a more natural hydrologic regime may be somewhat restored; however, the dam foundation and the large debris that would continue to accumulate on the dam may affect hydrologic processes

3.6.2.2 Proposed Action Alternative

The Proposed Action Alternative would have a local beneficial effect on surface-water hydrology. Dam removal would eliminate impoundment of water that occurs during part of the year. The river's hydrologic and geomorphic process would return to a more natural condition, constrained only by the dam foundation, which would be left in place.

3.6.2.2.1 *Water Quality*

Short-term adverse impacts on water quality would be minor. Water quality impacts may include redistribution and deposition of materials downstream as the river's hydrology and geomorphology equilibrate following the dam's removal.

Introduction of sediment to the river would be very limited because the proposed action would be completed at low flows, when much of the riverbed is exposed and accessible to construction equipment. The bed materials on site contain a limited amount of fine-grained sediment. Implementation of BMPs during construction would limit the potential for water quality impacts. For example, excavation of the temporary channels would begin downstream and move upstream. This would limit the amount of water that would flow through freshly disturbed stream bed. Construction in and adjacent to the river has the potential to release pollutants and increase sediment transport to the river by runoff from disturbed areas, vehicle and equipment storage areas, and from minor spills or leaks of fuel or lubricants used for construction vehicles. The total disturbed area would be approximately 2 acres; therefore, the contractor would be required to prepare, submit and implement an SWPPP to minimize erosion, sedimentation and fugitive dust, and to protect water quality. The SWPPP would outline BMPs, including preserving vegetation, installing silt fences and straw wattles, and other measures to contain sediment in stormwater runoff from work areas. A water truck would be used as needed to mitigate nuisance dust. Following construction, the site would be restored to preconstruction conditions and final erosion control measures would be installed.

Dam removal, channel excavation and riverbed substrate removal would require dewatering. Water removed from excavations would be treated to the required standards using settling ponds, sand filters and oil skimmers, and discharged downstream of the dam according to the construction permits,

including Section 401 Water Quality Certification and NPDES dewatering permits, and the Section 1600 Streambed Alteration Agreement.

In accordance with the SWPPP, the contractor would conduct turbidity monitoring in the Stanislaus River every 4 hours during in-stream construction (i.e., riverbed substrate removal), including representative stations 300 feet downstream of the dam, as well as a comparative upstream station. Monitoring would be conducted twice daily during mobilization and site restoration when no in-stream work is being performed. If instantaneous readings exceed 15 NTUs, site BMPs would be augmented or adjusted to minimize water quality impacts. If turbidity downstream of the dam persists, the contractor would contact the State Water Resources Control Board (SWRCB) to identify remedial measures. Turbidity measurements would be logged on field data sheets and retained on site.

Other measures implemented to protect water quality during dam removal would include a floating debris and oil containment boom installed downstream of the dam prior to demolition and excavation of riverbed substrate. Because of the short in-stream construction duration, the absence of silts and clays and implementation of water quality protection BMPs throughout construction, any water quality impacts would be short-term and local, with long-term benefits through the return of more natural hydrologic conditions.

3.6.2.2.2 Geomorphology

Under the Proposed Action Alternative, the contractor would remove the dam down to the riverbed elevation, as well as much of the bed material that has accumulated behind the dam. The dam foundation would likely regulate the riverbed elevation because substrate would accumulate upstream of the dam foundation. However, following construction, the river channel would experience changes in morphology and bed materials would be redistributed by river currents. Seasonal weather and streamflow patterns would become the main control on bedload distribution, rather than the former dam. The river's processes would likely reposition the channel bed through scour and material transport, likely forming a narrower channel with downstream redistribution. The gravel bar currently present on the right bank immediately downstream of the dam may experience erosion, and deposition in a new point bar along the left bank may occur. Over the long term, scouring and redistribution would be reduced once the channel stabilizes. Long-term benefits to river geomorphology would occur through the restoration of a more natural hydrologic cross-section.

Downstream deposition of fine-grained sediment, including sands, silts and clays, can result in adverse effects on water quality and aquatic habitat through turbidity, degradation of spawning gravels by filling interstitial spaces and degradation of aquatic insect habitat through smothering. However, the quantity of fine-grained material available for transport and deposition is small and would not likely have substantial adverse impacts.

Gravel-sized and larger cobble available for transport and deposition would provide beneficial effects on aquatic habitat quality. The gravel-sized material would provide valuable substrate for aquatic habitat, including for trout spawning and aquatic insects, as the material is transported downstream by river currents. In addition, cobbles and boulders dissipate stream energy, reducing erosion and protecting water quality.

3.7 Groundwater

3.7.1 *Affected Environment*

The ROI for groundwater resources includes groundwater underlying the site, which includes the Stanislaus River channel at the dam, as well as the adjacent river banks.

Regional groundwater resources of the greater San Joaquin Valley and the Great Valley Geomorphic Province of California are fed by the watersheds of the Sierra Nevada Mountains, such as the Stanislaus River watershed. Groundwater resources provide approximately 2,200 acre-feet or 30 percent of water demand within the San Joaquin Valley (CDWR 2003). The Eastern San Joaquin subbasin comprises unconsolidated to semiconsolidated sedimentary deposits that are bounded by the Stanislaus River to the south, consolidated bedrock to the east, the Mokelumne River to the north and the San Joaquin River to the west. Water-bearing formations in this region include the Alluvium and Modesto/Riverbank Formations, flood basin deposits, Laguna Formation and the Mehrten Formation. Of these formations, the Mehrten Formation is considered the oldest freshwater-bearing formation on the east side of the hydrogeologic region. The underlying Valley Springs Formation yields minor quantities of water (CDWR 2003).

Little data exist to describe site-specific groundwater resources in the Stanislaus River area near the dam. No known wells are located within or near the site. Very little alluvium or other unconsolidated sedimentary deposits are

present and shallow unconfined aquifers are unlikely to exist. Depth to groundwater within the limited alluvial deposits is directly related to river elevation. Minor amounts of groundwater may be present in areas of fractured bedrock. Therefore, groundwater resources are extremely limited at the dam site.

3.7.2 *Environmental Consequences*

3.7.2.1 No Action Alternative

Under the No Action Alternative, groundwater resources would be unaffected and no impacts would occur. Neither the dam nor the substrate would be removed and no dewatering would be needed. The No Action Alternative would result in no adverse environmental effects.

3.7.2.2 Proposed Action Alternative

The Proposed Action Alternative would have the potential to result in minor, local adverse groundwater impacts. Construction activities on site would have a limited potential to affect groundwater resources adjacent to the river. Accidental release of oil or gas used in construction equipment could affect shallow groundwater; however, any risk of groundwater contamination would be minor because of the small quantities of fuel that would be kept on site and the limited number of vehicles required. Risks of contamination would be minimized through implementation of an SWPPP and SPCC. Because no groundwater supply wells are located in the general vicinity, no groundwater supplies would be affected. Therefore, any groundwater impacts from the proposed action would be minor.

3.8 Cultural and Historic Resources

A cultural resource is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation that outlines the Federal Government's responsibility to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking on cultural resources listed on or eligible for inclusion in the National Register of Historic Places (NRHP). Those resources that are on, or eligible for inclusion on, the NRHP are referred to as historic properties.

The Section 106 process is outlined in the Federal regulations at 36 Code of Federal Regulations (CFR) Part 800. These regulations describe the process that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking would have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action to affect historic properties, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that APE, determine the effect that the undertaking would have on historic properties, and consult with the State Historic Preservation Office (SHPO), to seek concurrence on Reclamation's findings. In addition, Reclamation is required through the Section 106 process to consult with Indian Tribes concerning the identification of sites of religious or cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties.

The ROI for cultural resources was identified as the dam and the river channel under and adjacent to the dam, staging areas, and access roads, all of which are located in sec. 12, T. 3 N., R. 14 E., Mound Diablo Meridian, as depicted on the Murphy's 7.5 minute USGS quadrangle map. The Stanislaus River forms the boundary between Calaveras and Tuolumne counties at this location. This section summarizes the prehistory, ethnography, and history of the ROI; the study methods and results; and the potential effects of the proposed action on historic properties (from Cimina 2011).

3.8.1 *Affected Environment*

3.8.1.1 Ethnographic Background

The site is located within the linguistically defined boundaries of the Central Sierra Miwok (Levy 1978:398). The boundaries of the area occupied by these Penutian-speaking people are not well defined; however, most ethnographers agree that their territory can be characterized as a border region with the Northern and Central Sierra Me-Wuk groups (Krober 1976, Levy 1978).

Linguistically, the Central Sierra Me-Wuk are related and are included in the Eastern Me-Wuk, which comprises one of two major branches of the Me-Wukan subgroup of the Utian language family (Levy 1978). Further evidence indicates that the Eastern Me-Wuk separated from the Western Me-Wuk branch approximately 2,500 years ago and suggests that the Me-Wuk have

resided in central California for at least several thousand years. Occupation varied from seasonal camps to permanent villages, facilitating the Central Sierra Miwok's hunting- and gathering-based economy by enabling them to exploit a variety of resources. As with most Native Californians that occupied the Sierra, acorns were the main staple of their diet. The amount of ethnographic documentation about the Sierra Miwok is limited; however, detailed information about them can be found in Barrett et al. (1933), Kroeber (1976), Levy (1978) and Merriam (1955).

3.8.1.2 Prehistory and History

The most applicable chronology for the site was devised for the New Melones Reservoir region. The study synthesized research that had taken place in the area from 1948 to the 1980s and includes data on more than 700 prehistoric sites covering 10,000 years of human occupation. The New Melones scheme defined eight cultural phases, ranging from the early Clarks Flat Phase (c. 10,000 to 8,000 BP) to the point of European contact with the Peoria Basin Phase when archaeological evidence concurs with historic accounts of the Me-Wuk culture (Moratto 1984, Moratto et al. 1988). Aside from being geographically closest to the Stanislaus River Relicensing Project Area of Potential Effect (APE), the Melones study also compared the New Melones data to several regions in central California. This aspect of the study found significant parallels in the patterns of cultural, technological and temporal traits in these areas. The broad regional perspective of the New Melones synthesis provides the best framework for researching temporal and spatial variability in patterns of prehistoric land use, environmental adaptations and exchange systems in the Sierra Nevada (Ludwig and Deis 2001).

Historical land use surrounding the site includes mining, logging, transportation, hydroelectric generation and recreation. Settlement of Tuolumne County happened after the start of the gold rush and most development in the region was related to the combined demands for water for hydraulic mining and electricity to run San Francisco's railway system just after the turn of the century (Conners 2000, Baker 2002). The layout of the planned hydroelectric system on the Stanislaus River began to emerge in 1896 and was fully developed by 1917. PG&E purchased the development in 1927 and has maintained and improved the system for the last 70 years (Baker 2002).

3.8.1.3 Previous Studies

A previous inventory for the overall Spring Gap - Stanislaus Hydroelectric system was completed in 2001 (Ludwig and Deis 2001). The Stanislaus Afterbay Dam was included in the inventory. No cultural resources were identified in the proposed action's APE. In 2005, PG&E initiated a more detailed inventory for the dam removal (Trumbly and Compas 2005), including a detailed records search and field survey. No archaeological resources were identified.

PG&E completed a National Register of Historic Places evaluation of the built environment of the overall Spring Gap - Stanislaus Hydroelectric system in 2002 (Baker 2002). The dam was less than 50 years old at the time and was not evaluated.

In accordance with the Historic Properties Management Plan (HPMP), PG&E compiled updated information for four sites in the dam's vicinity, including the Camp Nine town site, Camp Nine Road and two prehistoric milling features. The proposed dam removal is within the New Melones Archaeological District; however, no resources associated with this district are located on site.

The dam was not identified as a cultural resource in any of these studies because it was less than 50 years old. However, the dam has nearly reached the 50-year threshold for consideration as a historical resource and was subsequently evaluated in 2011 in accordance with NRHP criteria (Baker 2011b). The dam was found to be ineligible for listing on the NRHP.

The proposed construction storage area is within the site boundary for the Camp Nine town site, which consists of foundations, trails, refuse dumps and other remains. Only two structures still stand: the trestle bridge across the Stanislaus River and a mortared stone bridge where Camp Nine Road crosses Indian Creek. The construction storage area is adjacent to the new Stanislaus Powerhouse Switchyard, south of the main town site and powerhouse location. This area is devoid of any artifacts or features and has been graded and covered with gravel.

Camp Nine Road is used to access the Stanislaus Powerhouse and Forest Service recreation areas. The two milling features are on the banks of the Stanislaus River. Neither feature would be affected by the proposed action.

3.8.1.4 Field Survey

PG&E examined the site, including both staging areas, on January 13, 2011 (Cimino 2011). This survey confirmed the results of previous studies and found that both staging areas consist of graded, graveled surfaces.

During previous studies, PG&E (Baker 2002) described the Spring Gap Subsystem Historic District. The dam was less than 50 years old at the time and was not evaluated. Because the administrative record does not contain written concurrence from the SHPO on the significance evaluations, PG&E undertook an additional NRHP evaluation for resources that have recently reached the 50-year benchmark, including the dam. This evaluation found the dam ineligible for listing in the NRHP (Baker 2011a, b). The detailed architectural evaluation is summarized below.

The dam was constructed in 1962. It is a full overpour, timber-faced dam with structural steel buttresses resting on up to 30-foot-wide concrete slabs on bedrock. The dam has a concrete pier (or buttress) near midstream and concrete abutments. It has a complex series of openings and notches that regulate flow over and through the dam so that rapid increases in discharge from the powerhouse are released more slowly to the river downstream (Leps 1973).

The dam crest is approximately 194 feet long and has a maximum height of 18 feet from its lowest opening. The timber-faced steel buttress varies from 9.5 to 13 feet tall. An approximately 13-foot-side concrete gravity section is located 40 feet from the left abutment. A 4-foot-wide by 5-foot-high opening near the center of the dam, with an invert elevation of 995 feet, permits in-stream flow releases during periods of low flows. The dam also has a 15-foot-long weir at its midpoint. The central 5 feet of this weir are 2.5 feet lower than the rest of the weir. Four 5- by 4-foot-tall hydraulically operated slide gates with inverts at elevation 1,047 feet (USGS) were provided to control flows. For flows above 800 cfs, the dam is overtopped.

As described in Section 1.3, the dam is now obsolete and has fallen into disrepair to the degree that it is a public safety hazard. The dam is not a unique type of hydroelectric feature in California and is not associated with the early twentieth century development of the hydroelectric project as a whole, or with any company or organization important or recognized in state or local history, or any person of historic import. It does not embody the distinct characteristics

of a type, period or method of construction or represent a significant and distinguishable entity. Further, although the dam is more than 50 years old, its design and workmanship are not exceptional, other similar dams are present in northern California, and its workmanship and materials are significantly deteriorated. For these and other reasons, using the criteria provided in the NRHP, the dam is not eligible for listing in the NRHP.

PG&E is in the process of updating the *National Register of Historic Places Evaluation, Spring Gap – Stanislaus Hydroelectric System* to include resources that have reached or will soon reach the 50 year benchmark for consideration as historic properties. In addition, an individual evaluation was conducted for the dam that concluded the dam is ineligible for the NRHP (Baker 2011). Reclamation has concurred with this determination and is consulting with SHPO on the NRHP evaluation and finding of effect pursuant to the requirements of Section 106 of the NHPA. Previously, SHPO concurred with a finding of No Historic Properties Effectuated related to the Afterbay removal (letter dated September 17, 2007). However, in the intervening years since receipt of SHPO concurrence, the proposed project was modified to the extent that it was judged prudent to reinitiate Section 106 consultation. More recently, Camp Nine Road was determined eligible for the NRHP in 2008 (Barnes 2008).

Two cultural resources were identified within the ROI: P-55-006287 (Stanislaus Afterbay Dam) and CA-CAL-1872H (Camp Nine Road). Three cultural resources were identified in adjacent to the ROI: CA-TUO-665H (Camp Nine town site and old powerhouse location), CA-TUO-668 (prehistoric milling feature) and CA-TUO-4423 (prehistoric milling feature). The only cultural resource that will be impacted by this undertaking is the Stanislaus Afterbay Dam since all other cultural resources will be avoided by project design.

3.8.1.5 Coordination and Consultation

Federal regulations require federal agencies to identify federally recognized Indian tribes that might attach religious and cultural significance to historic properties that may be affected by the undertaking (36 CFR Part 800.3[f][2]), and gather information about potential historic properties, including sites of religious and cultural significance from those Indian tribes (36 CFR Part 800.4[a][4]). Reclamation may also identify non-federally recognized Indian Tribes, individuals, and organizations who may have knowledge of historic properties that may be affected by the undertaking, and gather information about potential historic properties (36 CFR Part 800.4[a][3]).

PG&E contacted the Native American Heritage Commission regarding the proposed action in November 2005, requesting a search of their files and a list of local Native Americans in Tuolumne County (Trumbly and Compas 2005). The NAHC responded in December 2005 and PG&E sent letters to several individuals and tribal organizations in August 2007. No additional responses were received. In compliance with the HPMP, the proposed action would be documented in the HPMP Annual Report, which would be distributed as appropriate to consulting Native Americans.

Reclamation identified the Chicken Ranch Rancheria and Tuolumne Rancheria as tribes who might attach religious and cultural significance to historic properties within the area of potential effects for the Camp Nine Bridge removal project in 2008 (immediately adjacent to the Stanislaus Afterbay Dam ROI), pursuant to the regulations at 36 CFR 800.3(f)(2). Reclamation sent letters to these tribes on December 26, 2007, to invite their assistance in identifying sites of religious and cultural significance pursuant to 36 CFR Part 800.4(a)(4). The Tuolumne Band of Me-Wuk Indians responded on February 11, 2008, and requested a meeting and field visit to Camp Nine Bridge. Reclamation met with seven members of the Tuolumne Band of Me-Wuk on March 11, 2008. No concerns were expressed regarding the presence of sites of religious or cultural significance in or adjacent to the APE for the bridge removal project (Barnes 2008).

PG&E also submitted a finding of no historic properties affected to the SHPO in August 2007 in the Cultural Resources Survey Report for Pacific Gas and Electric Company's Demolition of Stanislaus Afterbay Dam (Trumbly and Compas 2005). In a letter dated September 17, 2007, the SHPO concurred with PG&E's finding. However, in the intervening years since receipt of SHPO concurrence, the proposed action was modified to the extent that it was judged prudent to reinitiate Section 106 consultation.

In an effort to identify historic properties for the modified undertaking, PG&E contracted PAR Environmental Services (PAR) to conduct a National Register of Historic Places (NRHP) evaluation, including survey, of the entire built environment associated with the Spring Gap-Stanislaus River Hydroelectric Generation Project in 2011 (Cimino et al. 2011-enclosed). Three historic sites and one district were identified within the APE of the current project. The project lies within the boundaries of the New Melones Archaeological District (NMAD) found eligible by consensus on January 26, 1988. An equipment laydown area (at the modern powerhouse facility) lays within the boundaries of

site CA-TUO-665H, the Camp Nine town and old powerhouse site, previously found to be a contributing element of the NMAD. Camp Nine Road (CA-CAL-1872H) is a primary access route to the project location, and a small portion that comprises the eastern approach to the old Camp Nine Bridge (removed in 2008) is within the APE. Site CA-CAL-1872H was found individually eligible through association with the Stanislaus Powerhouse by consensus on May 20, 2008. The dam was newly recorded as site P-55-6287 in the 2011 efforts as the dam had not reached the age of 50 years old at the time of the earlier surveys. Cimino et al. (2011) recommend that the afterbay dam is not eligible for listing under any of the four criteria (36 CFR 60.4) either individually or as a contributing element to any district (the NMAD). Reclamation agreed with their recommendation and determines the dam to be ineligible.

Reclamation determined that no adverse effect to historic properties for the removal of the dam. The dam itself is not a historic property. The Camp Nine Road (CA-CAL-1872H) is regularly used for access to the Stanislaus Powerhouse and Forest Service recreation areas. Temporary use for construction will not adversely affect the historic characteristics of the road. Although within site boundaries, the proposed lay down area near the modern Stanislaus Powerhouse is a significant distance from any features associated with the Camp Nine town site (CA-TUO-665H). A rock retaining wall situated 100 feet from the laydown area is the nearest feature. The temporary use of the previously graded laydown area will not adversely affect any of the historic characteristics of the Camp Nine town site and old powerhouse. The dam does not contribute to the NMAD and its removal and temporary construction activities will not adversely affect any of the historic characteristics of the NMAD.

Reclamation consulted with SHPO on July 20, 2011 regarding the current proposal to remove the Stanislaus Afterbay Dam and a finding of no adverse effects to historic properties. Concurrence from SHPO is pending.

3.8.2 *Environmental Consequences*

3.8.2.1 No Action Alternative

Under the No Action Alternative, the dam would remain in place and would continue to degrade; however, continued deterioration of the dam would not affect cultural or historic resources including the trestle bridge, Camp Nine

Road and the two milling features on the banks of the Stanislaus River. Therefore, there would be no adverse impact under this alternative.

3.8.2.1 Proposed Action Alternative

The Proposed Action is the type of activity that has the potential to affect historic properties. A records search, pedestrian survey, and Tribal consultation identified two cultural resources within the ROI: the Stanislaus Afterbay Dam and Camp Nine Road. PG&E evaluated the dam and determined that it was not eligible for listing on the NRHP and, therefore, not a historic property. The features associated with Camp Nine Road would be avoided by project design. There would be no adverse effects to historic properties associated with the New Melones National Register Archaeological District. Since there would be no adverse effects to historic properties, no cultural resources would be impacted as a result of implementing the Proposed Action Alternative.

3.8.2.1.1 Inadvertent Discoveries

In the unlikely event that previously unidentified cultural resources are encountered during construction, the contractor would stop activities within 100 feet of the find and contact PG&E's cultural resources specialist immediately. PG&E and the contractor would keep the location of the find confidential and would take measures to secure the site.

If cultural resources are discovered on federal lands during project implementation, Reclamation Cultural Resource Staff will be notified and consulted on how to proceed. The federal agency will subsequently make reasonable efforts to avoid, minimize, or mitigate adverse effects to any historic properties pursuant to the regulations at 36 CFR Part 800.13(b)(3). In the event that human remains are identified during the course of the proposed project, all activities will be stopped and a Reclamation Archeologist will be consulted on how to proceed. Note that all human remains identified on lands owned by the Federal government are subject to NAGPRA (25 USC 3001). Work may not resume until Reclamation issues to PG&E a notice to proceed.

If human remains are found on private or state lands, PG&E and the contractor would comply with Section 7050 of the California Health and Safety Code, which makes it a misdemeanor to knowingly disturb a human burial. If the remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) shall be notified within 24 hours of

determination, as required by PRC Section 5097. The NAHC shall notify designated Most Likely Descendants, who will provide recommendations for the treatment of the remains within 24 hours. The NAHC will mediate any disputes regarding treatment of remains. No work would proceed in the discovery area until consultation is complete and procedures to avoid and/or recover the remains have been implemented.

If the remains are of Native American ancestry, as determined on the basis of archaeological context, age, cultural associations or biological traits, Reclamation would notify the appropriate Native American tribes and initiate consultations as required by law. Reclamation and appropriate Native American representative(s) would consult to determine the final disposition of the human remains (e.g., in-situ reburial, re-interment at another location). PG&E would only resume activities following implementation of a treatment plan for the human remains and any associated funerary objects, sacred objects or objects of cultural patrimony, provided that resumption would not further disturb human remains or associated objects.

3.9 Indian Trust Assets

3.9.1 *Affected Environment*

Indian Trust Assets (ITAs) are legal interests in property held in trust by the U.S. for federally recognized Indian tribes or individual Indians. An Indian trust has three components: (1) the trustee, (2) the beneficiary and (3) the trust asset. ITAs can include land, minerals, federally reserved hunting and fishing rights, federally reserved water rights, and in-stream flows associated with trust land. Beneficiaries of the Indian trust relationship are federally recognized Indian tribes with trust land; the U.S. is the trustee. By definition, ITAs cannot be sold, leased or otherwise encumbered without approval of the U.S. The characterization and application of the U.S. trust relationship have been defined by case law that interprets Congressional acts, executive orders and historic treaty provisions.

Consistent with President William J. Clinton's 1994 memorandum, "Government-to-Government Relations with Native American Tribal Governments," Reclamation assesses the effect of its programs on tribal trust resources and federally recognized tribal governments. Reclamation is tasked to actively engage federally recognized tribal governments and consult with such tribes on a government-to-government level (59 Federal Register 1994)

when its actions affect ITAs. The U.S. Department of the Interior (DOI) Departmental Manual Part 512.2 ascribes the responsibility for ensuring protection of ITAs to the heads of bureaus and offices (DOI 1995). Part 512, Chapter 2 of the Departmental Manual states that it is the DOI's policy to recognize and fulfill its legal obligations to identify, protect and conserve the trust resources of federally recognized Indian tribes and tribal members. All bureaus are responsible for, among other things, identifying any impact of their plans, actions, programs or activities on ITAs; ensuring that potential impacts are explicitly addressed in planning, decision and operational documents; and consulting with recognized tribes who may be affected by proposed activities. Consistent with this, Reclamation's Indian trust policy states that Reclamation would carry out its activities in a manner that protects ITAs and avoids adverse impacts when possible, or provides appropriate mitigation or compensation when it is not. To carry out this policy, Reclamation incorporated procedures into its NEPA compliance procedures to require evaluation of the potential effects of its proposed actions on trust assets (Reclamation 1993). Reclamation is responsible for assessing whether the removal of the dam has the potential to affect ITAs.

3.9.2 *Environmental Consequences*

3.9.2.1 No Action Alternative

Under the No Action Alternative, no ITAs would be affected because none are present in or adjacent to the project area. Therefore, the No Action Alternative would not impact ITAs.

3.9.2.2 Proposed Action Alternative

The Proposed Action Alternative to demolish and remove the dam would not affect ITAs. Patricia Rivera, Reclamation Native American Affairs Specialist completed a review on April 4, 2011 and found the nearest ITA is Tuolumne Reservation, located approximately 13 miles southeast of the project site. Therefore, implementation of the Proposed Action Alternative would have no impact on ITAs.

3.10 Environmental Justice

3.10.1 Affected Environment

Executive Order 12898 (February 11, 1994) mandates federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority and low-income populations.

Most of the land within or adjacent to the site is under the jurisdiction of Reclamation, the U.S. Forest Service (USFS) and the U.S. Bureau of Land Management (BLM). There are no residences located near the site. However, two U.S. Census Block Groups are partially within or are near (within 1 mile) the site (Table 11; U.S. Census Bureau 2000). The Block Groups include residents who live on private land parcels that are accessed by State Highway 4 in Calaveras County and by Parrotts Ferry Road in Calaveras and Tuolumne counties.

Table 11 Block Groups of Residents within 1 Mile of the Proposed Action

Block Group	Census Tract	County
5	1.10	Calaveras
1	5	Calaveras
1	21	Tuolumne

The total population in 2000 in the affected block groups was 4,600. The cumulative racial characteristics of the blocks are presented in Table 12.

Table 12 Cumulative Racial Characteristics of Block Groups¹

Race	Percentage
Caucasian	91.2
Black	1.2
American Indian or Alaskan Native	0.8
Asian	0.3
Hawaiian or Pacific Islander	0.2
Other race	4.4

Table 12 Continued

Race	Percentage
Multi-racial	2.0
Hispanic or Latino	7.7

¹ Block Groups are those identified in Table 11.

The proportions of minority populations in the Census Blocks are similar, relative to the minority populations in Calaveras and Tuolumne counties. In 2000, the Calaveras County population was 91.2 percent Caucasian and the Tuolumne County population was 89.4 percent Caucasian.

The populations living below the poverty level in 2000 (according to the most recent available U.S. Census data) in the Block Groups, relative to the site are detailed in Table 13.

Table 13 Population Living below Poverty Level in 2000

County	Block Group	Census Tract	Percentage
<i>All of Calaveras County</i>			11.8
Calaveras	1	1.10	12.4
Calaveras	5	1.10	11.4
<i>All of Tuolumne County</i>			11.4
Tuolumne	1	5	5.2

3.10.2 Environmental Consequences

3.10.2.1 No Action Alternative

Adverse human health risks in the vicinity of the No Action Alternative may result from ongoing safety hazards related to the deteriorated condition of the dam. However, no minority or low-income populations in the Census Blocks located near the site were proportionately larger than the minority and low-income populations of Calaveras and Tuolumne counties. There would be no disproportionate impacts on minority or low-income populations residing near the site. Therefore, implementation of the No Action Alternative would not result in disproportionate effects on minority or low-income populations.

3.10.2.2 Proposed Action Alternative

No adverse human health or environmental effects were identified as a consequence of the proposed dam removal. In addition, a review of the racial characteristics of the population in the affected Census Block Groups located within or near the site did not identify any concentration of minority or low-income populations that were proportionately larger than the minority and low-income populations of Calaveras and Tuolumne counties. There would be no disproportionate impact on minority populations residing in Census Blocks affected by the proposed action. Similarly, there would be no disproportionate impact on populations with incomes below the poverty level. Therefore, implementation of the Proposed Action Alternative would not affect minority or low-income populations disproportionately.

3.11 Health and Safety

3.11.1 *Affected Environment*

The dam currently presents a public health and safety hazard. The dam is subject to total inundation under high flow conditions, which conceals portions of the structure from recreational boaters and rafters on the river, increasing the possibility of an accident. The dam, in its current structural condition, also poses a safety hazard to recreational users on the river from unauthorized access of the dam by the public. Its dilapidated condition and potential for failure (collapse) may pose a public safety hazard from sudden release of water stored behind the dam or from debris if the dam fails.

The primary hazards to construction workers associated with removal of the dam include hazards associated with general construction activities, noise, nuisance dust and ergonomic hazards. Many of these hazards can be controlled or eliminated with proper planning and implementation of effective industrial hygiene programs.

Federal regulations establish standards for safety procedures during construction activities involved in dam demolition. The handling, storage, transportation and disposal of hazardous materials, if used, also are regulated.

3.11.2 *Environmental Consequences*

3.11.2.1 No Action Alternative

Under this alternative, the dam would remain in its existing condition, without maintenance or repair. The dam is subject to total inundation under high flow conditions, which would further damage the condition of the dam and likely lead to its eventual collapse. The dam, in its current structural condition, poses a safety hazard to recreational users on the river and could be a danger to hikers and boaters. Based on riverbed conditions at the site, it would be difficult to retrieve the dam if it collapsed, which would pose higher safety risks to recreational users. Therefore, implementation of the No Action Alternative could result in future substantial adverse impacts to health and safety. The effects on public health and safety would be greater under the No Action Alternative compared with the Proposed Action Alternative.

3.11.2.2 Proposed Action Alternative

The primary purpose of the Proposed Action Alternative is to demolish and remove the dam in a manner that is safe for the environment and human health and is compliant with applicable permit and regulatory requirements. Leaving the dam in place in its current condition may cause loss of life, serious injury and damage to boats used for recreation in the waterway. Removing the dam would eliminate public health and safety concerns for recreational users. Only the dam's foundation below the natural riverbed elevation would remain. Therefore, the proposed action would have minimal direct public health and safety risks during removal and would eliminate future public health and safety risks from dam failure.

Health and safety effects from implementation of the Proposed Action Alternative would include a relatively low risk to construction workers from industrial accidents and wildfire. A slight increase in risk of traffic accidents would occur for the public during the anticipated construction period (specifically during times of heavier vehicle traffic, such as when demolition debris is transported to off-site facilities) and a negligible increase during field operations.

Adherence to relevant safety regulations of the Occupational Safety and Health Administration, Reclamation, and the California Occupational Safety and Health Regulations would reduce the probability of construction accidents.

The presence of large equipment during demolition, and movement of large, heavy pieces of the dam that would require removal, would represent risks to worker health and safety. However, risks to workers during dam removal would be short term and minor given compliance with regulations and worker training.

The risk of fire on site, which is a potential effect associated with demolition, may increase temporarily under the Proposed Action Alternative, but would remain low. Fire suppression equipment, a no smoking policy, shutdown devices and other safety measures would also minimize the risk of fire. The risk to the public would be minimal because of limited public use and presence on site. A small increase in risk would occur to area fire suppression personnel associated with the proposed action.

Overall, the public health and safety impacts of the Proposed Action Alternative would be short-term minor impacts and would benefit public safety in the long term with the removal of this abandoned dam from a recreational area.

3.12 Land Use

3.12.1 Affected Environment

The ROI for land use includes the site and federal lands near the site that provides access to recreational opportunities on federal lands. The site is located on land managed by Reclamation. Lands adjacent to the site include federal land managed by the BLM to the west and the Stanislaus National Forest (administered by the USFS), located to the east. Lands adjacent to the site are undeveloped and are used primarily for grazing and open space. The RMP/EIS (Reclamation 2010) describes land uses in the area, including power generation, water supply, recreation, rangeland and residential areas (near Parrotts Ferry Road).

The area provides opportunities for non-motorized boat access, fishing, swimming, hiking and picnicking. When the dam is inundated, it can pose a hazard to navigation if the top of the dam is just beneath the water surface. The dam could also be a safety hazard for hikers who use it to cross the river.

3.12.2 *Environmental Consequences*

3.12.2.1 No Action Alternative

Under the No Action Alternative, conditions would remain the same as described above and Reclamation would not remove the dam. The current safety hazards and associated potential liability issues would continue under the No Action Alternative.

The dam's condition would continue to deteriorate, increasing the potential for safety hazards for recreationists on the river. In addition, debris removal would disrupt recreational activities in the event of a dam collapse. Therefore, implementation of the No Action Alternative could potentially have short-term adverse impacts on land use.

3.12.2.2 Proposed Action Alternative

Implementation of the Proposed Action Alternative would improve current river-related recreation opportunities, remove the safety hazards posed by the dam and remove or reduce the potential for liabilities associated with the current safety hazards.

Short-term, temporary disruptions may occur to recreational activities near the site, which are accessed by Camp Nine Road during the demolition phase. For example, bankside access to the river would be restricted during demolition activities. However, adjacent bank access is provided both upstream and downstream of the site. Once the dam has been removed, there would be no hazard to boating activities associated with the submerged dam from high streamflow conditions. The quality of boating activities would improve throughout the affected river segment. The safety hazards and potential associated liabilities associated with unauthorized pedestrian access or other improper uses of the dam would be eliminated.

Implementation of the Proposed Action Alternative would have short-term impacts on land use because some access may be restricted during demolition activities, but would not result in long-term impacts on land use. The work associated with the dam removal would occur within the site and would not disturb adjoining lands. The Proposed Action Alternative would not permanently affect agricultural land uses, either on site or along the proposed access routes. There would be no livestock grazing or crop production

removed from existing agricultural uses. Therefore, implementation of the Proposed Action Alternative would have minor, local, short-term impacts on land use and a long-term beneficial impact on land use by eliminating a public safety hazard.

3.13 Socioeconomics

3.13.1 Affected Environment

Calaveras and Tuolumne counties comprise the ROI for economic resources. The dam spans the Stanislaus River, which is the boundary between Calaveras and Tuolumne counties. San Andreas is the county seat of Calaveras County and Sonora is the county seat of Tuolumne County. Table 14 summarizes population trends between 2000 and 2020 in the two counties. Calaveras County had a higher rate of growth than the State of California during this period. This is likely due to an influx of retirees moving into the county, because Calaveras County has a higher percentage of older residents relative to the state.

The population of Tuolumne County was 58,721 in 2010. The county grew at a little over half the rate of the state between 2000 and 2010, and grew 12.94 percent slower than Calaveras County during the same period. Projected population growth rates indicate that population growth in the county will continue to be slow. By the year 2020, Calaveras County is projected to be home to more than 56,318 persons (an increase of more than 27 percent), while a population of 64,161 is projected for Tuolumne County (an increase of approximately 8.5 percent from the 2010 population).

Table 14 Calaveras and Tuolumne Counties Population Estimates and Trends between 2000 and 2020

Area	Total Population			Percent Population Change 2000-2020	Average Annual Population Change
	2000	2010	2020		
State of California	34,105,437	39,135,676	44,135,923	22.7%	1.6%
Calaveras County	40,870	47,750	56,318	27.43%	2.1%
Tuolumne County	54,863	58,721	64,161	14.49%	0.8%

Source: California Department of Finance (revised August 10, 2009).

The dominant employment sectors in Calaveras and Tuolumne counties reflected different economies in 2006. The industry sectors with the largest number of jobs in Calaveras County include state, federal and local government, which together accounted for 2,531 jobs or 27.4 percent of the total number of nonagricultural employment. Transportation, warehousing and utilities accounted for 1,610 jobs; natural resources and mining for 1,348 jobs; and the leisure and hospitality industry for 1,313 jobs (California Department of Finance 2007b).

As in Calaveras County, the largest industry sector in terms of employment in 2006 in Tuolumne County was state, federal and local government (5,518 jobs). Transportation, warehousing and utilities accounted for 2,927 jobs. The third largest employment sector was the leisure and hospitality industry, which accounted for 2,230 jobs. Educational and health services were the fourth largest industry, employing 2,211 workers. The Tuolumne County economy is in a transition phase, because the mining and timber industries have decreased in recent years while retail, tourism, services and health care have grown.

Both counties are popular tourist destinations because of the recreational opportunities provided by scenic public lands (both federal and state) and because of agricultural tourism that includes winery tours, fruit and vegetable stands, tree farms, and historical sites (University of California Small Farm Center 2007, 2000).

The per capita income in Calaveras County was \$28,572 in 2005, which was 77.4 percent of the state per capita income of \$36,963. The 2005 per capita income of \$29,218 in Tuolumne County was 79.1 percent of the state per capita income. Per capita personal income consists of all income that is received by county residents in a given year from all sources. It is an indicator of the standard of living relative to the state.

3.13.2 *Environmental Consequences*

3.13.2.1 No Action Alternative

Implementation of the No Action Alternative would not affect socioeconomic conditions in Calaveras County or Tuolumne County. The current population and economic trends in Calaveras and Tuolumne counties would continue as described above.

3.13.2.2 Proposed Action Alternative

The Proposed Action Alternative would have minimal effect on the economies of Calaveras and Tuolumne counties through payroll earnings, which would be spent on items such as housing, food, goods and services. Construction expenditures on equipment and supplies and services from local area vendors would result in some minor, short-term economic benefits.

The Proposed Action Alternative would not have any direct growth-inducing effects. The majority of construction workers would likely temporarily relocate from larger population centers outside these counties or would be available within the two counties; therefore, the proposed action would not result in local or regional population impacts, or demand for new permanent housing or community services. Implementation of the Proposed Action Alternative would have short-term beneficial economic effects and no long-term socioeconomic effects.

3.14 Soils and Geology

3.14.1 Affected Environment

The ROI for soils and geologic resources includes the site and the riverbed underneath and immediately surrounding the dam, both riverbanks and the proposed access road and equipment staging areas.

The ROI is located within the Western Metamorphic Belt of the western Sierra Nevada. This geologic province consists of a wide band of marine sedimentary rocks (shales, siltstones and limestones) that were metamorphically altered in subduction zones along the western coast of North America from Paleozoic through Jurassic time. Subsequent intrusion and cooling of granitic plutons created the granitic rocks that form the majority of the Sierra Nevada.

Geologic mapping of the site has been conducted at coarse (1:250,000) scale (Wagner et al. 1987). A poorly defined fault in the vicinity divides two distinct groups of rocks: undifferentiated Paleozoic rocks of the Shoo Fly accretionary terrane to the north and the slates, schist and greenstone of the Calaveras Complex to the south. The Shoo Fly terrane and Calaveras Complex are dominated by argillaceous (clay-rich) and silty metasedimentary rocks, including thin-bedded chert and black carbonaceous slate that may contain

minor amounts of lenticular mafic pyroclastics (Clark 1964). These rock types form the majority of bedrock in the Stanislaus River channel and valley in the area.

Mesozoic plutonic rocks are present upstream from the dam and the Stanislaus Powerhouse and are composed of granodiorite, quartz monzonite and granite, with lesser amounts of hornblende gabbro and rocks of intermediate composition. A small outcrop of crystalline Paleozoic limestone and dolomite is present downstream of the dam and likely underlies a small stretch of the Stanislaus River (Wagner et al. 1987).

Sand and gravel have been quarried in multiple places along the Stanislaus River, but no other recoverable mineral resources are known to occur within or near the ROI (Calaveras County 2007). Slope instability issues are not known to be a problem. Due to the highly metamorphosed nature of bedrock in the area, the probability of encountering paleontological resources is very low.

As presented in Table 15, soils in the area are very shallow (0 to 43 inches). The Rancheria soil types present have extremely high to moderate susceptibility to surface erosion on 30 to 50 percent slopes, when all vegetation cover has been removed (Stone and Irving 1982). Although soils are at risk of erosion, current land uses have not created noticeable impacts on soils. Generally coarse, gravelly soil textures minimize risk of soil compaction.

Table 15 Characteristics of Site Soils

Soil Type	Slopes	Coverage	Typical Soil Profile	Characteristics Common to Both
Rancheria	35 to 80 percent	All portions of the ROI from the channel to the right (looking downstream), including the spur road.	Gravelly loam layers with a depth of 0 to 18 inches followed by an unweathered bedrock layer with a depth of 18 to 22 inches.	Derived from residuum weathered from metasedimentary rocks. Excessively drained. Most restrictive layers have a moderately low to high capacity to transmit water or saturated hydraulic conductivity (0.14 to 5.95 inches/hour). Available water capacity is very low (2.2 inches) and runoff potential is moderate to high. Depth to the water table is more than 80 inches. Moderately to strongly acidic.
Rancheria – rock outcrop – typic xerumbrepts	40 to 110 percent	All portions of the ROI from the channel to the left (looking downstream), including the equipment staging area.	Gravelly loam layers to 39 inches and unweathered bedrock from 39 to 43 inches.	

Sources: NRCS 2011, Stone and Irving 1982.

3.14.2 Environmental Consequences

3.14.2.1 No Action Alternative

The No Action Alternative would have only minor, short-term impacts on geologic and soil resources. Vegetative cover of soils would not be reduced and the area's soil stability, infiltration and erosion rates would be unchanged. Availability of geologic resources would not be affected.

Long-term degradation of the dam could require the removal of debris from the Stanislaus River. However, any impacts from debris removal would likely be incidental for removal of timbers in the course of routine maintenance and incrementally would result in no long-term soil impacts.

3.14.2.2 Proposed Action Alternative

Short-term impacts on soils located in the equipment staging areas, as well as on the river banks would include increased risk of erosion due to vegetation removal caused by the use of heavy equipment for dam removal, and from supporting truck traffic. Bank destabilization may create increased erosion and sedimentation in the Stanislaus River channel. Adverse soil compaction and reduced water infiltration in this small area would be minor.

Soils disturbed as a result of the dam removal work may be susceptible to accelerated erosive processes and may be transported into the Stanislaus River. Use of gravel surfacing at the construction storage areas and spur road would minimize erosion. To minimize soil impacts, soil disturbance and grading would be minimized. Regrading of the slopes surrounding the river channel would be completed during site restoration and stabilization, as necessary. Soil erosion control measures would be implemented during the demolition work and would include BMPs such as diverting runoff from exposed soil surfaces, revegetating disturbed areas with native plants and other measures to collect and filter runoff over disturbed land surfaces (e.g., sediment/silt fences). Use of BMPs, combined with the small overall area affected by dam removal activities would result in only minor, short-term adverse impacts on soils.

Long-term impacts on geologic and soil resources would be moderate in scale and beneficial. Partial restoration of natural hydrologic conditions at the dam location would create a more natural distribution of riverbed substrate within the Stanislaus River channel and along river banks and point bars. Increased flow velocities may create formation of a cut bank near the former Old Camp Nine Bridge. However, due to the abundance of cobbles, boulder and bedrock on the river bank, cut bank formation would be limited and would not affect Camp Nine Road. The proposed action would have only minor, long-term impacts on soils.

3.15 Traffic

3.15.1 Affected Environment

The ROI for the traffic analysis consists of the access route to the site from State Highway 4 and includes Parrotts Ferry Road, Camp Nine Road, FR 3N03 and the highway at the junction with Parrotts Ferry Road (see Map 3). The remainder of State Highway 4 as it continues to the intersection of State

Route 49, and the section of State Route 49 between Angels Camp and the disposal site (Carson Hill Rock Quarry), is not included in the ROI because daily traffic levels on these highways are high relative to anticipated construction-related traffic, as summarized below, and would not experience an appreciable effect from the Proposed Action Alternative.

FR 3N03 provides access to the dam from the east side of the Stanislaus River and connects to Camp Nine Road approximately 1 mile south of the dam. The west end of the road segment that is part of the USFS transportation system terminates at the south side of the dam. North of this location, the road provides access to the Stanislaus Powerhouse, located slightly more than 0.5 mile northeast of the dam. The road follows the east side of the river, which forms a tight, sinuous meander upstream and downstream of the dam. The existing access to the dam on the south side of the river is via a small gravel spur road off of FR 3N03. Large trucks would be unable to turn around at the spur and would have to travel up to the Stanislaus Powerhouse parking lot to turn around. The road surface of FR 3N03 is in fair condition. There are no available traffic counts for the FR 3N03 Road. Motor vehicles on the road include recreationists, because the road provides access to recreation opportunities in the Stanislaus National Forest, and employees of the PG&E Stanislaus hydroelectric facility located upstream of the dam.

Vehicular access to the west side of the site would be via the newer section of Camp Nine Road from the intersection of the New Camp Nine Bridge north to NCPA's Collierville power plant (approximately 1 mile north of the dam). This portion of the road was constructed in the early 1990s and is maintained in excellent condition. Contractors would install an additional temporary access road from the existing asphalt spur road (off Camp Nine Road) that leads to Reclamation's former Old Camp Nine Bridge Site, just downstream of the dam. This bridge was removed by Reclamation in 2008.

Camp Nine Road provides access to public lands near the site from State Highway 4 at the community of Vallecito, via Parrotts Ferry Road. The majority of Camp Nine Road is a narrow winding road that was built to allow one-lane traffic. Approximately 3 miles of Camp Nine Road is on land owned by Reclamation. The remainder of Camp Nine Road is privately owned by 22 landowners, with easements to PG&E and the NCPA. The power companies are responsible for maintenance of the road in exchange for access rights. The road is in fair to poor condition with numerous potholes, eroded shoulders and deteriorated guardrails (Reclamation 2008). Historical visitation for Camp Nine

Road was 51,188 in 2005; 37,213 in 2006; and 36,911 in 2007. Visitation by month in 2007 was 2,588 in August; 8,372 in September; 2,450 in October; and 3,511 in November (Reclamation 2008).

Parrotts Ferry Road runs from north to south and connects the communities along State Highway 4 to Tuolumne County. The most recent average daily traffic count was 2,244 vehicles, as recorded in April 1998 (Calaveras County 2007). The road provides access to residential and developed recreation uses in Calaveras and Tuolumne counties.

Trucks disposing of excavated material and debris would take State Highway 4 to its intersection with State Highway 49 and proceed south on State Highway 49 to reach the Carson Hill Rock Quarry, located approximately midway between Angels Camp and Melones on State Highway 49.

State Highway 4 is a two-lane highway that runs southwest-to-northeast through Calaveras County. The California Department of Transportation (CDOT) collected traffic volumes for State Highway 4 at Vallecito in 2009. The annual average daily traffic (AADT) at Vallecito for northeast-bound traffic was 7,900 vehicles. AADT is the total volume for the year divided by 365 days (CDOT 2011).

State Highway 49 is a two-lane highway that runs generally north-south and intersects with Highway 4 at Angels Camp. State Highway 49 originates in Oakhurst, Madera County in the Sierra Nevada Mountains, where it diverges from State Route 41. It continues in a generally northwest direction, weaving through the communities of Goldside and Ahwahnee, before crossing into Mariposa County. State Highway 49 then continues northward through the counties of Tuolumne, Calaveras, Amador, El Dorado, Placer, Nevada, Yuba, Sierra and Plumas, where it reaches its northern terminus at State Route 70 in Vinton. The AADT for State Highway 49 at Angels Camp, the south junction with Highway 4, is 15,300 vehicles (CDOT 2011).

3.15.2 *Environmental Consequences*

3.15.2.1 No Action Alternative

There would be no change in the traffic levels on federal and county roads and state highways from existing traffic levels if the No Action Alternative is

selected. Therefore, implementation of the No Action Alternative would have no effects on traffic.

3.15.2.2 Proposed Action

Implementation of the Proposed Action Alternative would increase the volume of traffic in the ROI (Camp Nine Road, FR 3N03, Parrotts Ferry Road, State Highway 4 at Vallecito and State Highway 49 between Angels Camp and the Carson Hill Rock Quarry) during dam removal activities. These increases would result from movement of construction-related workers, equipment and materials to and from the site for dam removal and the transport of dam debris to off-site solid waste landfill or recycling facilities.

Vehicle access to the site would be via FR 3N03 and the new portion of Camp Nine Road from the new Camp Nine Bridge to slightly upstream of the dam. Area access roads would be maintained and repaired as needed during construction. The new section of Camp Nine Road was built recently, and is in good condition. Vehicles used to haul equipment and dam debris would not be able to negotiate the tight turn at FR 3N03 and the dam access, and would need to use the parking area at the Stanislaus Powerhouse as a turnaround.

Approximately 134 truckloads would be required to remove excavated substrate and demolition debris from the site. The estimated maximum of 12 truckloads per day would result in an increase of less than 0.15 percent from the existing 7,900 AADT on state Highway 4 at Vallecito, and less than 0.078 percent from the existing 15,300 AADT on State Route 49. Assuming that current traffic levels on Parrotts Ferry Road are consistent with 1998 traffic levels, the maximum of 12 truckloads per day on the road would increase daily traffic by approximately 0.53 percent on Parrotts Ferry Road. The increase in traffic from the transport of dam debris would not be noticeable to motorists on State Highway 4, State Route 49 and Parrotts Ferry Road, although reduced speeds may be experienced at times.

The short-term increases in traffic are unlikely to result in substantial deterioration of the roads. Increased traffic may raise the potential for accidents that involve vehicles turning onto Parrotts Ferry Road from Camp Nine Road (Parrotts Ferry Road carries a greater traffic volume than Camp Nine Road). Measures would be taken to control traffic during demolition, as described in Sections 2.2.1 and 2.3.1.5.

Construction-related traffic would not conflict with existing traffic or existing uses of most roads in the ROI. Traffic conflicts between Stanislaus and Collierville Powerhouse employee traffic and construction-related traffic could be further mitigated by scheduling truck traffic to avoid the commuting periods. There would be a very small increase in the traffic levels on State Highway 4, State Route 49 and Parrotts Ferry Road. The increase in traffic levels occurring at any one time would not exceed road capacity. Therefore, any effects from implementation of the Proposed Action Alternative would be minor and short term, returning to pre-construction levels once demolition and waste removal are complete.

3.16 Noise

3.16.1 *Affected Environment*

Noise is generally defined as unwanted or objectionable sound. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment. An assessment of the potential for the proposed action to result in adverse noise effects requires an evaluation of the site's general setting (e.g., isolated, rural, suburban or urban), nature of the existing ambient noise sources or activities occurring in those settings, proximity of the noise-sensitive receptor to the existing ambient noise source or activity, time of day, and various sound-attenuating factors (e.g., vegetation, ground absorption, topographic features, buildings and atmospheric conditions).

Noise standards and sound measurement equipment have been designed to account for the sensitivity of human hearing to different frequencies. This is accomplished by applying "A-weighted" correction factors. This correction factor is widely applied in the industry and is known to de-emphasize the very low and very high frequencies of sound in a manner similar to the response of the human ear. A-weighted sound levels correlate well to a human's subjective reaction to noise.

Noise is measured in units of decibels on a logarithmic scale. When the A-weighted scale is applied, units are referred to as A-weighted decibels (dBA). Instantaneous, time-varying maximum noise levels are referred to as L_{max}. The noise level that would have the equivalent noise energy as the total amount of the time-varying noise levels over a set period of time is referred to as Leq. A change in the 1-hour Leq of 3-dBA is barely noticeable to people in a

community. However, a 5-dBA change in noise level is clearly noticeable. A 10-dBA change in noise level is perceived as a doubling or halving of noise loudness, while a 20-dBA increase represents a dramatic change.

The dam is located within a rural, sparsely populated area. The existing ambient noise environment in the immediate vicinity primarily comprises natural sounds, vehicle noise associated with small access roadway segments and resulting minimal community activity, as well as noise associated with a nearby quarry. There are no other major noise sources located near the site.

There is no indication that a documented noise study is available describing the measured ambient noise levels at or near the site. Research shows that the typical ambient noise levels for a rural-zoned area range from 35 to 40 dBA Leq during normal daytime hours and 30 to 35 dBA Leq during the night. The construction area is located on federal land and isolated from noise-sensitive land uses such as residential, lodging and healthcare. Ten residential noise-sensitive receptors were identified near the site. The nearest noise-sensitive land use receptor is a residential area located approximately 0.9 mile to the west of the site, at the east end of Skunk Ranch Road. Nine additional noise-sensitive residential receptors are located along Camp Nine Road, near the intersection of Parrotts Ferry Road. These nine noise-sensitive receptors are single-family detached residential structures and are shown to be adjacent to and setback from the construction traffic route along Camp Nine Road.

The County of Calaveras published a draft noise ordinance in 2010 to regulate noise levels from all construction-related activities adjacent to residential property lines. The draft ordinance establishes hourly noise threshold limits of 55 dBA from 7:00 a.m. to 10:00 p.m. and 45 dBA from 10:00 p.m. to 7:00 a.m. at residential property lines. The County of Calaveras also established an Lmax of 70 dBA from 7:00 a.m. to 10:00 p.m. and 65 dBA from 10:00 p.m. to 7:00 a.m. at a residential property line. The County of Calaveras noise ordinance exempts any stationary construction-related noise sources between 7:00 a.m. and 6:00 p.m.

3.16.2 *Environmental Consequences*

3.16.2.1 No Action

The No Action Alternative would not involve generation of construction noise and no changes in ambient noise levels would result at the construction site or

at any sensitive land use areas. Therefore, the No Action Alternative would have no noise impacts.

3.16.2.2 Proposed Action

The Proposed Action Alternative would generate noise at the dam removal site, as well as on the construction access roads from vehicles transporting workers, equipment and materials to and from the site. The proposed dam removal activities would require a variety of equipment. Typical maximum noise levels for construction equipment at 50 feet from the source are shown in Table 16.

Table 16 Typical Construction Equipment Maximum Noise Levels

Equipment	Maximum Noise Level (dBA) at 50 feet
Excavator	85
Loader	80
Compressor	80
Generator	82
Grader	85
Trucks	80 to 84

Source: FHWA 2009

A detailed noise model, Computer-Aided Noise Abatement (Cadna), Version 4.1, was used to determine potential noise impacts from temporary dam removal construction activities on sensitive receptors. This model uses information such as noise source data, barriers, structures and topography and as well as the most up-to-date calculation standards to predict outdoor noise impacts at property lines and sensitive receptor locations.

Construction noise impacts were evaluated using a reasonable ‘worst-case’ dam removal scenario based on the demolition and construction equipment and durations described above for the Proposed Action Alternative. With this scenario, construction equipment would operate 24 hours a day at the dam from mobilization to demobilization. Increases in roadway traffic along Camp Nine Road would occur for the duration of construction and would include up to approximately 12 haul trucks and 10 worker trucks entering and exiting the site per day. Truck traffic noise would only occur between 7:00 a.m. and 6:00 p.m.

As shown in Table 16, the maximum intermittent construction equipment noise levels are expected to range between 80 and 85 dBA at approximately 50 feet. Due to the attenuation of sound over distance, construction noise modeling shows that construction noise levels would be below the most stringent (nighttime) 45 dBA noise threshold limit beyond approximately 2,584 feet from the dam removal site. Because the nearest noise-sensitive receptor is located 0.9 mile from the site, the Proposed Action Alternative would comply with noise threshold limit of 45 dBA at the nearest residential property line. In fact, the noise impact level from the dam removal construction activities would be 23.2 dBA at the nearest noise-sensitive receptor (0.9 mile from the site). Based on researched ambient noise levels, this would result in a difference of approximately 7 dB, which would be barely audible at the nearest noise-sensitive receptor due to the distance to the receptor and the steep topography of the nearby terrain. Therefore, any noise impacts associated with dam removal activities may be imperceptible and would be minor and short term.

During construction, the increased traffic along Camp Nine Road would result in increased noise levels for adjacent residential receptors. The roadway construction traffic noise calculations consider the traffic impacts as a time-integrated value from operations occurring throughout the day. All identified residential noise-sensitive receptors nearest the traffic noise impacts were located at the occupied residential building facing Camp Nine Road. Calculations show that the closest residential structure is approximately 50 feet from Camp Nine Road. The increased truck and worker traffic would result in Leq noise levels ranging from 46.2 to 54.9 dBA at the nearest receptor building façade based on the distance and sound-absorbing terrain between the roadway and the receptors as well as the infrequency of operations. These average hourly noise levels would not exceed the daytime noise threshold limit of 55 dBA established in the noise ordinance established by the County of Calaveras. Haul trucks would depart the site in groups twice per day, and would generate maximum noise levels of 67.2 dBA Lmax at the nearest receptor located 50 feet from Camp Nine Road. This noise level would not exceed the daytime maximum noise threshold limit of 70 dBA. Therefore, any noise impacts associated with the increased construction traffic would be of short duration, condensed into two to four incidences per day when haul trucks leave the site, and below established noise thresholds.

The haul truck traffic along Camp Nine Road would generate ground-borne vibration due to the size and load of the vehicles. According to the Federal Transit Administration (FTA) guidelines, a vibration level of 65 VdB is the

threshold of perceptibility for humans. For substantial detrimental impacts to occur, vibration levels must exceed 80 VdB during infrequent events (FTA 1995). Vibration impacts associated with roadway operations would primarily affect sensitive receptors located closest to Camp Nine Road. The closest existing residence located adjacent to Camp Nine Road is 50 feet from the roadway. The FTA published vibration levels associated with a heavy truck to be 86 VdB at 25 feet. Calculations show that the 50-foot distance to the nearest existing residential structure from the roadway would be attenuated due to distance to a vibration impact level of 76.9 VdB. The vibration impacts associated with the increased construction traffic would not exceed the FTA-established threshold of 80 VdB and, therefore, would be minor.

3.17 Visual Resources

3.17.1 Affected Environment

The ROI for the Proposed Action Alternative is the viewshed, which includes the site and all areas that provide a view of the proposed dam removal activities. The site is in the foothills of the west slope of the Sierra Nevada. The regional landscape is characterized by steep-sided and rolling hills that range in elevation from a few hundred to 1,000 feet (Reclamation 2007).

The dam is located in a narrow valley at the north upper reach of New Melones Lake, formed by the Stanislaus River. Because of the orientation of the river canyon, which is winding and surrounded by steep terrain, the viewshed of the site is limited to an area within 0.5 mile upstream and downstream of the dam, or on slopes to the east and west that face the river. In general, the qualities of the scenic landscape increase with distance from New Melones Lake. The long, narrow upper reaches have dramatic aesthetic qualities (Reclamation 2007). Vegetation community types include riparian woodlands, which provide seasonal dark to light green colors that provide contrast with the light tan colors of exposed soils and rock, and the river. The diversity of the vegetation enhances the scenic quality, providing a variety of mounded linear forms and regular to irregular textures that soften the angular lines and forms of rocky outcrops on the steep slopes.

The timber-faced, steel-buttressed dam is supported on concrete slabs up to 30 feet wide. The dam was constructed in 1961. Prior to completion of the New Melones Dam in 1981, the Stanislaus Afterbay Dam impounded 31.6 acre-feet of water. However, in recent years, the maximum elevation of New Melones

Reservoir inundates this dam. Because of its age, frequency of overtopping and long periods of inundation, the dam is in disrepair. The existing dam exhibits considerable deterioration in the timber facing and other structural components, and detracts from the scenic quality of the surrounding landscape as viewed from the river, Old Camp Nine Road and FR 3NO3.

At low water levels, river-deposited debris that has collected on river banks around the dam support structures is very noticeable. Other human modification consists of a nearby weir (which is also in a deteriorated condition), the access roads and a boat launch ramp constructed of metal tubes located on a steep slope near the dam.

The number of people who are exposed to the site viewshed is low and includes mostly river recreationists and motorists on Camp Nine Road and FR 3NO3. Motorists generally fall into the categories of recreationists who use the road to access recreation opportunities on the river or at Clarks Flat, and employee traffic for the operation and maintenance of the two hydroelectric plants upstream of the dam.

3.17.2 *Environmental Consequences*

3.17.2.1 No Action Alternative

Under the No Action Alternative, no management action would be taken to remove the dam. The current dilapidated and deteriorating condition of the dam is a visually intrusive element in views of the natural landscape, as seen primarily by recreationists. The dam would likely eventually collapse if the deteriorating structure is not removed or repaired. Dam collapse would likely occur during a period of high flow. Dam debris would be removed from the river as soon as practicable; however, retrieval would not commence until streamflow conditions allowed.

Dam failure could also damage downstream river banks and vegetation from gouging and scouring by dam debris. Therefore, the No Action Alternative could result in moderate adverse effects on scenic resources.

3.17.2.2 Proposed Action Alternative

The Proposed Action Alternative would consist of the short-term visual intrusion from demolition and removal activities, including constructing a

temporary access road, removing the timber facing and steel buttresses, excavating riverbed substrate, hauling and disposing of debris, and restoring the banks to preconstruction conditions. The impacts from dam demolition and removal would also include the visual intrusion of vehicles and equipment. This activity would result in a local, short-term, minor, adverse effect on scenic resources in the viewshed of the dam.

The long-term effect of the Proposed Action Alternative would be to remove a structure that, in its present condition, provides an intrusive contrast that detracts from the scenic character of the natural landscape in the site viewshed. The deteriorating condition of the dam detracts from views of the natural landscape. Removal of the existing dam would result in a local, long-term beneficial effect on scenic resources in the affected viewshed by returning the project area to a more natural condition.

3.18 Wildfire

3.18.1 *Affected Environment*

Within the site vicinity, combustible vegetation (fuel) ranges from light grass to timber. Fires in lighter fuels at lower elevations are typically easier to control, but are the flash type with a very rapid spread under bad fire weather conditions. The heavier fuels on steeper slopes of the higher elevations are not as conducive to extreme spread as are the lighter fuels; however, fires in heavier fuels are hard to control because of the intense heat generated, greater manpower requirements and inherent restrictions on the use of equipment.

3.18.2 Environmental Consequences

3.18.2.1 No Action Alternative

Under the No Action Alternative, the potential for wildfires would not be increased by leaving the dam in place. The No Action Alternative would not involve the use of heavy equipment, workers or cutting. Therefore, the No Action Alternative would have no impact on wildfires.

3.18.2.2 Proposed Action Alternative

Demolition activities would introduce several potential ignition sources to the site, including cutting torches and equipment. The possibility of igniting a wildfire on site would be temporarily increased under the Proposed Action Alternative. However, the overall potential for a substantial wildfire during demolition would be low because the contractor would supply fire suppression equipment and shut-off devices. The contractor would also adopt a no-smoking policy. Risks to the public would be minimal because of the limited public use of the area. Given the remote location, limited vegetation, season and availability of fire-fighting equipment, any risk of wildfire would be minor and short term.

3.19 Waste Management

3.19.1 Affected Environment

PG&E analyzed the riverbed material directly upstream of the dam for potential hazardous metals to assess disposal options. Samples were collected at 3-foot depths at three sites in the bar area on August 24, 2007. Metals concentrations were all well below regulatory limits set by the USEPA (CFR Title 40 Part 261) and California (CCR Title 22 Chapter 11), and NOAA freshwater sediment thresholds (Buchman 1999). These data showed that the material was not hazardous waste based on mercury, methyl mercury and silver concentrations.

In 2010, FERC required PG&E to collect additional samples for compliance with Section 401 Water Quality Certification requirements issued in 2008 (Order WR 2009-0039) (SWRCB 2009), requiring additional analysis for lead, chromium, nickel, copper and arsenic. Samples were collected at three locations just upstream of the dam, as well as at a reference station upstream of the Stanislaus Powerhouse.

Table 17 lists the results for the 2007 and 2010 sampling. Arsenic and hexavalent chromium were not detected in any of the samples. Copper was detected in all of the samples and ranged from 6.9 milligrams per kilogram (mg/kg) in the background sample to 8.5 mg/kg at Site 3 (20 feet upstream of the dam). Lead was detected at Site 2 (10 feet upstream of dam) at 4.5 mg/kg and in the background sample at a concentration of 6.9 mg/kg. Nickel was detected in all four samples, ranging in concentration from 6.2 mg/kg (Site 2 and background) to 6.6 mg/kg at Site 1 (0 foot upstream of dam).

Table 17 2007 and 2010 Stanislaus Afterbay Dam Sediment Analysis Results

Sample ID	Location of Sample	2010 Results					2007 Results		
		Arsenic	Copper	Lead	Nickel	Hexavalent Chromium	Mercury	Methyl Mercury	Silver
Total Threshold Concentration		500	2,500	1,000	2,000	2,500	20	---	500
10 Soluble Threshold Limit Concentrations		50	250	50	200	50	2	---	50
Site 1	0 foot upstream	ND	7.5	ND	6.6	ND	0.002885	0.000079	0.165
Site 2	10 feet upstream	ND	7.3	4.5	6.2	ND	0.00118	0.000009 (=MDL)	0.087 (>MDL, <PQL)
Site 3	20 feet upstream	ND	8.5	ND	6.4	ND	0.001539	0.000008 (=MDL)	0.063 (>MDL, <PQL)
Back-ground	Upstream of Stanislaus PH Tailrace	ND	6.9	6.9	6.2	ND	N/A	N/A	N/A

Notes:

ND = Not detected above the Method Detection Limit.

N/A = Not analyzed.

MDL = Method detection limit is the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte.

PQL = Practical quantitation limit defined simply as about 5 times the MDL.

--- = No published threshold concentration.

Concentrations were compared with the state and federal Total Threshold Limit Concentration (TTLC) to assess potential toxicity and suitability for disposal as solid waste (Title 22 of the California Code of Regulations [CCR]). The TTLC assesses the potential for leaching of contaminants to groundwater. If an analyte exceeds TTLC limits, the waste is classified as hazardous and further testing is not required. If TTLC limits are not exceeded, the results are used to determine whether the Soluble Threshold Limit Concentration (STLC) procedure is necessary by comparing 10 times the STLC regulatory limit to TTLC analytical results. If the TTLC results do not exceed 10 times the STLC limit, further analysis is not required.

Results of the Stanislaus Afterbay Dam Sediment Analyses from 2007 and 2010 show that total metals concentrations in the riverbed substrate upstream of the dam were well below the associated TTLC solid waste regulatory limits. Further, all total metal results were well below “10 times the STLC solid waste” limits. Thus, the material is not classified as hazardous waste.

3.19.2 *Environmental Consequences*

3.19.2.1 No Action Alternative

The No Action Alternative would have no impact on the generation, transport and disposal of hazardous or solid waste. No excavated material or demolition debris would result from the No Action Alternative.

3.19.2.2 Proposed Action Alternative

The Proposed Action Alternative would not generate hazardous waste. The material was tested and was well below criteria for classification as hazardous waste. This result is consistent with the grain size analysis. PG&E found that the material accumulated behind the dam is composed predominantly of cobble mixed with gravel and that its transport downstream following dam removal would not result in substantial adverse water quality or aquatic habitat effects (see Sections 3.2 and 3.3). The Proposed Action Alternative would generate substantial solid waste; however, solid waste disposal impacts on landfill capacity and operations would be minimized because 1,000 cy of excavated material would be recycled as well as the concrete, wood and steel portions of the dam, to the extent practicable.

The dam does not contain hazardous building materials such as lead or asbestos. The only hazardous waste that may be generated during demolition is slag (from any torch cutting). This waste would be containerized for off-site disposal. Through maximizing recycling and proper disposal of minor quantities of construction-generated hazardous waste, the proposed action would not have substantial adverse effects on waste management.

3.20 Cumulative Effects

According to the Council of Environmental Quality's regulations for implementing NEPA (50 CFR § 1508.7), an action may cause cumulative impacts on the environment if its impacts overlap in space and/or time with the impacts of other past, present or reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place through time. Reviews of recent and pending planning and environmental reviews by Calaveras and Tuolumne counties identified no proposed or future projects near the site that would potentially contribute to the cumulative effects associated with the No Action and Proposed Action alternatives. The only project that recently affected the site was removal of the Old Camp Nine Bridge, which occurred in 2008 (Reclamation 2008b). Removal of the Old Camp Nine Bridge affected the riverbed and banks in an area immediately adjacent to and downstream from the dam.

Sections 3.19.1 through 3.19.12 assess the potential cumulative effects of bridge removal with the proposed action, as well as the No Action Alternative. Cumulative effects, including environmental justice, ITAs and wildfire, were not evaluated in cases where either the bridge or dam removal had no effects. For example, because the bridge removal did not have any effect involving wildfires, there would be no cumulative effect in conjunction with the proposed action. Cumulative effects were evaluated for air quality, biological resources, cultural and historic resources, health and safety, land use/recreation, socioeconomics, soils and geology, visual, waste management and water resources (surface water and groundwater). Potential cumulative effects on these resources are discussed further for the No Action and Proposed Action alternatives.

3.20.1 *Air Quality*

Under the No Action Alternative, the dam would be left in place, resulting in no effects on air quality and no cumulative effects with the proposed action. Under the Proposed Action Alternative, air quality effects associated with project construction would be intermittent and short term. The air quality effects associated with the recent removal of the Old Camp Nine Bridge were also intermittent and short term. There were no lasting air quality effects from removal of the Old Camp Nine Bridge that could overlap with the impacts of the proposed action. Because the air quality effects of the two projects are temporally separate, there would be no cumulative effect from emission of criteria pollutants. Although GHG emissions were not quantified for the bridge removal, when considered together, the two projects would have a minor, long-term cumulative impact. However, assuming the two projects would have similar emissions, the combined emissions would be approximately 800 metric tons of CO₂ equivalent, which is well below the Council on Environmental Quality's threshold of 25,000 metric tons per year for completing a quantitative evaluation of carbon emissions.

3.20.2 *Biological Resources*

Removal of the Old Camp Nine Bridge provided beneficial impacts for fisheries resources. Under the No Action Alternative, the dam would be left in place, potentially resulting in adverse effects on fish migration and habitat in the event of future dam collapse. Considered together with the Old Camp Nine Bridge removal, the No Action Alternative would have countervailing effects on fisheries, the net effect of which would be minor but long term. The bridge removal project involved removal of bridge footings, whereas the No Action Alternative would leave a fish barrier in place.

In conjunction with the recent removal of the Old Camp Nine Bridge, the Proposed Action Alternative would have a local, long-term, beneficial impact on fish migration and habitat because both alternatives involve removal of structures from the river and a return of natural flow regimes.

The No Action Alternative would have no environmental effect on T&E species. Leaving the dam in place would also have no effect on special-status plant species because the area does not provide suitable habitat and none have been identified during previous project area surveys. Additionally, no jurisdictional wetlands occur on the site. The continued presence of the dam or

its continued deterioration and eventual failure would have no effect on listed T&E or special-status plant species off site because the dam's influence is limited to the river channel. Therefore, the No Action Alternative would have no cumulative effects when considered together with the bridge removal.

The Proposed Action Alternative, which would involve construction of a temporary access road (from the dam access road to the dam removal work area) and demolition of the dam, would temporarily disturb portions of both river banks (including riparian and upland vegetation). However, the proposed mitigation, which involves reseeding the previously disturbed areas with a certified weed-free native vegetation seed mix, would result in an increase in native plant species and a corresponding benefit to wildlife in the area. The Proposed Action Alternative would not result in an effect on any federal- or state-listed, special-status species because no suitable habitat for such species exists at the site. Additionally, no jurisdictional wetlands occur on site. The Old Camp Nine Bridge removal did not result in adverse effects on wetlands, vegetation or wildlife because all potential impacts were mitigated. Reclamation determined that no special-status species were found on the site prior to construction, and all disturbed areas were repaired and reseeded in the same manner that is contemplated for the proposed action. Therefore, considered together with the Old Camp Nine Bridge removal, the Proposed Action Alternative would have only minor, temporary cumulative impacts on vegetation and waters, and no impacts on jurisdictional wetlands or wildlife.

3.20.3 Cultural and Historic Resources

Under the No Action Alternative, the dam would remain in place and would continue to degrade; however, continued deterioration of the dam would not affect cultural or historic resources including the trestle bridge, Camp Nine Road and the two milling features on the banks of the Stanislaus River. Therefore, there would be no cumulative effect when considered together with the Old Camp Nine Bridge removal.

The Proposed Action Alternative would have no impacts on cultural or historic resources. PG&E evaluated the dam and determined that it was not eligible for listing on the NRHP and is, therefore, not a historic property. No modifications are proposed for Camp Nine Road. No historic properties are located within the APE and the features associated with historic properties located near the APE would be avoided. To ensure avoidance of cultural resources and appropriate responses in the event of an unanticipated

discovery, PG&E cultural resource specialists or a qualified archaeological consultant would train construction crews prior to initiating construction. The Old Camp Nine Bridge removal did not result in any adverse effects on cultural or historic resources. The Old Camp Nine Bridge was more than 50 years old, but was not considered a cultural resource. Camp Nine Road was the only historic property within the APE of the Old Camp Nine Bridge removal, and the removal action incorporated construction practices and protective measures that prevented adverse effects on Camp Nine Road (particularly the portion of Camp Nine Road approaching the east end of the Old Camp Nine Bridge). Considered together with the Old Camp Nine Bridge removal, the Proposed Action Alternative would have no cumulative effects on cultural and historic resources.

3.20.4 *Health and Safety*

Removal of the Old Camp Nine Bridge produced beneficial impacts on public health and safety by removing an attractive but dangerous structure from the area. Under the No Action Alternative, the dam would continue to pose a potential public health and safety risk to those using the area. The potential exists for catastrophic failure of the dam, which represents an adverse impact in terms of risk to health and safety. Overall, the No Action Alternative would have a long-term, potential adverse impact on public health and safety due to the hazard that the dam currently represents, as well as the unknown potential hazard to health and safety it may pose in the event of a catastrophic failure.

In conjunction with the recent removal of the Old Camp Nine Bridge, the Proposed Action Alternative would have a long-term, beneficial impact on public health and safety because the dam and other hazards would be removed from the Stanislaus River.

3.20.5 *Land Use*

Removal of the Old Camp Nine Bridge resulted in beneficial impacts on land use by removing a potential safety hazard. The proposed action may result in short-term disruption of uses; however, long-term impacts on land use would be beneficial because the dam, which poses a potential underwater navigation hazard, would be removed. Under the No Action Alternative, the dam would continue to present a physical barrier and hazard. Considered together, the bridge removal and No Action Alternative would have countervailing effects on land use. The bridge removal action removed bridge footings and associated

potential impacts on public health and safety, whereas the No Action Alternative would leave the dam in place. Considered together, the two projects would have a local, long-term, adverse cumulative effect on recreational activities. In conjunction with the recent removal of the Old Camp Nine Bridge, the Proposed Action Alternative would have an overall local, long-term, cumulative beneficial effect on land use by removing two potential public safety and navigation hazards.

3.20.6 Noise

The No Action Alternative would not involve the generation of construction noise or changes in ambient noise levels at the site or at any sensitive land use areas. Therefore, considered together, the bridge removal and the No Action Alternative would have no cumulative noise impact.

During construction, the Proposed Action Alternative would generate noise at the dam removal site, as well as on the site access roads, from vehicles transporting workers, equipment and materials to and from the site. Noise modeling demonstrated that none of the expected noise or vibration from equipment or trucks would exceed applicable noise standards. The Old Camp Nine Bridge removal also generated short-term, local noise impacts during construction. The noise impacts associated with the Old Camp Nine Bridge removal were short term and would not overlap with the Proposed Action Alternative. Therefore, considered together, the two projects would have no cumulative noise impacts.

3.20.7 Socioeconomics

The No Action Alternative would not affect socioeconomics. The current population and economic trends in Calaveras and Tuolumne counties would continue as described for the affected environment. In conjunction with the recent removal of the Old Camp Nine Bridge, the No Action Alternative would have no impact on socioeconomics.

The Proposed Action Alternative would have minimal influence on the economies of Calaveras and Tuolumne counties through economic benefits associated with the construction project, including payroll earnings spent on goods and services and construction expenditures for equipment, supplies and services from local area vendors. The Proposed Action Alternative is not anticipated to have any direct growth-inducing effects. Implementation of the

Proposed Action Alternative would result in beneficial effects in the short term but no long-term socioeconomic effects. The Old Camp Nine Bridge removal likely provided short-term socioeconomic benefits, but no long-term benefits. Considered together with the Old Camp Nine Bridge removal, the Proposed Action Alternative would have minor potential cumulative beneficial socioeconomic effects.

3.20.8 Soils and Geology

Under the No Action Alternative, any impacts on soils and geology would be likely be limited to removal of dam debris (i.e., timbers) from river banks in the course of seasonal maintenance. Considered together with the bridge removal, which resulted in minor, local impacts on soils that were mitigated through use of BMPs, the cumulative impacts of the two projects would be minor and short term.

Under the Proposed Action Alternative, short-term impacts on soils located in the equipment staging areas, as well as on the river banks, would occur. These impacts include an increased risk of erosion due to vegetation removal, caused by the use of heavy equipment for dam removal and from supporting truck traffic. These potential effects would be reduced through erosion control BMPs. Long-term effects on geologic and soil resources would be moderate and beneficial. The partial restoration of natural hydrologic conditions at the dam location would create a more natural distribution of riverbed substrate within the Stanislaus River channel and along river banks and point bars. The Old Camp Nine Bridge removal resulted in short-term impacts on geologic and soil resources from grading and road construction. These impacts were reduced through BMPs and site restoration. In the long term, removal of the Old Camp Nine Bridge resulted in moderate beneficial effects on riverbed substrate through removal of bridge footings. Considered together with the Old Camp Nine Bridge removal, the Proposed Action Alternative would have a moderate beneficial cumulative effect on soils and geology.

3.20.9 Traffic

The No Action Alternative would not change traffic levels on federal and county roads and state highways from existing traffic levels. Therefore, the No Action Alternative would have no cumulative traffic impacts.

The Proposed Action Alternative would result in short-term increases in traffic in the project ROI during the demolition and waste removal activities, which would require an additional approximately 12 truck trips per day to and from the site. Truck traffic would be managed through the use of signs and flaggers, as well as grouping of departing trucks. Project-related traffic would not conflict with existing traffic and any impacts would be inconsequential. The Old Camp Nine Bridge removal resulted in short-term impacts on traffic from demolition and waste removal that were mitigated by similar traffic control measures. In the long term, however, removal of the Old Camp Nine Bridge has had no effect on traffic in the project ROI. Considered together with the Old Camp Nine Bridge removal, the two demolition projects would have no cumulative impact on traffic because their construction schedules would not overlap and neither project would result in long-term traffic increases.

3.20.10 Visual Resources

Removal of the Old Camp Nine Bridge provided beneficial impacts on visual resources. In the short term, the No Action Alternative would avoid visual impacts because construction would not occur. Potential failure of the dam would result in long-term, adverse visual effects from portions of the dam structure being washed downstream. Thus, the bridge removal, considered together with the No Action Alternative, would have countervailing effects on visual quality with an overall long-term, adverse effect on visual resources if the dam fails. In conjunction with the recent removal of the Old Camp Nine Bridge, the Proposed Action Alternative would have an overall local, long-term, beneficial impact on the visual quality of this reach of the Stanislaus River from removal of two structures and returning the area to a more natural condition.

3.20.11 Waste Management

The No Action Alternative would have no impact on the generation, transport and disposal of hazardous or solid waste. No excavated material or demolition debris would result from the No Action Alternative.

The Proposed Action Alternative would generate only a nominal amount of hazardous waste as slag from torch cutting, but would generate substantial amounts of solid waste. However, solid waste disposal impacts on landfill capacity and operations would be minimized by recycling 1,000 cy of excavated material, as well as the concrete, wood and steel portions of the dam. Through maximizing recycling and proper disposal of minor quantities of

construction-generated hazardous waste, the proposed action would have a minor effect on waste management. The Old Camp Nine Bridge Removal also generated a large amount of solid waste, but most of the material was recycled, which reduced the environmental effects on waste management. Considered together with the Old Camp Nine Bridge removal, the Proposed Action Alternative would have a minor impact on waste management.

3.20.12 *Water Resources*

Removal of the Old Camp Nine Bridge resulted in beneficial impacts on hydrologic processes by removing bridge footings. Leaving the dam in place would continue to adversely affect surface-water hydrology near the dam and would have an adverse effect on surface-water hydrology in the event of dam failure and potential erosion and damage to the riverbed and banks. Considered together with the Old Camp Nine Bridge removal, the No Action Alternative would have countervailing effects on hydrology. The bridge removal project involved removal of bridge footings, whereas the No Action Alternative would leave the dam in place, resulting in a net long-term adverse effect given the risk of dam failure.

In conjunction with the recent removal of the Old Camp Nine Bridge, the Proposed Action Alternative would have a local, long-term, minor beneficial effect on hydrologic processes and water quality.

Under the No Action Alternative, groundwater resources would be unaffected and no impacts would occur. Neither the dam nor the substrate would be removed and no dewatering would be needed. Therefore, the bridge removal considered together with the No Action Alternative would have no cumulative impact on groundwater.

The Proposed Action Alternative would result in only minor, local groundwater impacts. Dewatering would have a minor local impact on groundwater and risks of contamination would be minimized through BMPs to prevent leaks and spills, and according to procedures presented in site-specific SWPPP and SPCC plans. The Old Camp Nine Bridge removal had no adverse impacts on groundwater through drawdown or spills. Considered together with the Old Camp Nine Bridge removal, the Proposed Action Alternative would have no cumulative impacts on groundwater.

Chapter 4 – Consultation and Coordination

This chapter summarizes federal and state agency coordination in support of the Stanislaus Afterbay Dam removal. Documentation of correspondence with federal and state agencies is included in Appendix B.

Prior to construction, PG&E would obtain the following regulatory and agency approvals and permits:

- Clean Water Act Section 404, Nationwide Permit Nos. 27 and 33 from the United States Army Corp of Engineers (USACE).
- Lake and Streambed Alteration Agreement (Section 1601) from the California Department of Fish and Game (CDFG).
- 401 Water Quality Certification from the State Water Resources Control Board (SWRCB). (The SWRCB has already issued the Water Quality Certification for this project pursuant to Section 401 of the Clean Water Act as part of its CEQA review for relicensing Spring Gap – Stanislaus Project.)
- Construction General Permit for stormwater discharges from the State Water Resources Control Board.
- FERC approval of the sequence of activities, plans and specifications; Public Safety Plan; Waste Disposal Plan; Soil Erosion and Sediment Control Plan; and Quality Control and Inspection Program.
- Reclamation's concurrence with the proposed action description.

4.1 Agency Coordination

4.1.1 U.S. Army Corps of Engineers

In 1972, Section 404 of the Clean Water Act established a program to regulate the discharge of dredged or fill material into waters of the U.S. The purpose of the Section 404 program is to protect the quality, including the physical, biological and chemical characteristics of U.S. waters, from unregulated discharges of dredged or fill material that may permanently affect water resources (USACE 2007). The Rivers and Harbors Act of 1899 defined navigable waters of the U.S. as “those waters that are subject to the ebb and flow of the tides and/or are presently used, or have been used in the past, or

maybe susceptible to use to transport interstate or foreign commerce." The Clean Water Act built on this definition and defined waters of the U.S. to include tributaries to navigable waters, interstate wetlands, wetlands that may affect interstate or foreign commerce, and wetlands adjacent to other waters of the U.S.

The federal statutes of the Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act give the United States Army Corps of Engineers (USACE) jurisdiction over navigable waters and wetlands of the U.S. The program is jointly administered by the USACE and the USEPA. The USACE is responsible for daily administration and permit review, and the USEPA provides program oversight.

The USACE uses nationwide permits (NWP) to authorize specified categories of activities in waters of the U.S., provided they meet certain conditions. The Proposed Action Alternative would likely be covered by several NWPs.

4.1.2 U.S. Fish and Wildlife Service

The Endangered Species Act of 1973 (ESA), as amended, prohibits any person from taking (harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, relocating, or collecting or attempting to engage in any such conduct) any federal-listed threatened or endangered species. Habitat modification or degradation resulting in death or injury to federally protected species by impairing behavioral patterns, such as breeding, feeding or sheltering, is also prohibited. Administration and enforcement of the ESA are the responsibility of the USFWS.

Section 7 of the ESA outlines the procedures for federal interagency cooperation to conserve federal-listed species and designated critical habitats. Section 7(a)(1) requires federal agencies to use their authorities to further the conservation of listed species. Section 7(a)(2) requires federal agencies to consult with the USFWS to ensure that they are not undertaking, funding, permitting or authorizing actions that are likely to jeopardize the continued existence of listed species, or destroy or adversely modify designated critical habitat. Reclamation has issued a determination of no effect for this project (Appendix B.)

4.1.3 California Department of Fish and Game

California Department of Fish and Game (CDFG) Code Section 1601 requires that the CDFG be notified before beginning an activity that would substantially modify a river, stream or lake (CDFG 2007b). In general, the CDFG must be notified of any work that would be carried out within the annual high-water mark of a river or stream that contains fish and wildlife and supports riparian vegetation. However, Reclamation has previously reviewed the applicability of Fish and Game Code Section 1601 and has determined that Section 1601 applies solely to projects constructed “by or on behalf of, any state or local government agency or any public utility” (Turner 1998).

4.1.4 Central Valley Regional Water Quality Control Board

Section 401 of the Clean Water Act requires any applicant for a federal license or permit, for activities that may result in any discharge into waters of the U.S., to provide the federal permitting agency (USACE) with a certification from the respective state that the action would not violate state water quality standards. In California, the California State Water Resources Control Board (SWRCB) oversees the Water Quality Certification program and Section 401 permitting. To obtain a Section 401 permit, PG&E must file an application with the Central Valley Regional Water Quality Control Board (RWQCB). For the dam removal, the Central Valley RWQCB would rely on the certification issued for the relicensing project to cover this activity. PG&E would also obtain a Construction General Permit for stormwater discharges from the State Water Resources Control Board.

4.1.5 California Air Resources Board

The California Air Resources Board (CARB) does not have authority to issue permits directly to stationary sources of air pollution. Rather, it oversees and assists local air districts (Tuolumne County APCD and Calaveras County APCD) that regulate stationary sources of air pollution. Projects within these two APCDs are exempt for authority to construct permits if the source emits less than 1 ton per year of criteria pollutants. Based on the scale of the project and the resulting emissions, the dam removal activities would not likely result in less than 1 ton per year for criteria pollutants and would not require an air quality permit (pending Tuolumne and Calaveras County approvals).

4.1.6 California State Historic Preservation Office

Demolition of the dam, associated activities on federal lands, and approvals from FERC, the Stanislaus National Forest, and Reclamation constitute an undertaking subject to Section 106 of the NHPA, as set forth in 36 CFR 800.16(y). Section 106 of the NHPA and its implementing regulations require federal agencies to consider the effects of undertakings on historic properties. An effect is defined as an “alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register (36 CFR 800.16[i]).” If an undertaking will affect a historic property, the nature of the effect must be assessed.

Historic properties are defined as a buildings, structures, sites, objects or districts of exceptional historical, architectural, archaeological, engineering or cultural significance that are more than 50 years old and exhibit integrity of location, design, setting, materials, workmanship, feeling and association. They must also meet at least one of the following National Register criteria for evaluation:

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

The dam was not identified as a historic property in the 2002 Spring Gap - Stanislaus Hydroelectric Project evaluation because it was less than 50 years old. However, the dam is nearing the 50-year benchmark for consideration as a historic property. Therefore, in accordance with the Spring Gap - Stanislaus Hydroelectric Project Programmatic Agreement and HPMP, PG&E completed an assessment of the dam's eligibility to be listed in the NRHP using criteria 1 through 4 presented above. This assessment will be used in consultation with the SHPO, the Stanislaus National Forest, and Native American tribes.

PG&E contacted the Native American Heritage Commission regarding the proposed action in November 2005, requesting a search of their files and a list of local Native Americans in Tuolumne County (Trumbly and Compas 2005). The NAHC responded in December 2005 and PG&E sent letters to several individuals and tribal organizations in August 2007. No additional responses were received. In compliance with the HPMP, the proposed action would be documented in the HPMP Annual Report, which would be distributed as appropriate to consulting Native Americans.

PG&E also submitted a finding of no historic properties affected to the SHPO in August 2007 (Trumbly and Compas 2005). In a letter dated September 17, 2007, the SHPO concurred with PG&E's finding. However, because several years have passed and the dam is still in place, the agencies reinitiated the Section 106 consultation.

4.1.7 Tribal Consultation

Reclamation policy requires that, early in the planning process, consultation is initiated with appropriate Indian Tribes/Nations and the Bureau of Indian Affairs (BIA) concerning potential ITAs through government-to-government consultation in a face-to-face meeting, if possible. Reclamation must also coordinate with its Native American Affairs Office and the BIA to identify other Indian Tribes/Nations outside the immediate area that may be interested or affected.

4.2 Public Involvement

On July 1, 2001, Reclamation published a press release announcing the public comment period for the Draft EA. Postcards were sent to individuals and organizations on Reclamation's mailing list, including area residents. All interested agencies, groups and individuals were invited to review the document and submit comments during the 30-day public comment period. Copies of the Draft EA were sent to federal, state and local agencies and the two operating power plants. A list of individuals, agencies and organizations that received hard or electronic copies of the EA is included in Appendix B. An electronic copy of the Draft EA was posted on Reclamation's New Melones website and hardcopies were made available for review at the New Melones Administration Office and Visitor Center.

Chapter 5 - List of Preparers and Reviewers

Table 18 lists the individuals responsible for preparing this EA.

Table 18 List of Preparers

Name	Resource Area
<i>U.S. Department of Interior, Bureau of Reclamation</i>	
Melissa Vignau	Project Manager
Amy Barnes	Technical Review, Cultural Resources
Dan Holsapple	Technical Review
Jeff Laird	Technical Review
Peter Funkhouser	Technical Review, Civil Engineering
Patricia Rivera	Technical Review, ITA
Rob Schroeder	Management Review
Peggi Brooks	Management Review
<i>Pacific Gas & Electric</i>	
Matthew Frasz	Project Manager
Michael DeCarlo	Project Engineer, Parsons
Stephanie Cimino	Cultural Resources
Michael Taggart	Cultural Resources
<i>ARCADIS U.S., Inc.</i>	
Lisa Cope Micheletti	Principal-in-Charge
Jamie Tull	Program Manager, Technical Review
Richard Burke	Senior NEPA Specialist
Peter Boucher	Project Manager, Water Resources
Bryan Chen	Air Quality
Nicholas Kautzman	Biological Resources
Roberta Reinstein, J.D.	Environmental Justice, Land Use (including recreation), Health and Safety, Traffic, Socioeconomics, Indian Trust Assets, and Visual Resources
Michael Burrill	Noise
Kevin Fowler	Noise
Jason Adams	Soils and Geology, Groundwater, Surface Water, Paleontology
Erin Barns	Editorial Review
Jie Chen	Geographic Information Systems

Chapter 6 - References

- Baker, C. 2002. National Register of Historic Places Evaluation, Spring Gap-Stanislaus Hydroelectric System, FERC No. 2130, Tuolumne County, California. PAR Environmental Services, Inc., Sacramento, California. Submitted to Pacific Gas and Electric Company, San Francisco.
- Baker, C. 2011a. National Register of Historic Places Evaluation, Spring Gap-Stanislaus Hydroelectric System, FERC No. 2130, Tuolumne County, California. PAR Environmental Services, Inc., Sacramento, California. Submitted to Pacific Gas and Electric Company, San Francisco.
- Baker, C. 2011b. National Register of Historic Places Evaluation, Stanislaus Afterbay Dam Project, Tuolumne County, California. PAR Environmental Services, Inc., Sacramento, California. Submitted to Pacific Gas and Electric Company, San Francisco.
- Barnes, A. 2008. Archaeological Investigation of the Camp Nine Bridge Removal Project, Calaveras and Tuolumne Counties, California. Report #08-CCAO-024. Bureau of Reclamation, Mid-Pacific Regional Office, Sacramento, California.
- Barrett, S.A. and E.W. Gifford. 1933. Miwok Material Culture. Bulletin of the Public Museum of the City of Milwaukee 2(4):117-367. Milwaukee, Wisconsin.
- Buchman, M.F. 1999. NOAA Screening Quick Reference Tables, NOAA HAZMAT Report 99-1, Seattle WA, Coastal Protection and Restoration Division, National Oceanic and Atmospheric Administration, 12 pages. Updated November 2006.
- Calaveras County. 2007. Calaveras County General Plan Baseline Report. [Web Page] Located at: http://www.co.calaveras.ca.us/departments/gp_update.asp#BaseReport. Accessed: November 29, 2007.
- Calaveras County. 2010. Draft Noise Ordinance, Chapter 9.02.

- Calflora. 2011a. The Calflora Database, Taxon report 1687 (succulent owl's clover) [Web page] Located at: http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=1687. Accessed: February 4, 2011.
- Calflora. 2011b. The Calflora Database, Taxon report 1926 (Hoover's spurge) [Web page] Located at: http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=1926. Accessed: February 4, 2011.
- Calflora. 2011c. The Calflora Database, Taxon report 5850 (Colusa grass) [Web page] Located at: http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=5850. Accessed: February 4, 2011.
- Calflora. 2011d. The Calflora Database, Taxon report 8173 (Greene's tuctoria) [Web page] Located at: http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=8173. Accessed: February 4, 2011.
- California Department of Finance. 2007a. California County Population Estimates and Components of Change. [Web Page] Located at: http://www.dof.ca.gov/html/DEMOGRAP/ReportsPapers/Estimates/E2/E-2_2000-07.php. Accessed: December 14, 2007.
- California Department of Finance. 2007b. California County Profiles. [Web Page] Located at http://www.dof.ca.gov/HTML/FS_DATA/profiles/pf_home.php. Accessed: December 14, 2007.
- California Department of Fish and Game. 1994. Amphibian and Reptile Species of Special Concern in California. Final report submitted to the CDFG 1994. Sacramento CA.
- California Department of Fish and Game. 1995. Fish Species of Special Concern in California. Report submitted to the CDFG 1995. Sacramento CA.

California Department of Fish and Game. 2007a. California's Wildlife. [Web Page] Located at:
<http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.asp>. Accessed: December 2008.

California Department of Fish and Game. 2007b. Lake and Streambed Alteration Program available at:
<http://www.dfg.ca.gov/habcon/1600/index.html>. Accessed: December 6, 2007.

California Department of Fish and Game. 2011a. Natural Diversity Database (CNDDDB). [Web Page] Located at: <http://nrmsecure.dfg.ca.gov>. Accessed: January 21, February 4 and 15, 2011.

California Department of Fish and Game. 2011b. Biogeographic Information & Observation system (BIOS). [Web Page] Located at:
<http://imaps.dfg.ca.gov>. Accessed: February 2 and 11, 2011.

California Department of Fish and Game. 2011c. List of California fully protected species. [Web page] located at:
http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/fully_pro.html. Accessed: February 27, 2011.

California Department of Fish and Game. 2011d. Species Explorer. [Web Page] located at:
<http://nrm.dfg.ca.gov/taxaquery/SpeciesDetail.aspx?taxonid=872&PTitle=golden+eagle&STitle=Aquila+chrysaetos>. Accessed: February 27, 2011.

California Department of Fish and Game. 2011e. Terrestrial Mammal Species of Concern in California. 1998. California Department of Fish and Game. Sacramento CA. Online at:
<http://www.dfg.ca.gov/wildlife/nongame/ssc/1998mssc.html>.

California Department of Fish and Game. 2011f. Anadromous Fishes of California. Online at:
<http://nrm.dfg.ca.gov/taxaquery/SpeciesDetail.aspx?taxonid=23644&STitle=Oncorhynchus+nerka+kennerlyi&PTitle=kokanee+salmon>.

- California Department of Water Resources. 2003. California's Groundwater Bulletin 118. San Joaquin Valley Groundwater Basin, Eastern San Joaquin Subbasin. [Web Page] Located at: <http://www.groundwater.water.ca.gov/bulletin118/index.cfm>. Accessed: December 17, 2007.
- California Environmental Protection Agency, Air Resources Board. 2010. Almanac Emission Projection Data (Published in 2009) Located at: <http://www.arb.ca.gov/app/emsinv/emssumcat.php>. Accessed: February 14, 2010.
- CalRecycle 2011. Active Landfills Profile for Rock Creek Landfill (05-AA-0023) Located at: <http://www.calrecycle.ca.gov/profiles/Facility/Landfill/LFProfile1.asp?C OID=5&FACID=05-AA-0023> Accessed on April 28, 2011
- Central Valley Regional Water Quality Control Board. 1998. The water quality control plan (Basin plan) for the California Regional Water Quality Board Central Valley Region, fourth edition, 1998. The Sacramento River and the San Joaquin River Basin.
- Cimino, S. 2011. Cultural Resources Inventory and Evaluation, Stanislaus Afterbay Dam Removal Project, Tuolumne County, California. Pacific Gas and Electric Company. March.
- Clark, L.D. 1964. Stratigraphy and structure of part of the western Sierra Nevada metamorphic belt, California. USGS Professional Paper 410. 70 p.
- Conners, P. A. 2000. Central Sierra Watershed Analysis: Land Use History 1848-1958. Ms. On file at the Stanislaus National Forest, Supervisors Office, Sonora, CA.
- Decarlo M. 2011. Personal communication. Stanislaus Afterbay Dam. March 21, 2011.
- Dunn, S. 1917. The System of the Sierra and San Francisco Power Company. Bachelor of Science Thesis, Department of Electrical Engineering,

- University of California. On file, Water Resources Collection Archives, University of California, Berkeley.
- ECORP. 2004. Results of 2003 Foothill Yellow-Legged Frog (*Rana boylei*) and Mountain Yellow-legged Frog (*Rana muscosa*) Studies at the Spring Gap-Stanislaus Project (FERC Project No. 2130). Report prepared for Pacific Gas and Electric Company. May 26, 2004.
- Federal Energy Regulatory Commission. 2005. Final Environmental Impact Statement Stanislaus River Projects. Office of Energy Projects. FERC/FEIS – 0171F.
- Federal Energy Regulatory Commission. 2009. FERC Order Issuing New License for the Spring Gap-Stanislaus Project, FERC No. 2130. April 24.
- Federal Energy Regulatory Commission. 2010. Stanislaus Afterbay Dam Sediment Removal – Deficient Submittal Letter and Additional Information Request (AIR). March 30.
- Federal Transit Administration. 1995. Vibration Impact Criteria for General Assessment, Table 8.1: Ground Borne Vibration and Ground Borne Noise Impact Criteria for General Assessment.
- Jackson, R.J., with T.L. Jackson, C. Miksicek, K. Roper and D. Simons. 1994. Framework for Archaeological research and Management on the National Forests of the North-Central Sierra Nevada. Prepared for the U.S.D.A. Forest Service, Eldorado National Forest, Placerville, California.
- Katzel, M. 2010. Stanislaus Afterbay Dam Sediment Removal Study. Technical memo prepared for PG&E. December 8.
- Kroeber, A.L. 1976. Handbook of the Indians of California. Bureau of American Ethnology Bulletin 78. Reprinted. Dover Publications, New York. Originally published 1925, Smithsonian Institution, Washington, D.C.
- Leps, Thomas. 1973. Second Fire-Year Review of Safety of Stanislaus Forebay Dams, F. P. C. Project No. Calif.2130, State Dam No. 97-83.

- Thomas M. Leps, Inc., Consulting Civil Engineer. On file, Pacific Gas and Electric Company Archives, San Bruno, California.
- Levy, R. 1978. Eastern Miwok in California. Edited by R. F. Heizer, pp. 398-413. Handbook of North American Indians, vol. 8, William G. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.
- Ludwig, B. and R. Deis. 2001. Cultural Resources Inventory of the Stanislaus River Hydroelectric Relicensing Project: Beardsley/Donnells (FERC Project No. 2005), Spring Gap-Stanislaus (FERC Project No. 2130), Donnells-Curtis (FERC Project No. 2118). KEA Environmental, Incorporated. Sacramento, California.
- Merriam, C.H. 1955. Studies of California Indians. The staff of the Department of Anthropology, of the University of California, University of California Press, Berkeley, California.
- Moratto, M.J. 1984. California Archaeology. Academic Press, New York, New York.
- Moratto, M.J., J. Tordoff, and L. Shoup, with M.R. Arguelles, O.K. Davis, S.K. Goldberg, S. O'Brien and T.M. Van Buren. 1988. Cultural Change in the Central Sierra Nevada 8000 B.C.-A.D. 1950. Final Report of the New Melones Archaeological Project, Volume IX. On File, National Park Service, Washington, D.C.
- National Oceanic and Atmospheric Administration. 2005. Federal Register 50 CFR Part 226 Endangered and Threatened Species; Designation of Critical Habitat for Seven Evolutionarily Significant Units of Pacific Salmon and Steelhead in California; Final Rule. Includes Designated Critical Habitat for the Central Valley Steelhead. [Web Page] Located at: <http://www.nwr.noaa.gov/ESA-Salmon-Listings/SalmonPopulations/Steelhead/STCCV.cfm>. Accessed: February 2011.
- Outdoor Adventure River Specialists. 2007. North Fork Stanislaus River Rafting. [Web Page] Located at: <http://www.oars.com/california/stanislausriver.html>. Accessed: December 31, 2007.

- Pacific Gas and Electric Company. 2002a. Spring-Gap Stanislaus Project (FERC No. 2130) Application for New License, Volume III (Exhibit E-Aquatic Resources). December.
- Pacific Gas and Electric Company. 2002b. Spring-Gap Stanislaus Project (FERC No.2130) Application for New License, Volume IV (Exhibit E-Botanical, Wildlife, Historical and Archeological, Recreation, Land Management and Aesthetics, and Air Quality). December.
- Pacific Gas and Electric Company. 2007a. Demolition of Stanislaus Afterbay Dam, FERC Project No. 2130-CA, Tuolumne County, Sediment Sampling Results. Hydrogeneration Department. December 20.
- Pacific Gas and Electric Company. 2007b. Quality Assurance Program Plan (QAPP) for Module 4 Service Agreement Projects Requiring Water Quality and/or Water Temperature Monitoring. Report No. 026.11.06.12 Version 4, Revision Date April 18, 2007.
- Pacific Gas and Electric Company. 2010. Demolition of Stanislaus Afterbay Dam, FERC Project No. 2130-CA, Tuolumne County: Project Description. Prepared by PG&E Hydro-Generation Department, San Francisco.
- San Joaquin County 2011. San Joaquin County Landfills & Facilities 2011. Located at:
<http://www.sjgov.org/solidwaste/pdf%20folder/San%20Joaquin%20County%20Landfill%20Brochure%202011.pdf> Accessed on April 28, 2011.
- Sawyer, J.O., and T. Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society, Sacramento, CA.
- State Water Resources Control Board. 2008. SWRCB Water Quality Certification for FERC Project No. 2130. September 15.
- State Water Resources Control Board. 2009. Revised and Amended SWRCB Water Quality Certification for FERC Project No. 2130, Order WR 2009-0039. June 16.

- Stone, C.O. and D.M. Irving. 1982. Calaveras County Soil – Vegetation Handbook. Calaveras County Farm Advisor's Office. County Government Center. San Andreas, CA.
- Trumbly, M. and L. Compass. 2005. Cultural Resources Survey Report for Pacific Gas and Electric Company's Demolition of Stanislaus Afterbay Dam, Spring Gap Stanislaus Hydroelectric Project (FERC No. 2130), Tuolumne County, California. On file, Pacific Gas and Electric Company, Sacramento.
- Tuolumne County Community Development. 1996. Tuolumne County General Plan. [Web Page] Located at <http://portal.co.tuolumne.ca.us/>. Accessed: December 11, 2007.
- Turner, Jim. 1998. Internal Bureau of Reclamation Memo to Frank Michny. Subject: State Permit Requirements – Reply. September 21.
- U.S. Army Corps of Engineers. 2007. Sacramento District. Permitting Overview available at: <http://www.spk.usace.army.mil/organizations/cespk-co/regulatory/permitting.html>. Accessed: 17 December 2007.
- U.S. Army Corps of Engineers. 2011. Sacramento District. Permitting Overview available at: <http://www.spk.usace.army.mil/organizations/cespk-co/regulatory/delineations.html>. Accessed: February 5, 2011.
- U.S. Bureau of Reclamation. 2007. New Melones Resource Management Plan/ Environmental Impact Statement, Draft Resource Inventory Report.
- U.S. Census Bureau. 2000. Census 2000 Summary File 1 (SF 1) 100-Percent Data for Census Block Groups in Calaveras and Tuolumne Counties, California. [Web Page] Located at: http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=DEC&_submenuId=datasets_1&_lang=en. Accessed: December 11, 2007.
- U.S. Department of Agriculture, Natural Resources Conservation Service. 2007. Web Soil Survey 2.0. National Cooperative Soil Survey. [Web

- Page] Located at: <http://websoilsurvey.nrcs.usda.gov/app/>. Accessed: December 3, 2007.
- U.S. Department of the Interior Departmental Manual Part 512.2
- U.S. Department of the Interior, Bureau of Reclamation. 2007. New Melones Resource Management Plan/Environmental Impact Statement, Draft Resource Inventory Report.
- U.S. Department of the Interior, Bureau of Reclamation. 2008a. Reclamation Announces Old Camp Nine Bridge Removal at New Melones Reservoir Completed on December 3, 2008. Released On: December 23, 2008. Located at: <http://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=26041> Accessed on April 28, 2011.
- U.S. Department of the Interior, Bureau of Reclamation. 2008b. Old Camp Nine Bridge Removal, Environmental Assessment. Located at: http://www.usbr.gov/mp/nepa/documentShow.cfm?Doc_ID=3136 Accessed on April 28, 2011.
- U.S. Department of the Interior, Bureau of Reclamation. 2010. New Melones Resource Management Plan/Environmental Impact Statement (RMP/EIS) Located at: <http://www.usbr.gov/mp/ccao/newmelones/rmp.html> Accessed on April 28, 2011.
- U.S. Department of the Interior, National Park Service. 2007. Happy Isles Gauging Station Bridge Removal Project, Environmental Assessment. [Web Page] Located at: <http://www.nps.gov/archive/yose/planning/hi/web/index.htm>. Accessed: December 27, 2007.
- U.S. Department of Transportation, Federal Highway Administration. 2009. Section 9.0 Construction Equipment Noise Levels and Ranges, 2009.
- U.S. Environmental Protection Agency. 2007. Surf Your Watershed for the Stanislaus River Watershed web site.

- http://cfpub.epa.gov/surf/huc.cfm?huc_code=18040010. Web site accessed December 17, 2007.
- U.S. Fish and Wildlife Service. 2008. Birds of Conservation Concern. Division of Migratory Bird Management, Arlington, Virginia. December. 85 pp. Online, located at:
<http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf>
- U.S. Fish and Wildlife Service. 2011a. Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and /or USGS 7 ½ Minute Quads. [Web Page] Located at
http://www.fws.gov/sacramento/es/spp_list/auto_list.cfm. Accessed: February 4, 2011.
- U.S. Fish and Wildlife Service. 2011b. Listed species with critical habitat. [Web Page]; Located at:
http://ecos.fws.gov/tess_public/CriticalHabitat.do?nmfs=1. Accessed: February 10, 2011.
- U.S. Fish and Wildlife Service. 2011c. Species account: Succulent owl's clover. [Web Page]; Located at:
http://www.fws.gov/sacramento/es/plant_spp_accts/succ_owls_clover.html. Accessed: February 27, 2011.
- U.S. Fish and Wildlife Service. 2011d. Species account: Hoover's spurge. [Web Page]; Located at:
http://www.fws.gov/sacramento/es/plant_spp_accts/hooovers_spurge.html. Accessed: February 27, 2011.
- U.S. Fish and Wildlife Service. 2011e. Species account: Colusa grass. [Web Page]; Located at:
http://www.fws.gov/sacramento/es/plant_spp_accts/colusa_grass.html. Accessed: February 27, 2011.
- U.S. Fish and Wildlife Service. 2011f. Species account: Valley elderberry longhorn beetle. [Web Page]; Located at:
http://www.fws.gov/sacramento/es/plant_spp_accts/acctbug.htm. Accessed: February 27, 2011.

- U.S. Fish and Wildlife Service. 2011g. Species account: California red-legged frog. [Web Page]; Located at:
http://www.fws.gov/sacramento/es/plant_spp_accts/acctherp.htm.
Accessed: February 27, 2011.
- U.S. Fish and Wildlife Service. 2011h. Species account: Fisher. [Web Page]; Located at:
http://www.fws.gov/sacramento/es/plant_spp_accts/acctmammal.htm.
Accessed: February 27, 2011.
- U.S. Fish and Wildlife Service. 2011i. Species account: California tiger salamander. [Web Page]; Located at:
http://www.fws.gov/sacramento/es/plant_spp_accts/acctherp.htm.
Accessed: February 27, 2011.
- U.S. Fish and Wildlife Service. 2011j. Division of Migratory Bird Management. Online article discussing the bald eagle and endangered species status. Located at <http://www.fws.gov/migratorybirds/baldeagle.htm>.
Accessed: February 2011.
- U.S. Fish and Wildlife Service. 2011k. Digest of federal resource laws. [Web Page] located at:
<http://www.fws.gov/laws/lawsdigest/resourcelaws.htm>. Accessed: February 2011.
- U.S. Fish and Wildlife Service. 2011l. Species account: Delta smelt. [Web Page]; Located at:
http://www.fws.gov/sacramento/es/plant_spp_accts/acctfish.htm.
Accessed: February 27, 2011.
- U.S. Geological Survey. 1948. 7.5-Minute Topographic Quadrangles, Murphys and Columbia, CA. North American Datum 1983.
- University of California, Berkeley. 2007. The University and Jepson Herbaria. Jepson Online Interchange for California Floristics. [Web Page] Located at: <http://ucjeps.berkeley.edu/interchange.html>. Accessed: January 4, 2008.

- University of California Small Farm Center. 2007. California Agricultural Tourism Database. [Web Page] Located at <http://www.calagtour.org/>. Accessed: December 11, 2007.
- Wagner, D.L., Jennings, C.W., Bedrossian, T.L. and E.J. Bortugno. 1987. Geologic map of the Sacramento Quadrangle. Regional Geologic Map Series. Map No. 1a(geology). Scale 1:250,000. California Department of Conservation. Mines & Geology.
- Wolman, M.G. 1954. A method of sampling coarse river-bed material. Transactions of the American Geophysical Union 35(6): 951-956.

Appendix A: List of Environmental Commitments

A.1 Environmental Commitments

A.1.1 *Avoidance and Minimization Measures*

PG&E would implement avoidance and minimization measures to reduce or eliminate potential minor adverse construction impacts. These measures are beyond the design features incorporated into the proposed action, such as conducting the removal at low streamflow. These measures are summarized below and described in greater detail in Chapter 3.

A.1.1.1 Air Quality

Fugitive dust control measures would be installed in compliance with the SWPPP.

A.1.1.2 Biological Resources

After placing the water-fill diversion dams, and before and during dewatering, a qualified biologist will capture any stranded fish with dip nets and move them to an area downstream of the dam. Workers would be trained regarding the potential presence of special-status species and how to move fish to downstream areas, if encountered.

The area used for the temporary access road from the spur road to the riverbed would be restored to preconstruction conditions.

Native trees and shrubs would be flagged and avoided to the extent practicable, trimmed back as needed, and removed, if necessary. Portions of removed willow trees would be salvaged to make willow stakes to re-establish the species in disturbed areas.

To prevent the introduction of non-native species, construction equipment would be cleaned prior to mobilization to the site. Disturbed areas would be reseeded with a certified weed-free native seed mix, and willow stakes would be used to re-establish trees in the disturbed riparian areas.

A.1.1.3 Cultural Resources

To ensure protection of existing cultural resources, PG&E cultural resources specialists or a qualified archaeological consultant would train construction crews prior to initiating construction to ensure avoidance of cultural resources and respond appropriately in the event of an unanticipated discovery.

The contractor would avoid impacts on the hand-laid rock walls associated with the former Old Camp Nine Bridge. This area would be fenced, marked on the construction drawings and avoided during dam removal.

A.1.1.4 Surface Water

The contractor would install stormwater and fugitive dust control BMPs, according to the SWPPP, to minimize erosion and protect water quality. The only regrading required would be on the river banks in the area occupied by the wing walls. This area would be restored to its original grade and revegetated consistent with the SWPPP to minimize potential erosion.

A silt curtain and oil containment boom would be installed downstream of the dam prior to construction to minimize migration of any turbidity or fuel leaks from construction equipment.

Any surface water or extracted groundwater from above the dam would be diverted to a sedimentation pond, treated at the site using a sand filter to meet regulatory standards, and released to the downstream side of the dam. Flows discharged to the downstream side of the dam would be dissipated using riprap gathered on site to minimize turbidity according to action-specific permit conditions.

A.1.1.5 Traffic

Signage regarding truck traffic would be placed on Camp Nine Road and a Traffic Control Plan would be prepared to facilitate trucking of excavated materials and debris. On-site traffic would be limited to the dam and construction storage areas.

During the demolition period, warning signs would be posted near the site access road and any staging areas to alert passing traffic of demolition activities and associated traffic. During material hauling, a sentry or flagger

would be placed at the bridge near the job site and at the intersection of Camp 9 Road and Parrot's Ferry Road to alert oncoming traffic.

A.1.1.6 Wildfire

The contractor would provide fire suppression equipment and shutdown devices to work crews and a no smoking policy would be implemented to minimize fire risk.

A.1.1.7 Health and Safety

Access by recreationists who may boat or walk into the construction area would be controlled by posting signs upstream and downstream of the dam, depending on lake elevation and the level of public use of the area at the time of the demolition.

Safety "tailgate" meetings would be held at the start of each workday to discuss potential hazards that might be encountered for that day and lessons learned from previous days. A site-specific Health and Safety Plan (HASP) would be developed and all workers would be required to read and acknowledge their understanding of the HASP.

Workers would be protected with air-purifying respirators or supplied air respirators in accordance with the HASP when performing torch cutting and waste collection activities that could result in exposure to toxic fumes.

When heavy equipment is used to move large structures, alarms would be sounded to ensure that all workers vacate these areas and move to designated safe areas.

A.1.1.8 Waste Management

Any fine-grained material remaining in the sedimentation pond, as well as the sand filter medium would be disposed offsite.

A.1.1.9 Fire Prevention

Site preparation and construction would not take place during the normal fire season. Further, conditions adjacent to the site are not conducive to fire. However, the contractor would prepare a Fire Prevention Plan for validation by

the local fire control agency. During dam removal, potential sources of fire would include construction vehicles and sparks. Separation of steel, wood and concrete components may require torches and saws. The construction contractor would provide fire suppression equipment and shutdown devices, and a no smoking policy would be implemented during construction to minimize fire risk.

The work would be conducted so that potential sources of ignition (e.g., hot surfaces and/or exhaust vents from equipment, tools, vehicles and other sources) do not contact potentially combustible materials (e.g., dry vegetation, combustible demolition debris and other on-site flammable materials). Smoking on site would be restricted to a designated area. Fire extinguishers would be installed in all areas with potential sources of ignition. Because the site is located next to a river, a sump pump equipped with a fire hose with an adequate extension would be available to be used as the primary fire suppression and control equipment. During fire hazard conditions, workers would use fire-proof blankets and work areas would be sprayed with water to minimize fire hazards. Prior to mobilization, the contractor would train crews in fire prevention, and construction crews and vehicles would have the following equipment:

- One shovel, one axe and one or more UL-rated 4BC extinguisher on each pickup truck, crew truck and personal vehicle.
- One shovel with each tractor, backhoe or other heavy equipment.
- One shovel and one five-gallon water-filled backpack pump with each welder.
- One shovel and one fully charged chemical fire extinguisher at a point not greater than 25 feet from the work site for each gasoline-powered tool, including chain saws and rock drills. Fire extinguishers would be of the type and size set forth in the California Public Resources Code, Section 4431 and the California Administrative Code, Title 14, Section 1234.
- Shovels would be a type "O," with an overall length of not less than 46 inches. Axes or pulaskis would have a 2.5-pound or larger head and an overall length of not less than 28 inches.

A.1.1.10 *Hazardous Material Management*

PG&E would maintain material safety data sheets for all substances (e.g., fuels, hydraulic fluids) used on site and at the job headquarters in Angels Camp, as required by the Hazard Communication Law, General Industry Safety Orders, Sec. 5194. Hazardous wastes, such as grease cartridges and oil absorbents, would be placed in proper containers and transported from the site to an authorized hazardous waste collection site.

Trucks and equipment would be refueled as required from 110-gallon-capacity diesel tanks carried in the back of pickup trucks or from a lube truck that would visit the site daily. Fuel transfer areas would be protected (e.g., 10 mil plastic buried below 4 inches of soil). No fuel storage tanks would be placed on site.

This page intentionally left blank.

Appendix B

Correspondence and
Background Information

This page intentionally left blank.

Appendix B1

July 20, 2011 Letter from Bureau of Reclamation to State Historic Preservation Officer

This page intentionally left blank.



United States Department of the Interior

BUREAU OF RECLAMATION
Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, CA 95825-1898

IN REPLY REFER TO:

JUL 20 2011

MP-153
ENV-3.00

CERTIFIED – RETURN RECEIPT REQUESTED

Mr. Milford Wayne Donaldson
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

Subject: National Historic Preservation Act (NHPA) Section 106 Compliance for the Stanislaus Afterbay Dam (afterbay dam) Removal Project, Calaveras and Tuolumne Counties, California (Tracking #06-CCAO-203)

Dear Mr. Donaldson:

The Bureau of Reclamation is initiating consultation under Section 106 of the NHPA for a dam removal project and is seeking your concurrence with our finding of no adverse effect to historic properties. The afterbay dam, part of the Gap-Stanislaus Hydro-electric Project owned and operated by Pacific Gas and Electric (PG&E), is located about 12 air-miles east of Angels Camp, California, on lands owned and managed by Reclamation for the New Melones Reservoir (see enclosed Cimino et al. 2011:3, Figure 1). PG&E proposes to remove the afterbay dam to comply with Article 302 of the Spring Gap-Stanislaus Project's operating license (FERC 2130) because it no longer serves its intended purpose and is in a state of disrepair. Reclamation proposes to issue a permit to PG&E for the dam removal project on Reclamation lands. Issuing a Federal permit constitutes an undertaking as defined by Section 301(7) of the NHPA (16 U.S.C. § 470 *et seq.*). PG&E originally consulted on a finding of no historic properties affected for the removal of the afterbay dam in August 2007, receiving concurrence from your office on September 17, 2007. Due to project modifications and the additional evaluation of the afterbay dam itself, additional consultations are being conducted by Reclamation. Reclamation is consulting with you pursuant to the 36 CFR Part 800 regulations that implement Section 106 of the NHPA.

The afterbay dam, a timber-faced steel-buttress dam, was built in 1962 by PG&E as a component of the new Stanislaus powerhouse complex that replaced the original 1909 powerhouse complex (see Cimino et al. 2011:6, Photo 1). New complex operation began in 1963 with the dam used to regulate rapid flow changes due to operations of the new powerhouse (Cimino et al. 2011:9). Upon completion of New Melones Dam and Reservoir in 1981, the afterbay dam was abandoned in place as it is subjected to periodic inundation from the reservoir. The dam no longer serves its intended purpose and is in a state of disrepair, primarily due to accelerated weathering.

PG&E proposes to remove the afterbay dam and re-contour the river channel in the vicinity of the dam to the present river bed elevation (refer to Appendix C in the enclosed report for additional details). The project will involve a work area and a temporary access road at and immediately adjacent to the dam and two separate staging areas accessed by existing roads (see Cimino et al. 2011:5, Figure 3). One staging area for construction equipment and materials will be located on a flat area adjacent to the Stanislaus Powerhouse Switchyard. A turn-out along Camp Nine Road, about 0.25 miles south of the dam, will be utilized as a temporary stockpile area. The existing road built by PG&E to access the new Stanislaus Powerhouse will be used to access the staging areas and temporary road to the dam site. Stream flows at the dam will be diverted by dredging a channel through the existing sediment and gravel deposited behind the dam structure and installing a temporary water fill dam. Removed river bed material, timber, steel, concrete, and other debris will be hauled off site for disposal or recycling. Once the dam is removed, the area will be graded to match flush with the adjacent ground. The temporary access road will be removed at the end of the project.

Reclamation has determined that the area of potential effects (APE) includes approximately 2 acres that encompass all construction activities, staging activities, and access routes. The APE is located in sec. 12, T. 3 N., R. 14 E., Mount Diablo Meridian, as depicted on the Murphys 7.5' U.S. Geological Survey (USGS) topographic quadrangle map, and sec. 6 T. 3 N., R. 15 E., Mount Diablo Meridian as depicted on the Stanislaus 7.5' USGS topographic quadrangle map (see enclosed APE map). The in-river portion of the APE is limited to the dam location and its immediate vicinity. River flows above and below the dam will not change in quantity or intensity with elevations remaining well within the normal range of annual fluctuations. There will be no significant redistribution and deposition of materials downstream of the dam site after removal since the project will be implemented during a low water period.

In an effort to identify historic properties, PG&E contracted PAR Environmental Services (PAR) to conduct a National Register of Historic Places (NRHP) evaluation, including survey, of the entire built environment associated with the Spring Gap-Stanislaus River Hydroelectric Generation Project in 2002 and 2011 (Cimino et al. 2011-enclosed). Three historic sites and one district were identified within the APE of the current project. The project lies within the boundaries of the New Melones Archaeological District (NMAD) found eligible by consensus on January 26, 1988. An equipment laydown area (at the modern powerhouse facility) lays within the boundaries of site CA-TUO-665H, the Camp Nine town and old powerhouse site, previously found to be a contributing element of the NMAD. Camp Nine Road (CA-CAL-1872H) is a primary access route to the project location, and a small portion that comprises the eastern approach to the old Camp Nine Bridge (removed in 2008) is within the APE. Site CA-CAL-1872H was found individually eligible through association with the Stanislaus Powerhouse by consensus on May 20, 2008. The afterbay dam was newly recorded as site P-55-6287 in the 2011 efforts as the dam had not reached the age of 50 years old at the time of the earlier surveys. Cimino et al. (2011) recommend that the afterbay dam is not eligible for listing under any of the four criteria (36 CFR 60.4) either individually or as a contributing element to any district (the NMAD). Reclamation agrees with their recommendation and determines the afterbay dam to be ineligible.

Consultations with tribes who might attach religious and cultural significance to historic properties as well as interested parties likely to have knowledge of historic properties within or near the APE have been ongoing in this area. In PG&E's implementation of a Historic Properties Management Plan (enclosed for your information) for the Spring Gap-Stanislaus Hydroelectric Project, which includes the afterbay dam area, tribes and Native American groups are identified and contacted when effects to historic properties are unavoidable. PG&E contacted the Native American Heritage Commission and contacted several individuals and tribes regarding this project. Efforts to consult with Native Americans failed to identify any areas of concern regarding the afterbay dam removal project and no historic properties were identified. Additional information is provided in the enclosed report by Cimino et al. (2011).

Reclamation finds no adverse effect to historic properties for the removal of the afterbay dam. The dam itself is not a historic property. The Camp Nine Road (CA-CAL-1872H) is regularly used for access to the Stanislaus Powerhouse and Forest Service recreation areas. Temporary use for construction will not adversely affect the historic characteristics of the road. Although within site boundaries, the proposed laydown area near the modern Stanislaus Powerhouse is a significant distance from any features associated with the Camp Nine town site (CA-TUO-665H). A rock retaining wall situated 100 feet from the laydown area is the nearest feature. The temporary use of the previously graded laydown area will not adversely affect any of the historic characteristics of the Camp Nine town site and old powerhouse. The dam does not contribute to the NMAD and its removal and temporary construction activities will not adversely affect any of the historic characteristics of the NMAD.

Reclamation invites your comments on our delineation of the APE and the appropriateness of our identification efforts for the afterbay dam removal project. We request your concurrence on our determination that the Stanislaus Afterbay Dam is not eligible for inclusion on the NRHP. We also request your concurrence on our finding that the proposed undertaking will result in no adverse effect to historic properties, pursuant to 36 CFR Part 800.5(b). Please contact Ms. Amy Barnes, Archaeologist, at 916-978-5047, or abarnes@usbr.gov, if you have any questions, comments, or concerns.

Sincerely,

ANASTASIA T. LEIGH

FOR

Russell W. Grimes
Acting Regional Environmental Officer

Enclosures - 3

WBR:ABarnes:mjames:07-15-2011:916-978-5047 AIR-1752-9652-240-01-4-6-2
I:\153\Amy\2011\06-CCAO-203 Stanislaus Afterbay Dam Removal SHPO Revised.doc

This page intentionally left blank.

Appendix B2
August 10, 2011 Letter from State Historic Preservation Officer

This page intentionally left blank.



**OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION**

1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
calshpo@parks.ca.gov
www.ohp.parks.ca.gov

August 10, 2011

Reply in Reference To: **BUR110722A**

Anastasia T. Leigh - Acting Regional Environmental Officer
United States Department of the Interior
Bureau of Reclamation, Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, CA 95825-1898

Re: Section 106 Compliance for the *Stanislaus Afterbay Dam Removal Project, Calaveras and Tuolumne Counties, California* (Tracking #06-CCAO-203)

Dear Ms. Leigh:

Thank you for consulting pursuant to 36 CFR Part 800 (as amended 8-05-04) regulations implementing Section 106 of the National Historic Preservation Act (NHPA). The Bureau of Reclamation (BUR) is seeking comments on the above referenced Undertaking concerning (1) the proper delineation of the Area of Potential Effect (APE), (2) the appropriateness of resource identification efforts, (3) a determination of ineligibility for the Stanislaus Afterbay Dam, and (4) a finding of "No Adverse Effect" pursuant to 36 CFR Part 800.5(b).

The BUR has proposed to issue a permit to Pacific Gas and Electric (PG&E) to remove the long abandoned Stanislaus Afterbay Dam. The dam was constructed in 1962 as a component of the Stanislaus powerhouse complex and rendered useless after completion of the New Melones Dam in 1981. The APE is described as comprising less than three discontinuous acres of land that include (1) the Stanislaus Afterbay Dam and vicinity, (2) an Equipment Laydown Area located near the Stanislaus Powerhouse Switchyard, and (3) a Stockpile Area located adjacent Camp Nine Road. As I understand, the Undertaking will demolish the subject dam and reconstruct the immediate river channel and banks, and stage various activities at the stockpile and laydown areas. Resource identification efforts were completed in multiple phases of work and involved background research, a Native American Heritage Commission (NAHC) search, consultation with contacts provided by the NAHC, and field survey. Though the subject dam was not identified as a potential historic property, this work identified the following previously recorded cultural resources located within or adjacent the APE.

1. The New Melones Archaeological District (NMAD)
 - a. Ca-Tuo-665H (the historic Camp Nine Town Site and contributor to the NMAD)
 - b. Ca-Tuo-668 (a prehistoric bedrock milling site and contributor to the NMAD)
2. Ca-Cal-4423 (a prehistoric bedrock milling site)
3. Ca-Cal-1872H (the historic Camp Nine Road)

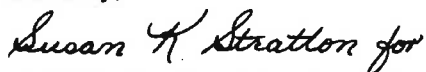
After reviewing your letter and reports titled *Cultural Resources Inventory and Evaluation, Stanislaus Afterbay Dam Removal Project, Tuolumne County, California* (FERC No. 2130) and *Historic Properties Management Plan for the Spring Gap-Stanislaus Project* (FERC No. 2130), *Tuolumne and Calaveras Counties, California* prepared by PG&E (2011) and Applied Earthworks (2004) respectively, I have the following comments:

1. Pursuant to 36 CFR Parts 800.4(a)(1), I find the APE as described in your submittal inconsistent with Federal regulations as it singularly focused on the project footprint. Please be advised the APE should encompass the acreage of the undertaking and the area extent of all historic properties it physically connects, including the NMAD.

2. Pursuant to 36 CFR Part 800.4(b)(1), I find the *Level of Effort* completed for identifying historic properties appropriate but with the singular issue of APE description discussed above.
3. Pursuant to 36 CFR Part 800.5(b), I **concur** with the finding of "*No Adverse Effect*" for the following reasons:
 - The Stanislaus Afterbay Dam - The submitted report applied the *Criteria for Evaluation* found at 36 CFR Part 60.4 and determined the subject dam ineligible under any criteria as an individual resource or a district contributor. I have no objections to this determination.
 - Ca-Tuo-665H and Equipment Laydown Area (ELA) - though located inside the boundary of Ca-Tuo-665H (a large multi-feature historic town site) the ELA occupies an existing graded and graveled flat adjacent the modern Stanislaus Powerhouse Switchyard. As such, neither the site nor the NMAD should be affected as the ELA contains no cultural constituents and appears to be an extension of the switchyard landscape.
 - Ca-Tuo-668 - the site is described as a small prehistoric bedrock milling station located on the bank of the Stanislaus River and outside APE boundary at the ELA. As such, neither the site nor the NMAD should be affected by the Undertaking.
 - Ca-Cal-1872H (Camp Nine Road) - the site is a discontinuous multi-feature historic road alignment that was determined eligible under Criterion A with the SHPO's concurrence in 2008. Some segments of the site, such as the one that will be used as an access route, have been incorporated into the modern road system. As such, the undertaking should have no effect to the site beyond its contemporary use as a transportation corridor.
 - The Stockpile Area - constitutes a small turn-out adjacent a non-historic segment of the Camp Nine Road. As per the aforementioned reports, resource identification work indicated it contains no historic properties.
 - Ca-Cal-4423 - the site is described as a small prehistoric bedrock milling site located on a bedrock outcrop on the Stanislaus River and outside the APE boundary at the Stanislaus Afterbay Dam. As such, the site should not be affected by the Undertaking.
4. Please be advised that under certain circumstances, such as an unanticipated discovery or a change in project scope (including inclusion of Ca-Tuo-668 and Ca-Cal-4423 and contributing elements of Ca-Tuo-665H and Ca-Cal-1872), the BUR may have additional future responsibilities for this undertaking under 36 CFR Part 800.

Thank you for considering historic properties as part of your project planning. Please contact project reviewers Ed Carroll at 445-7006 or ecarroll@parks.ca.gov, or Jeff Brooke at (916) 445-7003 or jbrooke@parks.ca.gov if you have any questions or concerns about this review.

Sincerely,



Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

Appendix B3
August 11, 2011 Email from Bureau of Reclamation Archaeologist

This page intentionally left blank.

Clinton, Patricia L

From: Barnes, Amy J
Sent: Thursday, August 11, 2011 10:56 AM
To: Clinton, Patricia L
Cc: BOR MPR Cultural Resources Section
Subject: Stanislaus Afterbay Dam Removal Project (06-CCAO-203)
Attachments: 9 BUR110722A Stanislaus Afterbay Dam Removal Project.pdf

Tracking #06-CCAO-203

Project: Stanislaus Afterbay Dam Removal Project (CCAO-FONSI-11-7)

Location: Calaveras and Tuolumne Counties; Murphy's and Stanislaus 7.5' USGS topographic quadrangle maps
sec. 30, T. 22 N., R. 2 W., and sec. 12, T. 3 N., R. 14 E., Mount Diablo Meridian

The activities associated with Reclamation issuing a permit to Pacific Gas and Electric (PG&E) to removed the Stanislaus Afterbay Dam (afterbay dam) on Reclamation lands will result in no adverse effects to historic properties. PG&E proposes to remove the afterbay dam to comply with Article 302 of the Spring Gap-Stanislaus Project's operating license (FERC 2130) because it no longer serves its intended purpose and is in a state of disrepair. PG&E originally consulted on a finding of no historic properties affected for the removal of the afterbay dam in August 2007, receiving concurrence from SHPO on September 17, 2007. Due to project modifications and the additional evaluation of the afterbay dam itself, additional review and consultation was conducted by Reclamation.

PG&E proposes to remove the afterbay dam and re-contour the river channel in the vicinity of the dam to the present river bed elevation (refer to Appendix C in the enclosed report for additional details). The project will involve a work area and a temporary access road at and immediately adjacent to the dam and two separate staging areas accessed by existing roads (see Cimino et al. 2011:5, Figure 3). One staging area for construction equipment and materials will be located on a flat area adjacent to the Stanislaus Powerhouse Switchyard. A turn-out along Camp Nine Road, about 0.25 miles south of the dam, will be utilized as a temporary stockpile area. The existing road built by PG&E to access the new Stanislaus Powerhouse will be used to access the staging areas and temporary road to the dam site. Stream flows at the dam will be diverted by dredging a channel through the existing sediment and gravel deposited behind the dam structure and installing a temporary water fill dam. Removed river bed material, timber, steel, concrete, and other debris will be hauled off site for disposal or recycling. Once the dam is removed, the area will be graded to match flush with the adjacent ground. The temporary access road will be removed at the end of the project.

In an effort to identify historic properties, PG&E contracted PAR Environmental Services (PAR) to conduct a National Register of Historic Places (NRHP) evaluation, including survey, of the entire built environment associated with the Spring Gap-Stanislaus River Hydroelectric Generation Project in 2002 and 2011 (Cimino et al. 2011). Three historic sites and one district were identified within the APE of the current project. The project lies within the boundaries of the New Melones Archaeological District (NMAD) found eligible by consensus on January 26, 1988. An equipment laydown area (at the modern powerhouse facility) lays within the boundaries of site CA-TUO-665H, the Camp Nine town and old powerhouse site, previously found to be a contributing element of the NMAD. Camp Nine Road (CA-CAL-1872H) is a primary access route to the project location, and a small portion that comprises the eastern approach to the old Camp Nine Bridge (removed in 2008) is within the APE. Site CA-CAL-1872H was found individually eligible through association with the Stanislaus Powerhouse by consensus on May 20, 2008. The afterbay dam was newly recorded as site P-55-6287 in the 2011 efforts as the dam had not reached the age of 50 years old at the time of the earlier surveys.

Cimino et al. (2011) recommend that the afterbay dam is not eligible for listing under any of the four criteria (36 CFR 60.4) either individually or as a contributing element to any district (the NMAD). Reclamation agreed with their recommendation and determined the afterbay dam to be ineligible.

Reclamation finds no adverse effect to historic properties for the removal of the afterbay dam. The dam itself is not a historic property. The Camp Nine Road (CA-CAL-1872H) is regularly used for access to the Stanislaus Powerhouse and Forest Service recreation areas. Temporary use for construction will not adversely affect the historic characteristics of the road. Although within site boundaries, the proposed laydown area near the modern Stanislaus Powerhouse is a significant distance from any features associated with the Camp Nine town site (CA-TUO-665H). A rock retaining wall situated 100 feet from the laydown area is the nearest feature. The temporary use of the previously graded laydown area will not adversely affect any of the historic characteristics of the Camp Nine town site and old powerhouse. The dam does not contribute to the NMAD and its removal and temporary construction activities will not adversely affect any of the historic characteristics of the NMAD.

Reclamation consulted with SHPO July 20, 2011 regarding a finding of no adverse effects to historic properties pursuant to 36 CFR Part 800.5(b). SHPO concurred with Reclamations' findings and determination on August 10, 2011.

As the proposed action will not adversely affect historic properties, and SHPO has concurred, Reclamations' responsibilities under Section 106 of the National Historic Preservation Act are fulfilled.

Thank you for the opportunity to review the proposed action. Please place a copy of this concurrence and attached correspondence with the EA administrative record.

Amy J. Barnes
Archaeologist
U.S. Bureau of Reclamation
Mid-Pacific Region, MP-153
2800 Cottage Way
Sacramento, CA 95825
916-978-5047
abarnes@usbr.gov

Appendix B4
April 25, 2011 Bureau of Reclamation No Effect Determination

This page intentionally left blank.



United States Department of the Interior

BUREAU OF RECLAMATION
Mid-Pacific Region
Central California Area Office
7794 Folsom Dam Road
Folsom, CA 95630-1799

IN REPLY REFER TO:

CC-418
ENV-6.00

APR 25 2011

MEMORANDUM

To: Central Files

From: Robert L. Schroeder **ROBERT L. SCHROEDER**
Chief, Resources Management Division

Subject: No Effect Determination- Removal of the Stanislaus Afterbay Dam

The Bureau of Reclamation is proposing to work with Pacific Gas and Electric as part of their Federal Energy Regulatory Commission relicensing, to remove the obsolete Afterbay Dam, where New Melones Reservoir transitions into the North Fork of the Upper Stanislaus River. This project is located in both Calaveras and Tuolumne Counties. Reclamation has determined that there will be no effect on listed, proposed, or candidate threatened or endangered species or on designated critical habitat. This determination is based on the following information:

1. No known occurrences of listed, proposed, or candidate threatened or endangered species exist in or near the project footprint including Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (VELB) or red legged frog (*Rana aurora*).
2. Habitat immediately adjacent to the Stanislaus Afterbay Dam has been degraded after years of traffic in the area due to the old Camp Nine Bridge, which was removed in 2007. The habitat surrounding this area is not suitable for red legged frog especially considering there is ample permanent water throughout the year in New Melones Reservoir, little emergent vegetation to provide cover, and healthy populations of both carnivorous warm water fishes and bull frogs. The river bank substrate at the Afterbay Dam consists of exposed bedrock and large river boulders. There is no suitable habitat for the frog in the area surrounding the Afterbay Dam.
3. The project footprint and areas adjacent to the project footprint have been surveyed for elderberry (*Sambucus sp.*) and no elderberry was observed. Consequently, there is no habitat for VELB.
4. The Fisher (*Martes pennanti*) is an uncommon permanent resident of the Sierra Nevada. Although there are conifers in the project area, canopy cover is low, and tree density is

sparse. The project area and surrounding vicinity are not considered suitable habitat for the Fisher.

5. No critical habitat has been designated within or near the project footprint.

For these reasons, Reclamation has determined the proposed project, removal of the Afterbay Dam, will have no effect on any federally listed, proposed, or candidate, threatened, or endangered species or on designated critical habitat, thus consultation pursuant to the Endangered Species Act is not required.

Several avoidance measures and best management practices will be implemented.

1. All demolition and debris removal activities will be completed prior to the start of the Bald Eagle nest building period (December/January). This will be done to ensure the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act are adhered to.
2. Debris barriers will be placed on the lake to catch all floating debris and prevent such material from floating into a known nesting area approximately 1 mile downstream.
3. Use of non-hazardous expansive compound and hydraulic splitting techniques will be utilized for removal of concrete minimizing noise and disruption in the project area.
4. Fire suppression equipment will be on site, a no smoking policy and equipment equipped with shut-down devices will be utilized to prevent wildfire hazards.
5. If special status species are identified during construction, additional consultation with U.S. Fish and Wildlife Service and National Marine Fisheries Service will be done prior to the continuation of construction.

Should you have any questions or need more information, please contact Ms. Melissa Vignau at 916-989-7182 or e-mail mvignau@usbr.gov.

cc: CC-400, CC-410, CC-460

WBR:MVignau:jaylor:4/21/11:916-989-7182
H:\Public\Typing\Vignau\FWS consultation

Appendix B5
June 16, 2009 Final Revised Section 401 Water Quality Certification

This page intentionally left blank.

STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD

ORDER WR 2009-0039

In the Matter of Petitions for Reconsideration of Water Quality Certification for the
PACIFIC GAS AND ELECTRIC COMPANY
SPRING GAP-STANISLAUS HYDROELECTRIC PROJECT
FEDERAL ENERGY REGULATORY COMMISSION PROJECT NO. 2130

SOURCE: Middle and South Forks of the Stanislaus River and Tributaries
COUNTY: Tuolumne

**ORDER GRANTING PETITIONS FOR RECONSIDERATION AND
AUTHORIZING ISSUANCE OF A REVISED WATER QUALITY CERTIFICATION**

BY THE BOARD:

1.0 INTRODUCTION

The Pacific Gas and Electric Company (PG&E or Licensee) and the Tuolumne Utilities District (TUD) petitioned the State Water Resources Control Board (State Water Board or Board) for reconsideration of the Executive Director's certification of a new Federal Energy Regulatory Commission (FERC) license for FERC Project 2130 (the Project) as complying with the requirements of section 401 of the Clean Water Act (33 U.S.C. § 1341). State Water Board staff met with the petitioners and settled on mutually agreeable language. By this order the State Water Board modifies the certification to incorporate the agreed-upon language and approves the certification as modified. (Cal. Code Regs., tit. 23, § 3869.)

2.0 FACTUAL BACKGROUND

These petitions involve the State Water Board's issuance of water quality certification as part of the FERC relicensing process. FERC issues licenses for non-federal hydroelectric power projects that affect navigable waters, occupy federal lands, use water or water power at a government dam, or affect interstate commerce. (16 U.S.C. § 797(e).) FERC licenses are for a fixed period, not to exceed fifty years. (16 U.S.C. § 799.) At the expiration of the license, FERC may issue a new license, applying the laws in effect at the time of the relicensing. (Id. § 808(a)(1).)

PG&E applied to FERC for a new license for FERC Project No. 2130 on December 26, 2002. FERC Project No. 2130 is located on the Middle Fork Stanislaus River (Middle Fork) and South Fork Stanislaus River (South Fork) in Calaveras and Tuolumne Counties, California, and occupies approximately 1,060 acres within the Stanislaus National Forest, managed by the U.S. Department of Agriculture - Forest Service (Forest Service). The project's installed capacity under this license is 87.9 megawatts (MW).

Before FERC may issue a new license, the applicant must obtain water quality certification from the State Water Board under section 401 of the Clean Water Act. (33 U.S.C. § 1341; *S.D. Warren v. Maine Board of Environmental Protection* (2006) 547 U.S. 370.) The State Water Board must certify that the Project will comply with the applicable provisions of the Clean Water Act, including water quality standards. (33 U.S.C. § 1321; Cal. Water Code, § 13160.) The applicable water quality standards for FERC Project No. 2130 are set forth in the Water Quality Control Plan for the Sacramento and San Joaquin River Basin (Basin Plan). (Central Valley Regional Water Quality Control Board, Water Quality Control Plan (Basin Plan) for the Sacramento River Basin and the San Joaquin River Basin (2007).) The Basin Plan designates the beneficial uses of waters to be protected along with the water quality objectives necessary to protect those uses that together comprise the water quality standards. The Basin Plan lists municipal and domestic supply, agricultural supply, hydropower generation, water contact recreation, non-contact water recreation, warm freshwater habitat, cold freshwater habitat, and wildlife habitat as beneficial uses for the Stanislaus River above New Melones Reservoir. The State Water Board analyzes the Project's overall effect on water quality and includes conditions in the certification, if necessary, to adequately protect the designated beneficial uses identified

in the Basin Plan. (See generally *PUD No. 1 v. Washington Dept. of Ecology* (1994) 511 U.S. 700, 704-705 [water quality standards include designated uses, criteria, and antidegradation requirements]; *id.* at 714-715 [conditions of certification may be set to assure protection of designated uses].)

The State Water Board Executive Director issued a water quality certification for FERC Project No. 2130 on September 15, 2008. Condition number 29 of the certification specifies that it “is subject to modification upon administrative or judicial review, including review and amendment pursuant to Water Code section 13330 and California Code of Regulations, title 23, division 3, chapter 28, article 6 (commencing with § 3867).” (State Water Board, Exec., Water Quality Certification for the PG&E Spring Gap-Stanislaus Hydroelectric Project, FERC Project No. 2130, Sept. 15, 2008.)

On October 14, 2008 and October 15, 2008, the State Water Board received petitions for reconsideration from PG&E and TUD, respectively, pursuant to California Code of Regulations, title 23, section 3867. TUD also asked that the petitions be held in abeyance for 45 days to allow TUD to acquire, develop and run a different reservoir model, and PG&E did not object to the abeyance. The State Water Board advised PG&E and TUD it would hold both petitions in abeyance until December 11, 2008. On December 3, 2008, TUD requested an additional 32-day abeyance, to which PG&E did not object, and which the State Water Board granted. TUD requested an additional 45-day abeyance on January 7, 2009. PG&E did not object, and the State Water Board granted the abeyance. On February 19, 2009, TUD requested another 45-day abeyance, until April 13, 2009. PG&E did not object and the State Water Board granted the abeyance. TUD requested a 7-day extension of the abeyance by letter dated April 10, 2009. PG&E did not object, and the State Water Board granted the extension. On April 20, 2009, PG&E and TUD requested activation of their petitions for reconsideration and requests for stay.

PG&E, TUD and State Water Board staff met one final time on April 30, 2009. At that meeting the petitioners and State Water Board staff came to an agreement as to language for a revised water quality certification for the Project. Specifically, PG&E, TUD and State Water Board staff agreed to proposed modifications of Conditions 4, 5, 7, 9, and 16 of the water quality certification. With these modifications, the target water surface elevation for Pinecrest Reservoir in condition 4 would be changed from 5610 to 5608, and a requirement to complete a study on reservoir elevations and recreational uses would be added. The modified Condition 4 would

allow Licensee to request the State Water Board modify the target elevation. Condition 5 would be changed to allow the State Water Board Deputy Director for Water Rights to modify the target elevation for an interim period until the Board modifies the target elevation in condition 4. Condition 7 would be changed to include streamflow measurement in addition to implementation. Minor changes are proposed to condition 9 to clarify the due date for completion of studies. Condition 16 would be changed to clarify that the objective of the spill channel plan is to reduce water quality impacts.

On May 4, 2009, PG&E and TUD submitted supplemental petitions for reconsideration, stating that if a revised water quality certification were issued reflecting the language agreed upon in the April 30, 2009 meeting, and there were no other changes objectionable to PG&E and TUD, they would consider their concerns resolved.

On April 24, 2009, FERC issued an Order Issuing New License for this project. That license “is subject to the conditions of the water quality certification issued by the California Water Resources Control Board on September 16, 2008, under section 401(a)(1) of the Clean Water Act, 33 U.S.C. § 1341(a)(1)....” (Fed. Energy Reg. Comm’n, Order Issuing New License, 127 FERC ¶ 62,070 (April 24, 2009).) “Authority is reserved to the Commission to amend this license to include such water quality certification conditions as may be required by the California Water Resources Control Board upon resolution of the petitions for reconsideration filed by the Tuolumne Utilities District and the licensee of the water quality certification issued September 16, 2008, and to modify existing conditions of this license as necessary to achieve consistency with any such certification conditions.” (*Id.*)

On May 7, 2009, the State Water Board issued a notice regarding the petition that included a request for comments or responses to the petition to be received within 20 days.

3.0 APPLICABLE LAW

An interested person may petition the State Water Board for reconsideration of an action or failure to act. (Cal. Code Regs., tit. 23, § 3867.) Following a petition for reconsideration, the State Water Board may

- (1) refuse to reconsider the action or failure to act if the petition fails to raise substantial issues that are appropriate for reconsideration
- (2) deny the petition upon a finding that the original action or failure to act was appropriate and proper
- (3) set aside or modify, if possible, the previous action or take new appropriate action; or
- (4) direct the executive director to take appropriate action.

(Cal. Code Regs., tit. 23, § 3869, subd. (a).)

4.0 ARGUMENTS AND DISCUSSION

Division staff and petitioners met on a number of occasions, and have come to mutually agreed-upon language for a revised certification. The revised water quality certification is attached.

The agreed-upon language primarily concerns conditions included in the Executive Director's water quality certification to protect recreational use at Pinecrest Lake. PG&E and TUD were concerned about the potential effect of those conditions on project operations, particularly the delivery of water by PG&E for consumptive use by TUD. In their supplemental petitions for reconsideration, PG&E and TUD stated that if the agreed upon changes are adopted, their concerns will be resolved.

The State Water Board also finds that the conditions of certification, as modified by the agreed-upon language, ensure that project operations will comply with water quality standards and other appropriate requirements of state law. (See Cal. Code Regs., tit. 23, § 3859, subd. (a).) The modifications provide additional flexibility and clarity, but still assure protection of beneficial uses, including recreational uses at Pinecrest Lake.

5.0 OTHER ISSUES

In their original petitions, PG&E and TUD raised several issues, including claims that the conditions of certification would interfere with deliveries by PG&E under contract with TUD, based on a pre-1914 water right held by PG&E. As part of its water quality certification, the State Water Board may impose conditions that limit the diversion or use of water that might otherwise be permissible under the licensee's proprietary water right. (*PUD No. 1 v. Washington Dept. of Ecology* (1994), *supra*, 511 U.S. 700, 720-721.) But the State Water

Board may consider effects on water rights when it issues water quality certification. (See Wat. Code, § 174.) Thus, if a FERC licensee or other parties claim that conditions of certification interfere with water deliveries under its proprietary water rights, it would be appropriate for the State Water Board to evaluate the nature and extent of those rights, including the extent to which the purpose or place of use may be changed and any limitations that may apply under the reasonableness requirements of article X, section 2 of the California Constitution or the common law public trust doctrine. Because PG&E and TUD have agreed to language that resolves their concerns, it is unnecessary to address these issues, or to address any related concerns as to the procedures that would apply.¹

Similarly, the original petitions for reconsideration raise several other concerns that are unnecessary to address because PG&E and TUD have indicated that if the State Water Board adopts the agreed-upon language, their concerns will have been resolved.²

6.0 CONCLUSION

For the reasons discussed above, the petition for reconsideration is granted, and the conditions of certification are modified to incorporate language agreed to by the petitioners.

ORDER

IT IS HEREBY ORDERED that the certification of FERC license No. 2130 for purposes of compliance with section 401 of the Clean Water Act is amended as attached to this order.

/

/

/

/

¹ Because the deliveries to TUD are for consumptive use, this is not a case where the State Water Board must choose between addressing the issues as part of its water quality certification or losing authority to address any adverse impacts. (See *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931 [state law environmental requirements are not preempted as applied to diversions for consumptive use at a multi-purpose project that has a FERC license for hydroelectric power].)

² As part of their original petitions for reconsideration, PG&E and TUD requested a stay during the pendency of the petitions for reconsideration. As the reconsideration process is complete, the issue of whether to issue a stay is moot.

CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on June 16, 2009.

AYE: Chairman Charles R. Hoppin
Vice Chair Frances Spivy-Weber
Board Member Tam M. Doduc

NAY: None

ABSENT: Board Member Arthur G. Baggett, Jr.

ABSTAIN: None



Jeanine Townsend
Clerk to the Board

Attachment

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

In the Matter of Water Quality Certification for the

**PACIFIC GAS AND ELECTRIC COMPANY
SPRING GAP-STANISLAUS HYDROELECTRIC PROJECT**

FEDERAL ENERGY REGULATORY COMMISSION PROJECT NO. 2130

SOURCES: Middle and South Forks of the Stanislaus River and Tributaries

COUNTY: Tuolumne

Introduction

Pacific Gas and Electric Company (PG&E or Licensee) applied to the Federal Energy Regulatory Commission (FERC) for a new license for the Spring Gap-Stanislaus Project (Project). The Project is located on the Middle and South Forks of the Stanislaus River in the Stanislaus National Forest near the town of Strawberry. The existing Spring Gap-Stanislaus Project is composed of four developments: Relief, Strawberry (Pinecrest Lake), Spring Gap, and Stanislaus as described in the Application for New License dated December 2002, that have a combined installed capacity of 87.9 megawatts. The Project includes the removal of the Stanislaus Afterbay Dam that poses a threat to the public.

Before FERC can issue a new license for the Project, PG&E must obtain water quality certification under section 401 of the Clean Water Act from the State Water Resources Control Board (State Water Board) (33 U.S.C. § 1341). The State Water Board must certify that the Project will comply with the applicable provisions of the Clean Water Act, including water quality standards set forth in the Water Quality Control Plan for the Sacramento and San Joaquin River Basin (Basin Plan). The Basin Plan designates the beneficial uses of waters to be protected along with the water quality objectives necessary to protect those uses that together are the water quality standards. The Basin Plan lists municipal and domestic supply, agricultural supply, hydropower generation, water contact recreation, non-contact water recreation, warm freshwater habitat, cold freshwater habitat, and wildlife habitat as beneficial uses for the Stanislaus River above New Melones Reservoir. The State Water Board analyzes the Project's overall effect on water quality and includes conditions in the certification, if necessary, to adequately protect the designated beneficial uses identified in the Basin Plan.

Stanislaus Planning Action Team

The Stanislaus Planning Action Team (SPLAT) was a collaborative group formed by PG&E and Tri-Dam Project to help interested parties develop recommended resource measures for the Spring Gap-Stanislaus, Beardsley/Donnells, Tulloch, and Donnells-Curtis Projects. In late 2003 and early 2004, the SPLAT participants reached consensus on recommended resource measures for the Spring Gap-Stanislaus Project. The concurring SPLAT participants (which

included the California Department of Fish and Game (CDFG), Central Sierra Environmental Resource Center, Stanislaus National Forest, Friends of the River, PG&E, Tuolumne Utilities District, Tri-Dam Project, Trout Unlimited, National Park Service, and American Whitewater) reached consensus on recommended resource measures that were filed by letter with FERC. In the letter, SPLAT requested that FERC consider the consensus recommended resource measures for the Spring Gap-Stanislaus Project in its Environmental Impact Statement (EIS). State Water Board staff provided input on Basin Plan water quality standards compliance to the SPLAT as it developed recommended resource measures, and assisted the SPLAT in crafting proposed measures with full consideration of the water quality standards. In general, the SPLAT recommended resource measures adequately protect designated beneficial uses and properly balance the needs of various flow-dependent resources. A more detailed rationale for each SPLAT measure is contained in the Recommended Resource Measures for the Spring Gap-Stanislaus Project dated March 1, 2004, and is incorporated into this certification by reference. Water quality certification conditions implement the substantive requirements of the flow-related Protection Mitigation and Enhancement (PM&E) measures in the SPLAT Agreement, with some language amendments designed to make the measures enforceable conditions.

Water Quality Impairments

Upon review of existing watershed data and studies conducted by PG&E for the relicensing of the project, the following impairments to the beneficial uses were identified and are addressed with the conditions in this water quality certification:

Ramping Rates

PG&E has the ability to alter stream flows at a time of year when unregulated stream flows would otherwise be stable. Ramping rates are needed during Licensee-controlled changes in regulated streamflow to avoid stranding or displacement of aquatic biota. This certification requires a ramping rate based on the stage-flow relationship of naturally occurring rates of stage change resulting from natural events, such as storms, and is consistent with such events. The measure refers to “regulated” streamflows to distinguish from “spill” flows over which the Licensee has little or no control. The six-inch per hour ramping rate refers to stage change as opposed to a change in flow rate because it is the rate of stage change in the stream channel that affects stranding and displacement. Facility modifications necessary to achieve the specified ramping rates may take a considerable amount of time to design, permit and construct, and shall occur no later than three years after license issuance. Licensee is required to make a good faith effort to provide the specified ramping rate until such facility modifications are completed.

Middle Fork Stanislaus River Water Temperature and Fish Habitat

Flows below the Sand Bar Diversion Dam during the warm summer months (July, August and September) are significantly less under the regulated hydrology compared to the unimpaired hydrology, which results in elevated water temperatures and reduced fish habitat. Current flow conditions in this reach are not adequate to protect cold freshwater habitat; however, the Middle Fork Stanislaus River (MFSR) is a transitional reach, which provides habitat for cold, eurythermal, and warm water species. The flow regime developed by the SPLAT, and required in this certification, balances the needs of cold and warm water aquatic species that use the Sand Bar Dam Reach during the entire year. The Minimum Supplemental Flows condition in this certification is expected to protect the beneficial uses by more closely mimicking the shape of the natural hydrograph and providing seasonal cues for spawning. The annual variability of

the timing and magnitude of the Minimum Supplemental Flows condition is anticipated to protect the beneficial uses by providing more natural annual variation in spring runoff.

Middle Fork Stanislaus River, Flow Fluctuations

Under certain conditions, the Sand Bar Project releases water in excess of the capacity of the Spring Gap-Stanislaus Project. If operation of the Stanislaus Powerhouse and the Sand Bar Project are not closely coordinated, flows from the Sand Bar Project can spill over the Sand Bar Diversion Dam, causing flow fluctuations in the MFSR to the detriment of macroinvertebrates, fish, and certain life stages of foothill yellow legged frog (FYLF). The condition in the certification specifically identifies the need for coordinated operation with regard to the Spring Gap-Stanislaus Licensee providing specified minimum Daily, Supplemental, and Recreation Streamflow Event flows in the Sand Bar Dam Reach, because the Spring Gap-Stanislaus Licensee cannot provide all of these flows without the cooperation of the Beardsley/Donnells Licensee. A Coordinated Operations Agreement has been developed with the Oakdale and South San Joaquin Irrigation Districts, Tri-Dam Power Authority, and PG&E. The agreement will avoid release of flows in excess of the capacity of the Stanislaus Power Tunnel, and provide water necessary for minimum flows.

South Fork Stanislaus River/ Pinecrest Lake Recreation, Water Temperature and Trout Habitat

The flow condition in the certification for the South Fork Stanislaus River (SFSR) maintains lake levels at Pinecrest Lake for recreation, adequate and stable instream flows for fish and amphibians, Tuolumne Utilities District's (TUD's) consumptive water demands, and water for power generation through the Philadelphia Diversion. In general, consumptive water supply and ecological flows after the end of the spill period require water releases from Pinecrest Lake which are in direct conflict with the recreation objective of keeping the water surface elevation high between Memorial Day and Labor Day weekends. Additionally, the lack of flow conditions in the existing FERC license has resulted in periods of very low streamflow during the summer followed by periods of higher streamflow in the fall periods and lower flows in late fall and winter between Pinecrest Lake and Lyons Reservoir.

The SPLAT proposed developing a drawdown curve in consultation with PG&E, Forest Service, State Water Board, CDFG and TUD by April 15 of each year. State Water Board staff developed an alternative measure after PG&E conducted additional operations modeling that achieves the goals developed by the SPLAT of maintaining adequate streamflows, maintaining lake levels to support recreation, providing water for power generation, and meeting TUD consumptive demand, without yearly consultation.

Relief Reach Stanislaus River

Relief Reservoir is used to store water that is subsequently released into the Relief Reach to Tri-Dam's Donnells Reservoir, where it is stored and diverted for power generation at Donnells Powerhouse and other powerhouses downstream. There are no power generation facilities at Relief Reservoir or in the Relief Reach. Under the current FERC license, stored water is released from Relief Reservoir in the late summer or early fall. This flow regime was shown to have a negative impact on stream geomorphology, cottonwood recruitment, amphibians (including mountain yellow legged frogs), and trout. The condition in the certification for the Reservoir Drawdown and Streamflows in the Relief Reach creates a regulated hydrograph with a shape that more closely resembles the shape of the unimpaired hydrograph, while avoiding increased spill at Donnells Reservoir and the associated reduction in power generation. The measure achieves this with a combination of operational objectives, which are intended to guide the Licensee in developing an annual "best fit" drawdown curve for Relief Reservoir along with

specified minimum and, in some cases, maximum streamflows, which are intended to assure that stream ecology needs are met.

The condition specifies minimum streamflows for all months and also specifies maximum streamflows for some months. The minimum streamflows are intended to meet ecological needs. The maximum streamflows in August and September protect cottonwood seedlings in the Kennedy Meadows area, and the maximum streamflows during the winter months assure a favorably shaped drawdown curve. The conditions substantially achieve desired conditions identified for water use and quality, including the protection of beneficial uses and watershed health.

White Water Boating

The MFSR and SFSR provided whitewater boating opportunities only during the spring high flow period. Based on whitewater boating study results, SPLAT determined that spill flows would provide adequate whitewater boating recreation opportunity on the Relief, Pinecrest, and Philadelphia reaches, particularly given the low demand and relatively high difficulty of runs on these reaches. However, project operations could result in multiple, consecutive non-spill years on the Sand Bar Dam Reach that would not provide adequate opportunity for boating on the Sand Bar and Mt. Knight runs.

To address this issue, the certification includes a condition that in the third of three consecutive years of no boating opportunity on the Sand Bar Dam Reach, the Licensee will make a good faith effort to provide a boating opportunity on two consecutive weekend days. The two-day concept will give boaters the opportunity to boat the Sand Bar run the first day, camp along the river, and then boat the Mt. Knight run the second day. The “good faith” provision and the multiple exceptions are intended to recognize that the Licensee has limited control on flows coming into Sand Bar Diversion Dam, that under certain circumstances the water may have far more value for electric generation than for recreation, and that the boating flows may potentially cause unanticipated resource damage. Further study is needed to clarify the minimum acceptable flow for whitewater boating in the Sand Bar and Mt. Knight Reaches.

Entrainment

Based on the design of the Stanislaus Power Tunnel, the high potential for entrainment, and lower trout populations below the diversion, studies were developed and conducted to quantify the level of entrainment. Based on this information, it was determined the level of entrainment was significant and that a fish screen was needed to protect fish populations. This certification requires PG&E to construct a fish screen at the entrance to the Stanislaus Power Tunnel that will prevent the entrainment of fish.

Spill Channels

The existing FERC license for the Spring Gap-Stanislaus Project does not include any specific limitations or operational guidelines to protect water quality during the operation of the Spring Gap Forebay spill channel or Stanislaus Forebay spill channel. Based on results of monitoring, short term spills will not result in significant impacts to aquatic resources; however, the use of the spill channels needs to be minimized and monitored. This certification requires the Licensee to develop a plan to ensure the continued use of the spill channels will not impact water quality or the beneficial uses.

Stanislaus Afterbay Dam

The Stanislaus Afterbay Dam is located on the MFSR just upstream of New Melones Dam and was constructed in 1961 to attenuate flow fluctuations from the Stanislaus Powerhouse. The dam impounds 31.6 acre-feet (af) of water and is timber-faced with steel buttresses supported on concrete slabs up to 30 feet wide. The maximum water surface of New Melones Reservoir inundates the afterbay dam, essentially rendering it obsolete and non-functional. FERC has requested that PG&E remove the dam because it is no longer functional, and has been essentially abandoned in place. The gates are no longer operational and the top three feet of timber planks have been removed from portions of the right side buttresses. Details of the removal are described in the Initial Study.

Findings

1. The Federal Clean Water Act (33 U.S.C. §§ 1251-1387) was enacted “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” (33 U.S.C. § 1251(a).) Section 101 of the Clean Water Act (33 U.S.C. § 1251 (g)) requires federal agencies to “co-operate with the State and local agencies to develop comprehensive solutions to prevent, reduce and eliminate pollution in concert with programs for managing water resources.”
2. Section 401 of the Clean Water Act (33 U.S.C. §1341) requires every applicant for a federal license or permit which may result in a discharge into navigable waters to provide the licensing or permitting federal agency with certification that the project will be in compliance with specified provisions of the Clean Water Act, including water quality standards and implementation plans promulgated pursuant to section 303 of the Clean Water Act (33 U.S.C. § 1313). Clean Water Act section 401 directs the agency responsible for certification to prescribe effluent limitations and other limitations necessary to ensure compliance with the Clean Water Act and with any other appropriate requirement of state law. Section 401 further provides that state certification conditions shall become conditions of any federal license or permit for the project. The State Water Resources Control Board (State Water Board) has delegated this function to the Executive Director by regulation. (Cal. Code Regs., tit. 23, § 3838, subd. (a).)
3. The California Regional Water Quality Control Boards have adopted, and the State Water Board has approved, water quality control plans (basin plans) for each watershed basin in the State. The basin plans designate the beneficial uses of waters within each watershed basin, and water quality objectives designed to protect those uses. Section 303 of the Clean Water Act requires the states to develop and adopt water quality standards. (33 U.S.C. § 1313.) The beneficial uses together with the water quality objectives that are contained in the basin plans constitute State water quality standards under section 303.
4. The Water Quality Control Plan for the Central Valley-Sacramento and San Joaquin River Basins (Basin Plan) identifies municipal and domestic supply, irrigation, stock watering, hydropower, warm and cold freshwater habitat, wildlife habitat, contact and non-contact recreation, canoeing, and rafting as beneficial uses of the Stanislaus River above New Melones Reservoir. Protection of the instream beneficial uses identified in the Basin Plan requires maintenance of adequate instream flows as well as effluent limitations and other limitations on discharges of pollutants from point and nonpoint sources to the Middle Fork Stanislaus River and its tributaries.

5. The State Water Board has reviewed and considered the Stanislaus Planning Action Team recommended resource measures for the Spring Gap-Stanislaus Project; PG&E's final Federal Energy Regulatory Commission (FERC) License Application; comments on the final License Application by agencies and interested parties; the U.S. Forest Service Final 4(e) Conditions; and the FERC Final Environmental Impact Statement prepared pursuant to the National Environmental Policy Act for the Stanislaus River Projects. Further, the State Water Board has considered the basin plan, the existing water quality conditions, and project-related controllable factors.
6. The State Water Board is the lead agency under the California Environmental Quality Act (CEQA), in connection with the proceeding to issue water quality certifications for the Project. (Pub. Resources Code, §§ 21000-21177.) Under CEQA, a project may be analyzed for its incremental effects over existing baseline conditions. In an analysis of an already existing hydroelectric project, reauthorizing the project will not yield many environmental impacts because most of the impacts have already occurred and, when compared to the existing condition, do not register as significant. In contrast, water quality certification requires an analysis of a project's overall effect on water quality, including whether the designated beneficial uses identified in the Basin Plan are adequately protected. Water quality certification may also review a project's effects on public trust resources. The water quality certification analysis is based not only on proposed modifications to Project operations from the existing condition, but also on whether past, existing, or future operations impair or degrade water quality.
7. On August 1, 2007, the State Water Board provided an initial study and notice of intent to adopt a mitigated negative declaration (SCH # 2007082008) for the Project. (Cal. Code Regs., tit. 14, § 15072.) The mitigated negative declaration and initial study reflects the State Water Board's independent judgment and analysis. After considering the documents and comments received during the public review process, the State Water Board hereby determines that the proposed project, with mitigation measures, will not have a significant effect on the environment. The mitigated negative declaration is hereby adopted. The documents or other material, which constitute the record, are located at the State Water Board, Division of Water Rights, 1001 I Street, Sacramento. The State Water Board will file a Notice of Determination within five days from the issuance of this order.
8. Public Resources Code section 21081.6(a) requires that if a public agency makes changes or alterations in a project to mitigate or avoid the significant adverse environmental effects of the project, it must adopt a monitoring or reporting program to ensure compliance with the changes or alterations. The mitigation and reporting plan is included as Attachment A to this certification.
9. On August 1, 2007, State Water Board staff issued a draft water quality certification for public review. On August 1, 2007, the State Water Board issued notice pursuant to section 3858 of the California Code of Regulations that it intended to issue water quality certification after a 21 day notice period.

ACCORDINGLY, BASED ON ITS INDEPENDENT REVIEW OF THE RECORD, THE STATE WATER BOARD CERTIFIES THAT THE OPERATION OF THE SPRING GAP-STANISLAUS PROJECT BY THE PACIFIC GAS AND ELECTRIC COMPANY UNDER A NEW LICENCE ISSUED BY FERC, AS DESCRIBED IN ITS APPLICATION FOR NEW LICENSE DATED DECEMBER 2002, will comply with sections 301, 302, 303, 306 and 307 of the Clean Water Act, and with applicable provisions of state law, provided Pacific Gas and Electric Company complies with the following terms and conditions:

1. Each year from February through May, Licensee shall determine water-year type based on the California Department of Water Resource's (DWR) forecast for annual unimpaired inflow into New Melones Reservoir (as set forth in DWR's Bulletin 120 entitled *Water Conditions in California*). Licensee shall use this determination in implementing conditions of this certification that are dependent on water-year type. From February through April, the water-year type based on DWR's forecast for the month shall apply from the 10th day of the month through the 9th day of the next month. From May 10 through February 9 of the following calendar year, the water-year type shall be based on DWR's May 1 forecast. The Licensee shall maintain a five-year record of its water-year type determinations, and shall provide this record to the State Water Board Deputy Director for Water Rights (Deputy Director) annually.

Water-Year Types for the Spring Gap-Stanislaus Project

Water-Year Type	DWR Forecast Annual Unimpaired Inflow to New Melones Reservoir (acre-feet)
Critically Dry	Less than or equal to 350,000
Dry	Greater than 350,000 and less than or equal to 676,000
Normal	Greater than 676,000 and less than 1,585,000
Normal-Dry	Greater than 676,000 and less than 1,050,000
Normal-Wet	Greater than or equal to 1,050,000 and less than 1,585,000
Wet	Greater than or equal to 1,585,000

2. The Licensee shall annually, beginning the first full calendar year after license issuance, develop a "best fit" drawdown curve for Relief Reservoir based on that year's hydrological conditions. The drawdown curve shall be designed to meet the specified Relief Reach minimum and maximum streamflow requirements for the water-year type, and achieve the Operational Objectives specified below. Relief Reach is defined as the 15.8 mile-long reach of Summit Creek and the Middle Fork Stanislaus River from Relief Dam to Donnells Reservoir.

Operational Objectives

- Streamflow in the Relief Reach, as measured at Kennedy Meadows, mimics the shape of the unimpaired hydrograph, with peak flows in late spring, declining flows from the spring peak until October (except for increases due to natural events), and relatively uniform flows from November through March;
- The transition from spill flows to regulated flows is smooth, without significant decreases and increases in flows other than from natural events, achieving a rate of decline and a range of fluctuation that are within the natural range of variability of the unimpaired hydrograph;
- Streamflow fluctuation in response to natural events, such as storms and variation in rate of snowmelt, is allowed;

- The rate and magnitude of changes in regulated streamflows is gradual and within the natural range of variability of the unimpaired hydrograph for the time of year;
- Relief Reservoir is able to annually fill and be drawn down to minimum pool;
- The water stored in Relief Reservoir is adequate to meet the specified minimum streamflow requirements;
- Avoidable spill at Donnell's Reservoir is minimized; and
- Relief Reservoir operation is responsive to annual hydrological conditions.

The Licensee shall develop its proposed Relief Reservoir drawdown curve and estimated Relief Reach streamflow regime and provide it, along with the prior year's Kennedy Meadows flow gage daily data and Relief Reservoir water surface elevations, to the Deputy Director no later than April 15 of each year.

The Licensee shall operate Relief Reservoir in conformance with the minimum and maximum streamflow requirements shown in the table below, as may be modified by an approved alternate streamflow regime, and to achieve the specified Operational Objectives. Additionally, the Licensee shall maintain a year-round streamflow in Summit Creek between Relief Dam and Kennedy Creek of at least 5 cubic feet per second (cfs), and shall maintain a minimum pool in Relief Reservoir of at least 200 acre-feet. The Licensee shall, within one year of license issuance, develop and file with the Deputy Director, a plan for monitoring compliance with the 5 cfs requirement.

If the Licensee anticipates at any time that it cannot meet the minimum and/or maximum streamflow requirements it shall notify the Deputy Director, labeling the notification "Compliance Item, Immediate Attention Requested" and provide an alternate streamflow regime and drawdown curve for the year that meets the specified minimum and maximum streamflow requirements and achieves the specified Operational Objectives to the greatest extent feasible. The Deputy Director shall be provided 30 days to review, and if acceptable, approve the Licensee's alternate streamflow regime.

The specified minimum streamflows are the minimum mean flow over a continuous 24-hour period. Except as provided below for the months of November through March, instantaneous streamflow may, on an infrequent basis, deviate below the specified minimum streamflow up to 10 percent.

The specified maximum streamflows are the instantaneous maximums for the month. The Licensee shall make a good faith effort to maintain actual streamflows within the specified maximums. However, the Licensee is not required to adjust the Relief Reservoir outlet gate in response to short-term (not greater than approximately one week in length) natural events such as storms, variations in rate of snow melt, and accretion flows. In complying with the specified maximum streamflows, the Licensee shall attempt to under-run the maximum streamflows specified for August and September to the greatest extent feasible, consistent with actual hydrological conditions.

The specified minimum and maximum streamflows for November through March are target streamflows. By November of each year, the Licensee shall forecast the inflow to Relief Reservoir for the period December through March, and set the Relief Dam outlet gate at an opening to achieve the streamflow in the approved Relief Reservoir drawdown plan. The Licensee shall monitor Relief Reservoir water surface elevation with at least weekly readings for December through March to confirm that the outlet gate is at an appropriate

setting to achieve the target streamflow range. Upon a determination that the outlet gate setting needs adjustment to achieve the target streamflow range, the Licensee shall make a good faith effort to adjust the outlet gate, subject to personnel safety and access limitations.

Minimum and Maximum Streamflows for the Relief Reach (cfs) ^{1, 2}

<i>Month</i>	<i>Water-Year Type</i>					
	<i>Normal</i>		<i>Dry and Critically Dry</i>		<i>Wet</i>	
	<i>Min</i>	<i>Max</i>	<i>Min</i>	<i>Max</i>	<i>Min</i>	<i>Max</i>
October 1-31	30	50	20	40	40	125
November 1-30	30	60	20	50	40	125
December 1-31	30	60	20	50	40	125
January 1–February 9	30	60	20	50	40	125
February 10-March 9	30	60	20	50	40	125
March 10-April 9	30	60	25	50	40	125
April 10-May 9	60	NA	45	NA	70	NA
May 10-May 31	100	NA	80	NA	150	NA
June 1-30	150	NA	100	NA	250	NA
July 1-31	90	NA	40	NA	200	NA
August 1-31	40	200	20	40	100	300
September 1-30	30	120	20	40	60	200

¹The specified maximum and minimum streamflows are made up of flow releases from Relief Reservoir, unregulated accretion flows from Kennedy Creek and other sources, as measured at USGS gage 11292000 (PG&E gage S-52) in Kennedy Meadows.

²NA: Not Applicable

- Beginning no more than six months after license issuance, Licensee shall maintain minimum streamflows made up of minimum Daily Flows and minimum Supplemental Flows in the Sand Bar Dam Reach in Normal, Dry, Critically Dry and Wet water-years as specified below. The Sand Bar Dam Reach is the 12.3 mile-long reach of the Middle Fork Stanislaus River extending from Sand Bar Diversion Dam to the confluence of the Middle Fork Stanislaus River with the North Fork Stanislaus River. Minimum Daily Flows and minimum Supplemental Flows may consist of any combination of spill, accretion and regulated flows.

Minimum Daily Flows

Licensee shall maintain the minimum Daily Flows in the following table in the Sand Bar Dam Reach. The specified minimum Daily Flow is the minimum mean flow over a continuous 24-hour period. Instantaneous flow may, on an infrequent basis, deviate below the specified minimum Daily Flow by up to 10 percent or 8 cfs, whichever is less.

//
//
//
//
//
//
//
//
//

Minimum Daily Flow schedule for the Sand Bar Dam Reach (cfs) ^{1, 2, 3}

<i>Month</i>	<i>Water-Year Type</i>		
	<i>Normal</i>	<i>Dry and Critically Dry</i>	<i>Wet</i>
October 1-31	80	50	80
November 1-30	70	50	70
December 1-31	70	50	70
January 1 - February 9	70	50	70
February 10 - March 9	70	50	70
March 10 - April 9	80	50	80
April 10 - May 9	80	50	80
May 10 – May 31	80	50	80
June 1 – 30	80	50	80
July 1- 31	80	60	100
August 1 – 31	80	60	100
September 1 – 30	80	50	100

¹The compliance location for the minimum Daily Flows shall be USGS gage 11293200 (PG&E gage S-12).

²The minimum required Daily Flow is the amount indicated or, if the inflow to Sand Bar Diversion Dam is less than the amount indicated due to reasons outside the Licensee's control, the inflow to Sand Bar Diversion Dam.

³Minimum Supplemental Flows that are additive to the specified minimum Daily Flows shall be provided during a continuous thirteen-week period (seven weeks in Critically Dry years) between March 1 and July 31.

Minimum Supplemental Flows

Licensee shall, in addition to the minimum Daily Flows specified above, maintain the minimum Supplemental Flows specified in the following table, provided such flows are available to the Licensee at Sand Bar Diversion Dam. The specified minimum Supplemental Flow for a week is the average flow for the week, with instantaneous flows at least equal to the specified minimum Supplemental Flow for the lower of the two adjoining weeks.

[illegible]

Minimum Supplemental Flow schedule for the Sand Bar Dam Reach (cfs) ^{1,2,3,4}

Week	Water-Year Type			
	Normal	Dry	Critically Dry	Wet
1	5	5	15	5
2	10	10	75	10
3	25	25	250	25
4	35	35	150	35
5	75	75	100	75
6	140	140	40	140
7	220	220	20	220
8	400	400	NA	400
9	180	180	NA	180
10	110	110	NA	110
11	65	65	NA	65
12	25	25	NA	25
13	10	10	NA	10

¹The compliance location for the minimum Supplemental Flows shall be USGS gage 11293200 (PG&E gage S-12) below Sand Bar Diversion Dam for the first 200 cfs. Flows in excess of 200 cfs shall be calculated by summing the flow contributions from Beardsley Afterbay Dam (gage S-89), Sand Bar Powerhouse and Spring-Gap Powerhouse and subtracting the flow diverted at Sand Bar Diversion Dam. If PG&E gage S-12 is upgraded to measure flows in excess of 200 cfs, it shall be used for flow measurement up to its upgraded rating.

²The minimum required Supplemental Flow is the amount indicated or, if the inflow to Sand Bar Diversion Dam is less than the amount indicated due to reasons outside the Licensee's control, the inflow to Sand Bar Diversion Dam.

³The minimum Supplemental Flows are additive to the specified minimum Daily Flows.

⁴NA: Not Applicable

The Supplemental Flow period shall be 13 continuous weeks in length (seven weeks in Critically Dry water-years). For years in which Beardsley Reservoir is forecast to spill, the Licensee may initiate the Supplemental Flow period any time between March 1 and May 1 to best coincide with the period of spill (Date Trigger). For years in which Beardsley Reservoir is forecast not to spill, the Licensee shall initiate the Supplemental Flow period at a time between March 1 and May 1 so that the peak Supplemental Flow will occur approximately two weeks after the then-forecast peak inflow to Donnell's Reservoir (Peak Flow Trigger).

The Licensee shall consult with the U.S Forest Service (USFS), Deputy Director, California Department of Fish and Game (CDFG), Fish and Wildlife Service (FWS) and other interested parties to develop a recommendation for a Water Temperature Trigger to function in combination with the Date and Peak Flow Triggers described above for initiating Supplemental Flows in years that Beardsley Dam is forecast not to spill. The Water Temperature Trigger shall not apply for years in which Beardsley Reservoir is forecast to spill. The Water Temperature Trigger shall be developed based on available information. The Licensee shall, within one year of license issuance, file with the Federal Energy Regulatory Commission (FERC) a Water Temperature Trigger recommendation, including evidence of consultation, and shall implement the Water Temperature Trigger approved by the USFS, State Water Board, and FERC. Use of the Water Temperature Trigger shall be

based on water temperatures measured using a continuous water temperature recorder installed and maintained by the Licensee at Sand Bar Diversion Dam.

The Licensee may meet the Supplemental Flow requirement with flow magnitudes in excess of those specified. However, the rate of decline in flow shall be no steeper than the specified decline for Supplemental Flows any time actual streamflow immediately below Sand Bar Diversion Dam is less than the peak magnitude specified for the Supplemental Flow. Exceptions to the decline rate are allowed when natural events, such as storms and variation in rate of snowmelt, cause short duration (not greater than approximately one week in length) flow fluctuations that exceed the flows specified for the declining limb of the Supplemental Flow. The Licensee shall make downward adjustments in Supplemental Flows in approximately equal steps to achieve a smooth decline.

4. The Licensee shall maintain the minimum streamflow schedule for the Pinecrest Reach between Strawberry Dam and the Philadelphia Diversion and in the Philadelphia Reach below the Philadelphia Diversion Dam in the SFSR, as specified in the following tables. In addition, the Licensee shall maintain a year-round minimum streamflow of 5 cfs in SFSR below Strawberry Dam. In years when Pinecrest Reservoir cannot be maintained above target elevation 5,608 feet, water releases during the period from the End of Spill through Labor Day shall only be made to meet the minimum streamflow schedule and Spring Gap Powerhouse Demand. Licensee shall draw down Pinecrest Reservoir to reach a target elevation of 5,615 feet as early as reasonably feasible each year after the End of Spill, provided that minimum streamflow schedule and Spring Gap Powerhouse Demand can be met, and Pinecrest Reservoir elevation can be maintained above a target elevation of 5,608 feet prior to and including Labor Day.

End of Spill is when the reservoir elevation falls below elevation 5,617 feet and the inflow to Pinecrest Lake decreases so that the diurnal fluctuation does not cause the water surface elevation to exceed elevation 5,617 feet and the outlet valve is used by Licensee to control water releases from Strawberry Dam.

Spring Gap Powerhouse Demand

During the period from the end of spill at Strawberry Dam until Labor Day, diversion of water to the Philadelphia Canal shall be a maximum flow of 6 cfs (the maximum flow is the mean flow over a continuous 24-hour period; the instantaneous streamflow may, on an infrequent basis, exceed the specified maximum flow by up to 1 cfs), except:

- a. During transmission line outages that require Spring Gap Powerhouse to govern local electric system load, or for Spring Gap Powerhouse maintenance, including start-up testing. Licensee shall use the minimum flow amount necessary to meet local load requirements or start-up testing procedures.
- b. When excess storage is available in Pinecrest Reservoir above that needed to meet the minimum stream flow schedule and maintain a reservoir elevation above target elevation 5,608 feet prior to and including Labor Day.
- c. When flow is available from Herring Creek above that needed to meet the minimum streamflow schedule.

//
//
//

Minimum streamflow schedule for the Pinecrest Reach (cfs)^{1, 2}

Month	Water-Year Type			
	Dry	Normal-Dry	Normal-Wet	Wet
October 1-31	10	10	15	15
November 1-30	10	10	15	15
December 1-31	10	10	10	15
January 1 – February 9	10	10	10	15
February 10 – March 9	10	10	10	15
March 10 - April 9	10	10	10	15
April 10 - May 9	10	10	15	15
May 10 – May 31	10	10	15	15
June 1 – 30	10	10	15	15
July 1- 31	10	10	15	15
August 1 – 31	10	10	15	15
September 1 – 30	10	10	15	15

¹ The compliance location for the minimum streamflows shall be USGS gage 11296500 (PG&E gage S-61) on the SFSR below Herring Creek.

² Once Pinecrest Lake has reached the specified minimum storage of 500 acre-feet, the minimum required streamflow is the amount indicated, or the inflow to Pinecrest Lake plus accretion flows from Herring Creek, whichever is less.

Minimum streamflow schedule for the Philadelphia Reach (cfs)^{1, 2}

Month	Water-Year Type			
	Dry	Normal-Dry	Normal-Wet	Wet
October 1-31	10	10	15	15
November 1-30	10	10	15	15
December 1-31	10	10	10	15
January 1 – February 9	10	10	10	15
January 1 – February 9	10	10	10	15
March 10 - April 9	10	10	10	15
April 10 - May 9	10	10	15	15
May 10 – May 31	10	10	15	15
June 1 – 30	10	10	15	15
July 1- 31	10	10	15	15
August 1 – 31	10	10	15	15
September 1 – 30	10	10	15	15

¹ The compliance location for the minimum streamflows shall be USGS gage 11297200 (PG&E gage S-83) below Philadelphia Diversion.

² Once Pinecrest Lake has reached the specified minimum storage of 500 acre-feet, the minimum required streamflow is the amount indicated, or the inflow to Pinecrest Lake plus accretion flows between Strawberry Dam and Philadelphia Diversion, whichever is less.

The Licensee shall, within one year of license issuance, develop and file a plan for monitoring compliance with the 5 cfs minimum streamflow requirement below Strawberry Dam for approval by the Deputy Director. The specified minimum streamflow schedule in this condition is the mean flow over a continuous 24-hour period. Instantaneous streamflow may, on an infrequent basis, deviate below the specified minimum streamflow by up to

10 percent. However, the Licensee shall make a good faith effort to meet the specified minimum streamflows at all times.

Pinecrest Reservoir shall not be drawn down below 500 acre-feet (af), except after approval of the Deputy Director. From Labor Day to December 31, regulated streamflows in the Philadelphia Reach shall not be greater than 60 cfs.

No later than April 15 of each year, the Licensee shall develop and submit a Pinecrest Lake drawdown curve to USFS, DFG and Tuolumne Utilities District, and others that request such information.

Within nine months of license issuance the Licensee shall submit a Pinecrest Reservoir minimum lake-level study plan (Lake-level Study), developed in consultation with the USFS, DFG, State Water Board staff, and TUD, to the Deputy Director for modification and approval that will determine the minimum Pinecrest Reservoir elevation between End of Spill through Labor Day that protects recreational uses (specifically, Day-Use Area beaches, the marina to just east of the handicap fishing access, and other areas as directed by the State Water Board). Licensee shall complete the Lake-level Study as approved by the Deputy Director by the end of the first full calendar year after license issuance. The completed study shall be provided to the USFS, DFG, State Water Board staff, and TUD for review and comment. By March 1 of the year following completion of the Lake-level Study, the Licensee shall submit to the Deputy Director for approval the completed study, including any comments received.

Within six months of approval of the Lake-level Study by the Deputy Director, Licensee may request the State Water Board modify the target elevation of 5,608 feet based on the results of the Lake-level Study, after the State Water Board provides notice to affected parties.

5. In Critically Dry water-years the Licensee may propose modifications to Condition #4 above. Licensee shall consult with the Deputy Director and provide justification for modifications to Condition #4. The Licensee shall maintain the dry year flows until modifications are approved by the Deputy Director.

In addition, until the State Water Board issues a decision modifying the target elevation, the Licensee may propose modifications to Condition #4. Licensee shall consult with the Deputy Director and provide justification for modifications to Condition #4.

6. The flow requirements and reservoir elevations specified above are subject to temporary modifications if required by equipment malfunction, agency requirements, emergency or law enforcement activity, or critical electrical system or water supply emergencies beyond the control of the Licensee. In the event of such temporary modifications, the Licensee shall promptly notify the Deputy Director labeling the notification "Compliance Item, Immediate Attention Requested". The flow requirements are also subject to modification, upon approval of the Deputy Director and FERC, based on the results of studies to improve streambank stability and restoration of riparian vegetation in the Relief Reach between Kennedy Meadows and Eureka Valley.
7. Where facility modification is required to implement or measure the specified minimum streamflows, the Licensee shall complete such modifications as soon as reasonably

practicable and no later than three years after license issuance. Prior to completion of such required facility modifications, the Licensee shall make a good faith effort to achieve the specified minimum streamflows within the capabilities of the existing facilities.

8. The Licensee shall, by the end of the first full calendar year after license issuance, prepare detailed plans for construction, operation, and testing to confirm compliance with the specified design criteria of a fish screen at the entrance to Stanislaus Power Tunnel. Upon completion, the Licensee shall submit the plans and drawings to the Deputy Director and provide 90 days for their review, comment and approval. The Licensee shall construct the fish screen approved by the Deputy Director within four years following approval of the plans and drawings.

The fish screen shall be designed using as guidelines the Environmental and Operational Objectives identified below:

Environmental Objectives

- Reduce entrainment of all life-stages of trout from Middle Fork Stanislaus River into Stanislaus Power Tunnel to less than significant levels, and
- Provide for all life-stages of trout in the Middle Fork Stanislaus River to pass downstream of Sand Bar Diversion Dam.

Operational Objectives

- No reduction in reliability, or hydraulic or electrical capacity of Stanislaus Powerhouse;
- Fish screen design is consistent with providing minimum Daily Flows and minimum Supplemental Flows in Sand Bar Dam Reach downstream of Sand Bar Diversion Dam;
- Provide for automated cleaning of the fish screen to avoid clogging;
- In the event the fish screen becomes clogged, provide for continued flow in Stanislaus Power Tunnel to maintain the operational reliability of Stanislaus Powerhouse and avoid large, rapid fluctuations in streamflows below Sand Bar Diversion Dam;
- Provide for sediment entering the fish screen structure to pass through downstream of Sand Bar Diversion Dam;
- Allow flexibility to determine fish screen maintenance and outage schedule after obtaining operating experience;
- Allow removal or opening of the fish screen during periods of high levels of potentially screen-clogging debris; and
- Provide for opening of the fish screen to assure continued flow in Stanislaus Power Tunnel in the event the fish screen becomes clogged with debris.

Design Criteria

- Flow capacity = 530 cfs;
 - Approach velocity = 0.33 to 0.4 feet per second (fps) at fish screen;
 - Sweeping velocity = 2 fps or greater at fish screen; and
 - Fish screen openings = 1.75 mm for slot width or 3/32 inch for round opening.
9. The Licensee shall, within six months after license issuance, or as otherwise indicated, and in consultation with the USFS, Deputy Director, and CDFG, develop detailed monitoring plans consistent with the descriptions provided below. The Licensee shall provide the final detailed plans, along with all agency comments received and an explanation for any such comments not adopted, to the Deputy Director for final approval. It is anticipated that

certain details of the Environmental Monitoring (e.g., specific years of sampling and/or specific study sites) may need modification during development of detailed study plans or during subsequent implementation of the Environmental Monitoring. All such modifications shall be developed in consultation with the USFS, Deputy Director, and CDFG, and approved by these agencies and provided to FERC before implementation.

Relief Reach Riparian Vegetation Restoration and Streambank Stabilization

- **Objective:** Evaluate the effectiveness of the specified streamflow regime on riparian vegetation restoration and streambank stabilization; evaluate existing streambank conditions; develop and implement vegetation restoration and streambank stabilization measures.
- Phase I: Evaluate existing information, develop recommendations for focused studies (within 12 months of license issuance), and re-evaluate cost of implementation and monitoring. Consult with the USFS, Deputy Director, and CDFG before Phase II is implemented.
- Phase II: Perform focused studies and develop recommended restoration (year 2). Consult with the USFS, Deputy Director, and CDFG before Phase III is implemented.
- Phase III: Implement monitoring and/or restoration (between year 3 and year 10 after license issuance per schedule developed in Phase II and subject to obtaining necessary approvals and permits).

Hardhead Monitoring in Camp Nine Reach and Sand Bar Dam Reach

- **Objective:** Determine if the specified streamflow regime affects hardhead habitat in the lower portions of the Sand Bar Dam Reach by evaluating hardhead distribution and abundance in the Camp Nine Reach (the 2.4 mile-long section of the Stanislaus River from the confluence of the Middle and North Forks of the Stanislaus River to Stanislaus Powerhouse) and the lower two miles of the Sand Bar Dam Reach.
- Conduct five years of snorkel surveys and/or electrofishing to determine abundance and distribution of hardhead in the Camp Nine Reach and the lower two miles of the Sand Bar Dam Reach, beginning within 12 months after approval of the monitoring plan.
- Radio tag 10-20 hardhead from the Camp Nine Reach in year 1 to determine if hardhead are using the lower Sand Bar Dam Reach or are only using the Camp Nine Reach and New Melones Reservoir. The Licensee shall consult with the USFS, Deputy Director, and CDFG within six months of license issuance to develop a detailed study plan for this task.
- Monitor algae abundance in Sand Bar Dam and Camp Nine reaches to determine relative food availability and evaluate if algae is limiting hardhead use of the lower Sand Bar Dam Reach. Conduct a general survey of algae abundance in the Sand Bar Dam and Camp Nine reaches within 12 months after approval of the monitoring plan and, if needed, collect additional quantitative algae abundance information within 24 months after approval of the plan.
- Monitor water temperature for up to five years to coincide with snorkel surveys and/or electrofishing (i.e., same years as for snorkel and/or electrofishing surveys) at the following four sites: (1) Middle Fork Stanislaus River above North Fork Stanislaus River, (2) Stanislaus River above Collierville Powerhouse, (3) Stanislaus River below Collierville Powerhouse, and (4) Stanislaus River below Stanislaus Powerhouse.
- Prepare and distribute to the USFS, Deputy Director, CDFG, and others upon request a final report after five years of study, including recommendations. Submit results of temperature monitoring and snorkel surveys to the USFS, Deputy Director, and CDFG within six months following completion of each year of monitoring.

Trout Population Monitoring in Spring Gap Reach and Sand Bar Dam Reach

- **Objective:** Monitor and evaluate effects of the specified streamflow regime on trout populations in the Sand Bar Dam Reach, using for comparison trout populations in the wild trout reference site established by CDFG upstream of the Spring Gap Reach (the 2.6 mile-long section of Middle Fork Stanislaus River from Spring Gap Powerhouse to Sand Bar Diversion Dam).
- **Spring Gap Reach:** Provide up to 50 percent of the labor or labor cost (in cooperation with CDFG and Forest Service) needed to electrofish one site (station 6, as identified in the License Application just upstream of Spring Gap Powerhouse) four times consistent with CDFG's three-year survey cycle at this site (expected in 2010, 2013, 2016, and 2019).
- **Sand Bar Dam Reach:** Perform electrofishing surveys at the lower-most historical site in the Sand Bar Dam Reach (station 4, as identified in the License Application) three times after license issuance to coincide with surveys at station 6 just upstream of the Spring Gap Powerhouse (expected in years 2010, 2013, and 2016).
- Prepare and distribute to the USFS, Deputy Director, CDFG, and others upon request a report within one year following each survey, including recommendations following completion of the study.

Foothill Yellow-Legged Frog (FYLF) Monitoring in Sand Bar Dam Reach and Camp Nine Reach

- **Objective:** Determine if the specified streamflow regime affects FYLF in the Camp Nine and Sand Bar Dam reaches and collect information to develop a Temperature Trigger for the minimum Supplemental Flows specified for the Sand Bar Dam Reach.
- Complete and distribute to the USFS, Deputy Director, CDFG, and others upon request within 12 months of license issuance, the Licensee's report on 2003 amphibian studies conducted in Relief Reach for Mountain Yellow-legged Frog (MYLF), Philadelphia Reach (Visual Encounter Surveys and flow study for FYLF), Spring Gap Reach (Visual Encounter Surveys for FYLF), and Sand Bar Dam Reach (Visual Encounter Surveys and flow study for FYLF).
- Conduct up to five years of additional Visual Encounter Surveys for FYLF at a total of three known sites with FYLF (based on 2000, 2001, 2003 study results) in the combined Sand Bar Dam Reach and the section of Camp Nine Reach above Collierville Powerhouse. Survey shall begin approximately 0.5 km below the known sites and end approximately 0.5 km above the known sites.
- Resurvey FYLF habitat at the three monumented stream cross sections that were established by the Licensee in 2003 in Sand Bar Dam Reach to enable monitoring of channel shape and substrate composition. The frequency of surveying cross sections shall be four times during the term of the license (anticipated to be years 5, 10, 15, and 25 after license issuance), and after any winter/spring flow event exceeding a 100-year recurrence interval.
- Conduct water temperature monitoring at three sites (Sand Bar Diversion Dam, mid-Sand Bar Dam Reach, and above the confluence of the Middle and North Forks of the Stanislaus River) to coincide with amphibian surveys. Identify a relationship between water temperatures at Sand Bar Diversion Dam and downstream amphibian breeding sites (including intermittent tributaries) so that implementation of the Temperature Trigger can be done by measuring water temperatures only at Sand Bar Diversion Dam.
- Compile existing relevant and reasonably available FYLF data from other hydroelectric projects in California licensed to Licensee to help develop the Temperature Trigger.

- Prepare and distribute to the USFS, Deputy Director, CDFG, and others upon request a final report, including recommendations, after completion of the study.

Mountain Yellow-Legged Frog (MYLF) Monitoring in Relief Reach

- Objective: Determine if the specified streamflow regime or the Licensee's land management practices have an affect on MYLF in the Relief Reach.
 - Perform three years of additional Visual Encounter Surveys in the Kennedy Meadows area (ponds and river), anticipated to be by the end of first, second and third years after license issuance.
 - Determine if MYLF habitat or known populations are affected by the specified streamflow regime or the Licensee's land management practices.
 - Evaluate results and prepare and distribute to the USFS, Deputy Director, CDFG and others upon request, a final report, including recommendations, after completion of study.
10. The Licensee shall, beginning as soon as reasonably feasible and no later than one year after license issuance, annually make recreation streamflow information available to the public as follows. Unless otherwise noted, the flow information shall be available to the public via toll-free phone and Internet, both of which may be accomplished through a third party. The flow information protocols may be modified upon mutual agreement of the Licensee and responsive stakeholders, and approval by the Commission:
- a. From May 1 through October 31, the hourly average streamflow for the Middle Fork Stanislaus River at Kennedy Meadows (Dardanelles and Donnell's Runs), Middle Fork Stanislaus River immediately below Sand Bar Diversion Dam (Sand Bar and Mt. Knight Runs), mainstem Stanislaus River immediately below Stanislaus Powerhouse, South Fork Stanislaus River below Herring Creek (Strawberry Run), and South Fork Stanislaus River immediately below Philadelphia Diversion Dam (lower Strawberry Run). The flow information may be measured, calculated or a combination of the two. The flow information shall be posted at 9 AM, Noon and 4 PM daily for the current day and the past seven days. Streamflows may be rounded up to the nearest 50 cfs, and all plots and tables showing this data shall be labeled: "These provisional data have not been reviewed or edited and may be subject to significant change."
 - b. By April 15, the proposed dates for any Recreation Streamflow Event (if applicable) planned to be provided by the Licensee. The information shall be shown in calendar format, shall specify the proposed flows in cfs, and shall be promptly updated if any changes occur.
 - c. By April 10, a preliminary forecast of the water-year type and the initiation date and duration of anticipated spill at Relief, Beardsley and Pinecrest Dams. The information shall be updated by May 10, and shall be updated weekly thereafter through the duration of the spill period.
 - d. The Licensee shall install and maintain one simple staff gage/depth indicator at each of the following locations: Middle Fork Stanislaus River at Kennedy Meadows (Dardanelles and Donnell's Runs), Middle Fork Stanislaus River at Sand Bar Diversion Dam (Sand Bar and Mt. Knight Runs), mainstem Stanislaus River at Stanislaus Powerhouse, South Fork Stanislaus River below Herring Creek (Strawberry Run), and South Fork Stanislaus River below Philadelphia Diversion Dam (lower Strawberry Run). The Licensee shall

make a good faith attempt to locate the staff gages/depth indicators near whitewater boating put-in locations and, if possible, angling access points, so they are easily accessible for public reference. The Licensee shall provide a means at each staff gage/depth indicator to reasonably correlate staff gage/depth indicator readings to cfs.

11. After license issuance, the Licensee shall provide a Recreation Streamflow Event immediately below Sand Bar Diversion Dam (Sand Bar and Mt. Knight runs) on two consecutive weekend days in the third of three consecutive years in which a flow event has not otherwise occurred. A Recreation Streamflow Event is defined as at least two consecutive days from May 15 to the end of the Beardsley Dam spill period when flows immediately below Sand Bar Diversion Dam, as measured or calculated, are between 700 cfs and 2,000 cfs from 10 AM to 3 PM. The Recreation Streamflow Event, if provided by the Licensee, shall take place between May 15 and June 15, but no later than the date of the peak Supplemental Flow. The Recreation Streamflow Event, if provided by the Licensee, shall occur simultaneously with any Supplemental Flow provided by the Licensee. The Licensee shall provide advance public notification of Recreation Streamflow Events provided by the Licensee, including the date and planned flow magnitude, beginning April 15 or as soon as reasonably feasible via the same toll-free phone and Internet system it uses to provide recreation streamflow information to the public. The Licensee's notification for a planned Recreation Streamflow Event shall be as accurate as reasonably feasible, recognizing that streamflows cannot be guaranteed and are subject to change.

All provisions for the Licensee to provide a Recreation Streamflow Event are subject to the safe operability of the Project facilities and equipment necessary to provide such streamflows. The Licensee is relieved from providing the Recreation Streamflow Event described above under the following circumstances: (1) if such events are causing significant ecological damage identified through scientific study, (2) water inflow at Sand Bar Diversion Dam is less than 600 cfs (100 cfs to keep Stanislaus Power Tunnel watered and 500 cfs absolute minimum boating flow), (3) equipment failure or conditions beyond the control of the Licensee from providing the Recreation Streamflow Event in the specified time period, (4) the California Department of Water Resources' May 1 forecast for total unimpaired inflow into New Melones Reservoir is less than 350,000 acre-feet, or (5) after consultation with, and upon the approval of the Deputy Director.

The Licensee shall: (1) provide the scheduled Recreation Streamflow Event on the dates it is scheduled to occur; (2) maintain the operability of Project facilities and equipment necessary to provide such event; (3) not schedule discretionary outages of such facilities and equipment in conflict with providing such event; and (4) co-ordinate with the Licensees of the upstream Beardsley/Donnells and Sand Bar Projects to have sufficient flow into Sand Bar Diversion Dam when the Spring Gap-Stanislaus Licensee has scheduled a Recreation Streamflow Event.

12. Prior to the beginning of construction of the Stanislaus Power Tunnel Fish Screen and the removal of the Stanislaus Afterbay Dam, Licensee shall obtain all necessary permits. Licensee shall submit final construction plans, including measures to protect water quality to the Deputy Director for review and approval prior to beginning work. The plans shall include a water quality monitoring program with monitoring locations upstream and downstream of the project site. The plans shall also include Best Management Practices, and measures that will be used to minimize water quality impacts during instream work.

13. Licensee shall collect sediment samples for selected trace metal analysis from sediment deposited upstream of Stanislaus Afterbay Dam to determine levels of selected metals to insure worker safety and to determine final disposition of the sediments. Sediment samples will be collected at three stations approximately two months prior to construction activities. The methodology and stations selected for sampling will be determined in the field based on access and stream and sediment characteristics. If site characteristics allow, a hand corer may be used to collect the samples. A composite of fine grained material at each station will be collected for analysis of selected trace metals. Sediment samples will be analyzed for mercury, methyl mercury, arsenic, copper, nickel, lead, chromium, and silver. Sampling and analytical analysis will be performed in accordance with PG&E Environmental Sciences Quality Assurance Program Plan. Sediment sample analysis results and proposed method of sediment disposal will be submitted to the Deputy Director for review and approval prior to removing the sediments.
14. Licensee shall prepare plans to minimize soil erosion and loss of topsoil for the review and approval of the Deputy Director prior to beginning construction of the Stanislaus Power Tunnel Fish Screen or removal of the Stanislaus Afterbay Dam. The plan shall include the requirement to prepare a Storm Water Pollution Prevention Plan to address specific site mitigation measures to prevent erosion and protect water quality. The plan shall include Best Management Practices with temporary surface drainage ditches, water bars, and filter barriers along the access road to mitigate any potential erosion from rain during construction as needed.
15. Material such as fuel (gasoline/diesel), hydraulic oil, and motor oil, will be used during construction of the Stanislaus Power Tunnel Fish Screen and removal of the Stanislaus Afterbay Dam. Material Safety Data Sheets for all substances used on the job site must be on file at the job headquarters in Angels Camp and at the job site as required by the Hazard Communication Law, General Industry Safety Orders, Sec. 5194.

Hazardous waste products such as grease cartridges and oil absorbents will be placed in proper containers and transported from the job site to an authorized Hazardous Waste Collection Site.

Trucks and equipment will be refueled as required from 110-gallon capacity diesel tanks carried in the back of pickup trucks. No fuel storage tanks will be placed on the site.

Equipment hydraulic oil will be changed out to biodegradable oil for the equipment operating within the stream channel. Oil collection booms will be strategically placed in the Stanislaus River to provide additional protection in the event of an equipment fluid release.

To reduce potentially hazardous conditions and minimize the impacts from the handling of potentially hazardous materials, PG&E will include the following in its construction contract documents:

- a) The contractor(s) shall enforce strict on-site handling rules to keep construction and maintenance materials out of receiving waters and storm drains. In addition, the contractor(s) shall store all reserve fuel supplies only within the confines of a designated construction staging area, refuel equipment only within the designated construction staging area, and regularly inspect all construction equipment for leaks.

- b) The contractor(s) shall prepare a *Health and Safety Plan*. The plan shall include measures to be taken in the event of an accidental spill.
 - c) The construction staging area shall be designed to contain contaminants such as oil, grease, and fuel products so that they do not drain towards receiving waters or storm drain inlets.
16. Within six months of license issuance the Licensee shall submit a spill channel management plan for the review and approval of the Deputy Director. The plan shall address the Spring Gap and Stanislaus Forebay spill channels and include measures to reduce water quality impacts. The plan shall include monitoring channel stability and monitoring and reporting of water quality impacts during spill events. Water quality monitoring stations may be located in the vicinity of the powerhouses.
17. The Licensee shall coordinate Project operations with operations of the Beardsley/Donnells Hydroelectric Project (Project No. 2005) consistent with the Coordinated Operations Agreement among the Oakdale and South San Joaquin Irrigation Districts, Tri-Dam Power Authority, and Pacific Gas and Electric Company. Any revisions or amendments to the Coordinated Operations Agreement shall be filed with the Deputy Director. The State Water Board may modify terms and conditions in this certification, after notice and opportunity for hearing, to address project coordination reasonably necessary to achieve water quality standards and beneficial uses of water.
18. Nothing in this certification shall be construed as State Water Board approval of the validity of any consumptive water rights, including pre-1914 claims, referenced in the Coordinated Operations Agreement or elsewhere. The State Water Board has separate authority under the Water Code to investigate and take enforcement action if necessary to prevent any unauthorized or threatened unauthorized diversions of water.
19. Beginning as soon as reasonably feasible and no later than six months after license issuance, Licensee shall limit increase or decrease of regulated minimum streamflows and Daily Flows to result in a stage change of six inches or less per hour. The point of compliance shall be at the following flow measurement gages; USGS gage 11293200 (PG&E gage S-12 below Sand Bar Diversion Dam), USGS gage 11292000 (PG&E gage S-52 at Kennedy Meadows), USGS gage 11296500 (PG&E gage S-61 below Herring Creek), and USGS gage 11297200 (PG&E gage S-83 below Philadelphia Diversion Dam) or at a different location after approval of the Deputy Director. The ramping rate may be temporarily modified if required by equipment malfunction, agency requirements, emergency or law enforcement activity, or electric system emergencies beyond the control of the Licensee. Where facility modification is required for the Licensee to provide the specified ramping rate, the Licensee shall complete such modifications as soon as reasonably practicable and no later than three years after license issuance. Prior to such required facility modifications, the Licensee shall make a good faith effort to provide the specified ramping rate within the capabilities of the existing facilities. The Licensee shall notify the Deputy Director if it is unable to meet the ramping rate prior to facility modification.
20. The Licensee shall continue to maintain and operate the Philadelphia Diversion fish screen in accordance with the functional design filed with FERC on May 3, 1993 and approved by FERC on July 30, 1993, including transporting stream sediment through the structure and

the option of removing the upper screen panels in the winter from December 1 through March 15 when ice and snow conditions may exist.

21. The Licensee shall continue to maintain and operate the fish ladder located at Philadelphia Diversion Dam. The Licensee shall annually, after the peak spring flow period, inspect the fish ladder and the downstream access pool and maintain their functionality.
22. The Licensee shall pay the cost, up to a maximum of \$20,000 per year (2002 cost basis), for fish stocking in Pinecrest Lake and potentially Pinecrest Reach by California Department of Fish and Game, provided such stocking is performed.
23. Notwithstanding any more specific conditions in this certification, the Project shall be operated in a manner consistent with all water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act or section 303 of the Clean Water Act. The Licensee shall take all reasonable measures to protect the beneficial uses of water of the Middle and South Forks Stanislaus River.
24. The authorization to operate the Project pursuant to this certification is conditioned upon payment of all applicable fees for review and processing of the application for water quality certification and administering the State's water quality certification program, including but not limited to: timely payment of any annual fees or similar charges that may be imposed by future statutes or regulations for the State's reasonable costs of a program to monitor and oversee compliance with conditions of water quality certification.
25. This certification is not intended and shall not be construed to apply to issuance of any FERC license or FERC license amendment other than the FERC license specifically identified in Licensee's application for certification described above.
26. This certification does not authorize any act which results in the taking of a threatened or endangered species or any act, which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & G. Code §§ 2050 - 2097) or the federal Endangered Species Act (16 U.S.C. §§ 1531 - 1544). If a "take" will result from any act authorized under this certification or water rights held by the Licensee, the Licensee shall obtain authorization for the take prior to any construction or operation of the Project. The Licensee shall be responsible for meeting all requirements of the applicable Endangered Species Act for the Project authorized under this certification.
27. In the event of any violation or threatened violation of the conditions of this certification, the violation or threatened violation shall be subject to any remedies, penalties, process or sanctions as provided for under applicable State or federal law. For the purposes of section 401(d) of the Clean Water Act, the applicability of any State law authorizing remedies, penalties, process or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this certification. In response to a suspected violation of any condition of this certification, the State Water Board may require the holder of any federal permit or license subject to this certification to furnish, under penalty of perjury, any technical or monitoring reports the State Water Board deems appropriate, provided that the burden, including costs, of the reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In response to any violation of the conditions of this certification, the State Water Board may add to or modify the conditions of this certification as appropriate to ensure compliance.

28. Licensee must submit any change to the Spring Gap-Stanislaus Hydroelectric Project, including project operation that would have a significant or material effect on the findings, conclusions, or conditions of this certification, to the Deputy Director for prior review and written approval.
29. This certification is subject to modification upon administrative or judicial review, including review and amendment pursuant to Water Code section 13330 and California Code of Regulations, title 23, division 3, chapter 28, article 6 (commencing with § 3867).
30. The State Water Board reserves authority to modify this certification if monitoring results indicate that continued operation of the project would violate water quality objectives or impair the beneficial uses of the Middle or South Forks Stanislaus River.
31. The State Water Board may add to or modify the conditions of this certification, as appropriate, to implement any new or revised water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act or section 303 of the Clean Water Act.
32. The State Water Board may add to or modify the conditions of this certification as appropriate to coordinate the operations of this Project and other hydrologically connected water development projects, where coordination of operations is reasonably necessary to achieve water quality standards or protect beneficial uses of water.
33. The State Water Board shall provide notice and an opportunity for hearing in exercising its authority to add or modify any of the conditions of this certification.

Attachment: Mitigation and Reporting Plan

Mitigation and Reporting Plan

The following mitigation measures are included in the Project to reduce the impacts to a less than significant level.

Mitigation Measure 1: Licensee shall prepare plans to minimize soil erosion and loss of topsoil for the review and approval of the State Water Board Deputy Director for Water Rights (Deputy Director) prior to beginning construction of the Stanislaus Power Tunnel Fish Screen or removal of the Stanislaus Afterbay Dam. The plan shall include the requirement to prepare a Storm Water Pollution Prevention Plan to address specific site mitigation measures to prevent erosion and protect water quality. The plan shall include Best Management Practices with temporary surface drainage ditches, water bars, and filter barriers along the access road to mitigate any potential erosion from rain during construction as needed.

Mitigation Measure 2: Material such as fuel (gasoline/diesel), hydraulic oil, and motor oil, will be used during construction of the Stanislaus Power Tunnel Fish Screen and removal of the Stanislaus Afterbay Dam. Material Safety Data Sheets for all substances used on the job site will be on file at the job headquarters in Angels Camp and at the job site as required by the Hazard Communication Law, General Industry Safety Orders, Sec. 5194.

Hazardous waste products such as grease cartridges and oil absorbents will be placed in proper containers and transported from the job site to an authorized Hazardous Waste Collection Site.

Trucks and equipment will be refueled as required from 110-gallon capacity diesel tanks carried in the back of pickup trucks. No fuel storage tanks will be placed on the site.

Equipment hydraulic oil will be changed out to biodegradable oil for the equipment operating within the stream channel. Oil collection booms will be strategically placed in the Stanislaus River to provide additional protection in the event of an equipment fluid release.

To reduce potentially hazardous conditions and minimize the impacts from the handling of potentially hazardous materials, PG&E will include the following in its construction contract documents:

The contractor(s) shall enforce strict on-site handling rules to keep construction and maintenance materials out of receiving waters and storm drains. In addition, the contractor(s) shall store all reserve fuel supplies only within the confines of a designated construction staging area, refuel equipment only within the designated construction staging area, and regularly inspect all construction equipment for leaks.

The contractor(s) shall prepare a Health and Safety Plan. The plan shall include measures to be taken in the event of an accidental spill.

The construction staging area shall be designed to contain contaminants such as oil, grease, and fuel products so that they do not drain towards receiving waters or storm drain inlets.

PG&E shall submit a copy of the construction contract to the Deputy Director. PG&E shall identify an individual responsible for monitoring hazardous materials and compliance during

construction. This individual shall be responsible for reporting spills to the Regional Water Quality Control Board and the Deputy Director.

Mitigation Measure 3: Sediment samples will be collected for selected trace metal analysis from sediment deposited upstream of Stanislaus Afterbay Dam. Sediment samples will be collected to determine levels of selected metals to insure worker safety and to determine final disposition of the sediments. Sediment samples will be collected at three stations approximately two months prior to construction activities. The methodology and stations selected for sampling will be determined in the field based on access and stream and sediment characteristics. If site characteristics allow, a hand corer, such as an Environmental Sample Processor (ESP), may be used to collect the samples. A composite of fine-grained material at each station will be collected for analysis of selected trace metals. Sediment samples will be analyzed for mercury, methyl mercury, arsenic, copper, nickel, lead, chromium, and silver. Sampling and analytical analysis will be performed in accordance with the PG&E Environmental Sciences Quality Assurance Program Plan. Sediment sample analysis results and proposed method of sediment disposal will be submitted to the Deputy Director for review and approval prior to removing the sediments.

Mitigation Measure 4: Prior to the beginning of construction of the Stanislaus Power Tunnel Fish Screen and the removal of the Stanislaus Afterbay Dam, Licensee shall obtain all necessary permits. Licensee shall submit final construction plans, including measures to protect water quality, to the Deputy Director for review and approval prior to beginning work. The plans shall include a water quality monitoring program with monitoring locations upstream and downstream of the project site. The plans shall also include Best Management Practices and measures that will be used to minimize water quality impacts during instream work.

Appendix C

Draft Environmental
Assessment Distribution List

This page intentionally left blank.

**Stanislaus Afterbay Dam Environmental Assessment
Mailing List for Draft EA**

Name	Organization	Address		
Northern California Power Authority	Collierville Powerhouse	Calaveras County Water District	Highway 49	San Andreas, CA 95249
Ross C. Jackson	Pacific Gas & Electric Company	Mail Code N11C	PO Box 770000	San Francisco, CA 94177
Librarian	Angeles Camp Library		426 North Main Street	Angels Camp, CA 95222-0456
Librarian	Tuolumne County library		18701 Tiffeni Drive	Twain Harte, CA 98383
Chairman	Board of Supervisors	Calveras County	891 Mountain Ranch Road	San Andreas, CA 95249
Librarian	Calaveras County Library	Murphys Library	480 Park Lane	Murphys, CA 95247
Librarian	Tuolumne County Library	Sonora Library	480 Greenley Road	Sonora, CA 95370
Chairman	Board of Supervisors	Tuolumne County	2 South Green Street	Sonora, CA 95370
	City of Sonora Administrator		94 N. Washington St.	Sonora, CA 95370
	Calaveras County Water District	Calaveras County	PO Box 846	San Andreas, CA 95249
	Calaveras County Environmental Health	Calaveras County	891 Mountain Ranch Road	San Andreas, CA 95249
	City of Angels Camp	Angels Camp	PO Box 667	Angels Camp, CA 95222-0456
	California Department of Fish and Game	San Joaquin Valley and Southern Sierra	1234 East Shaw Avenue	Fresno, CA 93710
	California Department of Water Resources		PO Box 942836	Sacramento, CA 94236-0001
	CAL Fire		16809 Peoria Flat Road	Jamestown, CA 95327
	US Army Corps of Engineers	Sacramento District	1325 J Street Room 1480	Sacramento, CA 95814-2922
	Office of the County Administrator	Tuolumne County	2 S. Green St.	Sonora, CA 95370
	United States Forest Service	Sonora	19777 Greenley Road	Sonora, CA 95370
	United States Forest Service	Calaveras County	P.O. Box 500	Hathaway Pines, CA 95233
Scott Fee	PG&E	Stanislaus Powerhouse	14550 Tuolumne Rd.	Sonora, CA 95370
John Buckley	Central Sierra Environmental Resource Center	Twain Harte	P.O. Box 396	Twain Harte, CA 98383