RECLAMATION
Managing Water in the West

Stanislaus Afterbay Dam Removal

DRAFT Environmental Assessment

U.S. Department of the Interior
Bureau of Reclamation

July 2011

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Stanislaus Afterbay Dam Removal

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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
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July 2011

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Table of Contents

Tables

Maps

Figures

Appendices

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
CNDDB	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

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

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

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Chapter 1 – Purpose and Need for Action

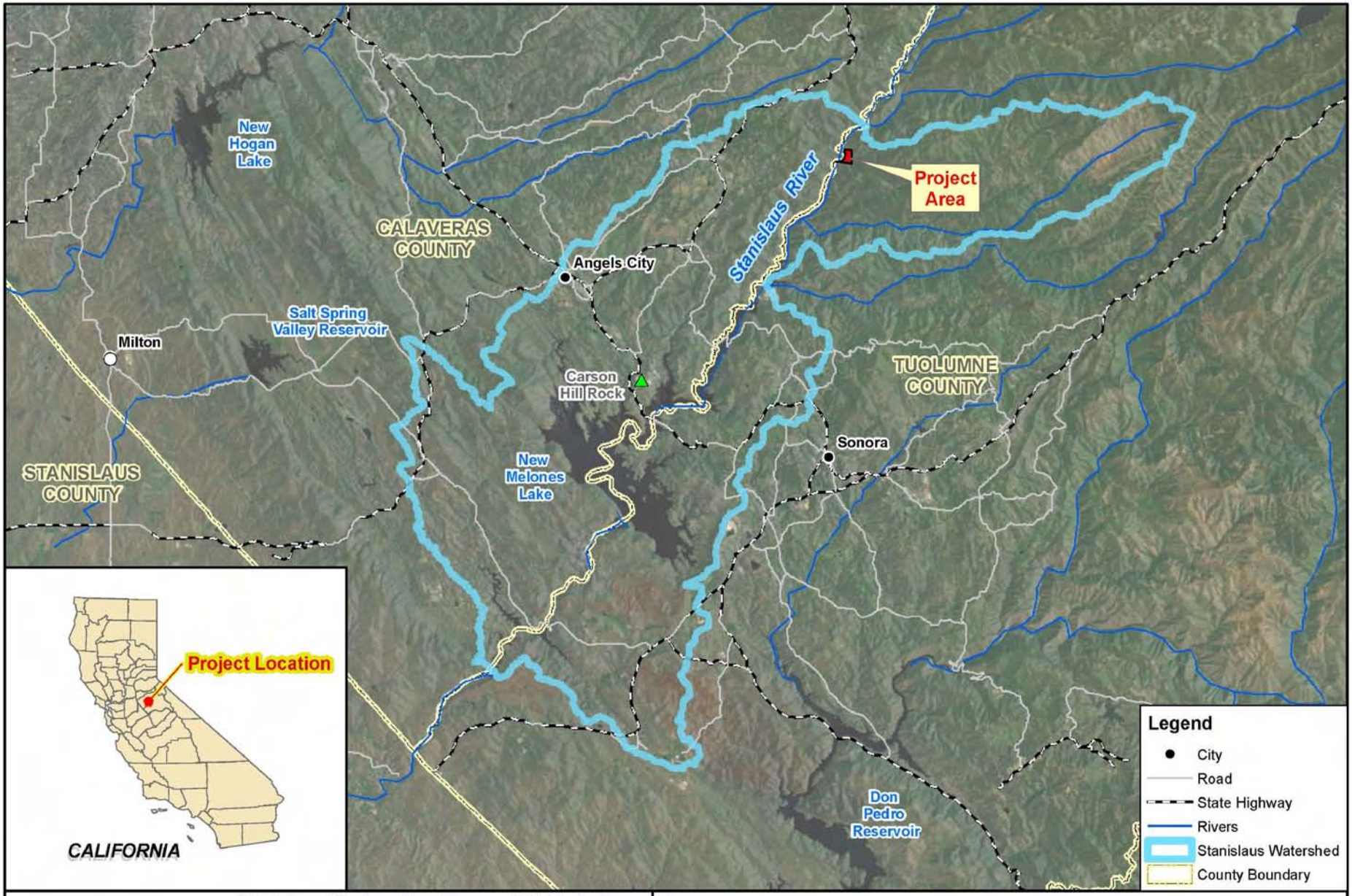
1.1 Introduction

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, Parrotts 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.



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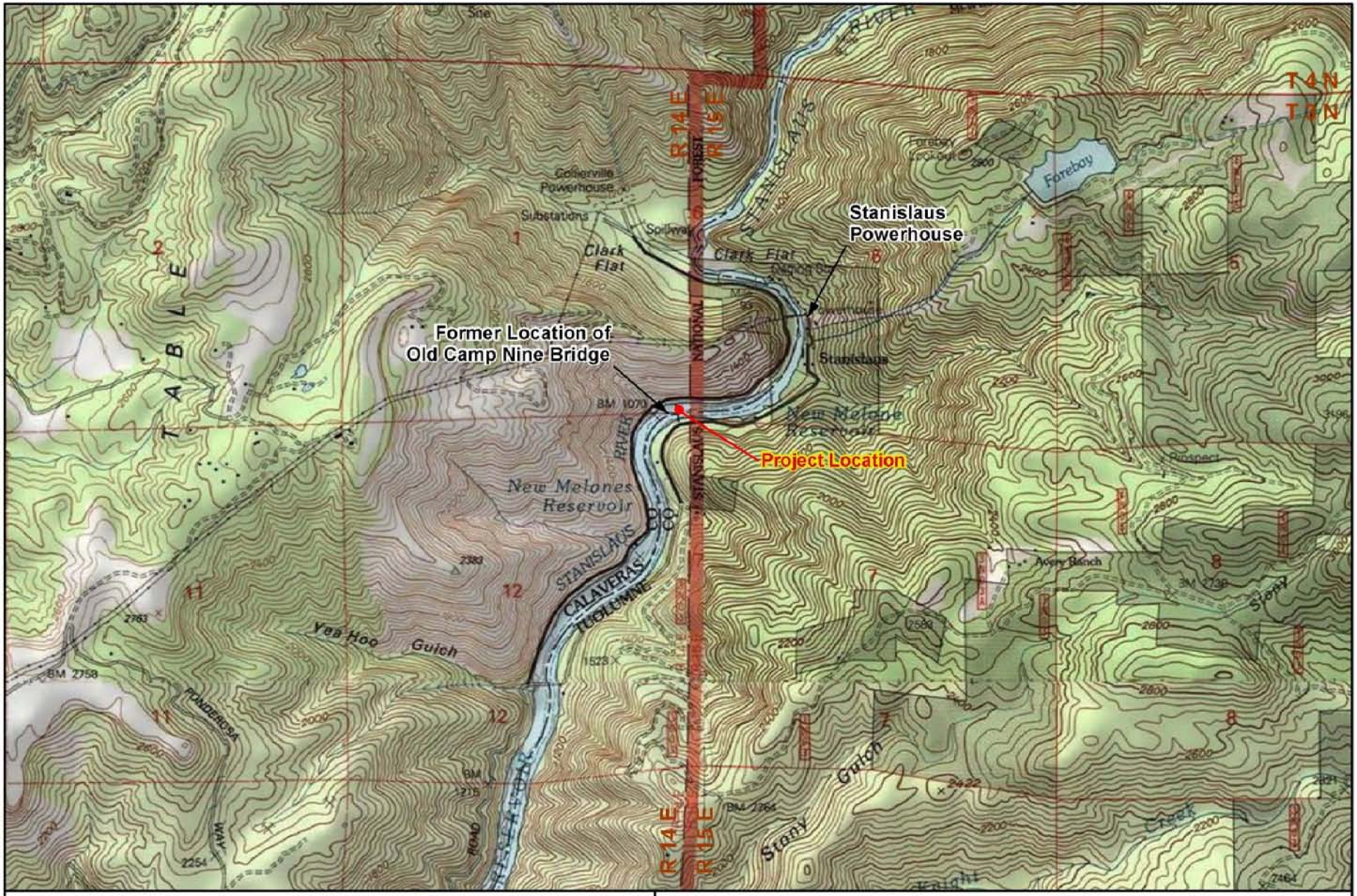
Stanislaus Afterbay Dam Removal EA Project

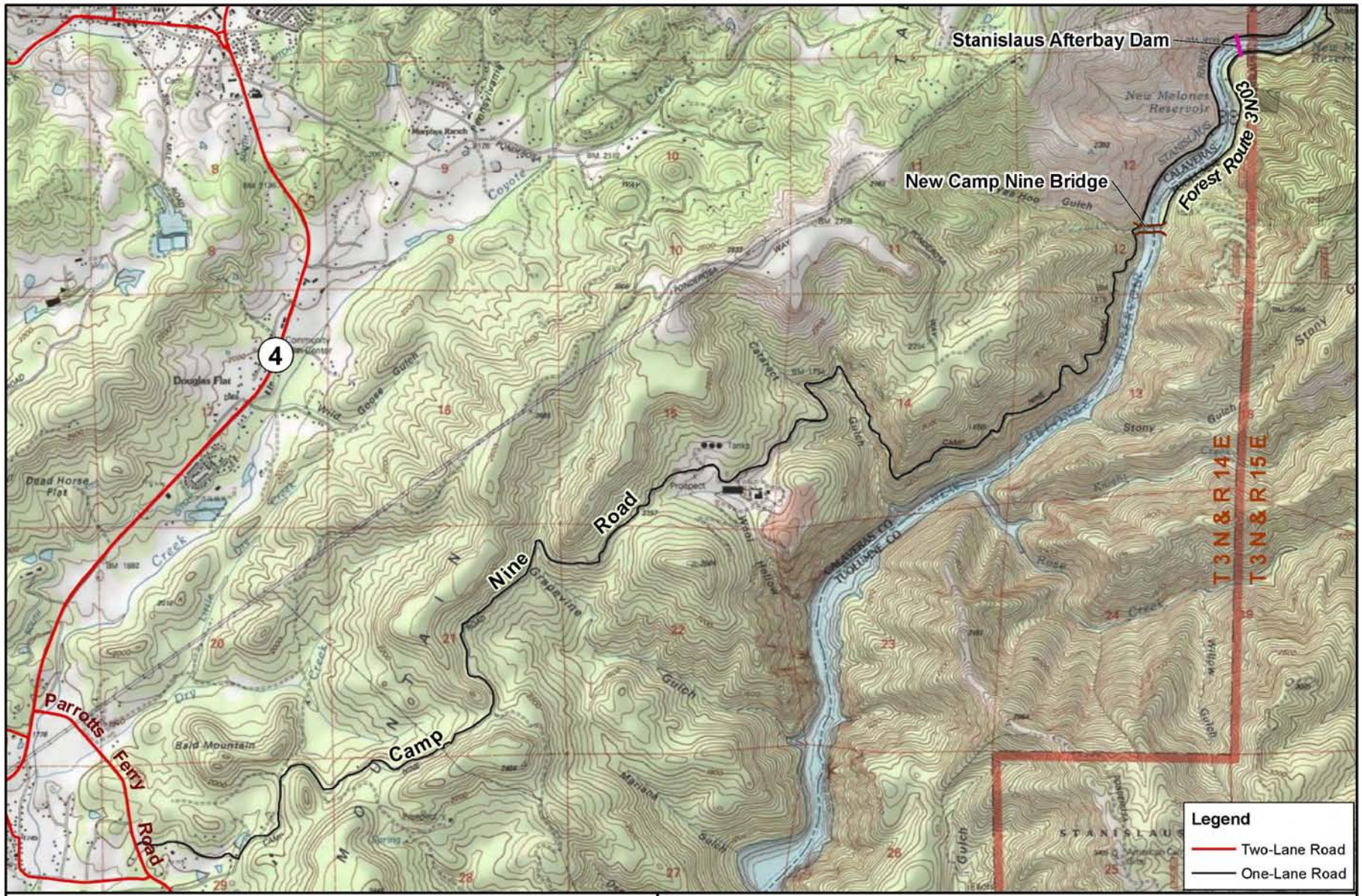
Map 1
Proposed Action Location Map

Calaveras and Tuolumne Counties, California

Notes:

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


Stanislaus Powerhouse
Former Location of Old Camp Nine Bridge
Project Location
Forebay
Clark Flat
New Melones Reservoir
Yaa Hoo Gulch
Stanislaus
Tuolumne
Calaveras
R14E
R15E
T4N
T3N
TABLE
Stanislaus Afterbay Dam Removal EA Project
Map 2
Project Location Map
Calaveras and Tuolumne Counties, California
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
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).
N
0
1,000
2,000
Feet



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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).

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 store water for the pumped-storage hydroelectric project and 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

(A)

(B)

(C)

(D)

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

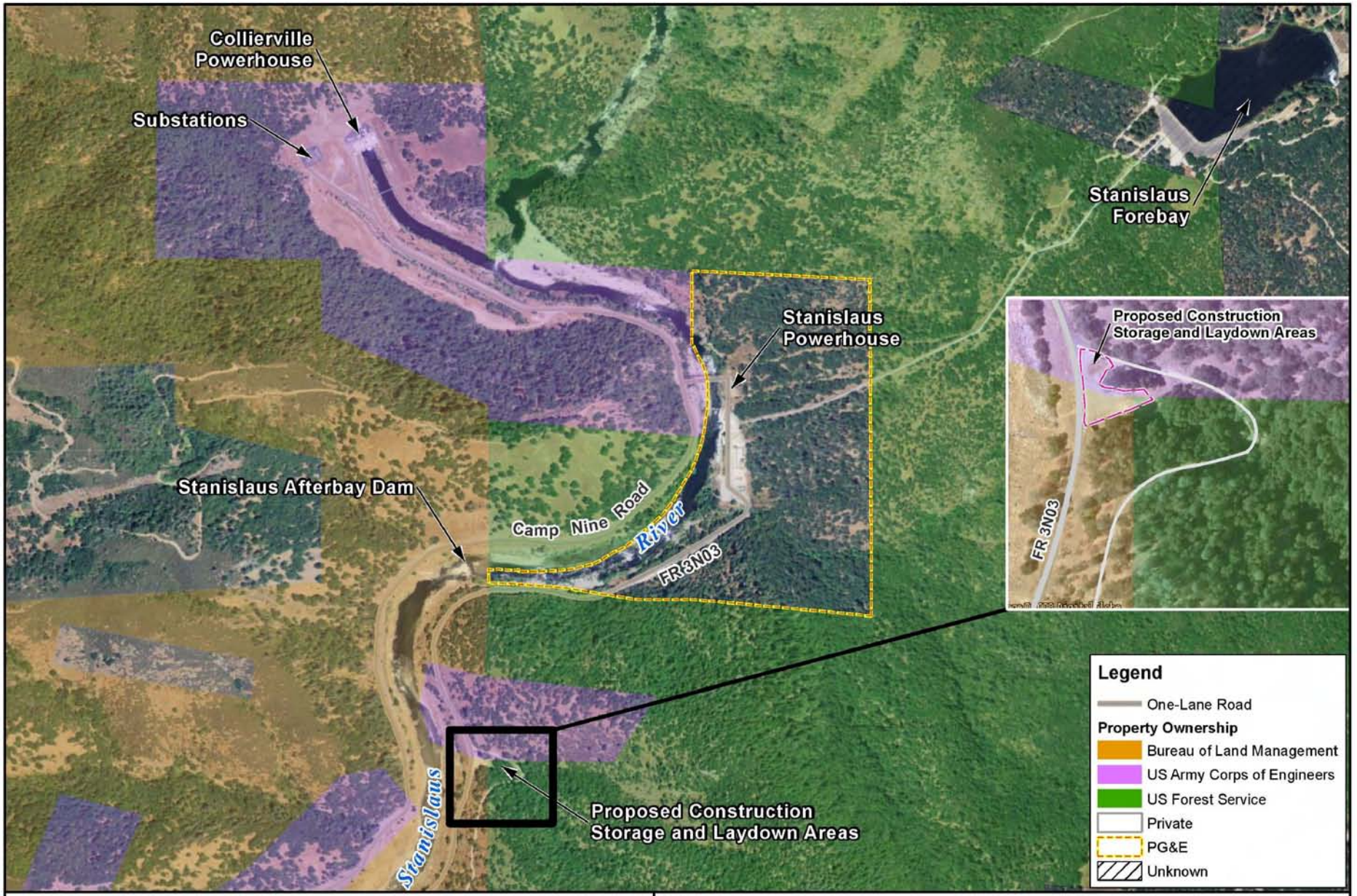
Stanislaus Powerhouse, which is operated by PG&E approximately 0.5 mile north and upstream of the dam. The pavement on the spur access road is in fair condition and would be maintained to prevent any further deterioration during construction. Because of the tight turning radius from Former FR 3N03 to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



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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

Main Map: 0 500 1,000 Feet

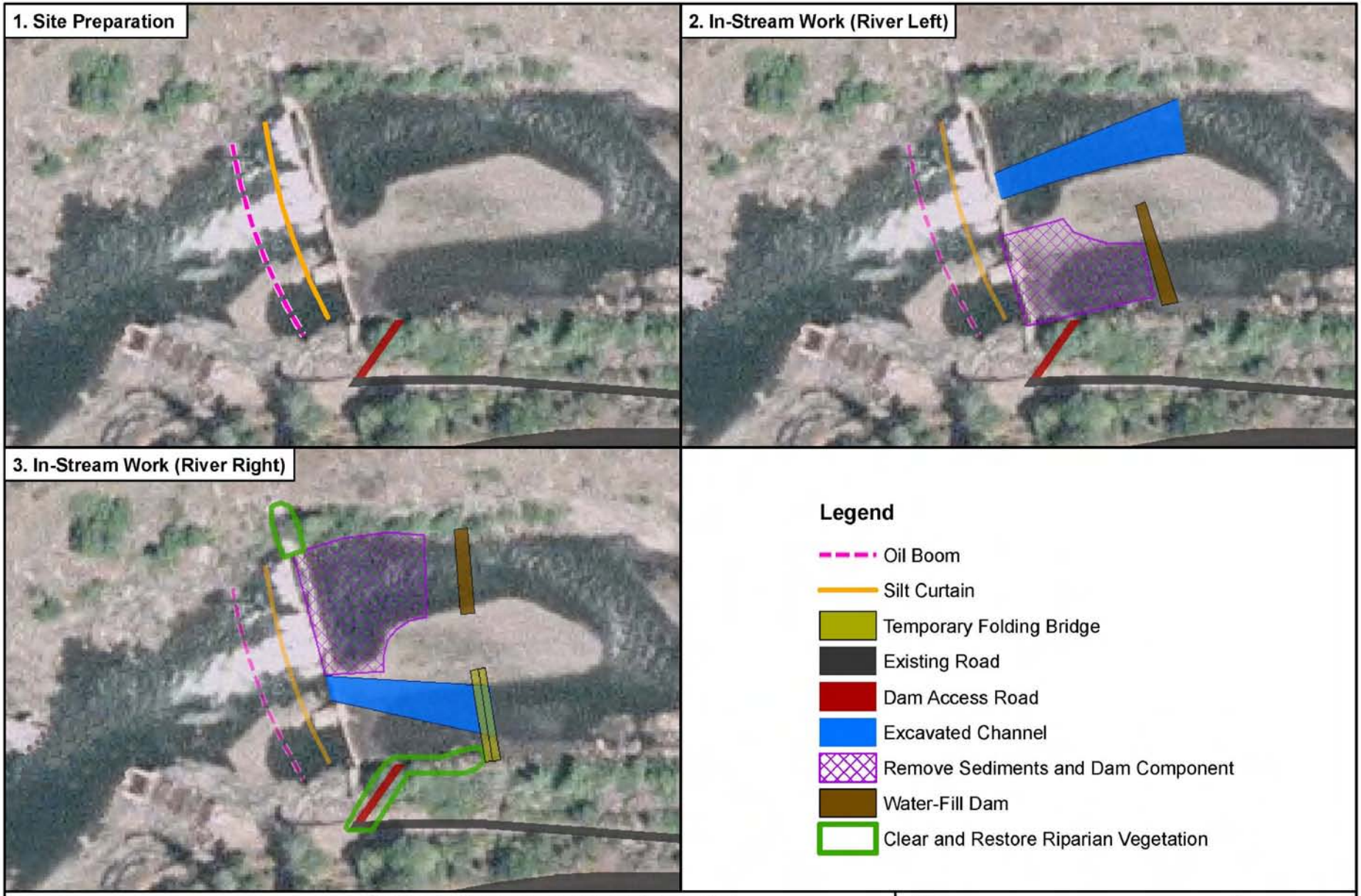
Inset Map: 0 150 300 Feet

N

- *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).



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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.

N

0 50 100 Feet

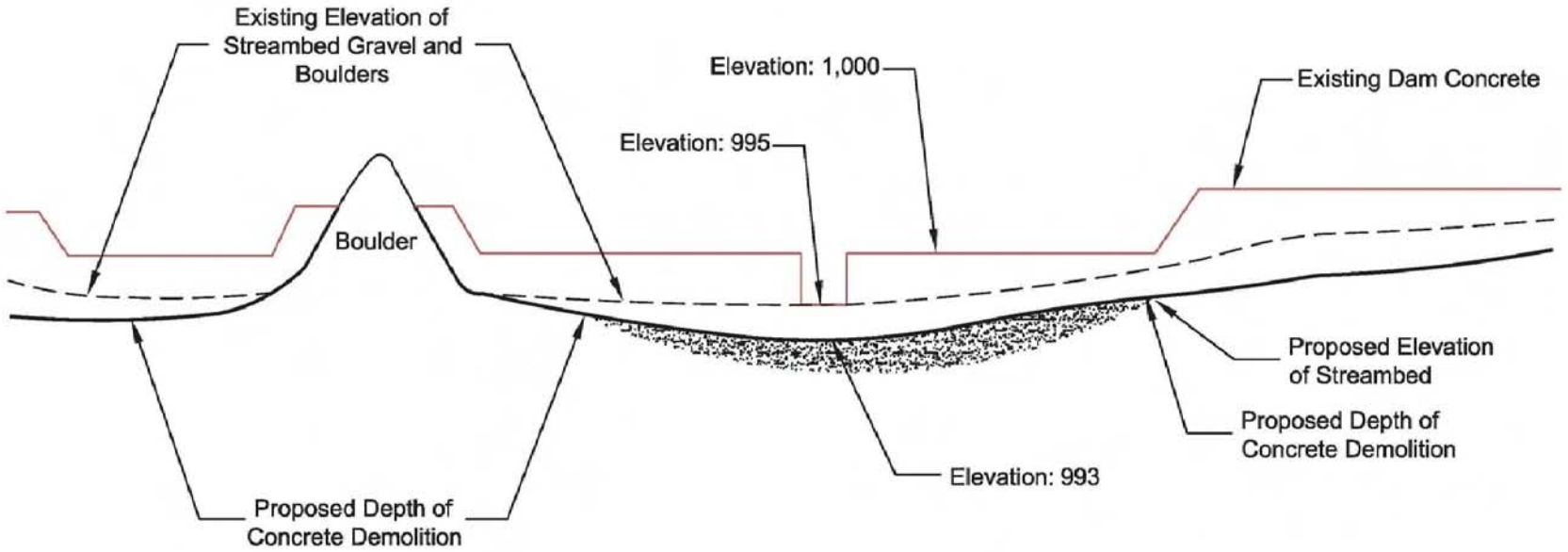
After flow is diverted, the contractor would dewater the area on the left side of the dam, treat the water to reduce turbidity, and release the water to the dam's downstream side. The contractor would then excavate approximately 250 cy of substrate that has accumulated against the upstream face of the 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

Stanislaus Afterbay Dam Removal EA Project

Figure 3
Proposed Removal of Dam Concrete and Riverbed Elevation

Calaveras and Tuolumne Counties, California

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.

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 Wetlands	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.
Vegetation	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.
Wildlife	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.
Fisheries	Continued intermittent barrier to resident fish movement. Would not achieve the benefits of dam removal.	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.

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 (PM_{10}), 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 PM_{10} (CARB 2010).

The USEPA has established national area designations for five criteria pollutants: ozone (1- and 8-hour standards), PM_{10}, 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 PM_{10} (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 (CO_2), 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 CO_2-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, PM_{10} 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 CO_2-equivalent[1] 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] CO_2-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 (ft^2) 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 ft^2 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 ft^2 of riparian vegetation. Restoration of the area occupied by the dam would result in a small

increase (approximately 100 ft^2) 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
Ione Manzanita	*Arctostaphylos myrtifolia*	Ione chaparral, cismontane woodland	T	U
Chinese Camp brodiaea	*Brodiaea pallida*	Valley and foothill grassland, serpentine soils	T	U
Succulent owl's clover	*Castilleja campestris ssp. succulenta*	Lower foothills, margins of vernal pools and swales, some seasonal wetlands	T	U
Layne's butterweed (ragwort)	*Senecia layneae*	Dry pine or oak woodlands in serpentine soils	T	U
Red Hills (California) vervain	*Verbena californica*	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 CNDDB 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 CNDDB 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	*Allium jepsonii*	Foothill woodland, yellow pine forest, serpentine soils.	1B.2
Three-bracted onion	*Allium tribracteatum*	Chaparral, red fir forest, yellow pine forest; 4,000 to 8,000 feet.	1B.2
Rawhide Hill onion	*Allium tuolumnense*	Foothill woodland, serpentine soils.	1B.2
Yosemite onion	*Allium yosemitense*	Chaparral, foothill woodland, yellow pine forest, mixed evergreen forest.	1B.3
Nissenan Manzanita	*Arctostaphylos nissenana*	Chaparral, closed cone pine forest; 1,500 to 3,000 feet.	1B.2
Big-scale balsamroot	*Balsamorhiza macrolepis var. macrolepis*	Valley grassland, foothill woodland.	1B.2
Common moonwort	*Botrychium lunaria*	Lodgepole pine forest, subalpine forest, wetland/ riparian; 7,000 to 1,000 feet.	2.3
Bolander's brachia	*Bruchia bolanderi*	5,500 to 9,100 feet.	2.2
Pleasant Valley mariposa-lily	*Calochortus clavatus var. avius*	Yellow pine forest.	1B.3
Hoover's calycadenia	*Calycadenia hooveri*	Valley grassland, foothill woodland.	1B.3
Red Hills soaproot	*Chlorogalum grandiflorum*	Chaparral foothill woodland, yellow pine forest, serpentine soils.	1B.2
Small's southern clarkia	*Clarkia australis*	Foothill woodland, yellow pine forest.	1B.2
Mariposa clarkia	*Clarkia biloba ssp. australis*	Chaparral, foothill woodland, yellow pine forest.	1B.2
Beaked clarkia	*Clarkia rostrata*	Valley grassland, foothill woodland.	1B.3
Subalpine cryptantha	*Cryptantha crymophila*	Subalpine forest; 9,000 to 9,500 feet.	1B.3
Mariposa cryptantha	*Cryptantha mariposae*	Chaparral, serpentine soils; 0 to 2,000 feet.	1B.3
Tahoe draba	*Draba asterophora var. asterophora*	Subalpine forest, alpine fell-fields.	1B.2
Subalpine fireweed	*Epilobium howellii*	Subalpine forest, wetlands, meadows.	4.3

Table 5 Continued

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

Table 5 Continued

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

3.5.2.2.2.2 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.

3.5.2.2.2.3 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	*Ambystoma californiense*	Cismontane woodland, valley and foothill grassland, vernal pool, wetlands	T	U
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	Riparian scrub, Cismontane woodland, lower montane coniferous forest	T	P
Fisher	*Martes pennanti*	North coast coniferous forest, old growth, riparian forest	C	U
California red-legged frog	*Rana draytonii*	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 CNDDB 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 CNDDB Special-Status Species with the Potential to Occur at the Site

Common Name	Scientific Name	Status	Habitat	Potential to Occur on Site
Amphibians				
Foothill yellow-legged frog	*Rana boylii*	CSSC	Streams and rivers with rocky substrate, sometimes in isolated pools, backwaters. In chaparral, woodlands, forests.	U – appropriate habitat absent
California red-legged frog	*Rana draytonii*	CSSC	Slow-moving streams or still bodies of water for breeding; uses a variety of habitat types.	U – appropriate habitat absent
Reptiles				
Western pond turtle	*Emys marmorata*	CSSC	Permanent or near permanent water bodies with logs, vegetation or exposed banks for basking.	U – appropriate habitat absent
Birds				
Northern Goshawk	*Accipter gentilis*	CSSC	Mature and old growth forests with relatively dense canopies.	U – appropriate habitat absent
Tricolored blackbird	*Agelaius tricolor*	BCC/ CSSC	Marsh vegetation or vegetation near small bodies of water.	U – appropriate habitat absent
Great grey owl	*Strix nebulosa*	SE	Old growth conifer forests.	U – appropriate habitat absent
Mammals				
Pallid bat	*Antrozous pallidus*	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	*Corynorhinus townsendii*	CSSC	Roosts in caves.	U – roosting habitat absent
Spotted bat	*Euderma maculatum*	CSSC	Roosts in caves, and crevices and cracks in cliff faces.	P – roosting habitat may be present
Western mastiff bat	*Eumops perotis californicus*	CSSC	Roost in high locations, cliffs, trees.	U – roosting habitat absent
Western red bat	*Lasiurus blossevillii*	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 will 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	*Hypomesus transpacificus*	Estuarine, rivers, tidally influenced backwater sloughs	T	U
Central Valley steelhead	*Oncorhynchus mykiss*	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 anadramous 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 CNDDB 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 will 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 will 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 Dam[1]

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 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), Krober (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 Effected 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.

3.8.2 Environmental Consequences

3.8.2.1 No Action Alternative

Under the No Action Alternative, the dam would remain in place and conditions related to cultural resources would remain the same as existing conditions. Since the dam was determined to be ineligible for listing on the NRHP, continued degradation of the dam would not result in affects to historic

properties. Since there would be no historic properties affected, no cultural resources will be impacted under the No Action 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 will be avoided by project design. There will be no adverse effects to historic properties associated with the New Melones National Register Archaeological District. Since there will be no adverse effects to historic properties, no cultural resources will 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 Groups[1]

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
All of Calaveras County			*11.8*
Calaveras	1	1.10	12.4
Calaveras	5	1.10	11.4
All of Tuolumne County			*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 3NO3, 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 3NO3 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 Lmax. 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 CO_2 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 conditions related to cultural resources would remain the same as existing conditions. Since the dam was determined to be ineligible for listing on the NRHP, continued degradation of the dam would not result in affects to historic properties. Degradation of the dam will not affect Camp Nine Road and the adjacent Camp Nin townsite and powerhouse location and the two milling features on the banks of the Stanislaus River. Therefore, there would be no cumulative effect under the No Action Alternative.

The Proposed Action Alternative involves the types of activities that have the potential to affect cultural resources. Since there will be no adverse effects to historic properties, no cultural resources would be impacted as a result of implementing the Proposed Action Alternative. Reclamation will consult with the SHPO regarding these findings and determinations. Concurrence from the

SHPO to conclude the Section 106 compliance process is pending. The project will not be implemented until the Section 106 compliance process has been completed.

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).
- Waste Discharge Requirements/National Pollutant Discharge Elimination System permit for diversion and dewatering from the Regional Water Quality Control Board (RWQCB).
- 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 Calavaras 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 will reinitiate 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.

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
U.S. Department of Interior, Bureau of Reclamation	
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
Pacific Gas & Electric	
Matthew Fransz	Project Manager
Michael DeCarlo	Project Engineer, Parsons
Stephanie Cimino	Cultural Resources
Michael Taggart	Cultural Resources
ARCADIS U.S., Inc.	
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

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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.

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