Joint Environmental Assessment/Initial Study
Public Draft

Saeltzer Dam
Fish Passage and Flow Protection Project

June 2000

3059_01

NOTICE OF INTENT TO ADOPT A NEGATIVE DECLARATION - SAELTZER DAM FISH PASSAGE AND FLOW PROTECTION PROJECT

This notice of intent to adopt a negative declaration is presented in accordance with Section 15072(f) of the CEQA Guidelines.

PROJECT DESCRIPTION AND LOCATION

Saeltzer Dam is located on Clear Creek in Section 36 of Township 31 North and Range 6 West, and Section 31 of Township 31 North and Range 5 West, Mount Diablo base and meridian. The project area includes Saeltzer Dam, the gorge downstream, and approximately 83 acres of stream channel, riparian corridor, dredge tailing piles, and wetland and upland habitats located upstream of the dam. The study area also includes the 7-mile Townsend Flat Water Ditch (Townsend Ditch) that conveys water from Saeltzer Dam to irrigated pasture between Clear Creek and Olney Creek to the north.

The Proposed Project Alternative consists of removing Saeltzer Dam, eliminating the water diversion to the Townsend Ditch at Saeltzer Dam, and exchanging 6,000 acre-feet of water through existing Central Valley Project (CVP) facilities to Townsend Flat Water Ditch Company (TFWDC) shareholders. Specific actions consist of improving access roads to Saeltzer Dam, removing the dam and sediment plug upstream of the dam, and restoring access roads and site to natural conditions.

The purpose of the proposed project is to provide fish passage over the major migration impediment to salmon habitat in the lower reach of Clear Creek and protect instream flows, while maintaining water supply to the shareholders of the TFWDC. The need for the proposed project has been documented since the 1950s when it was recognized that Saeltzer Dam was impairing access to upstream salmonid habitat. The fish passage problem has been consistently identified and documented by many federal and state agencies as a key element of restoring anadromous fish in Clear Creek and the upper Sacramento River. Primary examples include CVP Improvement Act (CVPIA) (b)(12) authorizing language and the CALFED Ecosystem Restoration Program Plan (ERPP). Should the fish passage problems at Saeltzer Dam be corrected, approximately 10 miles of additional habitat would be available to anadromous salmonids downstream of Whiskeytown Dam. Operation of Whiskeytown Dam has the potential to provide cold water releases downstream of the proposed project that would benefit both spring-run chinook salmon and steelhead trout during summer holding and rearing periods, substantially benefiting these federally listed species.

The project site is not designated as a site under Section 65962.5 of the Government Code, which lists hazardous waste properties and hazardous waste disposal sites.

REVIEW PERIOD

The Initial Study/Environmental Assessment and Proposed Mitigated Negative Declaration are open to public review and comment beginning June 13, 2000, and closing July 14, 2000. Any comments on the documents may be presented in writing to:

California Department of Fish and Game
Attn: Don Koch, Regional Manager
601 Locust Street
Redding, CA 96001

PUBLIC MEETINGS

The Clear Creek Coordinated Resource Management and Planning Group (CRMP) held a public meeting addressing the Saeltzer Dam Project on April 25, 2000.

An additional public meeting will be occur on June 22, 2000. Comments from the public will be welcomed at that time, and incorporated in the final report. Additional details will be sent to all parties on the mailing list.

DOCUMENT AVAILABILITY

Copies of the proposed negative declaration are available for review during normal business hours at the following location(s):

California Department of Fish and Game
601 Locust Street
Redding, CA 96001

U.S. Bureau of Reclamation
16349 Shasta Dam Boulevard
Shasta Lake, CA 96019

Shasta County Library
1855 Shasta Street
Redding, CA 96001

Additionally, individual copies of the document may be requested from:
Buford Holt, USBR, (530) 275-1554 and Harry Rectenwald, CDFG, (530) 225-2368.

PROPOSED FINDING OF NO SIGNIFICANT IMPACT SAELTZER DAM FISH PASSAGE AND FLOW PROTECTION PROJECT

Lead Agency:

U.S. Bureau of Reclamation
Northern California Area Office
16349 Shasta Dam Boulevard
Shasta Lake City, CA 96019-8400

The U.S. Bureau of Reclamation (Reclamation) and the California Department of Fish and Game (CDFG) are proposing to remove Saeltzer Dam, eliminate the water diversion to the Townsend Flat Water Ditch (Townsend Ditch) at Saeltzer Dam, and exchange 6,000 acre-feet of water from the Townsend Flat Water Ditch Company's (TFWDC) point of diversion at Saeltzer Dam to Central Valley Project (CVP) facilities and service areas within Shasta County. Removing Saeltzer Dam would benefit threatened and endangered anadromous salmonids by providing unimpeded access to the coldest 10 miles of stream habitat and improving sediment transport through the lower reaches of Clear Creek. This action would compliment other restoration projects in the watershed that benefit anadromous salmonids and other species.

ALTERNATIVES

Saeltzer Dam has been identified as a major impediment to fish migration since at least the 1950s when the CDFG installed a fish ladder along the right bank. Since then, the affect of Saeltzer Dam on salmonids has been regularly documented, culminating in the dam's inclusion in CVPIA (b)(12) authorizing language. The DWR identified ten (10) potential alternatives for consideration in a 1986 study. These alternatives included a broad range of options, which, after further consideration, were reduced to the following three alternatives:

1. Replace the existing dam with a low-head diversion dam upstream to convey water to the Townsend Ditch. A new fishway and fish screen would also be constructed at the new dam.

2. Remove the existing dam and construct a new dam at the same location with a fishway through the new dam.

3. Construct a new fishway around the south side of the existing dam.

Costs for these alternatives were considered excessive in comparison to the relative benefits provided. Therefore, these alternatives have not been carried forward because they are not considered feasible, either in terms of economic, institutional, or biological viability. Alternatives 1 and 2 attempted to address delivery of water to TFWDC, but failed to do so in an economical manner. Alternative 3 would maintain water deliveries, but was determined to provide inadequate assurance that fish passage would occur. The proposed project is the only identified project that TFWDC would agree to without reconstructing a ladder on the existing dam. The reconstruction of the ladder at the existing dam was not viewed as a prudent investment of funds because of the poor condition of the dam, the water rights holder's interest in other points of diversion, and the location of the dam at the

head of a gorge causing a compound fish passage problem. Therefore, the only alternative carried forward for full analysis in this EA/IS is the proposed project.

ANTICIPATED IMPACTS/BENEFITS

It is anticipated that implementing the proposed project would result in the following environmental effects:

- Anadromous salmonids would have access to an additional 10 miles of cool water habitat that is crucial to restoring threatened spring-run chinook salmon and steelhead trout.
- Instream flows would increase to the lower 6 miles of Clear Creek downstream once the current water diversion at Saeltzer Dam is eliminated, improving water temperatures and habitat conditions for anadromous salmonids.
- The existing fish passage impediment would be eliminated.
- Short-term water turbidity and suspended sediment levels would exceed water quality objectives while constructing access roads, stream crossings and cofferdams, and removing the dam and excavating sediments behind the dam.
- Up to 0.02 acres of intermittent pool wetlands, 1.14 acres of riparian wetlands, and 0.78 acres of riverine waters would be temporarily disturbed during construction. However, these impacts would be temporary in nature, and the operation of the proposed project would offset the minor impacts incurred during dam removal.

MEASURES TO AVOID ENVIRONMENTAL EFFECTS

Project design has been closely coordinated with the agencies responsible for the natural resources inherent within the proposed project area. Accordingly, the following specific actions would be undertaken during construction in an effort to avoid and minimize potential impacts to specific resources. Other measures incorporated into the proposed project include timing construction to avoid and minimize potential impacts, maintaining creek flows during demolition by incorporating flow bypass structures, and using spawning gravel for access roads and stability buttresses within the project area.

Biological Resources

- Clearly identify elderberry shrub locations in the field to ensure avoidance if project-related activities occur within 100 feet of the shrubs.
- Survey for yellow-breasted chats and yellow warblers if construction activities would result in the loss of potential habitat prior to August 31st. If active nests are present, consult with CDFG and avoid construction activities within the immediate area until August 1st.

Hydrology and Water Quality

- Equipment would not be operated in the stream channels of flowing live streams except as may be necessary to construct crossings and cofferdams necessary to implement the proposed project. All construction equipment would be cleaned prior to use on site.
- When work in a flowing stream is unavoidable, the entire streamflow would be diverted around the work area by a barrier, temporary culvert, and/or a new channel capable of permitting upstream and downstream fish movement. Construction of the barrier and/or new channel would proceed in a manner that minimizes sediment discharges and facilitates both fish rescue operations and fish escape from the work area.
- Construction sites would be isolated from free-flowing waters of Clear Creek through construction of either cofferdams, sediment berms, or placement of filter fabric and/or native grass straw bales.
- Uncrushed cleaned gravels (½ inch to 5 inch), or other materials acceptable to National Marine Fisheries Service (NMFS) and CDFG, would be used to construct necessary stream crossings. Following construction, these gravels would be notched to provide a passageway and left instream to improve spawning habitat for anadromous salmonids.
- Monitoring of water turbidity and settleable materials would be conducted above and 200 feet downstream of the construction site a minimum of once every 8 hours during the work day. Should water turbidity levels be found to exceed (1) 20 percent of background or 1 Nephelometric Turbidity Unit (NTU) when background turbidity is between 0 and 50 NTU; (2) 10 NTU when background turbidity is between 50 and 100 NTU; or (3) 10 percent when background turbidity levels are greater than 100 NTU, except during working periods when these limits would be eased to allow for a turbidity increase of 15 NTU and settleable materials exceed 0.1 milliliter per liter (ml/L), construction activities would cease until turbidity and settleable materials decrease to acceptable levels, or other actions as deemed appropriate by Central Valley Regional Water Quality Control Board (CVRWQCB) are implemented.
- Complete revegetation and stabilization of disturbed soils. Seeding and mulching of disturbed areas with native grass species would be conducted prior to November 15 or immediately following completion of construction activities, using native species appropriate for this purpose.
- Sediment catchment basins or traps would be used to prevent sediment from being transport to sensitive aquatic habitats. The location and size of these basins would be designed to minimize impacts to riparian areas, wetland habitats, and stream channels. The types of sediment traps considered include filter berms and straw-bale barriers.

Utilities

No measures are needed to avoid environmental effects.

Hazardous Materials

- Implement construction Best Management Practices (BMPs) and develop Spill Prevention Control and Countermeasures (SPCC).

- Identify staging areas for fueling and maintaining heavy equipment.
- If oil or fuel spill occurs during construction or maintenance activities, immediately cease work, contact the CVRWQCB and CDFG if spill is above state and/or federal reporting requirements, and begin cleanup.

Geology and Soils

No measures are needed to avoid environmental effects.

Mineral Resources

No measures are needed to avoid environmental effects.

Air Quality

- When using internal combustion engines, turn off when not in use.
- Properly maintain equipment.
- Incorporate dust-suppression techniques: water unpaved access roads and construction staging areas at least twice a day during construction periods.

Land Use and Policies

No measures are needed to avoid environmental effects.

Aesthetics

No measures are needed to avoid environmental effects.

Cultural Resources

- If ground-disturbing activities uncover prehistoric or archaeological resources, these activities would cease immediately, and Jim West, the Regional Archaeologist for the U.S. Bureau of Reclamation Mid-Pacific Region, would be contacted. Activities would not resume until appropriate measures have been developed.

Noise

No measures are needed to avoid environmental effects.

Recreation

No measures are needed to avoid environmental effects.

MITIGATION

Because no potential significant impacts have been identified, no mitigation is required.

AGENCY COORDINATION

The following agencies have been involved in the coordination process or have provided input:

- Bureau of Land Management
- California Department of Fish and Game
- Central Valley Regional Water Quality Control Board
- National Marine Fisheries Service
- Natural Resources Conservation Service
- U.S. Fish and Wildlife Service
- Western Shasta Resource Conservation District

Therefore, it is my determination that the proposal does not constitute a major Federal action significantly affecting the quality of the human environment. As such, an environmental impact statement is not required. An environmental assessment has been prepared in support of this finding and is available upon request at the Reclamation facility identified above.

Reference: Saeltzer Dam Fish Passage and Flow Protection Project

_____ _____

Michael Ryan, Area Manager **Date**
U.S. Bureau of Reclamation,
Northern California Area Office

NEGATIVE DECLARATION FOR THE PROPOSED SAELTZER DAM FISH PASSAGE AND FLOW PROTECTION PROJECT

Lead Agency:

California Department of Fish and Game
601 Locust Street
Redding , CA 96001

PROJECT DESCRIPTION AND ALTERNATIVES

The U.S. Bureau of Reclamation (Reclamation) and the California Department of Fish and Game (CDFG) are proposing to remove Saeltzer Dam, eliminate the water diversion to the Townsend Flat Water Ditch (Townsend Ditch) at Saeltzer Dam, and exchange 6,000 acre-feet of water from the Townsend Flat Water Ditch Company's (TFWDC) point of diversion at Saeltzer Dam to Central Valley Project (CVP) facilities and service areas within Shasta County. Removing Saeltzer Dam would benefit threatened and endangered anadromous salmonids by providing unimpeded access to the coldest 10 miles of stream habitat and improving sediment transport through the lower reaches of Clear Creek. This action would compliment other restoration projects in the watershed that benefit anadromous salmonids and other species.

Saeltzer Dam has been identified as a major impediment to fish migration since at least the 1950s when the CDFG installed a fish ladder along the right bank. Since then, the affect of Saeltzer Dam on salmonids has been regularly documented, culminating in the dam's inclusion in CVPIA (b)(12) authorizing language. The DWR identified ten (10) potential alternatives for consideration in a 1986 study. These alternatives included a broad range of options, which, after further consideration, were reduced to the following three alternatives:

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head of a gorge causing a compound fish passage problem. Therefore, the only alternative carried forward for full analysis in this EA/IS is the proposed project.

PROJECT LOCATION

The proposed project area (Clear Creek) is the first major tributary to the Sacramento River downstream of Shasta Dam. The creek originates in the mountains between Trinity Reservoir and Shasta Reservoir, and flows in a southeasterly direction for approximately 35 miles to its confluence with the Sacramento River just south of Redding. Whiskeytown Reservoir, located approximately 16 miles upstream from the confluence with the Sacramento River, is the dominant physical structure on the creek, regulating flows in the lower reach of the creek. Saeltzer Dam is located at river mile (RM) 6.2 on lower Clear Creek.

FINDING

It is anticipated that implementing the proposed project would result in the following environmental effects:

- Anadromous salmonids would have access to an additional 10 miles of cool water habitat that is crucial to restoring threatened spring-run chinook salmon and steelhead trout.
- Instream flows would increase to the lower 6 miles of Clear Creek downstream once the current water diversion at Saeltzer Dam is eliminated, improving water temperatures and habitat conditions for anadromous salmonids.
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Noise

No measures are needed to avoid environmental effects.

Recreation

No measures are needed to avoid environmental effects.

Based on the above, and as further detailed in the attached Environmental Assessment/ Initial Study, CDFG has determined that the proposed project <u>will not</u> have any significant adverse environmental effects.

MITIGATION

Because no potential significant impacts have been identified, no mitigation is required.

DETERMINATION

On the basis of this evaluation:

a. The project will not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish and wildlife species, cause a fish and wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare and endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory.

b. The project will not have the potential to achieve short-term goals to the disadvantage of long-term environmental goals.

c. The project will not have effects that are individually limited, but cumulatively considerable.

d. The project will not have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly.

e. No substantial evidence exists that the project will have a negative effect on the environment.

This Negative Declaration is filed pursuant to the California Environmental Quality Act Guidelines. Comments may be submitted to CDFG at the address identified above.

_____ _____

Don Koch, Regional Manager **Date**
California Department of Fish and Game

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FIGURES

ACRONYMS

°F	degrees Fahrenheit
µg/L	micrograms per liter
ACHP	Advisory Council on Historic Preservation
ACID	Anderson-Cottonwood Irrigation District
AFRP	Anadromous Fish Restoration Program
APE	Area of Potential Effect
BLM	Bureau of Land Management
BMP	Best Management Practices
BVWD	Bella Vista Water District
CCSD	Centerville Community Services District
CDFG	California Department of Fish and Game
CE	California endangered
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
cfs	cubic feet per second
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
COE	U.S. Army Corps of Engineers
CRHP	California Register of Historic Places
CRMP	Coordinated Resource and Management Planning Group
CSC	California Species of Special Concern
CSD	Community Services District
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CVRWQCB	Central Valley Regional Water Quality Control Board
dBA	decibels
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources

EA/IS	Environmental Assessment/Initial Study
Electronic Inventory	CNPS Electronic Inventory
EPA	Environmental Protection Agency
ERL	Effect Range-Low
ERPP	Ecosystem Restoration Program Plan
ESA	Endangered Species Act
ESU	evolutionary significant unit
FEMA	Federal Emergency Management Agency
FPD	proposed for federal delisting
FT	federally threatened
FWCA	Fish and Wildlife Coordination Act
HCCP	Horsetown-Clear Creek Preserve
LEL	Low Effect Level
LOP	Letter of Permission
mg/Kg	milligram per kilogram
mg/L	milligram per liter
MOA	Memorandum of Operating Agreement
MR	Mineral Resource
MW	megawatt
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA ERL	National Oceanic and Atmospheric Administration Effect Range-Low
NO_x	nitrogen oxide
NP	Nationwide Permit
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
NTU	Nephelometric Turbidity Units

PG&E	Pacific Gas and Electric
proposed project	Saeltzer Dam Fish Passage and Flow Protection Project
RA	Rural Residential
Reclamation	U.S. Bureau of Reclamation
RLD&CC	Redding Land Ditch and Cattle Company
RM	river mile
SCAQMD	Shasta County Air Quality Management District
SCWA	Shasta County Water Agency
SHPO	State Historic Preservation Officer
SMARA	Surface Mining and Reclamation Act
SPCC	Spill Prevention Control and Countermeasures
SR	Suburban Residential
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leaching Potential
TEC	Threshold Effect Concentration
TFWDC	Townsend Flat Water Ditch Company
Townsend Ditch	Townsend Flat Water Ditch
TRD	Trinity River Division
TSD	treatment, storage, and disposal
TTLC	Total Threshold Limit Concentration
USFWS	U.S. Fish and Wildlife Service
VELB	valley elderberry longhorn beetle
WAPA	Western Area Power Administration
WHR	Wildlife-Habitat Relationships System
WSRCD	Western Shasta Resource Conservation District

SECTION 1.0 INTRODUCTION

The *Environmental Assessment/Initial Study for the Saeltzer Dam Fish Passage and Flow Protection Project* (EA/IS) has been prepared to satisfy the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The U.S. Bureau of Reclamation (Reclamation) is serving as the lead agency under NEPA, while the California Department of Fish and Game (CDFG) is serving as the lead CEQA agency. The purpose of the EA/IS is to assess the potential environmental effects of implementing the Saeltzer Dam Fish Passage and Flow Protection Project (proposed project). Appendix A is the CEQA Initial Study Checklist (CEQA Guidelines Appendix G).

The proposed project, if approved, would remove Saeltzer Dam and exchange 6,000 acre-feet of water from the Townsend Flat Water Ditch Company's (TFWDC) point of diversion at Saeltzer Dam to Central Valley Project (CVP) facilities and service areas primarily within Shasta County. Removing Saeltzer Dam would benefit threatened and endangered anadromous salmonids by providing unimpeded access to the coldest 10 miles of stream habitat and improving sediment transport through the lower reaches of Clear Creek. This action would compliment other restoration projects in the watershed that benefit anadromous salmonids and other species.

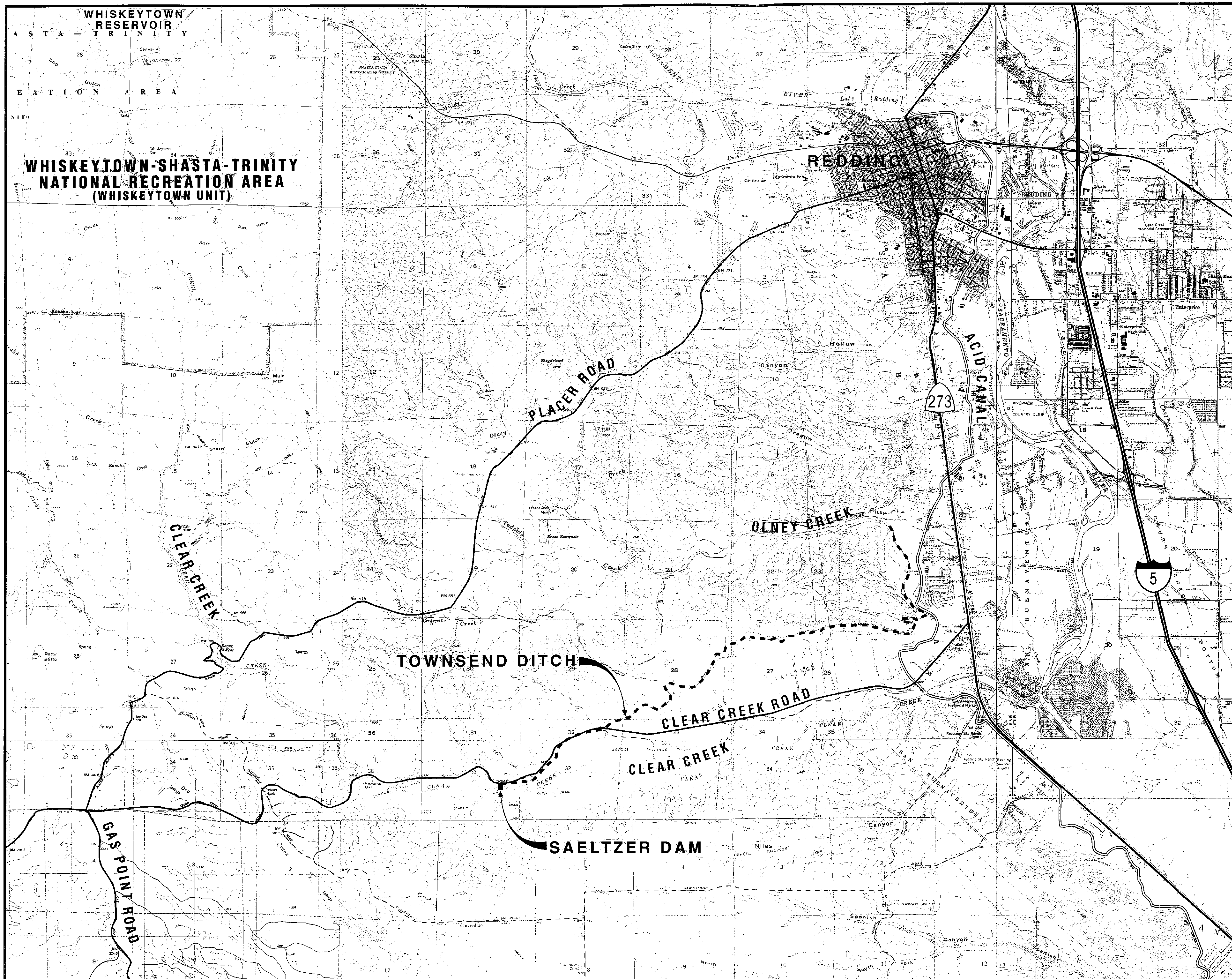
1.1 PROJECT SETTING AND BACKGROUND INFORMATION

Clear Creek is the first major tributary to the Sacramento River downstream of Shasta Dam. The creek originates in the mountains between Trinity Reservoir and Shasta Reservoir, and flows in a southeasterly direction for approximately 35 miles to its confluence with the Sacramento River just south of Redding (Figure 1-1). Whiskeytown Reservoir is located approximately 16 miles upstream from the confluence with the Sacramento River. Whiskeytown Dam is the dominant physical structure on the creek, regulating flows in the lower reach of the creek.

The second gold discovery site in California occurred in lower Clear Creek in 1848. The lower stream channel and floodplain was dredged extensively for gold throughout the late 1800s and early 1900s. Dredge tailing piles are common along the stream channel and floodplain. These activities resulted in major impacts to the stream channel and probably impacted salmon and steelhead populations.

Predecessors to Saeltzer Dam were built across Clear Creek as early as the late 1800s, and a permanent dam was built in 1903 to divert water through the Townsend Flat Water Ditch (Townsend Ditch) for mining and irrigation purposes. The present dam, built in 1912, is 15 feet high by 200 feet long and is located 10 miles downstream of Whiskeytown Dam. The TFWDC has a pre-1914 water right on Clear Creek for up to 55 cubic feet per second (cfs). The McConnell Foundation owns an 85 percent share of the water right, and the Centerville Water District owns the other 15 percent share.

Saeltzer Dam, located at river mile (RM) 6.2, is a major migration impediment to approximately 10 miles of anadromous salmonid spawning and rearing habitat. A steep bedrock gorge is located just downstream of the dam, which also hinders upstream migration of adult salmonids and compounds fish passage problems by presenting



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NOT TO SCALE

FIGURE 1-1
PROJECT SETTING
SAELTZER DAM FISH PASSAGE
AND FLOW PROTECTION PROJECT
NORTH STATE RESOURCES, INC.

sequential migration obstacles. In 1958, the CDFG constructed a 370-foot long tunnel with a step-pool fish ladder to improve fish passage through the gorge and Saeltzer Dam. The fish tunnel and ladder failed to provide effective fish passage. In 1992, the tunnel section along the gorge was abandoned, and the ladder was shortened and improved. Unfortunately, these attempts also proved to be ineffective in passing fish upstream (California Department of Water Resources [DWR], 1997). In 1999, several chinook salmon were successful in migrating past Saeltzer Dam and successfully spawned upstream. However, fish passage problems remain a serious impediment to restoring anadromous salmonid populations in the creek, especially for spring-run chinook.

The Whiskeytown Unit of the Trinity River Division (TRD) of the CVP was constructed in 1963. Should the fish passage problems at Saeltzer Dam be corrected, approximately 10 miles of additional habitat would be available to anadromous salmonids downstream of Whiskeytown Dam. Operation of Whiskeytown Dam provides cold water releases downstream of the proposed project capable of maintaining both spring-run chinook salmon and steelhead trout during summer holding and rearing periods, thereby providing substantial benefit to these federally listed species that formerly had such habitat available above Whiskeytown Dam.

The original purpose of the TRD was to divert surplus water from the Trinity River to the Sacramento River for power generation, agricultural use, and municipal and industrial purposes. Operation of the TRD has reduced and tempered Clear Creek flows downstream of Whiskeytown Dam. The dam diverts more than 80 percent of Clear Creek's average natural flow to the Spring Creek Powerhouse at Keswick Reservoir on the Sacramento River. Average annual discharges downstream of Whiskeytown Dam for unimpaired conditions have been reduced by 63 percent, from 418 cfs to 152 cfs (McBain and Trush, 1998).

These regulated flow releases have altered natural stream processes downstream and negatively impacted salmonid habitat. Regulated flow releases have created favorable conditions for riparian vegetation to encroach into the stream channel. Encroachment of riparian vegetation has caused increased channel confinement accelerated by accumulation of fine sediments along the channel margins. Construction of Whiskeytown Dam also eliminated coarse sediment contributions to lower Clear Creek. Clay surfaces have become exposed across several spawning riffles downstream of Whiskeytown Dam. Another example of decreased coarse sediment supplies caused by Whiskeytown Dam is the exposed ACID Clear Creek siphon. The siphon is currently protected by a series of sheet piles designed to prohibit further erosion. Extensive gravel mining operations within the lower stream channel and floodplain over the last 30 years have further reduced gravel supplies. All of these actions have negatively affected salmon and steelhead habitat in lower Clear Creek (DWR, 1986).

The Anderson-Cottonwood Irrigation District (ACID) diversion canal crosses lower Clear Creek upstream of the Highway 273 crossing near the mouth of Clear Creek. The ACID was formed in 1914, and the canal was constructed shortly thereafter. A siphon was constructed to convey diversion underneath the bed of Clear Creek. Construction of Whiskeytown Dam interrupted sediment transport from the upper watershed, and since 1963, the stream channel at the siphon has scoured significantly, exposing the siphon. Reclamation has placed sheet pile in Clear Creek downstream of the siphon to help protect the siphon from

further bed scour. Adult salmonids are able to pass over the sheet pile; however, downstream passage of fry and juvenile salmonids over the sheet pile is a concern. The ACID and resource agencies are investigating ways to improve protection of the exposed siphon and create better conditions for fish passage.

1.2 PURPOSE AND NEED

1.2.1 Project Need

The purpose of the proposed project is to provide fish passage over the major migration impediment to salmon habitat in the lower reach of Clear Creek and protect instream flows, while maintaining water supply to the shareholders of the TFWDC. The need for the proposed project has been documented since the 1950s when it was recognized that Saeltzer Dam was impairing access to upstream salmonid habitat (DWR, 1997). The fish passage problem has been consistently identified and documented by many federal and state agencies as a key element of restoring anadromous fish in Clear Creek and the upper Sacramento River. Primary examples include CVP Improvement Act (CVPIA) B-12 authorizing language and the CALFED Ecosystem Restoration Program Plan (ERPP).

The proposed project would achieve its purpose by removing Saeltzer Dam and exchanging 6,000 acre-feet of water from existing use along the Townsend Ditch to other uses within Shasta County, as identified by the TFWDC shareholders. The primary focus of the proposed project, however, is to provide access to an additional 10 miles of habitat upstream of Saeltzer Dam. Removing Saeltzer Dam and its associated water diversion would improve conditions for anadromous salmonids in Clear Creek for the following reasons:

- Instream Flow Preservation Agreement - The CDFG, USFWS, and Reclamation would enter into an agreement to ensure that Reclamation's future bypasses or releases at Whiskeytown Dam are, at a minimum, equivalent to the bypasses or releases made pursuant to the existing informal agreement among Reclamation, USFWS, and the National Park Service (NPS). The flows for fish preservation would be protected to the mouth of Clear Creek by not diverting any of the natural flow of Clear Creek associated with the fish flow preservation agreement or under any claim of right associated with the pre-1914 appropriative right assigned to Reclamation by the TFWDC.
- An additional 190,000 square feet of chinook spawning habitat, and 206,000 square feet of steelhead trout spawning habitat present upstream of the dam would be made available during flow releases of 200 cfs (Aceituno, 1985).
- The number of adult chinook salmon and steelhead trout produced would potentially increase by 18,083 and 911 fish, respectively (Reclamation, 1986).
- Removing the Townsend Ditch would eliminate potential losses of fry and juvenile salmonids that can become entrained in the ditch.
- Eliminating the water diversion would provide additional flows to 6 miles of lower Clear Creek that would benefit both riparian and salmonid habitat conditions in this reach.

- Spawning habitat below Saeltzer Dam would be improved through improved gravel replenishment of spawning substrates to lower sections of the creek.
- Conditions for potential restoration of spring-run chinook salmon populations in Clear Creek would be more favorable. Favorable water temperatures and holding habitat downstream of Whiskeytown Dam would provide suitable conditions for spring-run chinook salmon populations.
- Removing Saeltzer Dam would reduce the illegal poaching of adult salmonids known to occur downstream of the dam.
- Predation of salmonids by piscivorous fish and wildlife would be reduced downstream of Saeltzer Dam.

A secondary purpose of the proposed project is to eliminate the potential for dam failure. In 1997, engineers and geologists from the DWR concluded that the concrete used to construct the dam showed signs of extensive deterioration and cracking. Water currently leaks through construction joints, cracks, and seepage paths beneath the dam, raising questions about the structural integrity of the dam (DWR, 1997). Any failure of the dam would result in transient high flows, a rapid and undesirable redistribution of fine sediments and contaminants presently stored behind the dam, as well as a dangerous public safety hazard.

The pool behind the dam and gorge downstream are popular recreation sites for local sunbathers and swimmers during the hot summer days common in the Redding area. The existing dam is a dangerous attractive nuisance, and fatalities have occurred in recent years. Several people have fallen off the top of the dam and have been seriously injured or killed. Removing the dam would improve public safety considerations at the site.

A number of other habitat improvement projects are being implemented and/or have been approved in the Clear Creek basin. These include increasing releases from Whiskeytown Dam (providing improved hydraulic conditions and lower water temperatures), supplementing spawning gravels in the channel, reclaiming 1.6 miles of stream channel altered by past instream gravel mining activity, restoring upland habitats, and implementing erosion control measures to reduce the yield of fines to the stream. At the present time, the full benefit of these projects to anadromous salmonids is limited by the presence of Saeltzer Dam. Removing the dam would greatly increase the benefits of these restoration activities for anadromous salmonids and other species downstream of Whiskeytown Dam.

1.2.2 Joint Agency Involvement

The water exchange is an important element of this project because it maintains the water rights associated with the TFWDC, while removing the need for supplies from Saeltzer Dam. This is achieved by providing water to the shareholders of the TFWDC (Centerville Community Services District [CCSD] and McConnell Foundation) from CVP facilities and service areas and service areas in Shasta County. Eliminating the need for Saeltzer Dam as a source of water to the shareholders facilitates the removal of the dam.

Following negotiations with Reclamation, it was determined that the TFWDC shareholders may take 6,000 acre-feet/year from CVP facilities in Shasta County. The McConnell

Foundation holds an 85 percent share of the TFWDC, and would therefore take 85 percent of the exchanged water (5,100 acre-feet/year). McConnell Foundation has expressed an intention to make its share available to willing buyers within the County, but would dedicate the water to instream use until a willing buyer demonstrates a need for the water. The remaining 15 percent (900 acre-feet/year) would be delivered to the CCSD via conduits in Whiskeytown Dam to supplement existing supplies, providing an important firm supply for drought planning.

1.2.3 Central Valley Project Improvement Act

On October 30, 1992, the Reclamation Projects Authorization and Adjustment Act (Public Law 102-575) was signed into law by President Bush. Title 34 of P.L. 102-575 is the CVPIA, which amends the authorization of the CVP to include fish and wildlife protection, restoration, and mitigation as project purposes having equal priority with irrigation and domestic use. Fish and wildlife enhancement activities were also given equal consideration to power generation as a project purpose. Section 3406 of the CVPIA directs the Secretary of the Interior to implement a program to double natural populations of anadromous fish in Central Valley rivers and streams by 2002. This program is known as the Anadromous Fish Restoration Program (AFRP), and the U.S. Fish and Wildlife Service (USFWS) has been identified as the lead agency responsible for its development. Section 3406(b)(12) of the CVPIA identifies restoration actions that are necessary to restore salmonid populations in Clear Creek, including providing access to stream habitat located above Saeltzer Dam.

1.2.4 CALFED Bay-Delta Program

The mission of the CALFED Bay-Delta Program is to develop a long-term comprehensive plan that will restore ecosystem health and improve water management for beneficial uses of the Bay-Delta system. The goal for ecosystem quality is to improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species. To accomplish this goal, CALFED developed the ERPP. Clear Creek is identified in the ERPP as an important ecological unit of the North Sacramento Valley Ecological Zone. The ERPP recognizes the importance of removing Saeltzer Dam to improve passage and survival of chinook salmon and steelhead and to improve the transport of natural sediments through the reach (CALFED, 1999a; 1999b).

1.3 PROJECT DESCRIPTION

Saeltzer Dam is located on Clear Creek in Section 36 of Township 31 North and Range 6 West, and Section 31 of Township 31 North and Range 5 West, Mount Diablo base and meridian (Figure 1-1). The primary study area includes Saeltzer Dam, the gorge downstream, and approximately 83 acres of stream channel, riparian corridor, dredge tailing piles, and wetland and upland habitats located upstream of the dam. The study area also includes the 7-mile Townsend Ditch that conveys water from Saeltzer Dam to irrigated pasture between Clear Creek and Olney Creek to the north.

The Proposed Project Alternative consists of removing Saeltzer Dam without altering the steep gorge below the dam, eliminating the water diversion to the Townsend Ditch at Saeltzer Dam, and exchanging 6,000 acre-feet of water through existing CVP facilities to

TFWDC shareholders. Specific actions consist of improving access roads to Saeltzer Dam, removing the dam and the sediment plug upstream of the dam, and restoring access roads and site to natural conditions. Portions of this project are being coordinated with ongoing restoration efforts in the watershed. Specifically, placement of materials for the access roads and stability buttress are being implemented under a spawning gravel replenishment program, and may be initiated prior to finalization of NEPA/CEQA compliance for this project.

1.3.1 Saeltzer Dam Removal

Prior to removing the dam, Clear Creek flows would be diverted around the project site by constructing a temporary diversion channel around the dam. Flows would ultimately be returned to Clear Creek downstream of Saeltzer Dam. Because of concerns regarding the structural integrity of the dam, a support buttress of spawning gravel would be placed immediately downstream of the dam during the project to avoid dam collapse and synchronize the discharge of residual sediment with winter storm runoff. In addition, up to 25,000 cubic yards of sediment would be removed upstream of the dam site to avoid a rapid and undesirable redistribution of sediments after flows are returned to the channel. Removing sediments above the dam would also help re-establish a functional channel gradient and reduce channel erosion once the dam is removed. Sediments excavated from behind the dam would be placed on public lands owned by the State of California and/or the Bureau of Land Management (BLM) located in the vicinity of the dam site. Any contaminated sediments encountered during the dredging would be disposed of in accordance with applicable and relevant regulations. The sequence of actions associated with dam removal is described below.

1.3.2 Water Exchange

The TFWDC has a pre-1914 water right to divert up to 55 cfs of the natural flow of Clear Creek measured near the Igo Bridge. In 1960, Reclamation and the TFWDC entered into an agreement where Reclamation agreed not to interfere with TFWDC's water right diversion. The shareholders of the TFWDC are comprised of the McConnell Foundation, which owns 85 percent of the TFWDC, and the CCSD, which owns the remaining 15 percent share of the TFWDC. Reclamation has entered into an agreement with the shareholders of the TFWDC to modify their existing water right in exchange for 6,000 acre-feet of substitute CVP water for use within Shasta County. Under the agreement, the McConnell Foundation and the CCSD have agreed not to divert water from Clear Creek. In return, Reclamation would make available 5,100 acre-feet of substitute CVP water to the McConnell Foundation, and 900 acre-feet of substitute CVP water to the CCSD for use within that portion of Shasta County that is within the permitted place of use for CVP water. If either the McConnell Foundation or the CCSD uses substitute water outside of Shasta County, the maximum quantity of substitute water available would be reduced by 1.786 acre-feet for each acre-foot of substitute water transferred outside of Shasta County. Currently, CCSD plans to use the exchange water to supplement existing supplies. The McConnell foundation does not currently have plans to use the water directly, although it would pursue willing buyer/willing seller arrangements with water agencies in Shasta County. Until a formal arrangement is made with a water agency, the McConnell Foundation's share would likely be designated as environmental water. Other, future uses of the substitute water would use

existing CVP facilities and service areas and would be subject to separate environmental review, as appropriate. In conjunction with the environmental review, Reclamation has committed to coordinate CVP facilities to comply with the CDFG and National Marine Fisheries Service (NMFS) screen criteria in the near future by virtue of CVPIA screen programs.

1.3.3 Instream Flow Preservation

With the cancellation of the TFWDC settlement agreement, a necessary element of the proposed project is flow preservation. The flow preservation element of the TFWDC agreement serves as the mechanism to ensure that releases at Whiskeytown Dam on Clear Creek would be, at a minimum, equivalent to the releases made prior to the proposed project.

Assurances that future releases of water from Whiskeytown Dam would be, at a minimum, equivalent to the releases made pursuant to the existing informal agreement between Reclamation and the NPS are necessary for full agency support of the proposed project. The flows for fish preservation are protected to the mouth of Clear Creek by the elimination of Clear Creek diversions under any claim of right, associated with the pre-1914 appropriative right assigned to Reclamation by TFWDC.

1.4 CONSTRUCTION METHODS AND TIMING

The following construction methods have been developed in conjunction with state and federal resource agencies and are intended to avoid potential significant impacts associated with dam removal. Construction is anticipated to begin in July and conclude by October. The majority of the activities outlined below are expected to use standard construction methods requiring 1 to 2 excavators, 1 to 2 bulldozers, a grader, and highway vehicles for hauling equipment, sediment, and debris. However, the construction contractor may elect to use other similar equipment. Additionally, there is a possibility that controlled blasting would be necessary to remove portions of the dam. If blasting were to occur, a number of safety precautions would be initiated, including road closures, safety matting, air blast monitoring, vibration monitoring, and survey and inspection of the nearest residences.

1.4.1 Saeltzer Dam Removal

Removing the dam would generally follow the steps listed below. Final determinations on the precise steps that would be taken to remove the dam are currently underway, and it is expected that some of the steps listed would be further refined (Figure 1-2). To ensure that the refinements would not cause unidentified significant impacts, the steps have been evaluated under a worst-case scenario, and the proposed mitigation represents maximum potential impacts for each step. Specific aspects of dam removal have been designed in conjunction with other resource agencies in an effort to minimize and avoid environmental impacts.

1. Access. Construct stream crossing with bulldozer and excavator across reservoir with 200-cfs capacity culverts to allow Clear Creek to flow through the access road. As noted previously, spawning gravel used to build this road may be placed under an existing spawning gravel replenishment program.

2. **Buttress.** Using the access road, deliver spawning gravel to the downstream toe of the dam with a bulldozer, excavator, and trucks. Use the spawning gravel as a buttress, providing support to the dam structure and allowing access for dam removal. Spawning gravel may be placed under an existing spawning gravel replenishment program.

3. **Temporary Diversions.** A temporary diversion channel would be installed along the left bank (looking downstream) with a minimum capacity of 150 cfs and the capability to pass the equivalent number of fish as the existing ladder. The channel would be excavated and constructed around the dam using excavators and bulldozers. Diversions through the temporary channel would be 50 to 150 cfs during the project to maintain temperatures (<60 degrees Fahrenheit [°F]) suitable for holding spring-run chinook salmon that may likely be present downstream.

4. **Terminate Water Delivery to Ditch.** Plug ditch and remove headworks structure, precluding water diversions into the ditch and allowing all flow to stay in the stream. The TFWDC would be responsible for the maintenance and abandonment of the Townsend Ditch and would satisfy claims, if any, from persons or entities who take or use, or claim a right to take or use, water from the Townsend Ditch.

5. **Isolate Diversion Pool.** Close the culverts on the stream crossing and operate the temporary diversion as a cofferdam to move water around the reservoir. If required, conduct a fish rescue in the reservoir and move any fish recovered to a point downstream of the dam.

6. **Excavate Sediments Behind Dam.** Remove sediments from behind the dam, currently estimated at 25,000 cubic yards of material. Sediments would be disposed in compliance with applicable hazardous materials regulations. Sediment behind the dam is currently being analyzed for possible mercury contamination. Initial indications are that mercury levels are within allowable thresholds. Two thresholds will be used to determine hazardous nature of mercury contaminants. The first, called a NOAA ERL benchmark will be used to determine whether to excavate sediments. Sediment will be left in place where samples were recorded below 0.15 mg/kg for mercury. Sediment samples above the NOAA ERL benchmark, but below the TTLC and STLC thresholds (20 mg/Kg and 0.2 mg/L respectively) will be excavated and deposited above the 100 year flood plain. Deposits will be covered with topsoil and revegetated. Samples above TTLC and STLC thresholds will be treated as hazardous waste, removed, and transported to an approved hazardous waste treatment site. All activities will be performed pursuant to applicable laws. There is no proposal to mine, export, or sell excavated material; therefore, compliance with the Surface Mine and Reclamation Act (SMARA) is not required.

7. **Remove Dam.** The dam would be demolished using standard construction equipment positioned on the stability buttress and upstream face of the dam. All waste would be removed to an appropriate site. The stability buttress would be kept in place to synchronize release of residual sediments with high winter runoff events.

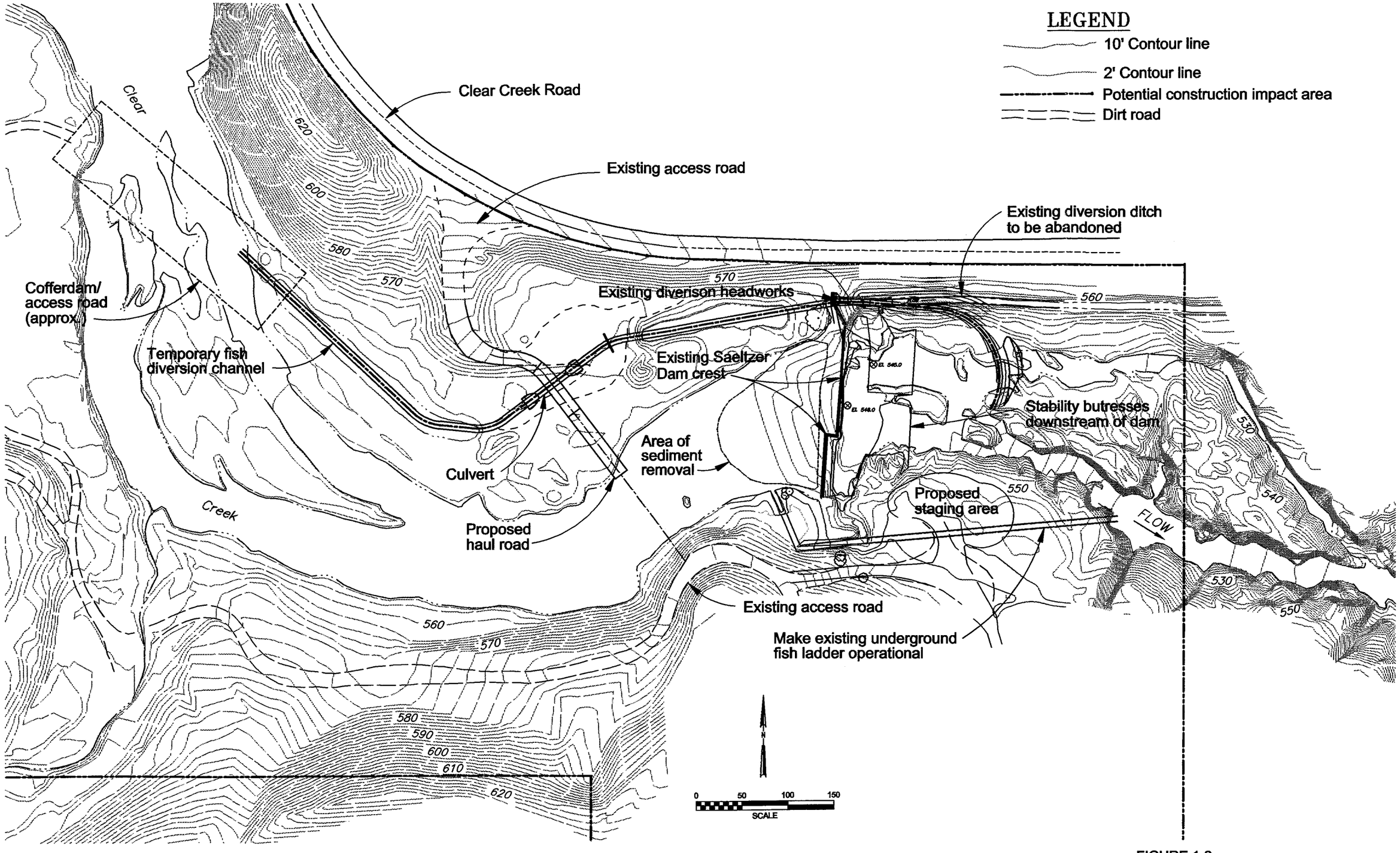

FIGURE 1-2
CONSTRUCTION METHODS AND TIMING
SAELTZER DAM FISH PASSAGE
AND FLOW PROTECTION PROJECT
NORTH STATE RESOURCES, INC

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8. **Remove Temporary Bypasses.** Remove temporary bypasses and permanently plug the existing fish ladder on the right bank. Before the bypasses are removed, flows would be monitored in the creek for erosion. If erosion or other physical processes are deemed to be a problem, flows could be returned to the bypass while corrective measures are undertaken on the stream channel. At this time flow would be restored to the main channel. The access road would also be removed.

9. **Monitor Erosion from Reservoir Site.** Erosion from the reservoir site would be closely monitored in conjunction with Central Valley Regional Water Quality Control Board (CVRWQCB) to ensure that fine sediments that remain behind the dam do not cause excessive harm to downstream fisheries. The stability buttress would also assist in controlling the release of residual sediments to synchronize with high winter runoff events. The pilot channel would also be constructed to adjust the stream gradient to a less erosive condition. If erosion levels are determined to be unacceptable, it may be necessary to partially reshape the reservoir site and pilot channel to a less erosive condition. Following dam removal, it may be necessary to schedule a large flow event to reshape the dam site. If such an action were necessary, it would be coordinated with flows in the Sacramento River to avoid potential downstream water quality impacts.

1.5 MEASURES TO AVOID ENVIRONMENTAL EFFECTS

In addition to the above noted construction methods, the following specific actions would also be undertaken during construction in an effort to avoid and minimize potential impacts to specific resource areas.

Biological Resources

Though occurring within the proposed project area, the two elderberry shrub locations do not occur within the project impact area. If project-related activities occur within 100 feet of these shrub locations, the site(s) would be clearly marked in the field to ensure avoidance.

Site-specific surveys for yellow-breasted chats and yellow warblers would be conducted if construction activities resulting in the loss of potential habitat would occur prior to the end of the breeding season (August 31). Should active nests be present, consultation would occur with the CDFG to implement appropriate mitigation measures, including potential removal of trees prior to dam removal activities.

Hydrology and Water Quality

Specific measures would be taken to avoid and minimize impacts to water quality. These steps are anticipated to be the same as those listed in Appendix E, which lists the specific standards required for the mercury sampling program currently underway at the site. All of the conditions listed in Appendix E would be carried forward for the proposed project.

Constructing access roads, stream crossings, and cofferdams, and removing Saeltzer Dam and excavating sediments behind Saeltzer Dam could potentially cause water turbidity and suspended sediment levels to exceed water quality objectives for brief periods. Newly disturbed soils also have the potential to increase water turbidity and settleable sediment levels, should these materials enter flowing waters of Clear Creek. To avoid or minimize

impacts related to potential increases to water turbidity and settleable materials, the proposed project shall include, at a minimum, the following measures:

- Equipment would not be operated in the stream channels of flowing live streams except as may be necessary to construct crossings, cofferdams, and the stability berm necessary to implement the proposed project. All construction equipment would be cleaned prior to use on site.
- When work in a flowing stream is unavoidable, the entire streamflow would be gradually diverted around the work area by a barrier, temporary culvert, and/or a new channel capable of permitting upstream and downstream fish movement. Construction of the barrier and/or new channel would proceed in a manner that minimizes sediment discharges and facilitates both fish rescue operations and fish escape from the work area.
- Construction sites would be isolated from free-flowing waters of Clear Creek through construction of either cofferdams, sediment berms, or placement of filter fabric and/or native grass straw bales.
- Uncrushed cleaned gravels (½ inch to 5 inch), or other materials acceptable to the NMFS and CDFG, would be used to construct necessary stream crossings and the stability berm (buttress) below the dam. Following construction, these gravel structures would be notched to provide a passageway and left instream to improve spawning habitat for anadromous salmonids. Streamflow in winter would be used to distribute these gravels.
- Complete revegetation and stabilization of disturbed soils. Seeding and mulching of disturbed areas with native grass species would be conducted prior to November 15 or immediately following completion of construction activities, using native species appropriate for this purpose.
- Sediment catchment basins or traps would be used to prevent sediment from being transported to sensitive aquatic habitats. The location and size of these basins would be designed to minimize impacts to riparian areas, wetland habitats, and stream channels. The types of sediment traps considered include filter berms and straw-bale barriers.

Hazardous Materials

Implementation of construction Best Management Practices (BMPs) and development of a Spill Prevention Control and Countermeasures (SPCC) would minimize the risk of an uncontrolled spill and consequent contamination of the creek during project operations. The identification of staging areas for fueling and maintenance of heavy equipment would limit potential spills to designated areas where observation and cleanup could be readily accomplished. Should an oil or fuel spill occur during construction or maintenance activities, all work would cease immediately, the Central Valley Regional Water Quality Control Board (CVRWQCB) and CDFG would be notified immediately if the quantity of the spill were above state and/or federal reporting requirements, and cleanup procedures would begin immediately.

Air Quality

The use of internal combustion engines would be minimized by turning machinery off when not in use, and equipment would be properly maintained. In order to prevent or suppress generation of particulate matter during construction, dust-suppression techniques would be incorporated into all project activities. For example, unpaved access roads and construction staging areas should be watered at least twice a day during construction periods. The proposed revegetation of the area around Saeltzer Dam would help stabilize the soil, and therefore minimize the potential for dust impacts to occur after construction activities have been completed.

Cultural Resources

Although there are no known cultural resources at the project site, there is a potential for ground-disturbing activities to uncover prehistoric or archaeological resources. Should cultural resources be discovered during construction, all ground-disturbing activities would cease immediately, and the regional archaeologist, Jim West, would be contacted at (916/978-5041). Dam removal would not resume until measures developed in consultation with the State Historic Preservation Officer (SHPO) have been completed.

1.6 REQUIRED PERMITS AND APPROVALS

The following permits and authorizations are required to implement the proposed project.

Federal Endangered Species Act - Section 7 of the Endangered Species Act (ESA) requires all federal agencies, in consultation with the USFWS and NMFS, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species or result in the destruction or modification of the critical habitat of these species.

Section 404 of the Clean Water Act - Authorizes the U.S. Army Corps of Engineers (COE) to issue permits for discharges of dredged or fill material into waters of the United States.

The proposed project would seek approval through the use of one or more Nationwide Permits (NP) as follows:

- NP 4: Fish and Wildlife Harvesting, Enhancement, and Attraction Devices and Activities
- NP 27: Wetland and Riparian Restoration and Creation Activities
- NP 33: Temporary Construction, Access, and Dewatering

Should consultation with the COE reveal that the proposed project does not quality for authorization under existing Nationwide Permits, then a Letter of Permission (LOP) would be the likely process to obtain approval.

Section 401 of the Clean Water Act - Requires that state water quality standards not be violated by the discharge of fill or dredged material into waters of the United States. The State Water Quality Control Board through the CVRWQCB is responsible for issuing water quality certifications, or waivers thereof, pursuant to Section 401 of the Clean Water Act.

National Pollutant Discharge Elimination System Permit - The CVRWQCB regulates point source and non-point source discharges through the National Pollutant Discharge Elimination System (NPDES). NPDES permits are required for storm water discharges from construction sites involving more than 5 acres or containing a hazardous substance in excess of reportable quantities established by the Environmental Protection Agency (EPA). The CVRWQCB has indicated that an NPDES permit or conditioned waiver is required for this work.

Fish and Wildlife Coordination Act- The Fish and Wildlife Coordination Act (FWCA; P.L. 85-624) provides for the equal consideration and coordination of wildlife conservation with other project features of federally funded or permitted water resource development projects. Implementation of the proposed actions in this Environmental Assessment (EA) would be under the authority of the Clear Creek Fish Restoration Program [Section 3406(b)(12)] of the CVPIA. The purposes of the CVPIA include "to protect, restore, and enhance fish, wildlife, and associated habitats..." and "to achieve a reasonable balance among competing demands for use of Central Valley Project water, including the requirements of fish and wildlife"; hence, the implementing authority fulfills the intent of the FWCA. Therefore, an additional separate FWCA report on the proposed actions will not need to be completed and appended to this EA.

Executive Order 11990 (Protection of Wetlands) - Requires federal agencies to follow avoidance, mitigation, and preservation procedures with public input before proposing new construction in wetlands. To comply with Executive Order 11990, the federal agency would coordinate with the COE, under section 404 of the Clean Water Act, and mitigate for impacts to wetland habitats.

Executive Order 11998 (Floodplain Management) - Requires all federal agencies to take actions to reduce the risk of flood loss, restore and preserve the natural and beneficial values in floodplains, and minimize the impacts of floods on human safety, health, and welfare.

Executive Order 12898 (Environmental Justice) - Requires federal actions to address environmental justice in minority and low-income populations. Environmental justice analyses are required to identify potential disproportionately high and adverse impacts from proposed actions and to identify alternatives that might mitigate these impacts.

California Endangered Species Act (CESA) - Section 2090 of the California Fish and Game Code requires any state agency acting as the lead agency under CEQA to consult with the CDFG to ensure that any action authorized, funded, or carried out by the state lead agency is not likely to jeopardize the continued existence of any species listed under the CESA as threatened or endangered, or destroy or adversely modify "essential habitat" necessary to the continued existence of the species. Under Section 2095 of the California Fish and Game Code, the legislature encourages cooperative and simultaneous consultation by every state lead agency to develop a coordinated federal Biological Opinion that reflects consistent and compatible findings between state and federal agencies. Whenever possible, the department, consistent with this act, shall adopt a federal Biological Opinion as the written findings required pursuant to Section 2090.

Section 1601 Streambed Alteration Agreement - Before any ground-disturbing activities occur in the 100-year floodplain of Clear Creek, the lead public agency must obtain a Streambed Alteration Agreement through a Section 1601 permit application.

Section 106 of the National Historic Preservation Act - Requires coordination with the SHPO and the Advisory Council on Historic Preservation (ACHP) regarding the effects a project may have on properties listed, or eligible for listing, on the National Register of Historic Places (NRHP).

Executive Order 13112 (Noxious and Invasive Plant Species) - On February 3, 1999, President Clinton signed Executive Order 13112, which requires federal agencies to work to prevent and control the introduction and spread of invasive species. Typical mitigation measures used to ensure compliance with this Executive Order include a survey for invasive weed species of proposed construction areas, use of certified weed-free and/or native materials in erosion control and revegetation efforts, and cleaning of all attached soil or plant parts from construction equipment prior to entering and/or leaving construction sites when equipment has been exposed to areas known to contain invasive plant species. The proposed project includes appropriate mitigation measures to be in compliance with this Executive Order.

SECTION 2.0 ALTERNATIVES

2.1 PROPOSED PROJECT ALTERNATIVE

As described in Section 1.3 Project Description, the Proposed Project Alternative includes removing Saeltzer Dam, eliminating the water diversion to the Townsend Ditch at Saeltzer Dam, and exchanging 6,000 acre-feet of water through existing CVP facilities to TFWDC shareholders. Implementing these proposed actions would provide anadromous salmonids access to an additional 10 miles of cool water habitat that is crucial to restoring threatened spring-run chinook salmon and steelhead trout. In addition, instream flows would increase to the lower 6 miles of Clear Creek downstream once the current water diversion at Saeltzer Dam is eliminated. These increased bypass flows would improve water temperatures and habitat conditions for anadromous salmonids.

The shareholders of the TFWDC are comprised of the McConnell Foundation, owning 85 percent of the TFWDC, and the CCSD, owning the remaining 15 percent share of the TFWDC. Reclamation has entered into an agreement with the shareholders of the TFWDC to modify their existing water right in exchange for 6,000 acre-feet of substitute CVP water for use within Shasta County. Under the agreement, the McConnell Foundation and the CCSD have agreed not to divert water from Clear Creek. In return, Reclamation would make available 5,100 acre-feet of substitute CVP water to the McConnell Foundation and 900 acre-feet of substitute CVP water to the CCSD for use within that portion of Shasta County that is within the permitted place of use for CVP water. If the McConnell Foundation should desire to use this substitute water outside of the permitted place of use for CVP water within Shasta County, further environmental compliance through NEPA and CEQA would be required.

To ensure that eliminating the current water diversion at Saeltzer Dam and transferring 6,000 acre-feet of CVP substitute water does not adversely impact fishery resources through a reduction in flows, the CDFG, USFWS, and Reclamation would enter into an Instream Flow Preservation Agreement to ensure that flow releases downstream of Whiskeytown Dam to the mouth of Clear Creek, with the elimination of diversions at Saeltzer Dam, are maintained at a minimum to levels equivalent to the bypasses or releases made pursuant to the existing informal agreement among Reclamation, USFWS, and NPS.

In addition, Reclamation and USFWS would also enter into an agreement to designate additional water for release to Clear Creek made available under Section 3406 (b)(2) of the CVPIA. Under the terms of the agreement, USFWS would annually transfer to Reclamation up to 900 acre-feet for release to Clear Creek in years when 6,000 acre-feet is delivered to TFWDC. In years when less than 6,000 acre-feet is delivered to the TFWDC, the USFWS and Reclamation would calculate the amount of (b)(2) water necessary to prevent impacts to other CVP water users, and the USFWS would transfer that amount of (b)(2) water to Reclamation for release to Clear Creek. These agreements would improve habitat conditions in lower Clear Creek for priority anadromous salmonids. Finally, Reclamation would enter into a formal agreement with the CDFG and NMFS to define a schedule for compliance with contemporary fish screening criteria for any identified water diversion associated with the water exchange, as appropriate.

For a complete description of the proposed project and specific actions included in the Proposed Project Alternative, please refer to Section 1.3.

2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, Saeltzer Dam would remain in place, and water diversions to the TFWDC would continue. Saeltzer Dam would remain as a major migration impediment preventing anadromous salmonids access to 10 miles of stream habitat upstream. Bypass flows downstream of the diversion would not increase, and potential benefits to anadromous salmonids and riparian habitats below Saeltzer Dam would not be achieved. Sediment transport processes would continue to be interrupted at Saeltzer Dam, and alluvial materials currently present behind the dam would remain in place and would not be available for transport to the lower stream reaches.

Saeltzer Dam would continue to be an attractive nuisance and potential hazard to public safety and environment because of the poor condition of the dam. The possibility of dam failure would continue to be a major concern (DWR, 1997). Dam failure could result in transient high flows, a rapid and undesirable redistribution of fine sediments to the stream channel and restoration sites downstream, could potentially cause undesirable impacts to the ACID siphon across lower Clear Creek, and could endanger public safety.

Impacts of the proposed project are compared against existing conditions, which is also the No Action Alternative. The No Action Alternative and existing conditions are the same, because in the absence of the project, it is expected that environmental conditions would be the same as currently exists in the study area. This comparison against an established baseline meets the requirements of both NEPA and CEQA. In addition, any dam failure would result in the catastrophic and uncontrolled release of mercury deposits that have accumulated behind the dam to lower Clear Creek and the Sacramento River. Such a release would potentially result in severe environmental impacts to both public health and the biological community, including fishery resources.

The No Action Alternative does not meet the primary purpose and need of the proposed project, which is to remove the primary impediment to access to salmon habitat in the middle reach of Clear Creek, while maintaining water supply to the shareholders of the TFWDC.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

Saeltzer Dam has been identified as a major impediment to fish migration since at least the 1950s when the CDFG installed a fish ladder along the right bank. Since then, the affect of Saeltzer Dam on salmonids has been regularly documented, culminating in the dam's inclusion in CVPIA authorizing language.

The CVPIA identifies the need to improve fish passage over Saeltzer Dam as a priority action on Clear Creek to improve anadromous salmonid production. Section 3406 (b)(12) of the Act specifically states: "develop and implement a comprehensive program to provide flows to allow sufficient spawning, incubation, rearing, and outmigration for salmon and steelhead from Whiskeytown Dam as determined by instream flow studies conducted by

the CDFG after Clear Creek has been restored and a new fish ladder has been constructed at the McCormick-Saeltzer Dam." In response to this legislation, the CDFG and Reclamation funded a study conducted by the California Department of Water Resources Division of Planning and Local Assistance to develop a preliminary engineering investigation of fish passage solutions at Saeltzer Dam (DWR, 1997).

In the initial stages of the investigation, the DWR identified ten (10) potential alternatives for consideration. These alternatives included a broad range of options which, after further consideration, were reduced to the following three alternatives:

1. Remove the existing dam and construct a new low-head diversion dam upstream with a canal and/or pipeline to convey water to the existing diversion headworks. A new fishway and fish screen would also be constructed at the new dam.
2. Remove the existing dam and construct a new dam at the same location with a fishway through the new dam.
3. Construct a new fishway around the south side of the existing dam.

Estimated cost for each of these three alternatives were $ 5,500,000 for Alternative 1, $3,800,000 for Alternative 2, and $1,500,000 for Alternative 3. Although each of these alternatives would improve fish passage when compared to existing passage conditions, complete unimpaired passage would not be achieved and diversions would continue. Only elimination of diversion structures across the creek channel would provide optimum fish passage conditions. When the costs and impacts of each of these alternatives were compared to the economic value of the beneficial use of the TFWDC's water diversion, resource agency representatives decided to investigate other solutions to the fish passage and water right diversion issue. As a result, representatives from Reclamation and the TFWDC agreed to discuss a mutual solution that would preserve a reliable water supply for TFWDC and allow for the removal of Saeltzer Dam for the long-term benefit of anadromous salmonids.

Another alternative considered removing the existing dam and constructing a pumping plant capable of delivering 55 cfs to the existing diversion ditch. The cost estimate to construct the plant was roughly estimated at $2,000,000, and annual pumping costs would total about $250,000 to deliver the water. With additional operation and maintenance costs, total annual expenses could reach $300,000. This alternative was eliminated from further consideration because the TFWDC would not trade their existing gravity flow supply for pumped water that may not yield a reliable water supply.

Other alternatives also considered included purchasing the TFWDC's water right or exchanging their existing water right for alternative sources of water that could include pumping groundwater or purchasing water from other water districts. Presently, the TFWDC will not consider alternatives that would eliminate their existing right or could compromise the reliability of their water supply.

Coincidental to the DWR's preliminary engineering study, TFWDC also pursued an alternative to improve fish passage through their facility. In July of 1997, Norman Braithwaite, Inc., on behalf of the TFWDC, submitted a proposal to receive Category III funding through the CALFED Bay-Delta Program. The proposal was selected by CALFED for funding, and in an effort to speed development of this project, Reclamation also provided some initial funds

through CVPIA. The TFWDC's proposal included removing the existing diversion dam and constructing a natural gravity flow side-channel diversion upstream. The natural side-channel diversion included construction of fish screens and a return channel and pipeline that would join the existing diversion ditch. This proposal provided the best solution for improved fish passage, short of removing the dam; however, costs associated with construction of the new diversion and related facilities approached $5,000,000. TFWDC decided not to pursue this alternative.

Previously identified alternatives have not been carried forward because they are not considered feasible, either in terms of economic, institutional, or biological viability. Alternatives 1 and 2 attempted to address delivery of water to TFWDC, but failed to do so in an economical manner. Alternative 3 would maintain water deliveries, but was determined to provide inadequate assurance that fish passage would occur. The proposed project is the only identified project that TFWDC would agree to without reconstructing a ladder on the existing dam. The reconstruction of the ladder at the existing dam was not viewed as a prudent investment of funds because of the poor condition of the dam, the water rights holder's interest in other points of diversion, and the location of the dam at the head of a gorge causing a compound fish passage problem. Therefore, the only alternative carried forward for full analysis in this EA/IS is the proposed project. However, as noted previously, impacts of the proposed project are compared against No Action, which is the same as existing conditions.

SECTION 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 BIOLOGICAL RESOURCES

Determination of potentially occurring federal- and state-listed species, other special-status species, and other special habitats was conducted, in part, using several database searches, request and review of a prior USFWS species list for the project, consultation with resource agency personnel, and field reviews (see USFWS Species List Appendix B). An updated species list has been requested from the USFWS and will be incorporated in the Final EA.

For the purposes of this evaluation, special-status plant species are vascular plants that are (1) designated as rare, threatened, or endangered by the state or federal governments; or (2) are proposed for rare, threatened, or endangered status; and/or (3) are state or federal candidate species; and/or (4) are listed as Species of Concern by the USFWS; and/or (5) are included on the California Native Plant Society (CNPS) List 1A, 1B, and 2 (Skinner and Pavlik, 1994).

Also for the purposes of this evaluation, special-status fish and wildlife species include taxa that are (1) designated as threatened or endangered by the state or federal governments (i.e., "listed species"); or (2) are proposed or petitioned for federal threatened or endangered status; and/or (3) are state or federal candidates for threatened or endangered status; and/or (4) are identified by the USFWS as Species of Concern; and/or (5) are identified by the CDFG as Species of Special Concern.

The most current lists of special-status floral and faunal species were reviewed to confirm the present status of these species (CDFG, 2000a; 2000b; 2000c; 2000d).

The California Natural Diversity Database (CNDDB) is a database consisting of historical observations of special-status plant species, wildlife species, and special plant communities. The CNDDB is limited to reported sightings and is not a comprehensive list of floral and faunal species that may occur in a particular area. The CNDDB was reviewed for records on the Redding and Olinda quadrangles. This search produced a listing of sightings of Species of Concern recorded in the CNDDB within the project vicinity.

Additional database searches were conducted using the CNPS Electronic Inventory (Electronic Inventory). The Electronic Inventory allows users to query the *Inventory of Rare and Endangered Vascular Plants of California* (Skinner and Pavlik, 1994) using a set of search criteria. The result of the search is a list of special-status plants selected by the particular search criteria.

The CDFG Wildlife-Habitat Relationships System (version 7.0) (WHR) was used to aid in determining wildlife species that potentially occur within the existing habitats. WHR is a predictive system based on scientific information of wildlife species and their habitat relationships. Fish fauna and invertebrates are not included in the WHR system. The application of WHR is based on characterization of wildlife habitats and special habitat elements occurring within the study area. Vegetation within the study area was classified using the system developed for use with WHR (Mayer and Laudenslayer, 1988). The WHR habitats

that occur within the project areas include blue oak-digger (grey) pine, valley foothill riparian, fresh emergent wetland, pasture, and riverine. These variables were put into the computer model. The model output is a list of wildlife species that potentially occur within the study area based on wildlife habitats, habitat elements, and geographic location.

During the field surveys, the project study area was surveyed to identify species of special concern or potential habitat for these species. Observations were made using binoculars or spotting scope, the unaided eye, observing wildlife signs, and identifying wildlife vocalizations.

3.1.1 Fisheries

3.1.1.1 Affected Environment

Anadromous Salmonids. Prior to European settlement, Clear Creek supported spring-run, fall-run, and late fall-run chinook salmon (*Oncorhynchus tshawytcha*) and winter-run steelhead trout (*Oncorhynchus mykiss*). Absent from Clear Creek for many years, approximately 30 adult spring-run chinook salmon re-appeared in the lower reaches of Clear Creek in 1999 (Brown, pers. comm.). Historic accounts of spring-run chinook salmon within Clear Creek are sparse, and population estimates are non-existent. Azevedo and Parkhurst (1958) observed spring-run chinook salmon in Clear Creek upstream of Saeltzer Dam in 1956. This was the first observation of spring-run in the creek since 1948. Construction of Whiskeytown Dam in 1963 permanently eliminated access to the upper reaches of the creek to all anadromous salmonids. Previous observations of spring-run chinook salmon indicate they likely held over and spawned in cooler water present in the upper watershed upstream of Whiskeytown Dam. There is a falls at French Gulch that restricted upstream migration to periods of high runoff in the spring.

Historic placer mining activities, construction of Saeltzer Dam, and construction of the TRD are all likely causes for the elimination of spring-run chinook salmon from the creek for many years. Without high amounts of cold Whiskeytown releases or access to cool holding water during the summer months, spring-run chinook salmon could not survive in the warm lower reaches of the creek downstream of Saeltzer Dam. Construction of Whiskeytown Dam allows for mitigation of spring-run chinook by maintaining conditions downstream (cold water releases) that may support spring-run chinook salmon should they gain access to those reaches in the future. In 1956, the USFWS and CDFG, in a joint report, recommended flows of at least 25 cubic feet per second (cfs) downstream of Whiskeytown Dam to support holding spring-run salmon (USFWS/CDFG, 1956).

Attempts to re-establish the spring run have been made in recent years. In 1991, 1992, and 1993, 200,000 juvenile spring-run chinook salmon from the Feather River Hatchery were planted in Clear Creek (Brown, 1996). A number of these fish returned to Clear Creek in the fall of 1995 rather than in the spring as expected. These fish may have remained in the cool waters of the Sacramento River over the summer and then migrated into Clear Creek once water temperatures dropped to desirable levels in the fall. There is also speculation that Feather River Hatchery spring-run chinook salmon were hybrid offspring from mixed spawning of fall and spring-run chinook salmon over several generations.

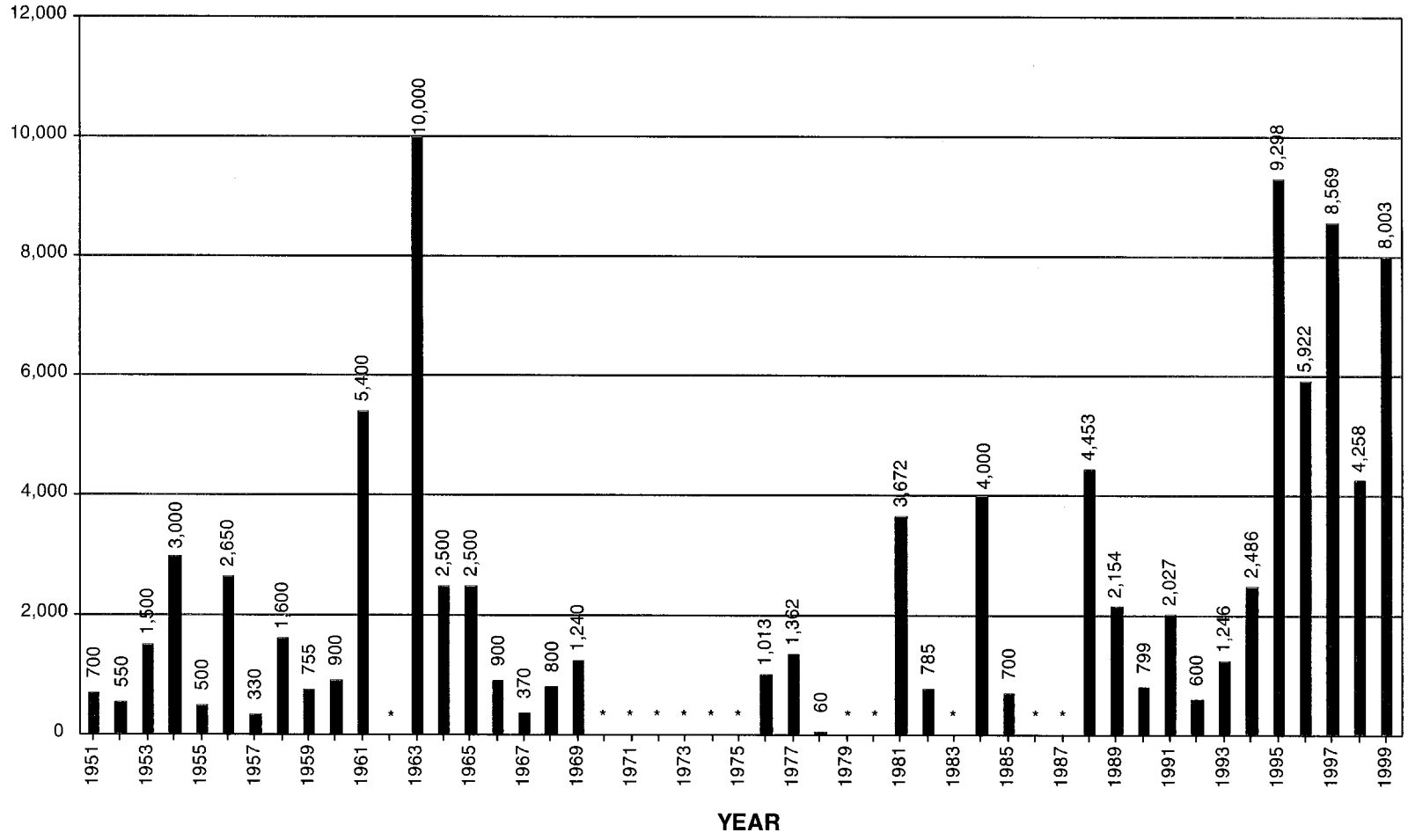
For the first time in many years, in the spring and summer of 1999, as stated above, USFWS and CDFG observed what were most likely adult spring-run chinook salmon in Clear Creek.

Approximately 30 of these adult chinook were estimated in Clear Creek, and one of these fish managed to pass through the ladder at Saeltzer dam. At the request of the NMFS, USFWS, and CDFG, Reclamation increased flow releases below Whiskeytown Dam to provide cooler water temperatures (<60°F) downstream of Saeltzer Dam to protect those adult spring-run chinook salmon that were held up in the gorge below Saeltzer Dam. For the first time ever, summer releases were temporarily maintained at 100 cfs through the August and were increased to 150 cfs on September 7, and to 200 cfs by September 10. On October 1, flows were reduced back to 150 cfs to provide adequate spawning and incubation habitat for salmon. Under this schedule, flows measured at the Igo Gage rarely dropped below 140 cfs during the hot summer months of 1999. Diversions to the Townsend Ditch were approximately 30 cfs during the summer months.

Although impacted by placer mining activities and construction of Saeltzer and Whiskeytown dams, fall and late fall-run chinook salmon only use the creek seasonally during the fall, winter and spring, when water temperatures are cool. Therefore, fall and late-fall chinook salmon were not as severely impacted by the loss of habitat upstream. Escapement estimates of fall-run chinook salmon are presented on Figure 3-1. These values were obtained from the Lower Clear Creek Watershed Analysis (1996), Brown (1996), and from personal communications with Matt Brown (USFWS). In 1995, an unusually large run of 9,298 fall-run chinook salmon spawned in Clear Creek (Brown, 1996). Increased minimum flow releases are thought to be one factor responsible for the increased number of spawners during that year. Escapement numbers of late-fall chinook salmon are not available because of sampling difficulties that persist during the winter months.

Late fall-run chinook salmon spawn in January, February, March, and April, and poor sampling conditions caused by high seasonal flows and turbid water hinder the ability to conduct spawning and carcass surveys during that time of the year. Fry and juvenile chinook salmon rear from January through May. Some late fall-run chinook juveniles may remain in stream through June, depending on flow and water temperature conditions that occur during the season.

Steelhead trout rear in freshwater for 1 to 4 years and require cool water habitat throughout the year to survive. Water temperatures in excess of 60°F are sub-optimal for rearing steelhead trout. Construction of Saeltzer Dam prevented most steelhead trout from reaching higher quality rearing and spawning habitat areas present in the upper watershed. Rainbow trout have been observed spawning in lower Clear Creek in recent years. However, steelhead spawning in the lower sections of Clear Creek has not been verified. Potential spawning habitat areas do exist in the lower reaches, and steelhead spawning may occur. However, high water temperatures prevent fry and juvenile use of lower Clear Creek during the summer. Water temperatures downstream of Saeltzer Dam commonly exceed 75°F during the summer and can exceed 80°F on some days. Water temperatures over 75°F are considered lethal for rearing steelhead trout (Bell, 1986). High water temperatures in lower Clear Creek during the summer months prevent salmonids from using habitat areas that may otherwise be available.



*NO DATA RECORDED

FIGURE 3-1
FALL-RUN CHINOOK SALMON SPAWNER ESCAPEMENT
SAELTZER DAM FISH PASSAGE
AND FLOW PROTECTION PROJECT
NORTH STATE RESOURCES, INC.

3059_11 (5/31/00)

Non-game and Warmwater Fish Species. Several non-game and other warmwater species have been reported in Clear Creek. Twenty-two species were observed by Villa (1984) in surveys conducted in 1981 and 1982 (Table 3-1). Of these, the most abundant non-game species present in the project site were sucker, squawfish, and hardhead. The most abundant game fish were bluegill and green sunfish. Largemouth and smallmouth bass were also present in large numbers.

Table 3-1. Non-game and Warmwater Fish Species Observed in Clear Creek

Common Name	Scientific Name	Upstream of Saeltzer Dam	Downstream of Saeltzer Dam
Pacific lamprey	*Lampetra tridentata*	NF	A
Speckled dace	*Rhinichthys osculus*	NF	C
Carp	*Cyprinus carpio*	C	U
California roach	*Lavinia symmetricus*	U	C
Hitch	*Lavinia exilicauda*	U	U
Hardhead	*Mylopharodon conocephalus*	C	A
Sacramento squawfish	*Ptychocheilus grandis*	A	A
Sacramento sucker	*Catostomus occidentalis*	A	A
White catfish	*Ictalurus catus*	U	U
Black bullhead	*Ictalurus melos*	C	C
Brown bullhead	*Ictalurus nebulosus*	C	C
Mosquitofish	*Gambusia affinis*	A	A
Threespine stickleback	*Gasterosteus aculeatus*	C	C
Green sunfish	*Lepomis caynellus*	C	C
Bluegill	*Lepomis macrochirus*	A	A
Smallmouth bass	*Micropterus dolomieui*	C	C
Largemouth bass	*Micropterus salmoides*	C	C
Tule perch	*Hysterocarpus traski*	U	C
Prickly sculpin	*Cottus asper*	A	C

A = Abundant, C = Common, U = Uncommon, NF = Not Found

Special-status Salmonid Species. Fall- and late fall-run chinook salmon within the Sacramento River basin were proposed for listing as threatened by NMFS on March 9, 1998. Additionally, on the same date, Sacramento River basin spring-run chinook salmon were proposed as endangered by NMFS. In September of 1999, NMFS ruled that spring-run chinook be listed as threatened rather than endangered, and determined that fall-run or late fall-run chinook salmon did not warrant listing as threatened, but they remain a candidate species. Spring-run chinook salmon were recommended for listing as threatened in 1997 by

CDFG, and the species was officially listed as threatened by the State of California in February 1999.

Effective on May 18, 1998, NMFS listed the Central Valley steelhead as threatened under the ESA. On February 5, 1999, NMFS proposed critical habitat designations for nine steelhead evolutionary significant units (ESUs) in California, Oregon, and Washington, including the Central Valley steelhead ESU. Proposed critical habitat for Central Valley steelhead includes all accessible river reaches and riparian areas in the Sacramento and San Joaquin rivers and tributary streams.

No other federal- or state-listed fish species are known to occur in lower Clear Creek.

3.1.1.2 Environmental Consequences

Criteria for Determining Significance. Impacts to fisheries would be considered significant if they would result in any one of the following:

- Direct mortality of federal- or state-listed aquatic species
- Temporary impact to habitats such that species suffer increased mortality or lowered reproductive success
- Permanent loss of habitat critical to listed aquatic species
- Potential to reduce the size of a special-status species population
- Potential to reduce the quantity of value of habitats where special-status aquatic species occur

Existing information, literature, and discussions with fishery biologists knowledgeable of the project area were used to evaluate potential impacts of the proposed project on fisheries and their habitat. NMFS, USFWS, and CDFG biologists and environmental specialists were directly involved in the development of the project, and their input has resulted in the incorporation of several mitigation measures into the project description to reduce potential impacts to listed anadromous salmonids to less than significant levels; and "take" is not likely to occur.

Proposed Project Alternative. The primary purpose of the proposed project is to improve conditions for anadromous salmonids by removing a major migration barrier and eliminating the only major water diversion on the creek. Removing Saeltzer Dam and eliminating the water diversion through the Townsend Ditch would benefit anadromous salmonids by providing access to an additional 10 miles of cool-water holding, spawning, and rearing habitat. The Central Valley Fish and Wildlife Management Study, conducted by Reclamation (1986), estimated that enough spawning habitat exists above Saeltzer Dam to support between 1,678 and 1,837 spawning pairs of chinook salmon, and between 1,793 and 4,200 spawning pairs of steelhead trout. Removing the dam would also improve transport of alluvial materials (gravel and cobble) to the lower sections of Clear Creek. Historic gravel mining has greatly decreased the amount of gravel and cobble available in the stream, which are critical to maintaining healthy spawning and rearing habitat conditions. Restoration of sediment transport processes to lower Clear Creek would improve natural geomorphic processes necessary to maintain healthy in-stream and adjacent floodplain

habitat conditions for anadromous salmonids and other wildlife species that use riparian habitats. Following completion of the project, Whiskeytown Dam would continue to block alluvial materials from the upper watershed, and gravel mining operations continue.

CDFG wardens have indicated that poaching of adult salmon in the holding pools downstream of Saeltzer Dam has been a chronic problem. Adult salmon that are forced to hold below Saeltzer Dam are also vulnerable to an unusually high number of predatory wildlife species. Removing the dam would allow adult salmon and steelhead to migrate through this reach freely, and would reduce the potential opportunities for poaching and predation of these fish in the future.

The fish screen at the diversion into the Townsend Ditch had not been operating effectively in recent years and was recently removed (Phil Warner, pers. comm.). In 1999, approximately 60 to 75 fall-run chinook salmon were able to migrate past Saeltzer Dam and spawned successfully upstream of the project (Brown, pers. comm.). There is the potential that some of the progeny from these fall-run salmon entered the diversion ditch during their downstream migration. Elimination of the diversion would prevent any potential future losses of fry and juvenile salmonids in the diversion ditch. Elimination of the diversion at Saeltzer Dam would also increase flows in Clear Creek downstream of Saeltzer Dam by approximately 25 to 30 cfs. This flow increase would improve water temperatures and habitat conditions in the lower 6 miles of Clear Creek downstream of Saeltzer Dam. These higher flows would also benefit riparian habitat adjacent to the creek, which over time would provide an additional source of shade and woody debris to the channel, providing long-term habitat benefits for anadromous salmonids.

The physical process of removing Saeltzer Dam has the potential to cause temporary impacts to anadromous salmonids that may be holding and/or rearing in Clear Creek during construction. Bypass flows around the dam would be consistent with existing requirements. The bypass flows would be provided through the existing fish ladder on the south side of the dam and through a temporary channel, diversion ditch waste gate, and fish passage channel located on the north side of the dam. The temporary fish passage channel would provide fish passage during construction and would be constructed around the north side of the dam. This channel would be constructed to provide fish passage at levels consistent with pre-project conditions and would connect the lower stream channel to the upper channel via a temporary channel along the north side of the reservoir pool. Once fish reach the diversion ditch, access to the upper creek channel could be achieved through this temporary diversion channel.

When the reservoir area is isolated from Clear Creek, there is the potential for fish to become trapped in the construction area. The slow-water habitat present behind the dam contains a large amount fine sediments and lacks adequate cover. It is unlikely that listed anadromous salmonids would be present in this area during construction. Regardless, to reduce potential impacts to listed anadromous salmonids that may become trapped in this area, a qualified fishery biologist would survey the area after flows to the site are diverted through the north and south temporary bypass channels. As noted in the project description, should listed anadromous salmonids be found within the isolated reservoir pool, a fish rescue would be conducted, and all captured fish would be released unharmed upstream of the proposed project.

The use of heavy equipment during construction could cause increased water turbidities and sedimentation to habitats downstream. To reduce these potentially adverse impacts to less than significant levels, the proposed project would isolate the construction area (dam and sediments located behind the dam) from free-flowing waters of Clear Creek. To accomplish this, bypass flows would be provided around the construction area via the existing fish ladder and diversion ditch waste gate and temporary fish passage channel as described previously.

The use of heavy equipment within and adjacent to Clear Creek would increase the risk of diesel fuel and/or hydraulic fluids during construction. Any spill of hazardous fluids to surface waters would impact fishery populations in Clear Creek. To reduce the potential for hazardous spills, construction activities would comply with Regional Water Quality Control Board Basin Plan Objectives and a Water Pollution Prevention Plan, and standard BMPs would be incorporated into the project description. Implementing construction BMPs and developing a hazardous materials spill and containment plan would minimize the risk of any contamination of toxic materials during project construction. Isolation of the project area with cofferdams would minimize the risk of contamination to surface waters from a potential spill of hazardous materials. The identification of staging areas for fueling and maintenance of heavy equipment away from the stream channel would help limit potential spills to designated areas where observation and clean up can be readily accomplished. Should an oil or fuel spill occur during construction or maintenance activities, all work would cease immediately, the Regional Water Quality Control Board would be notified, and clean up procedures would begin immediately. Incorporation of these measures reduces the risk of hazardous materials spills that would impact listed anadromous salmonids to less than significant levels.

3.1.1.3 Mitigation

Incorporation of preventive measures within the project description reduces potential impacts to listed anadromous salmonids to less than significant levels, and "take" is not likely to occur. No additional mitigation measures are necessary.

3.1.2 Vegetation

3.1.2.1 Affected Environment

Vegetation within the lower Clear Creek watershed in the general project vicinity consists mainly of grey pine/blue oak woodlands interspersed by small inclusions of grassland and mixed chaparral. Valley foothill riparian and/or fresh emergent wetland vegetation occupies various stream channel areas, mining tailings, and various seeps/springs. Most of the vegetation habitats have been influenced by past agriculture and mining activities and include a large component of exotic species.

The project study area consists of blue oak/grey pine, valley foothill riparian, fresh emergent wetland, pasture, and riverine vegetation habitats (Mayer and Laudenslayer, 1988). Within the majority of the project study area, these habitats are interspersed, forming a complex of woodland, riparian, and wetland habitat areas, although the areas to be most intensively disturbed are thinly vegetated gravel bars, existing roads, and grasslands.

The blue oak/grey pine habitat consists of open to dense woodlands dominated by an overstory of blue oak (*Quercus douglasii*), grey pine (*Pinus sabiniana*), and interior live oak (*Q. wislizenii*). Occasional valley oak (*Q. lobata*) and California black oak (*Q. kelloggii*) also occur. Dominant shrub species include white leaf and common manzanita (*Arctostaphylos viscida, A. arctostaphylos*), buckbrush (*Ceanothus cuneatus*), coffeeberry (*Rhamnus tomentilla*), and poison oak (*Toxicodendron diversiloba*). A dense herbaceous layer dominated by various annual grasses and forbs also occurs in portions of the area.

Valley foothill riparian and fresh emergent wetland habitats occur scattered along the entire project study area corridor and are characterized by a combination of woody riparian and herbaceous marsh vegetation. Dominant riparian tree and shrub species include open to dense growth of sandbar willow (*Salix exigua*), yellow willow (*S. lasiandra*), red willow (*S. laevigata*), arroyo willow (*S. lasiolepis*), white alder (*Alnus rhombifolia*), Fremont cottonwood (*Populus fremontii*), mule fat (*Baccaris viminea*), spicebush, (*Calycanthus occidentalis*), California rose (*Rosa californica*), and Himalayan blackberry (*Rubus discolor*). Lianas also commonly occur, including California grape (*Vitis californica*) and pipevine (*Aristolochia californica*). Many monocot and other herbaceous species occupy various slow- and back-water habitats throughout the project study area. Dominant species include hardstem bulrush (*Scirpus acutus*), broad-leaved cattail (*Typha latifolia*), sedges (*Carex* spp.), spikerush (*Eleocharis* sp.), rushes (*Juncus* spp.), nutsedges (*Cyperus* sp.), mint (*Mentha* sp.), water plantain (*Alisma plantago aquatica*), and giant monkeyflower (*Mimulus guttatus*). Submergent species mainly occur in Clear Creek and along the Townsend Ditch and include waterweed (*Elodea* sp.) and curl-leaf pondweed (*Potamogeton crispus*).

The riverine habitats include the portion of Clear Creek occurring within the project study area, portions of several small intermittent drainages, and the Townsend Ditch. Pasture habitats occur along the eastern portion of the project study area and consist of several large fields irrigated by the Townsend Ditch. Vegetation consists of dense herbaceous species including ryegrass (*Lolium* sp.), clovers (*Trifolium* spp.), and bluegrass (*Poa* sp.). Occasional wetland and/or wet meadow inclusions occur within the pastures and include various riparian and/or wetland species such as rushes, sedges, giant monkeyflower, western buttercup (*Ranunculus occidentalis*), bulrushes, and willow.

Reconnaissance-level special-status plant surveys were conducted within the proposed project area by CDFG personnel during April 2000, and North State Resources, Inc. (NSR) during May 2000. Following review of the habitats found within the proposed project area, no potential habitat occurs for one or more of the listed or proposed wildlife species included in the USFWS and State of California species list. However, potential habitat occurs for several species of concern and/or species currently on the California Native Plant Society (CNPS) list. The potentially occurring special-status floral species within the proposed project area are described in Table 3-2. No known special-status floral species issues occur within the proposed project area.

Table 3-2. Potentially Occurring Special-status Floral Species Within the Saeltzer Dam Removal Proposed Project Area, Shasta County, CA			
Common Name	**Scientific Name**	**Current Status[a]**	**Comments**
Pointed broom sedge	*Carex scoparia*	2	Occurs in open, wet habitats. Known locally from a site near the ACID Canal south of Anderson.
Fox sedge	*Carex vulpinoidea*	2	Occurs in riparian woodlands and freshwater marshes. Known locally from near HWY 273 approximately 4 to 5 miles from the proposed project area.
Silky cryptantha	*Cryptantha crinita*	1B	Occurs in gravelly streambeds. Known locally from several scattered locations.
Four-angled spikerush	*Eleocharis quadrangulata*	2	Occurs in margins (littoral zone) of lakes, ponds, or marshes. Known locally from several sites east of Redding.
[a]Status Definitions: 2 = CNPS List 2, 1B = CNPS List 1B.			

3.1.2.2 Environmental Consequences

Temporary impacts to approximately 1.52 acres of riparian habitat, mostly newly colonized gravel bars, would occur while removing Saeltzer Dam. Additionally, temporary disturbances to 0.78 acres of riverine habitat would occur. Longer-term impacts along the ditch would result from the termination of water diversions.

Direct impacts to vegetation along and/or influenced by the Townsend Ditch are difficult to quantify. As previously described, the Townsend Ditch corridor flows through a complex mosaic of upland, wetland, and riparian habitats within a historically disturbed landscape. Wetland/riparian habitats along the corridor would be most sensitive to changes directly resulting from the proposed project (i.e., loss of shallow groundwater of up to 6.5 feet); however, the impacts to these habitats would vary depending upon site-specific conditions. While some wetland/riparian vegetation sites would likely trend toward more mesic conditions, other sites would likely remain unchanged, as many areas are well established and/or obtain water from other sources.

Existing vegetation within the ditch would be subject to the most direct impacts. Currently, vegetation within the ditch consists mainly of herbaceous species (sedges, rushes, blackberry) with occasional isolated stringers/clumps of woody riparian species (e.g., willow, alder). These species are mainly restricted to the margins and berms of the ditch, and would be subject to varying degrees of impacts, ranging between mortality to little or no impact. The vegetation within the ditch channel is dominated mainly by sparse to moderate submergent wetland species growth (e.g., waterweed, curl-leaf pondweed) and would be subject to the most direct impact. However, ditch plants are systematically impacted by mechanical removal and herbicide treatments associated with ditch maintenance activities. These species would most likely become displaced by seasonal wetland and/or upland species.

The ditch channel would remain in the landscape after removing Saeltzer Dam, and would likely be characterized by a variety of wetland and upland plant species. Portions of the ditch would receive seasonal water from surrounding upslope land positions and/or incident precipitation, retaining characteristics similar to current conditions; while other portions would become colonized by plant species more typical of seasonal wetlands. Additionally, some portions of the ditch would become a mesic environment and become colonized by upland species.

Vegetation habitats most directly impacted by the proposed project (i.e., loss of irrigation water delivered by the Townsend Ditch) include the pastures and an emergent wetland located along the eastern portions of the ditch corridor. The ditch currently delivers irrigation water to approximately 178 acres of pasture, and an approximately 7-acre emergent wetland (pond) located at the Gore Ranch. Additionally, approximately 36 acres of pasture are irrigated south of Clear Creek Road.

These pastures are dominated by various herbaceous vegetation (e.g., rye grass, clover) and also support small wet meadow areas with occasional woody riparian species. With the absence of irrigation, dominant species within these vegetation habitats would likely shift towards species more suited for mesic sites. However, it should be noted that the proposed project would not preclude irrigation of pastures, should the McConnell Foundation choose

to annex to ACID or develop groundwater wells. In this case, little change in vegetation communities would occur.

The emergent wetland would also be subject to change in vegetation. Though wetland characteristics would remain (due to the depth of the feature and surrounding groundwater levels), this feature would change from a perennial emergent to a seasonal emergent wetland. Changes to riparian and wetland communities that would occur as a result of eliminating the water diversion through the Townsend Ditch would be offset through increased bypass flows in lower Clear Creek. Increased bypass flows would provide better conditions and higher and more stable flow in the lower 6 miles of Clear Creek that would benefit establishment of natural riparian and wetland habitats.

Locations of these pasture and wetland (pond) habitats are shown on Figure 3-2.

Criteria for Determining Significance. Impacts to floral resources would be considered significant if they would result in any one of the following:

- Direct mortality of federal- or state-listed plant species
- Direct reductions in the size of special-status plant species population
- Potential to reduce the extent or values of habitats where special-status plant populations occur

Proposed Project Alternative. No impacts to any federal- or state-listed endangered or threatened plant species, or plant species proposed for listing as endangered or threatened would occur as a result of the proposed alternative. Potential habitat for federal- or state-listed endangered or threatened plant species, or plant species proposed as endangered or threatened, does not occur within the project area boundary. Potential impact to riparian and wetland habitats along the Townsend Ditch would be offset by increased bypass flows in the lower 6 miles of Clear Creek, which would create favorable conditions for development of additional riparian and wetland habitats along the lower Clear Creek corridor.

3.1.2.3 Mitigation

Because no significant impacts are anticipated, no mitigation is required.

3.1.3 Jurisdictional Waters of the U.S.

3.1.3.1 Affected Environment

A delineation of jurisdictional waters of the U.S. was conducted, including wetlands, (jurisdictional waters) within the Saeltzer Dam removal project site during May 2000. The methods followed included the routine on-site determination based on field observations of soil, vegetation, and hydrologic characteristics as defined in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987).

Jurisdictional waters occur within the project study area in the forms of riparian and intermittent pool wetlands and riverine waters (Figure 3-3). The acreage of jurisdictional waters occurring within the project study area is summarized in Table 3-3.

N

NOT TO SCALE

PASTURE AREAS

PONDS

FIGURE 3-2
PASTURE AND POND HABITATS IRRIGATED BY TOWNSEND DITCH
SAELTZER DAM FISH PASSAGE
AND FLOW PROTECTION PROJECT
NORTH STATE RESOURCES, INC.

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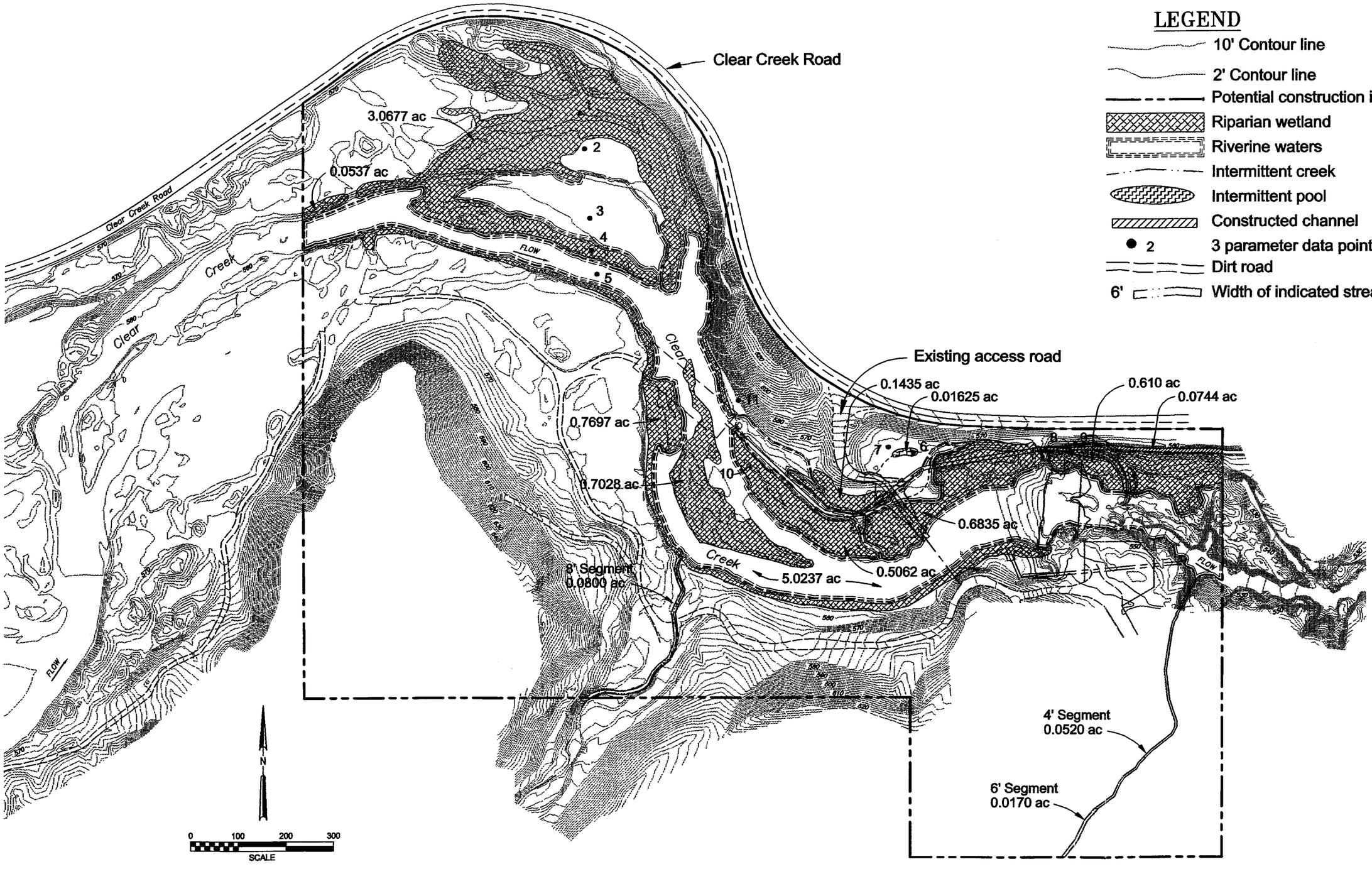

FIGURE 3-3
JURISDICTIONAL BOUNDARIES
OF WATERS OF THE U. S.
SAELTZER DAM FISH PASSAGE
AND FLOW PROTECTION PROJECT
NORTH STATE RESOURCES, INC

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Table 3-3. Summary of Jurisdictional Waters of the U.S., Including Wetlands	
Jurisdictional Waters Type	**Total Acreage**
WETLANDS	
Intermittent Pool	0.02
Riparian Wetland	6.54
TOTAL	6.56
OTHER WATERS	
Riverine	5.17
WETLANDS TOTAL	6.56
OTHER WATERS TOTAL	5.17
TOTAL JURISDICTIONAL WATERS	11.730

3.1.3.2 Environmental Consequences

Criteria for Determining Significance. Impacts to jurisdictional waters would be considered significant if they would result in any one of the following:

- Permanent loss of any amount of jurisdictional wetland habitat (total balance following project completion)

Proposed Project Alternative. The proposed project would temporarily disturb up to 0.02 acres of intermittent pool wetlands, 1.14 acres of riparian wetlands, and 0.78 acres of riverine waters during construction. However, these impacts would be temporary in nature, and the operation of the proposed project would offset the minor impacts incurred during dam removal.

3.1.3.3 Mitigation

Because no significant impacts are anticipated, no mitigation is required.

3.1.4 Wildlife

3.1.4.1 Affected Environment

The lower Clear Creek watershed provides habitat for many wildlife species including various mammals, herpetofauna, and avifauna. Based on geographic and vegetative characteristics, the lower Clear Creek watershed is transitional between the valley floor and foothill, or montane, wildlife habitats. This is reflected by the wildlife species composition of the area, as a mixture of both resident and migratory valley and foothill/montane species occur.

As previously described, the project study area consists of blue oak/grey pine, valley foothill riparian, fresh emergent wetland, pasture, and riverine vegetation habitats. Following review of the habitats found within the project study area, potential habitat occurs for one or more of the listed or proposed wildlife species included in the USFWS and State of California species list, or are Species of Concern. Potentially occurring special-status faunal species within the project study area are described in Table 3-4.

As shown in Table 3-4, potential valley elderberry longhorn beetle (VELB) habitat occurs in the form of two blue elderberry shrub locations at the dam removal site, which would be avoided during construction (Figure 3-4). In addition, known special-status species occurrences are likely for yellow-breasted chats and yellow warblers.

3.1.4.2 Environmental Consequences

Potential impacts to wildlife habitats are described under Vegetation. As noted under Vegetation, the proposed project would not result in a net loss of riparian vegetation along the stream banks. This increase would likely result in an incremental increase in wildlife habitat along the creek. No other potential impacts are expected to occur.

Criteria for Determining Significance. Impacts to wildlife resources would be considered significant if they would result in any one of the following:

- Potentially reduce the size of a special-status species population
- Potentially reduce the quantity or value of habitats where special-status species occur
- Direct mortality of federal- or state-listed wildlife species
- Temporary impacts to habitat of federal- or state-listed species resulting in increased mortality or lowered reproductive success
- Permanent loss of designated critical habitat for federal- or state-listed species

Proposed Project Alternative. No impacts to any federal- or state-listed endangered or threatened wildlife species, or wildlife species proposed for listing as endangered or threatened would occur as a result of the proposed project alternative. Potential habitat for federal- or state-listed endangered or threatened wildlife species, or wildlife species proposed as endangered or threatened, does not occur within the project impact area. Temporary impacts would occur to riparian habitats that potentially provide nesting habitat for yellow-breasted chat and yellow warblers. Pre-construction surveys for these species would be conducted in riparian areas prior to construction to ensure impacts to these species are avoided. Should an active nest be present, the CDFG would be consulted to determine appropriate course of action. Elderberry shrubs have been incorporated into design drawings to ensure that adequate buffer zones would be maintained, thus avoiding impacts to the VELB.

3.1.4.3 Mitigation

Because no significant impacts are anticipated, no mitigation is required.

3.2 HYDROLOGY AND WATER QUALITY

3.2.1 Surface Water

3.2.1.1 Affected Environment

The headwaters of Clear Creek originate in the Trinity Mountains east of Trinity Lake. From its headwaters at over 6,000 feet, the creek flows south and east for 35 miles to its confluence with the Sacramento River just south of the City of Redding. Whiskeytown Dam, one component of the TRD of the CVP, was constructed in the early 1960s and became

Table 3-4. Potentially Occurring Special-status Faunal Species Within the Saeltzer Dam Removal Proposed Project Area, Shasta County, CA			
Common Name	**Scientific Name**	**Current Status[a]**	**Comments**
Foothill yellow-legged frog	*Rana boylii*	CSC	Occurs in rocky, shallow water habitat areas along healthy alluvial rivers and small streams. Historical disturbances to the stream habitats, and presence of bullfrogs and predatory warmwater fish species within the project area reduces potential likelihood of occurrence. Not observed during surveys within the proposed project area.
California red-legged frog	*Rana aurora draytonii*	FT, CSC	Occurs in permanent streams, ponds, and marshes with abundant shoreline vegetation. Presence of bullfrogs and predatory warmwater fish species within the proposed project area reduces potential likelihood of occurrence. Not observed during surveys within proposed project area.
Northwestern pond turtle	*Clemmys marmorata marmorata*	CSC	Occurs in various wetland/riverine habitats, and uses adjacent uplands for nesting and winter hybernacula. Potentially occurs throughout entire proposed project area.
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT	Two blue elderberry shrub locations within the Saeltzer Dam proposed project area.
Bald eagle	*Haliaeetus leucocephalus*	CE, FPD	Occur occasionally during the fall and winter while using the area for foraging and roosting. The nearest nesting location is at Whiskeytown Reservoir.
Osprey	*Pandion haliaetus*	CSC	Occur during fall and winter while using the area for foraging and roosting. A nesting pair also occurs south of the Townsend Ditch, north of the City of Redding Clear Creek Powerplant.
Little willow flycatcher	*Empidonax traillii brewsteri*	CE	Uncommonly occurs within the proposed project area during spring migration. No known nesting occurs within lower Clear Creek watershed.
Yellow-breasted chat	*Icteria virens*	CSC	Common breeder within lower Clear Creek watershed; observed at scattered locations in Saeltzer Dam and Townsend Ditch areas.
Yellow warbler	*Dendroica petechia*	CSC	Common breeder within lower Clear Creek watershed; however, this area is one of only several Central Valley nesting sites known. Observed at scattered locations along Clear Creek, including Saeltzer Dam area.
[a]Status Definitions: CSC = California Species of Special Concern, FT = Federally Threatened, CE = California Endangered, FPD = Proposed for Federal Delisting.			

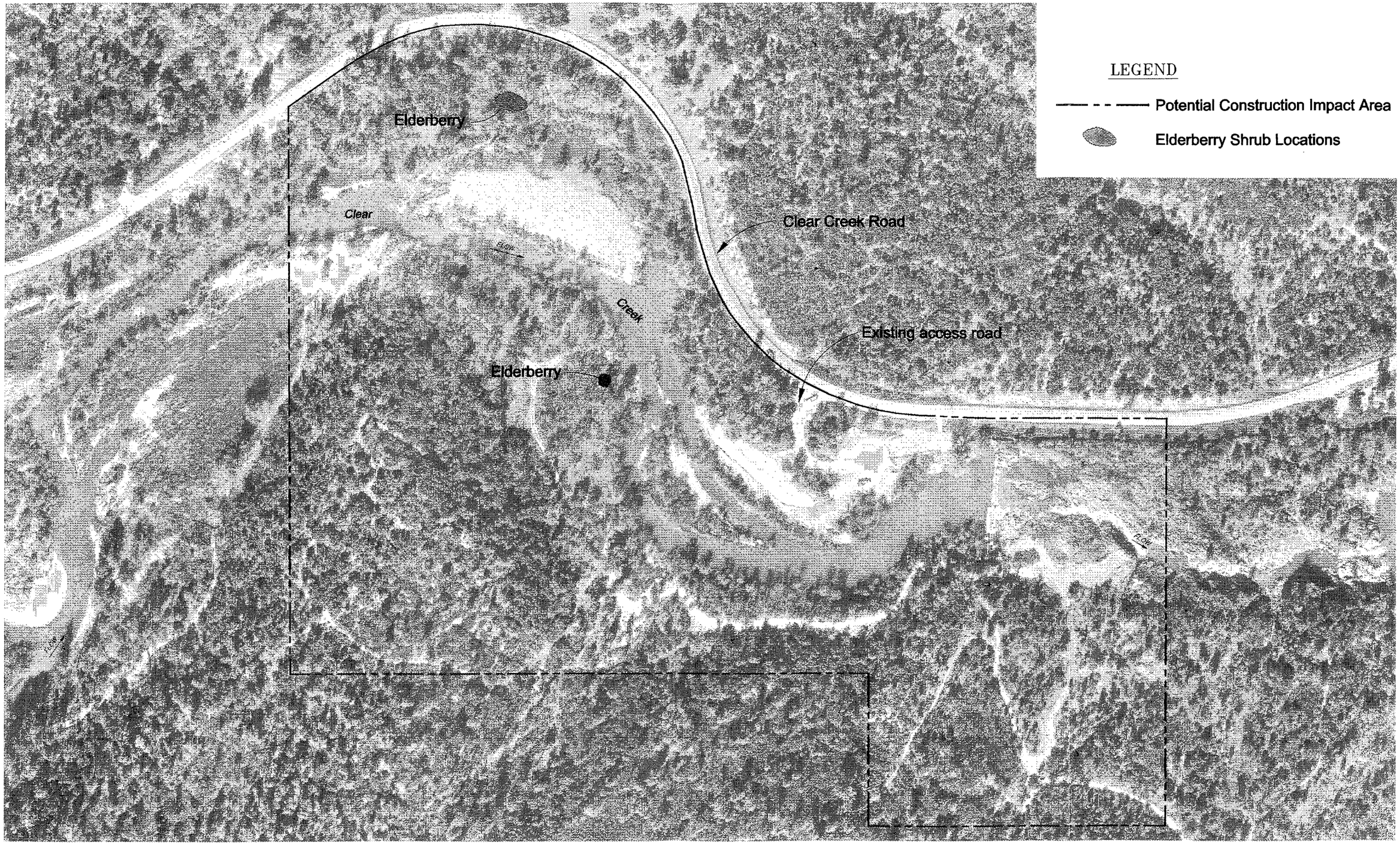

FIGURE 3-4
BLUE ELDERBERRY SHRUB LOCATIONS
SAELTZER DAM FISH PASSAGE
AND FLOW PROTECTION PROJECT
NORTH STATE RESOURCES, INC

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operational on May 2, 1963. Whiskeytown Dam is located on Clear Creek approximately 16.2 RMs upstream of its confluence with the Sacramento River and 7 miles west of Redding on Highway 299. Whiskeytown Reservoir has a capacity of 241,000 acre-feet and impounds both Clear Creek and Trinity River flows diverted through the Clear Creek Tunnel and Judge Francis Carr Powerhouse. At Whiskeytown Reservoir, a portion of Clear Creek flows and all of the flow diverted from the Trinity River is diverted through the Spring Creek Tunnel to the Spring Creek Powerhouse just upstream of Keswick Dam. The remaining natural flow from upper Clear Creek, combined with tributary accretions downstream of Whiskeytown Dam, flow through the project. The average annual yield in Clear Creek prior to 1963 was 302,000 acre-feet and varied considerably from a low of 91,000 acre-feet to 790,500 acre-feet. Since construction of Whiskeytown Dam, the average annual yield in Clear Creek has averaged 112,000 acre-feet, a 63 percent reduction in flow (McBain and Trush, 1998).

In 1960, the CDFG and Reclamation entered into a Memorandum of Operating Agreement (MOA) for streamflow maintenance for the protection and preservation of fish, wildlife, and recreational resources in Clear Creek that would be affected by the operation of Whiskeytown Dam. Under the agreement, releases for fish, wildlife, and recreational resources would be made in addition to amounts necessary to satisfy existing downstream water rights. The agreement identifies a flow release of 50 cfs from January 1 to February 28-29, 30 cfs from March 1 to May 31, 0 cfs from June 1 to September 30, 10 cfs from October 1 to October 15, 30 cfs from October 16 to October 31, and 100 cfs during the remainder of the calendar year.

Reclamation, USFWS, and NPS reached a tentative agreement for increased flow releases to lower Clear Creek in 1963, and although this agreement was never formalized, Reclamation has provided those release amounts since that time. The agreement calls for releases of 50 cfs from January through October and 100 cfs from November to December in normal water years and for releases of 30 cfs from January through October and 70 cfs for November and December in critical water years.

Increased flow releases from Whiskeytown Dam are identified in the AFRP. The objective of the increased flow releases are to: (1) provide adequate instream flows and channel maintenance flow for all life stages of salmon and steelhead; (2) provide suitable temperatures for all life stages; and (3) provide channel maintenance flows. The current recommended releases from Whiskeytown Dam to Clear Creek are 200 cfs from October to April and 150 cfs for the remainder of the year with variable spring-time releases depending on water-year type.

Water temperatures in lower Clear Creek are generally cool (less than 55°F) during the late fall and winter months when salmon spawn. During the late spring and summer, water temperatures increase significantly as day lengths increase and air temperatures rise. During flow releases of 50 cfs, water temperatures commonly exceed 75°F through the Gravel Mined Site in the summer. In 1982, the DWR monitored water temperatures in Clear Creek. In that year, water temperatures just upstream of the project reached 79°F, and at the mouth of Clear Creek, water temperatures reached 82°F, a lethal level for salmonids. The DWR (1986) speculate that under a flow release of 50 cfs it appears that ambient air temperatures and water temperatures in Clear Creek reach equilibrium approximately 4.5 miles upstream from the confluence with the Sacramento River. In 1999, Reclamation increased flow

releases to 100, 150, and 200 cfs periodically during the summer to improve water temperatures for rearing salmonids located downstream of Saeltzer Dam.

In 1976, the State Reclamation Board approved the Designated Floodway Maps for Clear Creek in Shasta County. Delineation of the 100-year floodway was not based on a detailed hydrologic analysis. Instead, approximate estimates were developed from testimony, prior flood damage, topography, and rough calculations for a limited number of transects. The designated floodway within the Gravel Mined Site is based on a flood of 37,000 cfs. The proposed project would remove Saeltzer Dam and fine sediment accumulations that have deposited behind the dam. Given the questionable structural integrity of Saeltzer Dam, its removal would eliminate a potential flood hazard in future years should a failure of the dam occur during a large flow event.

The Federal Emergency Management Agency (FEMA) has not determined base flood elevations within lower Clear Creek. The Flood Insurance Rate Maps for both Shasta County and the City of Redding delineate the lower Clear Creek floodway as Zone A. Zone A designations indicate areas where the 100-year base flood elevation and flood hazard factors have not been determined.

Beneficial uses identified for Clear Creek in the Central Valley Water Quality Control Plan include municipal and domestic water supply, agricultural, recreation, warmwater fishery habitat, coldwater fishery habitat (migration and spawning), and wildlife.

3.2.1.2 Environmental Consequences

Criteria for Determining Significance. Impacts to surface water and water quality would be considered significant if they would result in any one of the following:

- Increase in water turbidity in surface waters that exceeds: (1) 20 percent of background or Nephelometric Turbidity Units (NTU) when background turbidity is between 0 and 50 NTU; (2) 10 NTU when background turbidity is between 50 and 100 NTU; and/or (3) 10 percent when background turbidity levels are greater than 100 NTU, except during working periods when these limits would be eased to allow for a turbidity increase of 15 NTU over background turbidity levels as measured 200 feet downstream of the construction site
- Cause settleable matter to exceed 0.1 milliliter per liter (ml/L) in surface waters as measured 200 feet downstream of the construction site

Proposed Project Alternative. The proposed project would restore a defined bankfull alluvial stream channel within the vicinity of Saeltzer Dam. Fine sediments would be removed from behind Saeltzer Dam during construction; however, larger sized alluvial material (gravel and cobble) important to maintenance of quality salmonid habitat within the channel would remain and would become available for transport to lower sections of Clear Creek during natural high flow- and/or managed flushing flow-type events. Transport of these alluvial materials to downstream areas would benefit stream channel and floodway rehabilitation efforts that are currently being implemented by Western Shasta Resource Conservation District (WSRCD) in coordination with the lower Clear Creek Restoration Team. Any large flow releases scheduled to reshape the dam site would be coordinated with

flows in the Sacramento River to protect Basin Plan standards; therefore, no impacts would result.

To ensure that the proposed project, the transfer of 6,000 acre-feet of CVP water and elimination of the current water diversion at Saeltzer Dam, does not adversely impact flow or fishery resources, the CDFG, USFWS, and Reclamation would enter into an Instream Flow Preservation Agreement to ensure that the flow releases downstream of Whiskeytown Dam to the mouth of Clear Creek are maintained, at a minimum, to levels equivalent to the bypasses or releases made pursuant to the existing informal agreement among Reclamation, USFWS, and NPS.

In addition, Reclamation and USFWS would also enter into an agreement to designate additional water for release to Clear Creek made available under Section 3406 (b)(2) of the CVPIA. Under the terms of the agreement, USFWS would annually transfer to Reclamation up to 900 acre-feet for release to Clear Creek in years when 6,000 acre-feet is delivered to the TFWDC. In years when less than 6,000 acre-feet is delivered to the TFWDC, USFWS and Reclamation would calculate the amount of (b)(2) water necessary to prevent impacts to other CVP water users, and the USFWS would transfer that amount of (b)(2) water to Reclamation for release to Clear Creek. These agreements would improve habitat conditions in lower Clear Creek for priority anadromous salmonids.

The purpose of the project is environmental restoration focused towards elimination of major salmonid migration barrier and rehabilitation of the stream channel to benefit high priority salmonid species. The proposed project would obtain necessary permit approvals from the CVRWQCB in accordance with the federal Clean Water Act and state Basin Plan Objectives. Incorporation of mitigation measures and BMPs outlined in the project description would reduce the potential to exceed water quality objectives to less than significant levels.

Potential impacts to water quality associated with hazardous materials, including mercury, are discussed in Section 3.4 Hazardous Materials.

3.2.1.3 Mitigation

Because no significant impacts are anticipated, no mitigation is required.

3.2.2 Groundwater

Clear Creek drains an area of approximately 4,500 acres on its north side between Saeltzer Dam and the intersection with the ACID canal. Much of the area is comprised of alluvial deposits that result in unconfined aquifers, especially in the dredger tailings south of the ditch. However, there have been reports of clay deposits in the dredger tailings, which may result in local perching of groundwater on the clay deposits.

Groundwater in this area generally flows to the southeast, following surface topographic features toward Clear Creek and the Sacramento River. Natural recharge occurs primarily in the winter-spring months, in the form of deep percolation from precipitation. Precipitation averages approximately 39 inches per year. Current data on depth to water in the project area is not available. However, USGS data from the 1980s indicates three wells in the general project area near the dredge tailing ponds all recorded depths to groundwater ranging from less than 10 feet to approximately 30 feet.

The Townsend Ditch is an unlined ditch that starts on the north and downstream end of Saeltzer Dam and runs subparallel with Clear Creek toward the east, until it veers north near the western edge of the ACID canal, and ultimately terminates at Olney Creek. The total length of the ditch is approximately 6.4 miles from Saeltzer Dam to Olney Creek. Saeltzer Dam diverts approximately 12,500 acre-feet of water annually to the Townsend Flat Water Ditch (L&A, 2000). Given Townsend Ditch is an unlined, a portion of the water that is conveyed provides groundwater recharge along its length. Further, irrigation from the ditch provides groundwater recharge through deep percolation of applied water to areas down-gradient of the ditch, including the dredge tailings south of the ditch. Irrigation from the ditch also provides surface runoff to down-gradient areas where it may percolate to groundwater. Down-gradient percolation is most likely to occur in the dredge tailings south of the ditch. The ditch typically conveys water from the dam between May and October, with the peak irrigation season occurring in July and August. Accordingly, the ditch exerts its maximum influence on groundwater during the irrigation season.

3.2.3 Environmental Consequences

3.2.3.1 Criteria for Determining Significance

Impacts to surface water and water quality would be considered significant if they would result in any one of the following:

1. Increase in water turbidity in surface waters that exceeds: (1) 20 percent of background or Nephelometric Turbidity Units (NTU) when background turbidity is between 0 and 50 NTU; (2) 10 NTU when background turbidity is between 50 and 100 NTU; and/or (3) 10 percent when background turbidity levels are greater than 100 NTU, except during working periods when these limits would be eased to allow for a turbidity increase of 15 NTU over background turbidity levels as measured 200 feet downstream of the construction site

2. Cause settleable matter to exceed 0.1 milliliter per liter (ml/L) in surface waters as measured 200 feet downstream of the construction site

3. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)

Proposed Project Alternative. The effect of the project on groundwater resources in the area between the ditch and Clear Creek was forecast via a water budget analysis. Figure 3-5 illustrates the area for which the following water budget was estimated. This area was determined to be an area of concern at public meetings held by the Western Shasta Resource Conservation District and through direct contact with landowners in the area, at least one of which directly uses flow from up-gradient areas during summer months. Details of the assumptions and procedures used in the water budget analysis are presented in Appendix C.

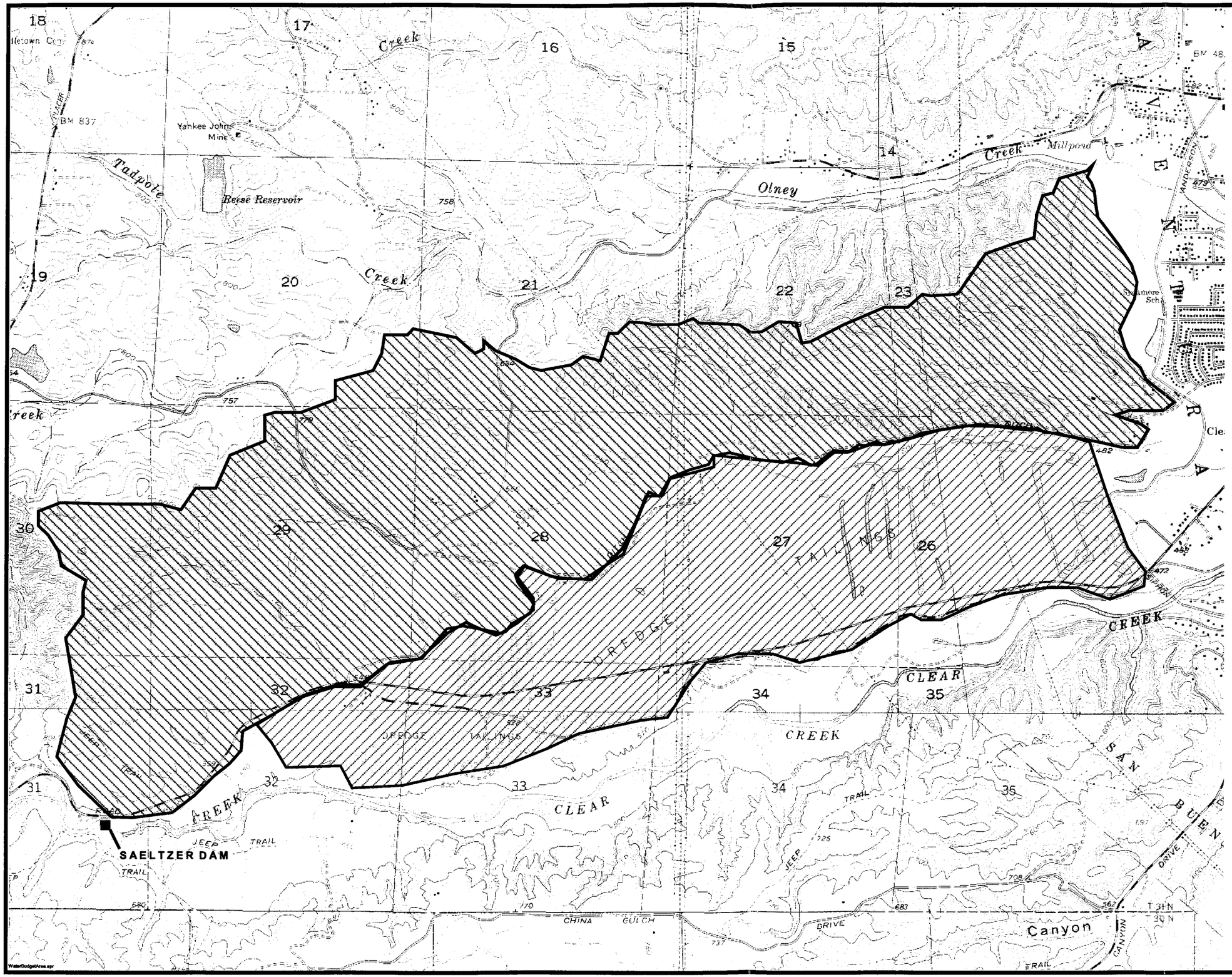

FIGURE 3-5
GEOGRAPHIC EXTENT OF WATER BUDGET AREA
SAELTZER DAM FISH PASSAGE AND FLOW PROTECTION PROJECT
NORTH STATE RESOURCES, INC.

The water budget was estimated with the assumption that annual inflows equal annual outflows and that water levels in ponds are expressions of the groundwater table. Therefore, the following water budget is presented in terms of a groundwater budget for the dredge tailings area. Table 3-5 shows the water budget for the dredge tailings area.

Table 3-5. Water Budget: Dredge Tailings Area with Ditch

Inflow Component	Winter Season (Nov-Apr)	Irrigation Season (May-Oct)	Annual Total
Deep percolation of upgradient water from precipitation	2,250	450	2,700
Leakage from Townsend Ditch	165	1,008	1,173
Deep percolation of direct precipitation onto dredge tailings area	1,250	250	1,500
Deep percolation of applied water	0	1,410	1,410
Total In	***3,665***	***3,118***	***6,783***
Outflow Component	**Winter Season (Nov-Apr)**	**Irrigation Season (May-Oct)**	**Annual Total**
Phreatophyte evapotranspiration	400	1,300	1,700
Pond evaporation	100	500	600
Unknown outflow (subsurface outflow, waste gate outflow, Clear Creek inflow, etc.)	3,165	1,318	4,483
Total Out	***3,665***	***3,118***	***6,783***

Note: units in acre-feet

As shown in Table 3-5, the inflows from the Townsend Flat Water Ditch make up approximately 38 percent of the total inflows into the dredge tailings area ((1,173+1,410)/6,783). When Saeltzer Dam is removed and the diversions to the Townsend Flat Water Ditch cease, the groundwater and surface water levels in the dredge tailings area will be impacted, primarily during the irrigation season. The degree to which they will be impacted is difficult to quantify, due to the uncertainty related to net outflows in the dredge tailings area. That is, with a cessation in ditch flows, "Unknown Outflows" from the dredge tailings will also decrease. However, the degree to which outflows from the dredge tailings will decrease is not known.

The annual inflows resulting from the presence of water in the Townsend Flat Water Ditch equate to approximately 2,600 acre-feet (1,173+1,410; see Table 3-5). By assuming a specific yield of 20 percent for the subsurface porous medium and a specific yield of 1 for the ponds, one can estimate the maximum decrease in water levels that would occur in the dredge

tailings area as approximately 6.5 feet. However, based on communications with landowners in the area, probable decreases are more likely in the 3-4 foot range, with some areas more affected than others (Swarts, pers. comm. with Mike Urkov/CH2M HILL). Assumptions for the water budget are outlined in Appendix C.

Landowner experience indicates that the decrease in inflows would be offset, to some degree, by a decrease in outflows. A decrease in outflows would occur because as water levels drop in the dredge tailings area, the hydraulic gradient would also decrease, thereby decreasing the volume of subsurface outflow. Furthermore, as water levels drop in ponds their surface areas are reduced, thereby decreasing the amount of evaporation from the ponds. Also, leakage rates may vary from pond to pond. Therefore, the forecast 6.5-foot decrease in water levels should be viewed as an upper limit to the average decrease in water levels in the dredge tailings area that would occur in response to cessation of the ditch flows. The degree to which the decrease in outflows will offset the reduction in inflows, once the dam is removed, is not known.

During the rainy season, the net precipitation rates in the area will likely overcome the average infiltration rates of the ponds. Therefore, local ponds will likely fill with water during the rainy season, as they currently do. However, following project implementation, once the rainy season ends, water in the ponds will leak and evaporate water throughout the summer season with little to no additional inflows. The ponds will likely follow a hydrologic cycle similar to other intermittent water features in the region, characterized by wet winters and dry summers.

The overall reduction in water levels of a given pond will depend on the average infiltration rate of the pond sediments, the degree to which the groundwater table interacts with the pond, and the evaporation and evapotranspiration rates at and surrounding a given pond. Once the ditch is no longer used, water level fluctuations in a given pond may be greater over the course of a year than are currently observed. This assumes that the area that was irrigated by the ditch is no longer irrigated once diversions to the ditch cease. If irrigation during the summer season in currently irrigated areas continues once the ditch flows cease (e.g. pastures are irrigated with water from ACID or newly developed wells), then impacts to pond levels may be less.

Following implementation of the project, landowners may expect a decrease in groundwater levels up to approximately 6.5 feet, with maximum impacts occurring in the late summer months. Anecdotal evidence from landowners in the dredge tailings area indicate that actual impacts are likely to be less. Winter recharge is likely to provide adequate groundwater supply to recharge the groundwater aquifer in the vast majority of years, thus no significant impacts to long-term groundwater supplies would result from the project. Landowners in the area that currently use excess water from the ditch in the late summer may need to supplement supplies, or manage supplies from winter months for use in later summer months. Potential supplies include new wells, increased retention of winter water, or annexation to ACID for supplemental water deliveries. This water is readily available, thus land uses in the area would be only slightly affected by having to manage for water that was previously provided from the ditch, including pumping a small amount of additional groundwater to supplement existing supplies. The project's impacts on land use dependent on groundwater is therefore less than significant.

3.2.4 Mitigation

The effect of the project on groundwater resources is considered less than significant, therefore no mitigation is required.

3.3 UTILITIES

3.3.1 Affected Environment

This section discusses public utilities in the vicinity of the project. The proposed project is located within the service area of several separate utilities; however, only those services that have the potential to be affected by the project are discussed below.

3.3.1.1 Water Delivery Systems

The City of Redding supplies domestic water to residential developments within the City limits, which includes a portion of the project study area. Redding provides water service to 24,163 service connections and is the largest domestic water supplier in Shasta County (Figure 3-6). Urban land uses predominate, with only incidental agricultural use. Sources of water include both surface water and groundwater.

The Clear Creek Community Services District (CSD) is located immediately south of the project area. The district serves approximately 1,500 residential and 850 agricultural customers. Residential uses with lot sizes between 1 and 5 acres predominate. Some homes in unincorporated areas of Shasta County within the project area maintain individual supplies, which typically include groundwater wells.

The Bella Vista Water District (BVWD), which serves the McConnell Foundation headquarters, is a publicly owned water agency formed in 1964. BVWD is located east of the City of Redding and south of Shasta Lake. BVWD was formed to serve agricultural irrigation demands, which still represent 70 to 80 percent of the BVWD's water demand. However, most of the service connections are now either domestic or rural residential, which has resulted in treated, potable water being applied as irrigation water at rural residences. Water is delivered to the BVWD from the Sacramento River via the Cow Creek Unit of the CVP. The BVWD also operates wells in the southern portions of the district.

The CCSD is located west of the City of Redding and north of the project study area. CCSD was formed in 1959 to provide domestic water supplies to 8,000 acres of land. Land use is predominantly residential, with an average lot size of 3 acres. Water is delivered to the district from Whiskeytown Lake, where it is conveyed through the Muletown Conduit.

The ACID is the primary provider of irrigation water in Shasta County. ACID's service area extends from the City of Redding to Tehama County. The ACID Main Canal crosses Clear Creek via a siphon at the eastern end of the project area, conveying water from the Sacramento River diversion at the Market Street Bridge to irrigable lands along its length. The siphon is protected from erosion by a series of sheet piles immediately downstream of the siphon. The district serves 900 customers. Approximately 90 percent of ACID's customers irrigate pasture for livestock; however, a small percentage also grow food crops, such as melons, tomatoes, and walnuts.

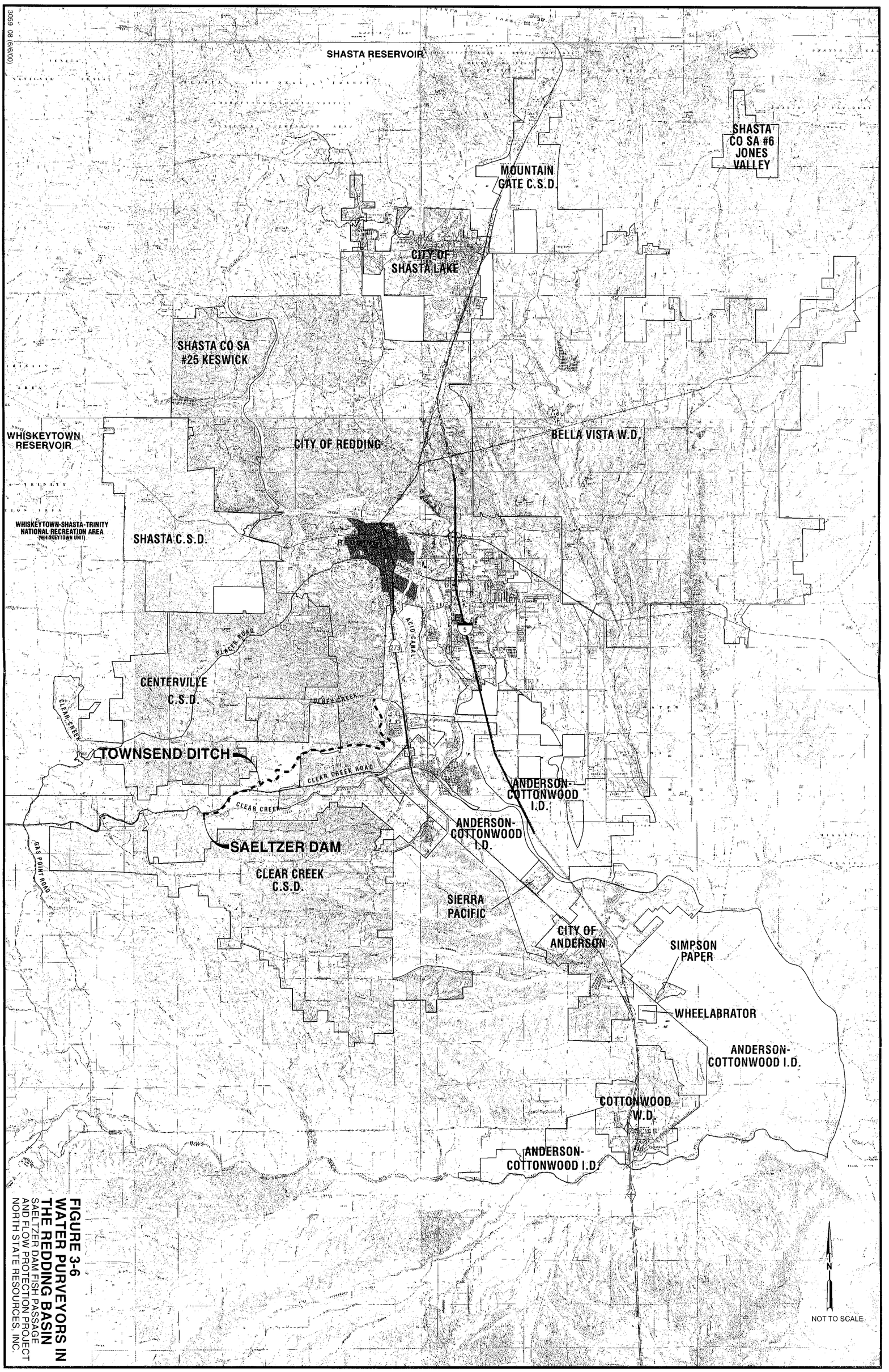

FIGURE 3-6
WATER PURVEYORS IN THE REDDING BASIN
SAELTZER DAM FISH PASSAGE AND FLOW PROTECTION PROJECT
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Powerplant owned by the City of Redding. The powerplant has one unit and a capacity of 3.5 megawatts (MW). Water that is diverted from Whiskeytown Reservoir directly to the Sacramento River passes through the Spring Creek Powerplant. The Spring Creek Powerplant consists of two units with a combined capacity of 200 MWs. The Spring Creek Powerplant supplies electricity for the needs of the CVP; any surplus electricity is marketed to customers of the Western Area Power Administration (WAPA).

3.3.1.3 Solid Waste Disposal

The City of Redding provides all solid waste collection and recycling services within the City. Solid waste is collected and delivered to the West Central Landfill south of Redding. The West Central Landfill receives most of the residential and commercial solid waste within Shasta County. Operation of the landfill is separated into five permitted phases. The County currently operates Phase 2 of the landfill. The life expectancy of Phase 2 is 23 years.

The Anderson Solid Waste, Inc. facility in Anderson is a second potential landfill site that could receive solid wastes generated during project construction and demolition. The Anderson facility is a regional landfill serving portions of northern California. The facility received approximately 73,000 tons of waste in 1996, and typically receives approximately 100,000 tons per year. Given this use rate, the life expectancy of the facility is approximately 70 years.

3.3.2 Environmental Consequences

3.3.2.1 Criteria for Determining Significance

Impacts to public services and utilities would be considered significant if they would result in any of the following:

- Breach published national, state, or local standards relating to solid waste or litter control
- Encourage activities that result in the use of large amounts of fuel, water, or energy
- Substantially impact local services or infrastructure
- Use fuel, water, or energy in a wasteful manner
- Extend a sewer trunk line with capacity to serve new development

The proposed project would remove Saeltzer Dam, which would cease diversions to the TFWDC. The shareholders in the TFWDC are currently negotiating with Reclamation to exchange water that currently is used along the ditch for delivery of 6,000 acre-feet of water from CVP facilities. Current plans call for delivery of 900 acre-feet of water to the CCSD, increasing the district's firm supply. The remaining 5,100 acre-feet would be available for the McConnell Foundation for delivery from CVP facilities. The McConnell Foundation does not currently have plans for use of the exchange water and would likely designate the water to environmental purposes until a use is identified. Currently, water providers in Shasta County have adequate supplies for normal water years, although the bulk of future supplies is pending contract renewals with Reclamation. In the event of a drought, the McConnell Foundation supply would likely be made available to districts within the County. Transfers outside of the County are unlikely, as the current agreement between

Reclamation and the McConnell Foundation imposes a reduction in supplies for any use outside the Shasta County boundary. These exchanges would benefit water supply in the basin. Use of the water outside the existing service areas of CVP water districts would require further NEPA analysis. Given that the shareholders in the Company negotiated the terms of the exchange on a willing seller/willing buyer basis, the cessation of water deliveries to the ditch would be less than significant.

Clear Creek flows are managed to provide suitable temperatures for salmonids, as discussed in Section 3.1 Biological Resources and 3.2 Hydrology and Water Quality. Flows below Whiskeytown would remain the same under the project as under current conditions to ensure beneficial temperatures for fisheries. This would also ensure that generation at Whiskeytown Dam would remain unchanged. Any exchange water that would be moved through the Spring Creek Powerplant would result in additional generation, providing an incremental benefit in terms of power generation in the region.

Solid waste generated by the project would likely be disposed of in either the West Central Landfill or the Anderson solid waste facility. Both of these facilities have existing capacity to receive solid waste generated by the project. Therefore, there would be no impact to existing waste facilities.

3.3.3 Mitigation

Because no significant impacts are anticipated, no mitigation is required.

3.4 HAZARDOUS MATERIALS

3.4.1 Affected Environment

The proposed project would include excavating and removing sediments and other fluvial materials that have filled in the basin on the upgradient side of Saeltzer Dam. Some of the fluvial materials that have accumulated behind the dam may have been previously exposed to mercury during historic mining and dredging activities. (Mercury was used in sluice boxes to separate gold-bearing minerals, which were then processed by hand to remove the gold deposits. As the dredge moved forward, alluvial streambed materials were turned upside down and discharged into long tailing piles, many of which are still present today.)

In the spring of 1997, CDFG collected sediment samples from a newly dredged bypass channel located behind Saeltzer Dam. These samples were tested to determine if elevated levels of mercury existed in the sediment basin behind the dam. Test results showed that mercury concentrations in the Saeltzer sediments ranged from 0.1 milligram per kilogram (mg/Kg) to 0.06 mg/Kg. These results indicated that the sediments behind the dam were not hazardous materials and were within maximum allowable concentrations of mercury in a solid material according to the State of California and the EPA. However, the test results were determined to be flawed because of inconsistencies in sample handling. More extensive and rigorous sampling is now in progress.

Preliminary analysis results have been received for 32 samples taken from sediment cores from 1-to 4-foot depths of sediment. These sample locations are shown on Figure 3-1 of the sampling and analysis plan, provided in part in Appendix F. No sample exceeded the maximum allowable concentrations for mercury under 40 CFR 261.24, and CA Title 22.

Samples did not exceed the Total Threshold Limit Concentration (TTLC) limit of 20 milligrams per kilogram (mg/Kg) nor the 10 x level of the Soluble Threshold Limit Concentration (STLC) of 2 mg/Kg. In addition to comparison with regulatory levels and because there is an intent to protect the eco-habitat, National Oceanic and Atmospheric Administration Effect Range-Low (NOAA ERL) sediment eco benchmarks, as recommended by California Environmental Protection Agency, Department of Toxic Substances Control (DTSC), were chosen for comparison. Of several guidance limits reviewed, this was the lowest "effect" level for mercury. Standards are presented in Tables 3-6 and 3-7.

Table 3-6. California Code of Regulations, Title 22 TTLC and STLC Values for Metals

Analyte	TTLC (mg/Kg)	STLC (mg/L)	10x STLC (mg/Kg)
Antimony	500	15	150
Arsenic	500	5	50
Barium	10,000	100	1,000
Beryllium	75	0.75	7.5
Cadmium	100	1	10
Chromium (VI)	500	5	50
Chromium	2,500	5	50
Cobalt	8,000	80	800
Copper	2,500	25	250
Lead, Total	1,000	5	50
Mercury	20	0.2	2
Molybdenum	3,500	350	3,500
Nickel	2,000	20	200
Selenium, Total	100	1	10
Silver	500	5	50
Thallium, Total	700	7	70
Vanadium	2,400	24	240
Zinc	5,000	250	2,500

Table 3-7. Freshwater Sediment Benchmarks

Metals	DTSC NOAA ERL (mg/Kg)	TEC (mg/Kg)	ERL (mg/Kg)	LEL (mg/Kg)	Other (mg/Kg)
Antimony	2.0	--	--	--	--
Arsenic	3	9.8	32	6	--
Barium	--	--	--	--	--
Beryllium	--	--	--	--	--
Cadmium	5.0	0.99	0.7	0.6	--
Chromium	80	43	39	26	--
Cobalt	--	--	--	--	50 [a]
Copper	70	32	96	16	--
Lead	35	36	99	31	--
Mercury	0.15	0.18	--	0.2	--
Molybdenum	--	--	--	--	--
Nickel	30	23	40	16	--
Selenium	--	--	--	--	2.5 [b]
Silver	1.0	--	--	--	--
Thallium	--	--	--	--	--
Vanadium	--	--	--	--	--
Zinc	120	120	320	120	--

DTSC California Environmental Protection Agency, Department of Toxic Substance Control (1996)
NOAA ERL National Oceanic and Atmospheric Administration Effect Range-Low (Long and Morgan, 1990)
TEC Threshold Effect Concentration (MacDonald et al, 1999)
ERL Effect Range-Low (Ingersoll et al, 1996)
LEL Low Effect Level (Persaud et al, 1993)
Other Benchmarks: [a] Ontario Ministry of the Environment Guideline (Persaud et al, 1993); [b] Predicted effect level (vanDerveer and Canton, 1997)

The NOAA ERL is 0.15 mg/Kg for mercury. One sample (0.6mg/Kg) from this upper layer set of samples taken from the area adjacent to the dam itself exceeded this benchmark for mercury. No other sample exceeded the guideline, and most of the samples were not detectable at 0.040 mg/Kg. During the initial sampling effort, water quality samples were taken at intervals and locations directed by the CVRWQCB. All of the water samples were non detect at 0.0002 mg/Kg of mercury. Because of the presence of a coarse layer of material and refusal of the current sampling device at 3 to 4 feet of depth, a drill coring device is continuing the investigation of sediment below the refusal level.

If available, results of additional sampling are intended to be presented in the Final EA/IS and will be considered prior to final NEPA/CEQA determinations. In addition to the sediment analysis, during the coring activity water analysis will also be performed to satisfy the requirements of the current CVRWQCB permit for sampling in the stream. The analysis will be done on an accelerated turnaround basis and data will be delivered to the CVRWQCB as soon as it is available. Sediment sample size for estimation of mean concentration of metal in sediment and for determining if concentration is below hazardous limits is based on a statistical analysis in compliance with EPA, SW846, Chapter 9, Part III.

3.4.2 Environmental Consequences

3.4.2.1 Criteria for Determining Significance

Impacts to public health and safety would be considered significant if they would result in any one of the following:

- Risk accidental explosion or release of hazardous substances including, but not limited to oil, pesticides, chemicals, or radiation
- Interfere with an emergency response plan or emergency evacuation plan
- Create any health hazard or potential health hazard
- Expose people to existing sources of potential health hazards
- Increase fire hazard in areas with flammable brush, grass, or trees

Hazardous substances such as oil, diesel fuel, or hydraulic oil may be accidentally released into Clear Creek while removing the dam. In addition, excavation of the sediments and other materials behind the dam could potentially release mercury deposits into Clear Creek.

At certain levels, mercury is highly toxic to aquatic life. Concentrations of 0.012 micrograms per liter (μg/L) of water are harmful to freshwater fish, and 2.4 μg/L are reported as the minimum lethal concentrations for phytoplankton (EPA, 1986). The maximum contaminant level for mercury in drinking water under California State and federal EPA standards is 0.002 mg/L of water.

If representative samples of sediment behind Saeltzer Dam exceed maximum allowable concentrations they would qualify as toxic and be considered a hazardous waste[1,2]. The maximum concentrations for mercury in the sediments and corresponding analytical test

[1] 40 CFR 261.24

[2] Title 22, Division 4.5, Chapter 11, Article 2. Characteristics of Hazardous Waste.

methods are as follows: (1) Toxicity Characteristic Leaching Potential (TCLP) 0.2 mg/L; (2) STLC 0.2 mg/L; and (3) TTLC 20 mg/Kg. Current sediment samples are below threshold concentrations and are therefore not considered a hazardous waste. However, if additional sampling and analytical results indicate that mercury concentrations in Saeltzer sediments exceed the maximum values provided under California and federal regulations, the sediments would be excavated and disposed of in accordance with applicable state and federal rules for the treatment, storage, and disposal (TSD) of hazardous waste. Incorporation of applicable requirements stipulated under California and EPA rules would reduce the risk of hazardous materials spills to less than significant levels. The final results of the mercury sampling effort would be used to determine the amount of sediment that must be dredged from behind the dam.

So long as results of the sampling efforts indicate that mercury concentrations are below NOAA ERL benchmark, the entire cross section of sediments associated with that sample may be left in place. A cross section is defined as the section of stream channel between the banks, approximately 20 feet wide (see Appendix F). No hazardous impacts would result from exposure of sediments with concentrations less than NOAA ERL benchmark levels.

However, if mercury concentrations are above NOAA ERL benchmarks, but below TTLC and STCL thresholds, then the sediment would be dredged and placed on a terrace above the floodplain. Following dam removal, the dredge tailings would be covered with topsoil and revegetated. Impacts from the exposure of sediments above NOAA ERL benchmark levels, but below TTLC and STCL levels, would be less than significant following dredging, covering and revegetation.

Any sediment samples that exceed both NOAA ERL benchmarks and TTLC and STCL thresholds would be considered a hazardous waste, and would be subject to all applicable reporting requirements and would be disposed of in a manner consistent with hazardous waste regulations. Sediments exceeding TTLC and STCL concentrations would be subject to all applicable reporting and handling requirements; accordingly, impacts associated with handling hazardous materials would be less than significant. However, for the purposes of this analysis, it is assumed that sediments are below TTLC and STCL levels. This assumption will be verified prior to finalization of the project.

Notably, because Saeltzer Dam is considered structurally unsound, removal of the sediments behind the dam avoids a potential catastrophic release that could occur in the event of dam failure. A portion of the dam failed in 1964, sluicing unknown amounts of deposits that had collected behind the dam. Controlled removal of sediments containing mercury is therefore considered a beneficial effect of the project.

3.4.3 Mitigation

As noted in the project description, removing the dam would incorporate BMPs and include developing an SPCC. Incorporation of these measures reduces the risk of hazardous materials exposure and spills to less than significant levels.

Potential impacts from turbidity or the release of suspended solids or effluent during project activities are discussed in Section 3.2 Hydrology and Water Quality. Measures taken to reduce or avoid these impacts are included in the project description in Section 1.5.

Potential impacts from sediments contaminated with mercury are less than significant; therefore, no mitigation is required.

3.5 GEOLOGY AND SOILS

3.5.1 Affected Environment

The proposed project area is located in the Sacramento Valley within the Great Valley geologic and geographic province of Northern California. The geology of the Great Valley is characterized by a forearc basin filled with a thick sequence of shallow to deep marine sedimentary rocks and sediments of Jurassic to recent age overlaying a composite basement of Mesozoic Coast Range ophilite on the west, and a granitic and metamorphic Sierran basement on the east. The geology of the project area in the lower Clear Creek watershed includes the following:

- *Undivided Sedimentary Rocks*—Cretaceous in age sandstone and conglomerate in outcrops in small areas located mostly on the north side of the lower watershed.
- *Tehama Formation*—Pliocene in age, pale green, gray, and tan sandstone and siltstone with lenses of crossbedded pebble and cobble conglomerate occurring on both sides of the lower watershed.
- *Nomlaki Tuff*—Lowermost member of the Tehama Formation, white or light gray dacitic pumice tuff and pumice lapilli tuff with limited exposure on the north side of the lower watershed. Thickness varies in this area from 3 to 30 feet.
- *Redbluff Formation*—A thin veneer of distinctive, highly weathered, bright red gravel deposit overlaying the Tehama Formation and capping the dissected ridges of the southern edge of the lower watershed.
- *Riverbank Formation*—Pleistocene in age, weathered reddish gravel, sand, and silt forming alluvial terraces and fans.
- *Overbank Formation*—Holocene in age, sand, silt, and minor lenses of gravel deposited by floods and during high water stages occurring along the entire length of Clear Creek in the lower watershed.
- *Alluvium and Overbank Deposits, Undivided*—Deposits of Overbank Formation and unconsolidated silt, sand, and gravel in the contemporary stream channel of Clear Creek and on associated low terraces in the lower watershed.
- *Placer Tailings*—Random, hand-stacked, or machine-deposited coarse cobbles and gravel resulting from placer mining. Also includes placer-mined areas and alluvium that has been disturbed by aggregate mining. The largest areas occur in the lower watershed adjacent to Clear Creek and on terraces to the north. Small, unmapped tailings deposits are ubiquitous along Clear Creek and its tributaries, particularly to the north and east.

The soils in the lower Clear Creek watershed have been grouped into five associations. Two of these, lower terrace soils and bottom land alluvium, occur in the project area. Lower terrace soils include Perkins, Churn, Tehama, and Honcut. These soils are generally located in the lower watershed between the high terraces and the alluvial floodplain. They are well-

drained and moderately well-drained clay loams and silty clay loams, with a 40- to 60-inch depth to parent alluvial material. Soils in the bottomland alluvium are composed of Reiff and Anderson associations. These soils are well-drained to somewhat excessively drained loamy fine sands and loams. They are located adjacent to the creek and are subject to flooding.

Human activities have adversely affected soils within the Clear Creek stream channel downstream from Saeltzer Dam. Tailings and placer digging activities have altered the soil mantle, removing fines and leaving only gravel, and exposed hardpan and bedrock in many areas of the channel.

3.5.2 Environmental Consequences

3.5.2.1 Criteria for Determining Significance

Impacts to geology and soils would be considered significant if they would result in any one of the following:

- Expose people or structures to major geological hazards, including earthquakes, ground failure, or similar hazards

Removing Saeltzer Dam is expected to beneficially impact salmonid habitat in Clear Creek by restoring the natural mechanism for distribution of unconsolidated silt, sand, and gravel in the contemporary stream channel of the creek. However, there is a potential that mercury contamination, resulting from historic mining activities, may exist in sediments that have accumulated in the areas of the creek directly above the dam. A discussion of the environmental consequences of potential mercury-contaminated sediments in the project area is presented in Section 3.4 Hazardous Materials. Removing Saeltzer Dam is not expected to result in any other potentially significant impacts to geologic or soil resources in Clear Creek or in the area of the Townsend Ditch.

3.5.3 Mitigation

Preventative measures undertaken during dam removal and channel rehabilitation activities are expected to include measures to prevent the uncontrolled discharge of suspended solids, sediments, and other native and non-native materials into the creek; these measures are presented in Section 1.5. No mitigation would be required for soil or geologic resources in the area of the Townsend Ditch.

3.6 MINERAL RESOURCES

3.6.1 Affected Environment

Mineral resources within the project area consist primarily of commercially available gravel and sand deposits located along Clear Creek Road to the north and east of Saeltzer Dam. These deposits have been actively mined for aggregate and concrete production since the 1950s. In the past, significant mineral resources in the area also included deposits of placer gold found in the alluvium and floodplain of Clear Creek. However, mining, consisting of large gold dredging operations conducted in the late 1880s and early 1900s, resulted in the extraction and depletion of readily available placer gold in the creek; and large-scale

dredging is no longer conducted in the area. Dredge tailings from these operations remain in the area and make up part of the commercially available aggregate resource.

3.6.2 Environmental Consequences

3.6.2.1 Criteria for Determining Significance

Impacts to mineral resources would be considered significant if they would result in any one of the following:

- Loss of availability of a known mineral resource that would be of value to the region and the residents of the state
- Loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan

Removing Saeltzer Dam and discontinuing flow in the Townsend Ditch may reduce the discharge of surface water and groundwater into the active gravel mine pits located downgradient from the ditch; this change is discussed in Section 3.2 Hydrology and Water Quality. However, the disruption of flow is not expected to have any significant impact on future mining and planned reclamation activities at these facilities.

3.6.3 Mitigation

Because no significant impacts are anticipated, no mitigation is required.

3.7 AIR QUALITY

3.7.1 Affected Environment

Air quality standards are established by the Clean Air Acts of the federal government and the State of California. Shasta County is in compliance with all federal air quality standards. However, the County is designated as a moderate non-attainment area with respect to state standards for both ozone and particulate matter (Shasta County, 1995).

The project area is within the Northern Sacramento Valley Air Basin, and within a pocket of relatively stable air protected by the surrounding mountains. An inversion layer commonly develops over Shasta County during stable atmospheric weather conditions, and the inversion layer creates a lid that traps pollutants until unstable weather conditions move over the County (Shasta County, 1995). A recent study found that transport of ozone and ozone precursors from the broader Sacramento Valley is responsible for Shasta County's ozone violations, and that localized pollution sources did not exceed the ozone standards. Residential wood stove and fireplace use during the winter, coincident with inversion layer development over Shasta County, is the primary contributor to particulate matter violations.

The Shasta County Air Quality Management District (SCAQMD) is responsible for achieving air quality standards for ozone, particulate matter, and other air pollutants of concern, and administers the County's Air Quality Attainment Plan. The air quality impacts of construction activities, however, are not regulated by the SCAQMD (Jonio, pers. comm.).

3.7.2 Environmental Consequences

3.7.2.1 Criteria for Determining Significance

Impacts to air quality would be considered significant if they would result in any one of the following:

- Violate any ambient air quality standard
- Substantially contribute to an existing or projected air quality violation
- Expose sensitive receptors to substantial pollutant concentrations
- Generate objectionable odors

Proposed construction and demolition activities at Saeltzer Dam include placing the rock buttress on the downstream face of the dam, installing the cofferdam and bypass facilities, and removing the dam. Construction equipment required for these activities would include large excavators, dump trucks, and front-end loaders. These typical construction activities would temporarily contribute to air pollution in the form of vehicle exhaust (ozone precursors) and dust generation (particulate matter).

Ozone precursors generated by construction equipment and particulate matter entrained into the air by construction activities are not regulated by the SCAQMD. The primary ozone precursors generated by construction activities are oxides of nitrogen (NO_X), a byproduct of burning gasoline or diesel fuel. Measures outlined in Section 1.5 would ensure that this impact remains less than significant.

3.7.3 Mitigation

Mitigation incorporated into the project description would be implemented to reduce impacts to less than significant levels.

3.8 LAND USE AND POLICIES

3.8.1 Affected Environment

The Clear Creek watershed is located west of Redding in Shasta County, and encompasses approximately 154,820 acres. The watershed is divided into the upper and lower Clear Creek watersheds. Upper Clear Creek watershed is the portion of the watershed above Whiskeytown Dam. This portion of the watershed is not extensively developed, and consists mostly of large tracts of land managed by the NPS, the BLM, the Forest Service, and Sierra Pacific Industries as part of the Whiskeytown-Shasta-

Trinity National Recreation Area. The lower Clear Creek watershed is located below Whiskeytown Dam (Figure 3-7). About 8,000 acres of this land is managed by the NPS, and an additional 3,900 acres are publicly owned by various other state, federal, and local resource agencies. The BLM manages multiple parcels of land in the lower Clear Creek watershed, and intends to transform this land base into a consolidated resource management unit.

3.8.1.1 Saeltzer Dam and Lower Clear Creek Watershed

Saeltzer Dam is located on lower Clear Creek approximately 6 miles upstream of the Sacramento River in Shasta County. The 35 acres of undeveloped lands immediately

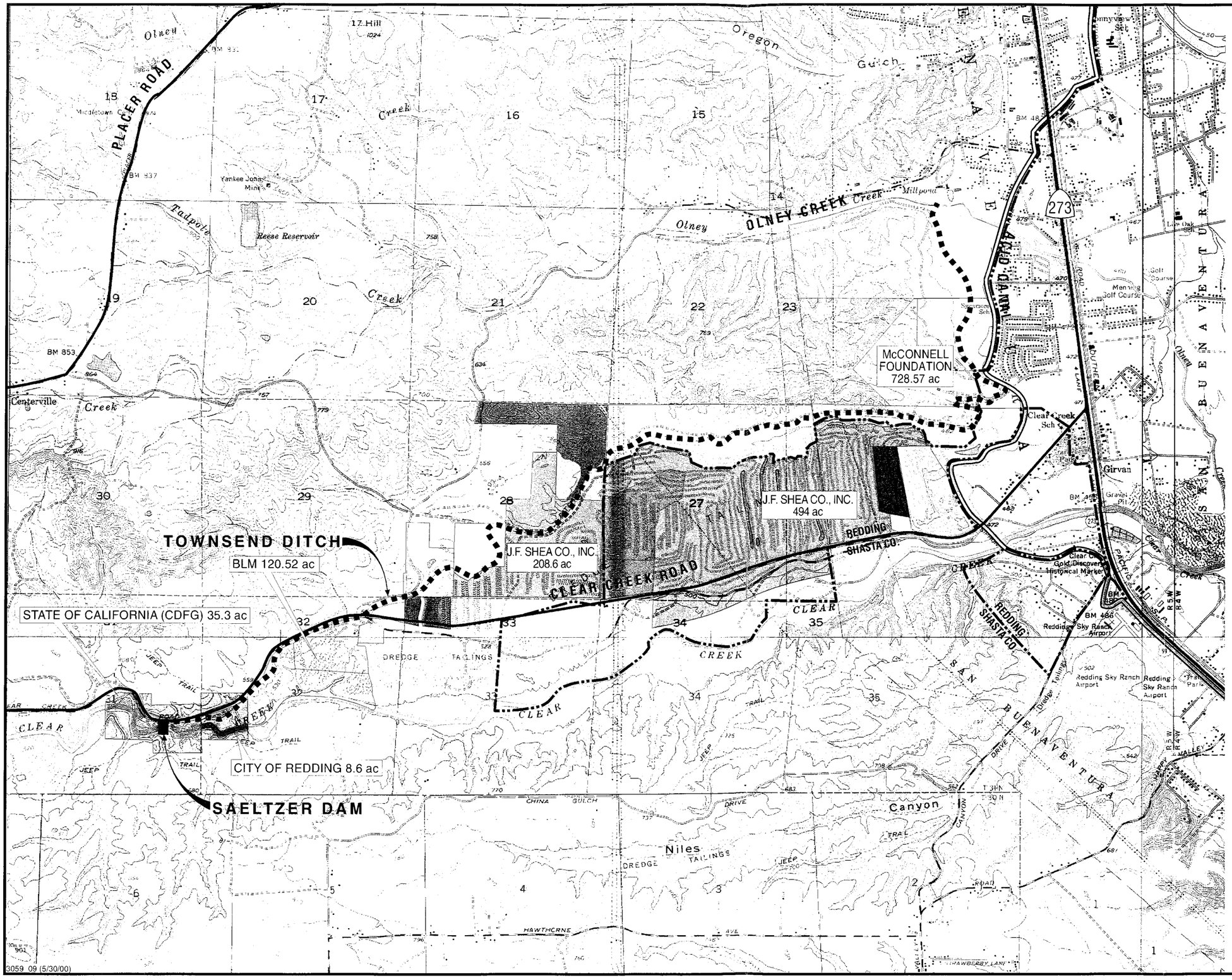

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FIGURE 3-7
LAND OWNERSHIP IN VICINITY OF SAELTZER DAM AND TOWNSEND DITCH
SAELTZER DAM FISH PASSAGE AND FLOW PROTECTION PROJECT
NORTH STATE RESOURCES, INC.

Redding General Plan land use designation for this portion of the creek is "Greenway," with a Critical Mineral Resource overlay (City of Redding Planning Commission, 2000).

3.8.1.2 Townsend Ditch

Townsend Ditch originates on the north side of Saeltzer Dam, and runs parallel to Clear Creek Road for approximately 1.3 miles before crossing beneath the road in a siphon near Honeybee Road. The ditch travels northeasterly toward the ACID Main Canal and then turns directly north and eventually empties into Olney Creek. The entire 6.4-mile Townsend Ditch alignment crosses multiple parcels including BLM, CDFG, and City of Redding lands, as well as private ownerships including aggregate processors and the McConnell

Foundation. The ditch alignment also has multiple land use designations within the Shasta County General Plan, including Rural Residential (RA), Suburban Residential (SR), and Mineral Resource (MR). The ditch does not enter the Redding city limits.

The McConnell Foundation owns a large majority of the property (approximately 780 acres) immediately adjacent to the ditch. These properties are bordered by the ACID Main Canal to the east, and are designated as either SR or RA in the Shasta County General Plan. The parcels are currently used for irrigated pasture and cattle grazing and three single-family residences.

3.8.1.3 Agriculture

Agricultural lands in Shasta County are typically located in the northeastern portion of the County, as well as south of the City of Redding along the Sacramento River. Approximately 66,000 acres of land in Shasta County are designated for agricultural uses (Shasta County, 1990). Over 83 percent of this total (55,728 acres) is located in upland portions of the County in the northeast planning area centered in and around Big Valley (Shasta County General Plan, 1984). This upland area is characterized by a short growing season and narrowed range of cropping opportunities. 10,334 additional acres of land are designated for agricultural use in the Sacramento Valley, south of the City of Redding (Shasta County, 1990). The agricultural capability of Sacramento Valley farmland is considered greater than that of upland Shasta County due to the long growing season and generally more reliable sources of irrigation (Shasta County General Plan, 1984).

The McConnell Foundation owns a large majority of the property (approximately 780 acres) immediately adjacent to Townsend Ditch. These properties are bordered by the ACID Main Canal to the east, and are designated as either SR or RA in the Shasta County General Plan. The parcels are considered uplands and are currently used for irrigated pasture and cattle grazing and three single-family residences.

3.8.1.4 Gravel Mining Operations along Clear Creek Road

Several gravel mining operations are located along Clear Creek Road, east of Saeltzer Dam. All of the gravel mining operation sites along the north side of Clear Creek Road either abut Townsend Ditch or abut property owned by the McConnell Foundation on the south side of the ditch (see Figure 3-7). The Redding city limits encompass several of these parcels, which are designated as Heavy Industrial with a Mineral Resources Overlay in the City of Redding General Plan. Several other gravel mining operation parcels are located in unincorporated Shasta County and are designated as MR lands in the Shasta County General Plan. Recla-

mation plans have been filed for these properties with the City and County, as required by the Surface Mining and Reclamation Act of 1975 (Carr and Walker, pers. comm.). The reclamation plans call for developing residential land uses following the closure of gravel mining operations on each site. The proposed residential developments would surround large ponds and call for large-scale revegetation. In addition to gravel mining operations in this area, a private water ski school is operated on a large pond in the vicinity.

3.8.2 Environmental Consequences

3.8.2.1 Criteria for Determining Significance

Impacts to land use would be considered significant if they would result in any one of the following:

- Conflict with adopted plans and goals of the community (e.g., the General Plan) where the project is located
- Convert prime agricultural land to non-agricultural use
- Impair the agricultural productivity of prime agricultural land
- Conflict with residential, commercial, or industrial uses

The proposed project would not conflict with adopted plans and goals of the Shasta County General Plan or the City of Redding, nor would it conflict with the residential, commercial, or industrial uses within the project vicinity.

The existing land uses surrounding the proposed project area would not be precluded as a result of the proposed action or under the No Action Alternative. The proposed project is consistent with multiple land use policies applicable to the lower Clear Creek watershed, including BLM's Redding Resource Management Plan (BLM, 1993), the Shasta County General Plan, the City of Redding General Plan, the Lower Clear Creek Watershed Analysis (WSRCD, 1996), and the Lower Clear Creek Watershed Management Plan.

Construction and operation of the proposed project would not affect gravel mining operations in the lower Clear Creek watershed, nor would it affect the implementation of reclamation plans for these sites. In addition, actions to develop recreation-based land uses in the immediate vicinity of Saeltzer Dam would be consistent with various plans to improve public access and recreation opportunities in the lower Clear Creek watershed.

The proposed action would not convert prime agricultural land to non-agricultural use in Shasta County. The existing agricultural land uses within the project area, specifically cattle grazing on the McConnell Foundation properties, would not be precluded by the proposed action. The intensity of grazing operations on the McConnell Foundation properties may be reduced because water for pasture irrigation would no longer be supplied by the Townsend Ditch. However, supplemental water supplies are available from other sources, including annexing the ACID or developing new groundwater wells on the property. Similarly, the water ski school operation would be affected by the loss of the water from seepage from the ditch, but supplemental water supplies would be physically available.

3.8.3 Mitigation

Because no significant impacts to the community are anticipated, no mitigation is required.

3.9 AESTHETICS

3.9.1 Affected Environment

Saeltzer Dam is situated in a scenic stretch of the Clear Creek watershed. Figures 3-8A and 3-8B shows the qualities that contribute to existing visual conditions, including slow-moving water behind the dam, water rushing over the dam and through the gorge below, rock outcrops, and a forested uplands habitat. These conditions combine to form a vivid landscape in this reach of lower Clear Creek, with a high degree of visual continuity.

Townsend Ditch is generally not a visible landscape feature. Figure 3-8C presents a typical view of the ditch from Clear Creek Road.

3.9.2 Environmental Consequences

3.9.2.1 Criteria for Determining Significance

Impacts to aesthetics would be considered significant if they would result in any one of the following:

- Substantial demonstrable negative aesthetic effect
- Create new sources of light and glare
- Generate objectionable noise and/or dust levels during project construction or operation

For this project, an aesthetic impact would be an impact that causes the visual quality of the landscape to be degraded. As described above, the existing quality of the visual landscape is high at the dam site. Removing Saeltzer Dam would eliminate the upstream pool, which would reduce the extent of the open, slow-moving water impoundment area. The cascade of water over Saeltzer Dam would be eliminated.

The intent of the project is to restore access to upstream spawning habitat by removing the fish passage barrier of Saeltzer Dam. As part of this action, the sponsors of the project are proposing to restore the site to natural conditions after construction is finished. This restoration has the potential to result in natural habitat conditions with aesthetic value similar to current conditions. In general, the reach of Clear Creek currently occupied by the impoundment and dam would be replaced by a free-flowing river and a natural stream environment, resulting in no net change to aesthetic resources.

Removing Saeltzer Dam would disconnect Townsend Ditch from its water supply. At this time, there are no firm plans to irrigate the rangelands along Townsend Ditch with an alternative water supply. However, given that Townsend Ditch is generally not visible, and because it is surrounded by upland vegetation that would maintain its native character following project implementation, dewatering Townsend Ditch would not result in a significant visual resources impact.

3.9.3 Mitigation

Because no significant impacts are anticipated, no mitigation is required.

3.10 CULTURAL RESOURCES

3.10.1 Affected Environment

A records search, field survey, and literature review was conducted for the Area of Potential Effect (APE) located within the proposed construction limits and sediment spoil areas in the vicinity of Saeltzer Dam (Appendix D). The Townsend Ditch was not surveyed for cultural resources because the proposed project does not include any construction activities along the ditch. The project proposes to abandon the ditch and eliminate the water diversion. Since no construction activities would occur along the ditch, or in areas adjacent to the ditch, the project would not impact cultural resources that may be present in that area (Figure 3-9). The exact construction date for the modern Saeltzer Dam is somewhat unclear; different sources are putting the completion date as either 1902 or 1903 or about a decade later in 1912. Because of the age of the structure, greater than 50 years, an inventory of the property's historical significance and potential eligibility for the NRHP was conducted.

3.10.1.1 Ethnographic and Historic Background

The proposed project is within the ethnographic boundary of the Wintu. The traditional territory of the Wintu encompasses parts of what are now Shasta, Trinity, Tehama, and Siskiyou counties. The Wintu relied on a subsistence pattern based on hunting, gathering, and fishing, and exploited a variety of resources within their territory as they became seasonally available. Although the Wintu used nearly all the resources within their territory, there was an emphasis on deer hunting, fishing spring and fall Chinook salmon runs, and fall acorn gathering. Other important resources were elk, bear, rabbit, and other small mammals, various birds, fish, insects, buckeye, pine nut, manzanita berries, and a variety of other plants.

The expeditions of Jedediah Smith and Peter Ogden across the northern Sacramento Valley in 1826 and 1827, respectively, recount the earliest encounters between Wintu and Euro-Americans (LaPena, 1978:324). Succeeding expeditions of Euro-American explorers and fur trappers brought foreign diseases that took a huge toll on the Indians of northern California, particularly those of the Central Valley and its major river systems. In 1846, Mexico granted land, the 26,000-acre Rancho Buenaventura (Beck and Haase, 1974), to Major Pearson B. Reading; and the Wintu soon found themselves in competition with settlers who were rapidly moving into the area. Finally, with the onset of the Gold Rush in the late 1840s, the lives of the remaining Native Americans in California were changed forever.

In 1848, Major Reading discovered gold in Clear Creek about 1.5 miles upstream from the current location of Saeltzer Dam at what became known as Reading Bar (Petersen, 1965). Reading's discovery of gold caused an influx of large numbers of gold-seekers to the area, specifically the Clear Creek drainage. A community named Horsetown quickly grew up around Reading's discovery site, which was also called Reading's Bar or Clear Creek diggings. The founding of Horsetown (or One Horse Town) in 1849 was soon followed by the development of Briggsville, located about 1 mile east of Horsetown in the vicinity of the

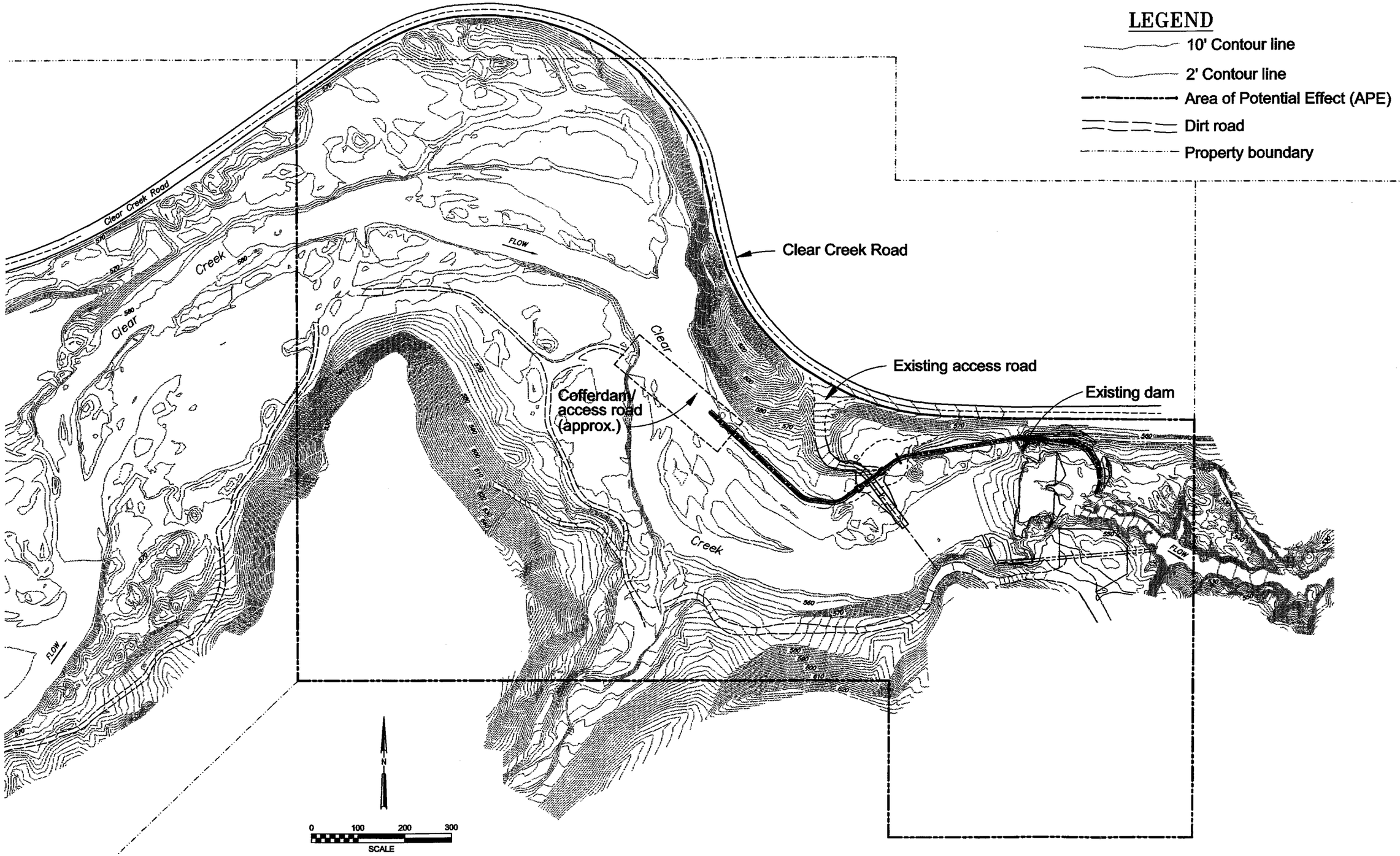

FIGURE 3-9
CULTURAL RESOURCES APE
SAELTZER DAM FISH PASSAGE
AND FLOW PROTECTION PROJECT
NORTH STATE RESOURCES, INC

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current Saeltzer Dam (California Department of Parks and Recreation, 1992). Horsetown was occupied by at least 1,000 residents, and included plank sidewalks, two hotels, several stores, blacksmith shops, football and handball alley, a Catholic church, a newspaper, and 14 saloons covering about 36 acres (Smith, 1991). In 1868, many of the building were destroyed by fire. Large-scale dredging of the area began in 1905, and by the time it ended in 1930, almost the entire town had been destroyed. No tangible remains of the town remain, with the exception of a few translocated artifacts.

Rudolph M. Saeltzer and James McCormick were two prominent Shasta County businessmen during the 1880s. The two men formed a partnership in the 1870s to run a general merchandise store, the McCormick Saeltzer Company, which grew to dominate the regional market for nearly 70 years. They also owned some of the largest tracts along Clear Creek and were responsible for constructing the current Saeltzer Dam and its water diversion system. During the 1880s, Saeltzer and McCormick diversified their business interests and registered a livestock brand in 1884 (Leighton Livestock Register, 1902). In 1887, Saeltzer, McCormick, and five other partners formed the Redding Land Ditch and Cattle Company (RLD&CC). During the 1880s and 1890s, Saeltzer and McCormick expanded their cattle business, and in 1890 organized, with seven partners, the TFWDC. The TFWCD diverted water from Clear Creek at Saeltzer Dam to supply water to the growing agricultural industry, primarily cattle ranching, in the area. The dam itself was probably constructed in 1902/1903, and completely rebuilt in 1912.

Renewed gold mining operations returned to lower Clear Creek in the early 1900s. A large gold dredging operation began in 1906 when the Shasta Dredging Company installed a remodeled double-lift dredge at Reading's Bar and dredged the old Horsetown area. Two fires destroyed the double-lift dredge in 1908, but the Shasta Dredging Company rebuilt it and continued operations through the 1910s. The company forfeited its incorporation status in 1927. William Diestelhorst, who owned land along the south bank of Clear Creek about a mile downstream from the Saeltzer Dam, also dredged for gold using a small-capacity steam scoop during the early 1900s (Bunse and Wee, 1999). Dredge works were also in operation farther downstream of Saeltzer Dam and along the north side of Clear Creek from about 1920 through the 1930s.

Following the end of World War II, gravel operators began to mine gravel and sand available in tailing piles left behind by the large gold dredges. In addition, large quantities of gravel and sand were excavated from the Clear Creek channel and floodplain. These gravel operations expanded to meet the growing demands of the public highway system and local construction projects. Even though many of the areas along lower Clear Creek have been transferred to public ownership and no longer provide a viable source for gravel extraction, the gravel industry is still prominent in the lower Clear Creek corridor today.

3.10.2 Environmental Consequences

3.10.2.1 Criteria for Determining Significance

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to evaluate the effects of their actions on historical, archaeological, and cultural resources. CEQA guidelines for determining eligibility of cultural properties for inclusion on the

California Register of Historic Places (CRHP) are separate but parallel to the criteria for determining the eligibility of a cultural property for inclusion on the NRHP.

Archaeological sites may be considered eligible for the CRHP under any of the criteria listed in the CEQA Guidelines. A resource is deemed important under CEQA if it:

- Is associated with an event or person of recognized significance in California or American history
- Is of recognized scientific importance in prehistory
- Can provide information that is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable or archaeological research questions
- Has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind
- Is at least 100 years old and possesses substantial stratigraphic integrity
- Involves important research questions that historical research has shown can be answered only with archaeological methods (CEQA: Appendix K, III)

The criteria for evaluating the eligibility of a cultural property for listing in the NRHP include the following:

- Objects having the quality of significance in American history, architecture, archaeology, engineering, and culture present in districts, sites, buildings, structures, and objects that possess integrity of location, design, materials, workmanship, feelings, and association
- Objects that are associated with events that have made a significant contribution to the broad patterns of our history
- Objects that are associated with the lives of persons significant in our past
- Objects that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinctions
- Objects that have yielded, or may be likely to yield, information important in prehistory or history

Proposed Project Alternative. An inventory and evaluation of Saeltzer Dam was conducted in 1998 (Bunse, M. and S. Wee., 1999). The evaluation concludes, based on the above criteria, that Saeltzer Dam does not appear to meet the criteria for listing in the NRHP. Given the close similarity between the criteria for listing in the CRHP and NRHP, and information provided in Form DPR 523 within the JRP evaluation, Saeltzer Dam also does not appear to qualify for listing in CRHP.

Saeltzer Dam is not associated with any important event within the broad context of California or American history. The dam was constructed by a private water company in 1912 to continue water deliveries to local ranches. The ditch only served a few hundred

acres of alfalfa and orchards. By the 1930s, most of these lands were taken by dredging companies and were no longer irrigated. In the context of local irrigation enterprises and irrigation in California, Saeltzer Dam and its associated Townsend Ditch do not rise to the level of significance necessary for eligibility in the CRHP or the NRHP because it is not associated with any important events in the broad context of local, regional, or state history.

Although the Saeltzer-McCormick partnership has a prominent place in the local history of Shasta County, their primary historical contribution is associated with their ownership and operation of the McCormick-Saeltzer Company department store, not their agricultural irrigation enterprise. Saeltzer Dam does not appear to have played a particularly crucial role for the Saeltzer-McCormick partnership, but was instead only a part of their secondary cattle and land operation. Therefore, Saeltzer Dam and its associated Townsend Ditch do not rise to the level of significance regarding its contribution to the lives of persons significant in our past.

Saeltzer Dam does not embody a distinctive type and method of construction in terms of dam engineering and design, and the historical integrity of the dam was compromised in the 1964 when the dam underwent partial rebuilding after flood damage (DWR, 1997). In addition, the CDFG constructed a substantial fish ladder along the southern abutment in 1958. These alterations further detract from the integrity of the structure. The current condition of the dam also shows extensive deterioration and cracking and evidence of many concrete repairs. The dam's subsequent loss of integrity results in the finding that Saeltzer Dam and its associated Townsend Ditch do not meet the criteria for listing in the NRHP or CRHP.

A cultural resources survey was conducted for the proposed project APE. Results of the survey found no cultural resources of significance in the APE. An examination of the Theodoratus Cultural Research Mapping Project Ethnographic Inventory completed in 1985 for the BLM revealed no sacred or sensitive Wintu locations. Based on the archaeological and earlier ethnographic inventory, no cultural resources of significance (National Register) are present within the proposed project, and cultural resource clearance for the project is recommended.

3.10.3 Mitigation

If any buried prehistoric or archeological resources were discovered during construction, the project proponents would halt all work until the resource could be evaluated by a qualified archeologist. Incorporation of this mitigation measure reduces potential impacts to cultural resources to less than significant levels.

3.11 NOISE

3.11.1 Affected Environment

Ambient noise conditions in this area are characteristic of rural Shasta County, with very quiet background noise levels of less than 30 decibels (dBA) (Shasta County, 1995). Currently, vehicles traveling along Clear Creek Road generate the only source of noise above background levels, but the road does not substantially affect ambient conditions

because of its low traffic volume[3]. The low ambient noise conditions at Saeltzer Dam are characteristic of most of the lower Clear Creek watershed, but noise levels increase with proximity to the aggregate facilities below the dam.

Noise concerns are best described in terms of sensitive receptors, or noise-sensitive land uses within hearing range of the noise-producing activity. Sensitive receptors include residences, hospitals, child-care facilities, and other similar land uses. No sensitive receptors are located near Saeltzer Dam.

3.11.2 Environmental Consequences

3.11.2.1 Criteria for Determining Significance

Standards of significance were evaluated for short-term noise levels caused by project construction.

Noise impacts would be considered significant if they would result in any one of the following:

- Expose people to or generate noise levels in excess of standards established in the general plan or noise ordinance, or applicable standards of other agencies
- Expose people to or generate excessive groundborne vibration or groundborne noise levels
- Result in a substantial permanent increase or substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project

The proposed project's primary noise-producing activities would occur at Saeltzer Dam, with additional noise being generated by project-related construction traffic on Clear Creek Road. Proposed construction activities at Saeltzer Dam include placing the rock buttress on the downstream face of the dam, installing the cofferdam and bypass facilities, and removing the dam. Construction equipment required for these activities would include large excavators, dump trucks, and front-end loaders. Noise produced by the operation of this equipment is expected to substantially exceed ambient noise conditions (Table 3-8).

Although noise levels would substantially exceed ambient conditions, this would be a less than significant impact, primarily because no sensitive receptors are located near the project area. In addition, the proposed construction activities would be temporary, and no aspect of the project would change long-term noise conditions in the project area. Temporary construction activities are exempt from the noise requirements of Shasta County (Walker, pers. comm.).

3.11.3 Mitigation

Because no significant impacts are anticipated, no mitigation is required.

[3] Traffic volume in the vicinity of Saeltzer Dam is estimated to be about 1,700 vehicles per day, according to a one-day study performed in 1999 (Caffee, pers. comm.).

Table 3-8. Noise Generated by Typical Construction Equipment	
Equipment	**Sound Level (dBA) at 50 feet**
Earthmoving	
Front-end loader	75
Excavator/Backhoe	75
Dozer	75
Tractor	75
Scraper	80
Grader	75
Truck	75
Impact	
Pile driver	95
Jack hammer	75
Rock drill	80
Pneumatic drill	80
Stationary	
Pump	75
Generator	75
Compressor	75
Other	
Vibrator/Compactor	75
Source: Environmental Protection Agency, 1971.	

3.12 RECREATION

3.12.1 Affected Environment

The entire Clear Creek watershed offers a broad spectrum of recreational opportunities to Shasta County residents and area visitors. Upper Clear Creek watershed, situated above Whiskeytown Dam, currently has a more highly developed recreation infrastructure than lower Clear Creek watershed. Whiskeytown National Recreation Area forms the backbone of this infrastructure and offers abundant swimming and boating opportunities at several public beaches and marinas, as well as 45 miles of horseback riding, hiking, and mountain biking trails. Lower Clear Creek watershed is transforming into a more cohesive recreation area as a corridor of private lands along the creek are gradually transferred to public ownership and long-term management and recreation objectives are established. For example, the Clear Creek CRMP recently developed several recreation objectives for the lower watershed, including the development of a guidance document for recreation use on public lands within the watershed, and the conceptual design of a regional trails system connecting the Sacramento River with Whiskeytown National Recreation Area along Clear Creek (Figure 3-10).

3.12.1.1 Saeltzer Dam and Townsend Ditch

CDFG currently owns the 35-acre parcel of land surrounding Saeltzer Dam, and is in the process of transferring ownership to BLM. The public can access the dam, the pool behind

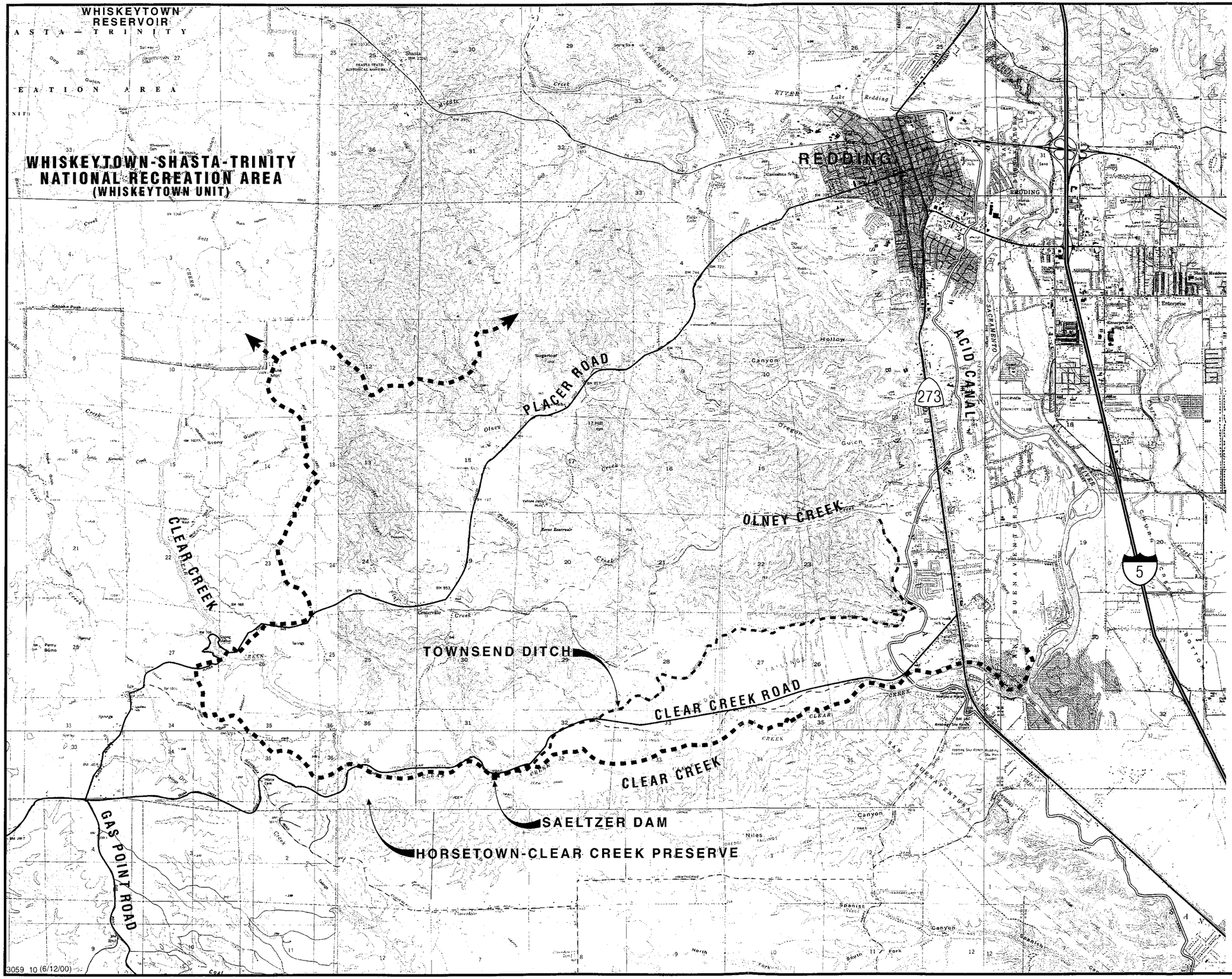

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FIGURE 3-10
RECREATION OPPORTUNITIES
SAELTZER DAM FISH PASSAGE
AND FLOW PROTECTION PROJECT
NORTH STATE RESOURCES, INC.

the dam, and the gorge downstream of the dam from this location. A 1980 DWR recreation survey found this area to be the most heavily used recreation area on lower Clear Creek (WSCRD, 1998). However, there is currently no formal recreation infrastructure in the vicinity of the dam, such as a formal parking lot, signage, or public restrooms. Therefore, recreation use is generally informal and peaks during the summer months when this area becomes a popular swimming and fishing destination for local residents.

Saeltzer Dam is considered a dangerous attractive nuisance where fatalities have occurred in recent years; several people have fallen off the dam and have been seriously injured or killed. In addition, due to the isolated and undeveloped nature of this portion of the watershed, the area around Saeltzer Dam is known for unauthorized and illegal activities such as vandalism, trash dumping, unauthorized target shooting, squatting, drug dealing, and under-aged drinking. Law enforcement and resource management agencies are currently working on long-term solutions to these problems.

There are no formal recreation opportunities along Townsend Ditch. However, a water ski school is operated on a large pond near the gravel mining operations on Clear Creek Road. Water ski lessons are typically taught and water ski competitions held during the summer months.

3.12.1.2 Other Recreation Opportunities in Lower Clear Creek

Other recreation opportunities available in the lower Clear Creek watershed include fishing, inner tubing, limited gold panning, and kayaking. The 1980 DWR recreation survey concluded that there were approximately 15,000 recreation user days[4] along lower Clear Creek during the summer months (WSRCD, 1996). However, it is important to note that these survey results are more than 20 years old; in 1980, most of the land bordering lower Clear Creek was privately owned, and access to the creek was limited. Since that date, public land management agencies have acquired substantial amounts of land along the creek. In turn, this land acquisition process has increased public access to the creek, and recreation visitor days have most likely increased in recent years.

Kayaking. Lower Clear Creek offers kayaking opportunities from the base of Whiskeytown Dam to the Clear Creek Road bridge. Shasta Paddlers, a local whitewater kayaking organization, recommends running lower Clear Creek at a base flow[5] of 300 cfs. However, some kayakers report the creek running at flows of 2,000 cfs or more (http://snowcrest.net/klewis/). The lower Clear Creek run contains multiple Class II and Class III rapids, and at higher flows may contain as many as four Class IV rapids, and one Class V rapid[6].

Horsetown-Clear Creek Preserve. The HCCP anchors the public land holdings along lower Clear Creek. The preserve was formed in 1989 by local residents, and is a non-profit environmental education organization. The group's mission statement is to "save, rehabilitate and restore approximately 1,000 acres of public land in the vicinity of Saeltzer Dam and to create, organize and operate it as a preserve with many broad and overlapping benefits for residents of, and visitors to, the community." The preserve plays an active role in attempting to improve the type of recreational use available in the vicinity of Saeltzer Dam.

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[4] A Recreation User Day is the measure of actual user days for a particular recreational activity.

[5] Base flow is considered a measurement of the release from Whiskeytown Dam as measured at the Igo gage.

[6] Class I—beginner run, Class II—novice run, Class III—intermediate run, Class IV—advanced run, Class V—expert run.

The group promotes transforming recreation opportunities from illegal and unauthorized activities, such as target shooting and trash dumping, to uses that enhance the local fishery and expand environmental education and other low-impact recreation activities, such as hiking, fishing, and kayaking (WSRCD, 1996).

3.12.2 Environmental Consequences

3.12.2.1 Criteria for Determining Significance

Impacts to recreation opportunities and use within the lower Clear Creek watershed would be considered significant if they would result in any one of the following:

- Conflict with an established recreational use of the area
- An increase in the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated
- Require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment

Recreation access to the area around Saeltzer Dam would be curtailed while demolishing and removing the dam. However, this is considered a temporary, short-term impact to recreation use in the vicinity of Saeltzer Dam, and is therefore considered less than significant.

Removing Saeltzer Dam and decommissioning Townsend Ditch would not conflict with the established recreational use of the area. In addition, removing the dam would not require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment. In addition, removing the dam would be consistent with multiple resource and land management plans to improve public access and recreation opportunities in the lower Clear Creek watershed.

In fact, removing the dam would beneficially impact recreation in the lower Clear Creek watershed, as it would remove a public safety hazard for swimmers and would improve fishing and whitewater kayaking throughout the entire lower Clear Creek watershed. Further, existing swimming and sunbathing opportunities in the gorge downstream of the dam would remain following implementation of the project.

3.12.3 Mitigation

Because no significant impacts are anticipated, no mitigation is required.

SECTION 4.0 OTHER IMPACTS AND COMMITMENTS

4.1 CUMULATIVE IMPACTS

A cumulative impact is defined as an impact to the environment that results from the incremental impact of the proposed action when added to other past, present, or reasonably foreseeable future actions. Such impacts must be evaluated with regard to their significance and potential to be "cumulatively considerable" pursuant to NEPA and CEQA. The scope of this cumulative impacts analysis is focused within the lower Clear Creek watershed, and the whole of Shasta County. This analysis addresses cumulative impacts for the physical removal of Saeltzer Dam and exchange of 6,000 acre-feet of water within the CVP service area.

No major future proposed or ongoing projects within the watershed, or Shasta County in general, were identified that would result in potentially cumulatively considerable impacts in relation to the proposed action (Marci Gonzalez, pers. comm.). The proposed project would result in long-term fishery habitat improvements both in terms of improved fish passage related to the removal of a barrier (Saeltzer Dam) and increased stream flows (caused by elimination of the diversion). Lands that are currently irrigated within the Gore Ranch would still be available as range/pasture lands, but would likely be less productive given they would no longer be irrigated, although irrigation would be possible via annexation to ACID or development of groundwater wells. In the short term, construction of the proposed project has the potential to impact water quality, soils, and endangered species. As described in Section 3.0 Affected Environment and Environmental Consequences, each of these impacts can be mitigated to less than significant levels through incorporation of appropriate mitigation measures. These impacts are limited to the construction phase of the project and would not cause significant cumulative impacts.

4.1.1 CVPIA- and CALFED-related Programs

After Clear Creek has been restored and fish passage has been improved at Saeltzer Dam, section 3406 (b)(12) of the CVPIA requires that the Secretary of the Interior develop and implement a comprehensive program to provide flows for salmon and steelhead from Whiskeytown Dam as determined by instream flow studies conducted by CDFG. These actions are not currently underway, but are expected to commence sometime after dam removal. Any actions taken as a result of the flow studies or implementation of the flow program would be subject to separate environmental documentation.

Both the CVPIA AFRP and the CALFED Bay-Delta Program have identified several potential beneficial restoration actions for lower Clear Creek. The AFRP has identified six high priority restoration actions for lower Clear Creek, the majority of which are currently underway. The following lists each action, followed by the status of ongoing implementation efforts:

1. Release 200 cfs October 1 to June 1 from Whiskeytown Dam for spring-, fall-, and late fall-run chinook salmon spawning, egg incubation, emigration, gravel restoration, spring flushing, and channel maintenance; release 150 cfs, or less, from July through September to maintain temperatures less than or equal to 60°F in stream areas used by

spring-run chinook salmon. Both releases should be within the average total annual unimpaired flows to the Clear Creek watershed. *The CDFG, USFWS, and Reclamation are currently formalizing the Instream Flow Preservation Agreement. The purpose of the agreement is to ensure that Reclamation's future releases are equivalent to the bypasses and releases made pursuant to the existing informal agreement among Reclamation, USFWS, and NPS. A second agreement is being developed between USFWS and Reclamation to designate water identified for fish and wildlife habitat improvement purposes related to section 3406 (b)(2) of the CVPIA. Reclamation increased flows into Clear Creek in 1999 to maintain cool water for spring-run chinook that entered the stream.*

2. Halt further habitat degradation and restore channel conditions from the effects of past gravel mining. *Reclamation, the WSRCD, and other resource agencies are addressing this issue through channel restoration projects included as part of the ongoing Lower Clear Creek Floodway Rehabilitation Project.*

3. Remove sediment from behind McCormick-Saeltzer Dam and provide fish passage, either by removing the dam or improving fish passage facilities. *This action is being addressed through the implementation of the proposed action discussed in this environmental document.*

4. Develop an erosion control and stream corridor protection program to prevent habitat degradation due to sedimentation and urbanization. *The CRMP for the watershed includes a watershed management plan that describes erosion control plan objectives. Ongoing BLM land exchanges with willing participants are being formalized and pursued to protect the stream corridor from future urbanization and gravel extraction activities along the creek.*

5. Replenish gravel and restore gravel recruitment blocked by Whiskeytown Dam. *The WSRCD's ongoing gravel restoration programs are continuing.*

6. Preserve the productivity of habitat in the Clear Creek watershed through cooperative watershed management and development of a watershed management analysis and plan. *The Lower and Upper (upstream of Whiskeytown Reservoir) Clear Creek Watershed Management Plan has been developed by WSRCD and participating resource agencies.*

In addition to the actions described above related to the AFRP specified in the CVPIA, the ERPP of the CALFED Bay-Delta Program has also identified similar restoration-type actions for Clear Creek (CALFED, 1999b). In general, these actions are very similar to the AFRP, other than the ERPP includes objectives related to overall ecosystem health and water quality, in addition to salmonid-related objectives. The ERPP specifically identifies actions related to minimizing impacts related to ongoing gravel mining operations in Clear Creek. As described above, the BLM is continuing to work with mining operators to acquire and/or exchange lands.

4.1.2 Potential Water Transfers

Removing the dam would result in TFWDC no longer being able to divert its pre-1914 water right of up to 55 cfs of the natural flow of Clear Creek. The shareholders of the TFWDC are comprised of the McConnell Foundation, which owns 85 percent of the TFWDC, and the CCSD, which owns the remaining 15 percent share. As part of the agreement between Reclamation and the TFWDC, the TFWDC would no longer divert from Clear Creek, and the existing water right would be modified in exchange for 6,000 acre-feet of substitute CVP

water for use within Shasta County. The agreement is structured to provide for 5,100 acre-feet of water to the McConnell Foundation and 900 acre-feet to the CCSD for use within that portion of Shasta County that is within the permitted place of use for CVP water. Should either the McConnell Foundation or the CCSD desire to use substitute water outside of Shasta County (and this use is agreed to by Reclamation), then the maximum quantity of water available to the McConnell Foundation or the CCSD within Shasta County would be reduced by 1.786 acre-feet for each acre-foot of water transferred outside of Shasta County.

The CCSD has had the right to divert a greater quantity of water (from Clear Creek) than is specified in the agreement with Reclamation for CVP water, but historically lacked the facilities to divert the water. The 900 acre-feet that would be made available annually to CCSD (from Whiskeytown Reservoir via the Muletown Tunnel) would serve to bolster CCSD's drought and normal-year supplies, and thereby improve the reliability of their supplies. The transfer of this quantity of water from the original place of use at the Saeltzer Dam site to Whiskeytown Reservoir would result in improved fishery habitat conditions in Clear Creek, and would not impact Whiskeytown Reservoir operations, because 900 acre-feet represents less than one third of one percent of the end-of-water-year storage of the reservoir. The remaining 5,100 acre-feet is proposed to be made available for environmental purposes either through releases into the Sacramento River at Keswick Dam or Clear Creek. Any transfer of this water beyond that portion of Shasta County that is within permitted places of use for CVP water is subject to full compliance with NEPA, CESA, CEQA, and the ESA, as relevant. Accordingly, any such transfer would be subject to public disclosure and input as required by these laws. Transfers out of Shasta County would be subject to the same processes.

4.2 GROWTH-INDUCING IMPACTS

As described above, the project includes removal of Saeltzer Dam in addition to a change in the diversion location for the Company. The CCSD, which owns a 15 percent share in the company historically had the right to divert up to 15 percent of the 55-cfs right to Clear Creek flows. As such, CCSD had the right to divert approximately 6,000 acre-feet/year, but lacked the facilities to do so. CCSD has a contract with the Shasta County Water Agency (SCWA) for 2,900 acre-feet/year; current water use by CCSD is approximately 1,500 acre-feet/year (Phil Browning, pers. comm.). Use by year 2030 is projected to be approximately 3,800 acre-feet/year; maximum water use at full district build-out is estimated to be 5,700 acre-feet/year. The 900 acre-feet that would be made available annually to CCSD from Whiskeytown Reservoir and the Muletown Tunnel would be used primarily to augment potential drought year reductions associated with the existing contract with the SCWA. This water would be used to accommodate existing demands, and would potentially be used to accommodate planned growth within the CCSD rather than induce growth.

As also described above, the remaining 5,100 acre-feet/year available to the TFWDC is proposed to be used for environmental purposes, either through releases to the Sacramento River at Keswick Dam or Clear Creek. Such releases would improve habitat conditions for aquatic and/or wildlife species and therefore would not influence potential growth. Transfer of this quantity of water within Shasta County, but outside the permitted place of use for CVP water, would need to comply with NEPA, ESA, CEQA, and CESA, and as such would be subject to public input as appropriate. This water would likely be used in a similar

manner to supplement drought year supplies and improve overall water reliability as is anticipated for CCSD. Such use would be expected to accommodate current and planned demand and therefore would not be growth inducing.

4.3 ENVIRONMENTAL JUSTICE

Environmental justice analyses are required to identify potential disproportionately high and adverse impacts to minority and low-income populations that may result from federally proposed projects. The purpose of the project is to remove the primary barrier to salmon habitat in the middle reach of Clear Creek, while maintaining water supply to the shareholders of the Company. Saeltzer Dam is located on lands owned and managed by CDFG. These lands would be transferred to the BLM following the anticipated removal of Saeltzer Dam and would not change existing land uses. The Townsend Ditch traverses multiple land use designations including RA, SR, and MR operations. Abandonment of the Townsend Ditch would not affect current land uses or existing management plans within the project vicinity. Therefore, no minority or low-income populations and communities would be disproportionately affected by the proposed project.

SECTION 5.0 REFERENCES

Aceituno, Michael. 1985. Central Valley Fish and Wildlife Management Study; Problem C-9: Restoration of Salmon and Steelhead in Clear Creek (Projected Improvement). U.S. Fish and Wildlife Service, Division of Ecological Services, Sacramento, CA. 19 pp.

Azevedo, R.L., and Z.E. Parkhurst. 1958. The Upper Sacramento River Salmon and Steelhead Maintenance Program, 1949-1956. U.S. Fish. Wildl. Serv., Office Report. 96 pp.

Beck, W., and Y. D. Haase. 1974. *Historical Atlas of California.* University of Oklahoma Press, Norman, Oklahoma.

Bell, M. 1986. Fisheries Handbook of Engineering Requirements and Biological Criteria. U.S. Army Corps of Engineers, Fish Passage Development and Evaluation Program, 290 pp.

Brown, M. R. 1996. Benefits of Increased Minimum Instream Flows on Chinook Salmon and Steelhead in Clear Creek, Shasta County, California 1995-6. U.S. Fish & Wildlife Service, North Central Valley Fishery Resource Office, 10950 Tyler Road, Red Bluff, CA. 17 pp.

Bunse, Meta and Stephen Wee. 1999. Inventory and Evaluation of Saeltzer Dam, Clear Creek, Shasta County, California. Prepared for: Pacific Legacy, Inc. 3081 Alhambra Drive, Suite 280, Cameron Park, CA. Prepared by JRP Historical Consulting Services, 1490 Drew Avenue, Suite 110, Davis CA 15 pp.

CALFED Bay Delta Program. 1999a. Programmatic Environmental Impact Statement/ Environmental Impact Report, Draft June 1999. CALFED Bay Delta Program, 1416 Ninth Street, Sacramento, California.

CALFED Bay Delta Program. 1999b. Strategic Plan for Ecosystem Restoration, Revised Draft February 1999. CALFED Bay Delta Program, 1416 Ninth Street, Sacramento, California.

California Creekin' Website: http://www.creekin.net/clear-wh.htm

California Department of Parks and Recreation, Office of Historic Preservation. 1992. *California Points of Historical Interest.* Sacramento: DPR, 1992.

California Department of Fish and Game (CDFG). 2000a. State and Federally Listed Endangered, Threatened, and Rare Plants of California. State of California. The Resources Agency. Department of Fish and Game, Habitat Conservation Division. January. 16 pp.

California Department of Fish and Game (CDFG). 2000b. Special Plants List. The Resources Agency. Department of Fish and Game, Natural Heritage Division, Natural Diversity Database. January. 119 pp.

California Department of Fish and Game (CDFG). 2000c. State and Federally Listed Endangered, Threatened Animals of California. State of California. The Resources Agency. Department of Fish and Game, Natural Heritage Division, Natural Diversity Database. January. 12 pp.

California Department of Fish and Game (CDFG). 2000d. Special Animals. State of California. The Resources Agency. Department of Fish and Game, Natural Heritage Division, Natural Diversity Database. January. 42 pp., plus appendices.

California Department of Water Resources (DWR). 1986. Clear Creek Fishery Study. Department of Water Resources, Northern District, Red Bluff, CA. 70 pp.

California Department of Water Resources (DWR). 1997. Saeltzer Dam Fish Passage Project on Clear Creek. Department of Water Resources, Division of Planning of Local Assistance, Red Bluff, CA. 54 pp.

California Water Resources Control Board. 1973. Water Quality Criteria. Second Edition, publication No. 3A. pp. 218-219.

City of Redding Planning Commission and Development Services Department Planning Division. 2000. City of Redding Public Hearing Draft General Plan. March 27.

Environmental Laboratory. 1987. "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss. 100+ pp.

Environmental Protection Agency (EPA). 1971. Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances. NTID300.1

Kondolf, G. Mathias, Ph.D., and J.G. Williams, Ph.D. 1998. Draft – Flushing Flows: A Review of Concepts Relevant to Clear Creek, California. December 27.

La Pena, F. 1978. Wintu. In *California*, edited by R.F. Heizer, pp. 485-495. Handbook of North American Indians Vol. 8, W.C. Strurtevant, general editor. Smithsonian Institute, Washington, D.C.

Lawrence and Associates (L&A). 2000. Water Budget Analysis: Townsend Flat Water Ditch, Clear Creek, Redding, CA. January.

Leighton's Livestock Register. 1902. Shasta Historical Society.

Mayer K. E., William F. Laudenslayer Jr., Editors. 1988. A Guide to Wildlife Habitats of California. California Department of Forestry and Fire Protection. 166 pp.

McBain and Trush. 1998. Draft Technical Memorandum, Lower Clear Creek Hydrologic Evaluation, Redding, CA. 4 pp.

McBain and Trush and Graham Matthews. 1999. Lower Clear Creek Bedload Transport Measurements-Technical Memorandum for WY 1998. November 30.

McBain and Trush. 1998. Draft – Lower Clear Creek Hydrologic Evaluation Technical Memorandum. April 1.

North State Resources. 1999. Public Review Draft – Proposed Mitigated Negative Declaration/Finding of No Significant Impact Joint CEQA Initial Study/NEPA Environmental Assessment – Lower Clear Creek Floodway Rehabilitation Project, Shasta County, California. September.

North State Resources. 1999. Final Draft – Mitigated Negative Declaration/Finding of No Significant Impact Joint CEQA Initial Study/NEPA Environmental Assessment – Lower Clear Creek Floodway Rehabilitation Project, Shasta County, California. November.

Petersen, E. 1965. *In the Shadow of the Mountain.* S.1.:Petersen.

Shasta County. 1990. Communication Development. Staff Report to Planning Commissions. January 11.

Shasta County. 1984. Shasta County General Plan. January 10.

Shasta County, California. 2000. Shasta County General Plan Designation Maps.

Shasta County Department of Resource Management. 1995. Shasta County General Plan. Adopted by the Shasta County Board of Supervisors January 10, 1984. As amended through October 1995.

Shasta Paddlers Website: http://www.snowcrest.net/klewis/

Skinner, M. W., & Pavlik, B. M. (Ed.). 1994. Inventory of Rare and Endangered Vascular Plants of California (5 ed.). Sacramento: Griffin Printing Company.

Smith, D. 1991. The Dictionary of Early Shasta County History. Published privately.

USDA Natural Resources Conservation Service, California State Office. 1999. Draft Lower Clear Creek Sediment Budget Report. January 6.

USDA Natural Resources Conservation Service. 1998. Lower Clear Creek Monitoring Project Summary Report 1997, Shasta County, California.

USDA Natural Resources Conservation Service. 1997. McCormick/Saeltzer Dam Sediment Transport. March.

USDA Natural Resources Conservation Service. 1997. Procedure for Determining Flows to Maintain Chinook Redds, Lower Clear Creek, Shasta County California. January.

U.S. Bureau of Reclamation, BLM, and WSRCD. 2000. Water Budget Analysis Townsend Flat Water Ditch Clear Creek, Redding, California. January 4.

U.S. Bureau of Land Management (BLM). 1992. Proposed Redding Resource Management Plan and Final Environmental Impact Statement. Redding Resource Area, Redding, CA.

U.S. Bureau of Reclamation (Reclamation), Technical Service Center, Denver, Colorado. 1999. Value Planning Presentation Report – Lower Clear Creek Hydraulic Analysis at Whiskeytown Dam. May 7.

U.S. Bureau of Reclamation (Reclamation). 1999. Conceptual Plan for Restoration of the Lower Clear Creek Floodway. November.

U.S. Bureau of Reclamation (Reclamation). 1986. Central Valley Fish and Wildlife Management Study, Evaluation of the Benefits and Costs of Improving the Anadromous Fishery of Clear Creek, California. USDI, U.S. Bureau of Reclamation. 93 pp.

U.S. Fish & Wildlife Service, California Department of Fish and Game (USFWS/CDFG). 1956. A Plan for the Protection and Maintenance of Fish and Wildlife Resources Affected by the Trinity River Division, Central Valley Project. 76 pp.

Villa, N. A. 1984. The Potential for Rehabilitating Salmon Habitat in Clear Creek, Shasta County. California Department of Fish and Game.

Western Shasta Resource Conservation District (WSRCD). 1998. Lower Clear Creek Watershed Management Plan. September.

Western Shasta Resource Conservation District (WSRCD). 1997. Final Report – Lower Clear Creek Spawning Gravel Restoration Pilot Project, 1996-1997. June.

Western Shasta Resource Conservation District. (WSRCD). 1996. Lower Clear Creek Watershed Analysis – Bureau of Land Management, Redding Resource Area. January.

Whiskeytown-Shasta National Recreation Area Website: http://www.nps.gov/whis/gmp/summary.htm May 2000.

Personal Communications

Brown, Matt. 2000. E-mail communication between Matt Brown, Fisheries Biologist, USFWS, and Mark Hampton, North State Resources, Inc., May 12 and 19.

Browning, Phil. 2000. Phone conversation between Phil Browning, CCSD, and Mark Oliver, CH2M HILL, May 18.

Caffee, Val. 2000. Phone conversation between Val Caffee, Shasta County Department of Public Works, and Matt Franck, CH2M HILL, May 12.

Carr, Phil. 2000. Phone conversation between Phil Carr, City of Redding Development Services Department Planning Division, and Beth Doolittle, CH2M HILL, May 11.

Free, Dan. 2000. Phone conversation between Dan Free, NMFS, and Buford Holt, Reclamation, June 5.

Jonio, Donald. 2000. Phone conversation between Donald Jonio, Shasta County Air Quality Management District, and Matt Franck, CH2M HILL, May 12.

Shasta County Planning Department. 2000. Personal communication. May 18.

Walker, Bill. 2000. Phone conversation between Bill Walker, Shasta County Department of Resource Management, and Matt Franck, CH2M HILL, May 12.

Walker, Bill. 2000. Phone conversation between Bill Walker, Shasta County Department of Natural Resources, and Beth Doolittle, CH2M HILL, May 11.

Warner, Phil. 2000. Personal communication with Phil Warner, CDFG, and Mark Hampton, North State Resources, Inc., May 12.

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Environmental Factors Potentially Affected:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology/Soils
☐ Hazards & Hazardous Materials	☐ Hydrology/Water Quality	☐ Land Use/Planning
☐ Mineral Resources	☐ Noise	☐ Population/Housing
☐ Public Services	☐ Recreation	☐ Transportation/Traffic
☐ Utilities/Service Systems	☐ Mandatory Findings of Significance	

Determination:

(To be completed by the Lead Agency)

On the basis of this initial evaluation:

☒ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Signature Date

_____ _____

Printed Name For

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
I. AESTHETICS—Would the project:				
a) Have a substantial adverse effect on a scenic vista? *The proposed project would not have an adverse effect on a scenic vista.*	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? *The proposed project is not located within a state scenic highway corridor; and therefore would not have an impact on a scenic resource.*	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings? *Saeltzer Dam is situated in a scenic stretch of the lower Clear Creek watershed. In general, the reach of Clear Creek currently occupied by the impoundment and dam would be replaced by a free-flowing river and natural stream environment; resulting in no net change to aesthetic resources. In addition, dewatering Townsend Ditch would not result in a visual resources impact.*	☐	☐	☐	☒
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area? *The proposed project would not generate any new sources of light or glare.*	☐	☐	☐	☒
II. AGRICULTURE RESOURCES—Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? *The proposed project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.*	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract? *The proposed project would not conflict with existing zoning for agricultural use within Shasta County or a Williamson Act contract because none of the property within the project area is zoned for agricultural use nor falls under a Williamson Act contract.*	☐	☐	☐	☒
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use? *The proposed project would not convert prime Farmland to non-agricultural use in the proposed project area. The existing agricultural land uses within the proposed project area, specifically the grazing lands on the McConnell Foundation properties, would not be precluded by the proposed action or under the No Action Alternative See Section 3.8 Land Use and Policies.*	☐	☐	☐	☒

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
III. AIR QUALITY—Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
The proposed project would not conflict with or obstruct implementation of Shasta County's Air Quality Attainment Plan. See Section 3.7 Air Quality.				
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
Preventative measures incorporated into project construction would ensure that air quality impacts are less than significant; see Section 1.5 Measures to Avoid Environmental Effects.				
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).	☐	☐	☒	☐
Preventative measures incorporated into project construction would ensure that air quality impacts are less than significant; see Section 1.5 Measures to Avoid Environmental Effects.				
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
No sensitive receptors (e.g., residences, schools, etc.) are located in the proposed project area.				
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒
The proposed project would not create any objectionable odors; in addition, there are no sensitive receptors (e.g., residences, schools, etc.) located in the proposed project area.				
IV. BIOLOGICAL RESOURCES—Would the project::				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
See Section 3.1 Biological Resources.				
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☐	☒
See Section 3.1.2 Vegetation.				

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act, (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
See Section 3.1.3 Jurisdictional Waters of the U.S.				
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or, impede the use of native wildlife nursery sites?	☐	☐	☐	☒
The proposed project includes construction of a temporary fish passage channel to provide anadromous salmonids access through the site during construction. See Section 3.1.1 Fisheries and Section 1.5 Measures to Avoid Environmental Effects.				
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
The proposed project would accomplish one of the priority action items identified by CALFED, CVPIA, and the Lower Clear Creek Watershed Management Plan. The proposed project is not in conflict with existing policies or ordinances; see Section 1.2 Purpose and Need and Section 3.8 Land Use and Policies.				
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒
See Response to IV (e) above.				
V. CULTURAL RESOURCES—Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☒	☐
Based on cultural resources surveys, no cultural resources of significance are present within the proposed project area. In the event that any buried or archaeological resources were discovered during construction, the project proponents would halt all work until the resource could be evaluated by a qualified archaeologist.				
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☒
See response to V (a) above.				
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
See response to V (a) above.				
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒
See response to V (a) above.				
VI. GEOLOGY AND SOILS—Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. *The proposed project is not anticipated to rupture a known earthquake fault as the proposed project involves limited dam demolition and removal; and no permanent structures would be constructed on site.*	☐	☐	☐	☒
ii) Strong seismic ground shaking? *No impacts related to strong seismic ground shaking are anticipated to occur because the proposed project involves limited demolition and removal.*	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction? *Earthquake faults are not known to occur in the project area, but ground shaking could be produced by earthquakes along various Northern California faults. However, permanent structural features are not a component of the proposed project, and therefore, no impacts of this nature would be likely to occur.*	☐	☐	☐	☒
iv) Landslides? *The proposed project area is relatively flat, and therefore no impacts associated with landslides would occur.*	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil? *Preventative measures have been incorporated into project construction to prevent uncontrolled discharges of suspended solids, sediments, and other native and non-native materials into Clear Creek; see Section 1.5 Measures to Avoid Environmental Effects.*	☐	☐	☐	☒
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse? *The proposed project area is relatively flat, and therefore no impacts associated with landslides, lateral spreading, subsidence, liquefaction, or collapse would occur. In addition, permanent structural features are not a component of the proposed project.*	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property? *Permanent structural features are not a major component of the proposed project, and therefore, no impact of this type would occur.*	☐	☐	☐	☒

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
The proposed project does not require the use of any septic tanks or alternative wastewater disposal systems; therefore, no impact of this type would occur.				
VII. HAZARDS AND HAZARDOUS MATERIALS—Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
Current analysis of mercury levels behind Saeltzer Dam indicate that levels of mercury in the sediments are well within the EPA and California standards. Based on these findings, sediments excavated from behind Saeltzer Dam are not classified as a hazardous waste; therefore, no mitigation is required. If additional sampling results indicate that mercury concentrations in Saeltzer sediments exceed the maximum values provided under California and federal regulations, the sediments would be excavated and disposed of in accordance with applicable state and federal rules for the treatment, storage, and disposal (TSD) of hazardous waste.				
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
Demolition activities would include best management practices (BMPs) that would mitigate potential releases of hazardous materials to levels considered less than significant; see Section 1.5 Measures to Avoid Environmental Effects				
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
There are no existing or proposed schools located within one-quarter mile of the proposed project area; therefore, no impact of this type would occur.				
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
The proposed project is not located on a hazardous waste site; therefore, no impact of this type would occur.				
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
The proposed project is not located within an airport land use plan or within two miles of a public airport or public use airport; therefore, no impacts of this type would occur.				

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
The proposed project is not located in the vicinity of a private airstrip; therefore, no impacts of this type would occur.				
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	☐	☐	☐	☒
The proposed project would be located away from public roads and thoroughfares; therefore, no impact of this type would occur.				
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒
The proposed project is located away from residences and urbanized areas, and does not entail the construction of permanent structures; therefore, no impact of this type would occur.				
VIII. HYDROLOGY AND WATER QUALITY— Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☒
The project would comply with Basin Plan objectives, and incorporation of BMPs outlined in the project description would reduce potential impacts to less than significant levels; see Section 1.5 Measures to Avoid Environmental Effects and Section 3.2 Hydrology and Water Quality.				
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).	☐	☐	☐	☒
See Section 3.2.2.3 Groundwater				
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
The proposed project would construct temporary diversion channels around the project area to reduce potential for violation of water quality standards and provide fish passage during construction. Temporary channels would be constructed of native materials and cleaned gravels. All work would be completed during low-flow periods, and the site would be returned to natural conditions following completion of construction. Implementation of BMPs during construction and revegetation activities following construction would reduce potential for erosion or siltation; see Section 1.5 Measures to Avoid Environmental Effects.				

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site? *The proposed project would eliminate a potential flood hazard (Saeltzer Dam) and would return the channel to a natural configuration. The proposed project would not increase the rate or the amount of surface runoff, which would increase the likelihood of flooding.*	☐	☐	☐	☒
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? *The proposed project is limited to the lower Clear Creek corridor and is not associated with existing or planned storm water drainage systems. Elimination of diversion flows through the Townsend Ditch would reduce runoff volumes in lower Clear Creek.*	☐	☐	☐	☒
f) Otherwise substantially degrade water quality? *See response to VIII (a) above.*	☐	☐	☐	☒
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? *The proposed project does not involve the construction of any housing; therefore, no impacts of this type would occur.*	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows? *The proposed project would remove Saeltzer Dam and water diversions through the Townsend Ditch. Removal of Saeltzer Dam would improve flow conditions through lower Clear Creek. Removal of Saeltzer Dam would eliminate a current flood hazard should dam failure ever occur in the future. Construction of temporary diversion channels during construction would be limited to low-flow conditions, and the site would be returned to natural conditions prior to the onset of the potential flood period. Therefore, there would be no impact on flood flows.*	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam? *See response to VIII (h) above.*	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow? *The proposed project is not anticipated to cause inundation by seiche, tsunami, or mudflow.*	☐	☐	☐	☒
IX. LAND USE AND PLANNING—Would the project:				
a) Physically divide an established community? *The proposed project would not physically divide Redding, the closest established community; therefore, no impact of this type would occur.*	☐	☐	☐	☒

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
The proposed project is consistent with multiple land use policies applicable to the Lower Clear Creek watershed, including BLM's Redding Resource Management Plan (BLM, 1993), the Shasta County General Plan, the City of Redding General Plan, the Lower Clear Creek Watershed Analysis (CRMP, 1996), and the Lower Clear Creek Watershed Management Plan (1998); therefore, no impact of this type would occur.				
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒
There are no Habitat Conservation Plans, Natural Community Conservation Plans, or other similar plans applicable to the proposed project area; accordingly, no impact would occur.				
X. MINERAL RESOURCES—Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
The proposed project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; accordingly, no impact of this type would occur. See Section 3.6 Mineral Resources.				
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒
The proposed project would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. In addition, the proposed project would not affect the gravel mining operations in the lower Clear Creek watershed, nor would it affect the implementation of reclamation plans for these sites.				
XI. NOISE—Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	☐	☐	☒	☐
Although noise levels would substantially exceed ambient conditions (see Section 3.11 Noise), this would be a less than significant impact, primarily because no sensitive receptors are located near the project area. In addition, the proposed construction activities would be temporary, and no aspect of the project would change long-term noise conditions in the project area. Noise generated by construction activities are not regulated by the Shasta County Noise Ordinance, and are not addressed in the Shasta County General Plan.				

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.	☐	☐	☐	☒
No groundborne vibration or noise would be generated by the proposed project, except potentially during removal of Saeltzer Dam. However, no sensitive receptors are located within the project area that would be affected by this activity; accordingly, no impact of this type would occur.				
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
No permanent changes in ambient noise conditions would occur; all noise impacts would be temporary.				
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	☐	☐	☒	☐
See Response to XI (a) above.				
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
The proposed project is not located within an airport land use plan, or within two miles of a public airport; accordingly, no impact of this type would occur.				
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
No public or private airports are located near the project area; accordingly, no impact of this type would occur.				
XII. POPULATION AND HOUSING—Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).	☐	☐	☐	☒
The proposed project is not expected to induce any population growth in the project area either directly or indirectly. For information regarding the potential growth-inducing impacts of the proposed exchange of 6,000 acre-feet of CVP water, please see Section 4.2 Growth-inducing Impacts.				
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
The proposed project would not displace any existing housing or necessitate the construction of replacement housing elsewhere; therefore, no impact of this type would occur.				

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
The proposed project would not displace any residents in the project area, and would not necessitate the construction of replacement housing; therefore, no impact of this type would occur.				
XIII. PUBLIC SERVICES—Would the project:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services?	☐	☐	☐	☒
No aspect of the proposed project construction or operation would generate the need for additional police or fire protection services. In addition, no residential development is a part of or is attributable to the proposed project; therefore, no impacts to schools, parks, or other public facilities would occur.				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒
XIV. RECREATION—Would the project:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
The proposed project would not increase the use of an existing neighborhood or regional park or other recreational facility such that substantial physical deterioration of the facility would occur or be accelerated; therefore, no impact of this type would occur.				
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☐	☐	☒
The proposed project would not require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment; therefore, no impact of this type would occur.				

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XV. TRANSPORTATION/TRAFFIC—Would the project:				
a) Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	☒	☐
Traffic volumes on Clear Creek Road in the vicinity of Saeltzer Dam are low, and are estimated to be about 1,700 vehicles per day, according to a one-day study performed in 1999 (Caffee, pers. comm). Traffic associated with demolition and construction of the proposed project would generate a small amount of construction-related traffic in the project vicinity for a short period of time. This small increase in traffic is not anticipated to affect the street system; accordingly, no impacts would occur. The operation of the proposed project would not cause an increase in traffic loads and capacity of the street system within the project vicinity because no new traffic would be generated by the project.				
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
The operation of the proposed project would not generate any additional permanent traffic on Clear Creek Road; accordingly, no impacts of this type would occur.				
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
The proposed project would not generate air traffic or contribute in any way to changes in air traffic patterns. Accordingly, no impacts of this type would occur.				
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
The proposed project would not result in any changes to existing roads and traffic conditions, and therefore, would not substantially increase hazards.				
e) Result in inadequate emergency access?	☐	☐	☐	☒
The proposed project would not result in any permanent changes to existing roads and traffic conditions in the project vicinity, and therefore, would not affect emergency access.				
f) Result in inadequate parking capacity?	☐	☐	☐	☒
The proposed project would not affect existing parking capacity or generate demand for additional parking.				
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒
The proposed project would not conflict with any adopted transportation policies, plans, or programs supporting alternative transportation within Shasta County because the proposed project would not generate any permanent additional traffic.				

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XVI. UTILITIES AND SERVICE SYSTEMS— Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
The proposed project does not entail the use of wastewater treatment, and would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board; accordingly, no impact of this type would occur.				
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
The proposed project would not require or result in the construction of new water or wastewater treatment facilities or the expansion of existing facilities; accordingly, no impact of this type would occur.				
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
The proposed project would not require or result in the construction of new storm water drainage facilities or expansion of existing facilities.				
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
Permanent water supplies are not actually required to serve the proposed project; however, a water exchange is a part of the proposed project. Please see Section 4.1.2 Potential Water Transfers and Section 4.0 Other Impacts and Commitments.				
e) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
The proposed project does not require a connection to a wastewater treatment facility; therefore, no impacts of this type would occur.				
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
The proposed project is served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs; therefore, no impacts of this type would occur.				
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒
The proposed project is served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs; therefore, no impacts of this type would occur.				

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XVII. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☒	☐
Temporary impacts to riparian and riverine habitat would occur while removing Saeltzer Dam, and direct impacts to Townsend Ditch would occur. However, the impacts would be offset by increased bypass flows in the lower 6 miles of Clear Creek that would create favorable conditions for development of additional riparian and wetland habitats along the lower Clear Creek corridor. See Section 3.1.2 Vegetation.				
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
No cumulative impacts were identified with the implementation of the proposed project. See Section 4.1 Cumulative Impacts.				
c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒
The proposed project would not cause substantial adverse effects on human beings, either directly or indirectly. See Section 4.1 Cumulative Impacts.				

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
3310 El Camino Avenue, Suite 130
Sacramento, California 95821-6340

IN REPLY REFER TO:
1-1-98-SP-748

March 19, 1998

Memorandum

To: Matt Brown, Northern Central Valley Fish and Wildlife Office, Fish and Wildlife Service, Red Bluff, California

From: Field Supervisor, Sacramento Fish and Wildlife Office, Fish and Wildlife Service, Sacramento, California

Subject: Species Lists for McCormick Seltzer Dam Fish Passage Improvement on Clear Creek, Shasta County, California

As requested by memo from your agency dated February 11, 1998, you will find attached lists of sensitive species that may be present in *or may be affected by* projects in the subject project area (see Attachment A). These lists fulfill the requirement of the Fish and Wildlife Service (Service) to provide species lists pursuant to section 7(c) of the Endangered Species Act of 1973, as amended (Act).

The animal species on the Attachment A quad list are those species we believe may occur within, *or be affected by projects within*, the Olinda US Geological Survey 7½ minute quad, where your project is planned.

Any plants on the Olinda list are those *that have actually been observed* in that quad. Plants on the Shasta County list may also occur in the quad where your project is planned.

Some of the species listed in Attachment A may not be affected by the proposed action. A trained biologist or botanist, familiar with the habitat requirements of the listed species, should determine whether these species or habitats suitable for these species may be affected by the proposed action. For plant surveys, the Service recommends using the enclosed Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Species (Attachment C).

Some pertinent information concerning the distribution, life history, habitat requirements, and published references for the listed species is available upon request. This information may be helpful in preparing the biological assessment for this project, if one is required. Please see Attachment B for a discussion of the responsibilities Federal agencies have under section 7(c) of the Act and the

conditions under which a biological assessment must be prepared by the lead Federal agency or its designated non-Federal representative.

Formal consultation, pursuant to 50 CFR § 402.14, should be initiated if you determine that a listed species may be affected by the proposed project. If you determine that a proposed species may be adversely affected, you should consider requesting a conference with our office pursuant to 50 CFR § 402.10. Informal consultation may be utilized prior to a written request for formal consultation to exchange information and resolve conflicts with respect to a listed species. If a biological assessment is required, and it is not initiated within 90 days of your receipt of this letter, you should informally verify the accuracy of this list with our office.

Candidate species are currently being reviewed by the Service and are under consideration for possible listing as endangered or threatened. Candidate species have no protection under the Endangered Species Act, but are included for your consideration as it is possible that one or more of these candidates could be proposed and listed before the subject project is completed. Should the biological assessment reveal that candidate species may be adversely affected, you may wish to contact our office for technical assistance. One of the potential benefits from such technical assistance is that by exploring alternatives early in the planning process, it may be possible to avoid conflicts that could otherwise develop, should a candidate species become listed before the project is completed.

Attachment A contains a section called *Species of Concern.* This term includes former category 2 candidate species and describes the taxa whose conservation status may be of concern to the Service and other Federal, State, and private conservation agencies and organizations.

If the proposed project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by the U.S. Army Corps of Engineers (Corps), a Corps permit will be required, pursuant to section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act. Impacts to wetland habitats require site specific mitigation and monitoring. You may request a copy of the Service's General Mitigation and Monitoring Guidelines or submit a detailed description of the proposed impacts for specific comments and recommendations. If you have any questions regarding wetlands, contact Mark Littlefield at (916) 979-2113.

We appreciate your concern for endangered species. Please contact Jan Knight, Sacramento Valley Branch Chief, at (916) 979-2120, if you have any questions about the attached list or your responsibilities under the Endangered Species Act. For the fastest response to species list requests, address them to the attention of the section 7 office assistant at this address.

Wayne S. White

Attachments

ATTACHMENT A

Endangered and Threatened Species that May Occur in
or be Affected by Projects in the Following Selected Quads
Reference File No. 1-1-98-SP-748

March 18, 1998

QUAD : 629B OLINDA

Listed Species

Birds

American peregrine falcon, *Falco peregrinus anatum* (E)

Aleutian Canada goose, *Branta canadensis leucopareia* (T)

bald eagle, *Haliaeetus leucocephalus* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

winter-run chinook salmon, *Oncorhynchus tshawytscha* (E)

winter-run chinook salmon critical habitat, *Oncorhynchus tshawytscha* (E)

delta smelt, *Hypomesus transpacificus* (T)

Invertebrates

vernal pool tadpole shrimp, *Lepidurus packardi* (E)

vernal pool fairy shrimp, *Branchinecta lynchi* (T)

valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)

Proposed Species

Fish

Central Valley steelhead, *Oncorhynchus mykiss* (PE)

Central Valley spring-run chinook salmon, *Oncorhynchus tshawytscha* (PE)

Central Valley fall-run chinook crit hab, *Oncorhynchus tshawytscha* (PT)

Central Valley fall-run chinook salmon, *Oncorhynchus tshawytscha* (PT)

Sacramento splittail, *Pogonichthys macrolepidotus* (PT)

Species of Concern

Mammals

small-footed myotis bat, *Myotis ciliolabrum* (SC)

long-eared myotis bat, *Myotis evotis* (SC)

QUAD : 629B OLINDA

Species of Concern

Mammals

- fringed myotis bat, *Myotis thysanodes* (SC)
- long-legged myotis bat, *Myotis volans* (SC)
- Yuma myotis bat, *Myotis yumanensis* (SC)
- San Joaquin pocket mouse, *Perognathus inornatus* (SC)
- pale Townsend's big-eared bat, *Plecotus townsendii pallescens* (SC)
- Pacific western big-eared bat, *Plecotus townsendii townsendii* (SC)

Birds

- Bell's sage sparrow, *Amphispiza belli belli* (SC)
- western burrowing owl, *Athene cunicularia hypugea* (SC)
- ferruginous hawk, *Buteo regalis* (SC)
- white-faced ibis, *Plegadis chihi* (SC)

Reptiles

- northwestern pond turtle, *Clemmys marmorata marmorata* (SC)

Amphibians

- foothill yellow-legged frog, *Rana boylii* (SC)
- western spadefoot toad, *Scaphiopus hammondii* (SC)

Fish

- green sturgeon, *Acipenser medirostris* (SC)
- river lamprey, *Lampetra ayresi* (SC)
- longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

- Antioch Dunes anthicid beetle, *Anthicus antiochensis* (SC)
- Sacramento anthicid beetle, *Anthicus sacramento* (SC)

KEY:

(E)	*Endangered*	Listed (in the Federal Register) as being in danger of extinction.
(T)	*Threatened*	Listed as likely to become endangered within the foreseeable future.
(P)	*Proposed*	Officially proposed (in the Federal Register) for listing as endangered or threatened.
(C)	*Candidate*	Candidate to become a *proposed* species.
(SC)	*Species of Concern*	May be endangered or threatened. Not enough biological information has been gathered to support listing at this time.
(*)		Possibly extinct.
	Critical Habitat	Area essential to the conservation of a species.

ATTACHMENT A

Endangered and Threatened Species that May Occur in or be Affected by Projects in the Area of the Following California County or Counties

Reference File No. 1-1-98-SP-748

March 18, 1998

SHASTA COUNTY

Listed Species

Birds

American peregrine falcon, *Falco peregrinus anatum* (E)

Aleutian Canada goose, *Branta canadensis leucopareia* (T)

bald eagle, *Haliaeetus leucocephalus* (T)

northern spotted owl, *Strix occidentalis caurina* (T)

northern spotted owl critical habitat, *Strix occidentalis caurina* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

winter-run chinook salmon, *Oncorhynchus tshawytscha* (E)

winter-run chinook salmon critical habitat, *Oncorhynchus tshawytscha* (E)

delta smelt, *Hypomesus transpacificus* (T)

Invertebrates

vernal pool tadpole shrimp, *Lepidurus packardi* (E)

Shasta crayfish, *Pacifastacus fortis* (E)

vernal pool fairy shrimp, *Branchinecta lynchi* (T)

valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)

Plants

Greene's tuctoria, *Tuctoria greenei* (E)

slender Orcutt grass, *Orcuttia tenuis* (T)

Proposed Species

Fish

Central Valley steelhead, *Oncorhynchus mykiss* (PE)

Central Valley spring-run chinook salmon, *Oncorhynchus tshawytscha* (PE)

Klamath Mts. Province steelhead, *Oncorhynchus mykiss* (PT)

Central Valley fall-run chinook crit hab, *Oncorhynchus tshawytscha* (PT)

Proposed Species

Fish

Central Valley fall-run chinook salmon, *Oncorhynchus tshawytscha* (PT)

Sacramento splittail, *Pogonichthys macrolepidotus* (PT)

Species of Concern

Mammals

pygmy rabbit, *Brachylagus idahoensis* (SC)

spotted bat, *Euderma maculatum* (SC)

Sierra Nevada snowshoe hare, *Lepus americanus tahoensis* (SC)

Pacific fisher, *Martes pennanti pacifica* (SC)

small-footed myotis bat, *Myotis ciliolabrum* (SC)

long-eared myotis bat, *Myotis evotis* (SC)

fringed myotis bat, *Myotis thysanodes* (SC)

long-legged myotis bat, *Myotis volans* (SC)

Yuma myotis bat, *Myotis yumanensis* (SC)

San Joaquin pocket mouse, *Perognathus inornatus* (SC)

pale Townsend's big-eared bat, *Plecotus townsendii pallescens* (SC)

Pacific western big-eared bat, *Plecotus townsendii townsendii* (SC)

Birds

northern goshawk, *Accipiter gentilis* (SC)

tricolored blackbird, *Agelaius tricolor* (SC)

grasshopper sparrow, *Ammodramus savannarum* (SC)

western burrowing owl, *Athene cunicularia hypugea* (SC)

American bittern, *Botaurus lentiginosus* (SC)

ferruginous hawk, *Buteo regalis* (SC)

lark sparrow, *Chondestes grammacus* (SC)

white-faced ibis, *Plegadis chihi* (SC)

California spotted owl, *Strix occidentalis occidentalis* (SC)

Reptiles

northwestern pond turtle, *Clemmys marmorata marmorata* (SC)

California horned lizard, *Phrynosoma coronatum frontale* (SC)

Species of Concern

Amphibians

tailed frog, *Ascaphus truei* (SC)

foothill yellow-legged frog, *Rana boylii* (SC)

Cascades frog, *Rana cascadae* (SC)

western spadefoot toad, *Scaphiopus hammondii* (SC)

Fish

green sturgeon, *Acipenser medirostris* (SC)

river lamprey, *Lampetra ayresi* (SC)

Pit roach, *Lavinia symmetricus mitrulus* (SC)

McCloud River redband trout, *Oncorhynchus (=Salmo) mykiss ssp.* (SC)

longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

Antioch Dunes anthicid beetle, *Anthicus antiochensis* (SC)

Sacramento anthicid beetle, *Anthicus sacramento* (SC)

confusion caddisfly, *Cryptochia shasta* (SC)

King's Creek ecclisomyian caddisfly, *Ecclisomyia bilera* (SC)

Shasta sideband snail, *Monadenia troglodytes* (SC)

Siskiyou ground beetle, *Nebria gebleri siskiyouensis* (SC)

Trinity Alps ground beetle, *Nebria sahlbergii triad* (SC)

King's Creek parapsyche caddisfly, *Parapsyche extensa* (SC)

Castle Crags rhyacophilan caddisfly, *Rhyacophila lineata* (SC)

bilobed rhyacophilan caddisfly, *Rhyacophila mosana* (SC)

Plants

Henderson's bentgrass, *Agrostis microphylla var. hendersonii* (SC)

Klamath manzanita, *Arctostaphylos klamathensis* (SC)

Suksdorf's milk-vetch, *Astragalus pulsiferae var. suksdorfii* (SC)

long-haired star-tulip, *Calochortus longebarbatus var. longebarbatus* (SC)

Wilkins' harebell, *Campanula wilkinsiana* (SC)

arid northern clarkia, *Clarkia borealis ssp. arida* (SC)

silky cryptantha, *Cryptantha crinita* (SC)

clustered lady's-slipper, *Cypripedium fasciculatum* (SC)

Species of Concern

Plants

Oregon fireweed, *Epilobium oreganum* (SC)

Butte fritillary, *Fritillaria eastwoodiae* (SC)

Howell's lewisia, *Lewisia cotyledon var. howellii* (SC)

Bellinger's meadowfoam, *Limnanthes floccosa ssp. bellingeriana* (SC)

Stebbins' madia, *Madia stebbinsii* (SC)

The Lassics sandwort, *Minuartia decumbens* (SC)

Ahart's whitlow-wort, *Paronychia ahartii* (SC)

thread-leaved penstemon, *Penstemon filiformis* (SC)

Trinity (Scott Mountain) phacelia, *Phacelia dalesiana* (SC)

Devil's Garden pogogyne, *Pogogyne floribunda* (SC)

Howell's alkali grass, *Puccinellia howellii* (SC)

valley sagittaria, *Sagittaria sanfordii* (SC)

Canyon Creek stonecrop, *Sedum paradisum* (SC)

Butte County (western) catchfly, *Silene occidentalis ssp. longistipitata* (SC)

Mt. Lassen smelowskia, *Smelowskia ovalis ssp. congesta* (SC)

Pit River jewelflower, *Streptanthus sp. nov. /ined. (Shasta Co.)* (SC)

KEY:

(E)	*Endangered*	Listed (in the Federal Register) as being in danger of extinction.
(T)	*Threatened*	Listed as likely to become endangered within the foreseeable future.
(P)	*Proposed*	Officially proposed (in the Federal Register) for listing as endangered or threatened.
(C)	*Candidate*	Candidate to become a *proposed* species.
(SC)	*Species of Concern*	Other species of concern to the Service.
*	*Extirpated*	Possibly extirpated from the area.
	Critical Habitat	Area essential to the conservation of a species.

Attachment B

FEDERAL AGENCIES' RESPONSIBILITIES UNDER SECTIONS 7(a) and (c) OF THE ENDANGERED SPECIES ACT

SECTION 7(a) Consultation/Conference

Requires: (1) federal agencies to utilize their authorities to carry out programs to conserve endangered and threatened species; (2) Consultation with FWS when a federal action may affect a listed endangered or threatened species to insure that any action authorized, funded, or carried out by a federal agency is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. The process is initiated by the federal agency after determining the action may affect a listed species; and (3) Conference with FWS when a Federal action is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat.

SECTION 7(c) Biological Assessment-Major Construction Activity[1]

Requires federal agencies or their designees to prepare a Biological Assessment (BA) for major construction activities. The BA analyzes the effects of the action[2] on listed and proposed species. The process begins with a Federal agency requesting from FWS a list of proposed and listed threatened and endangered species. The BA should be completed within 180 days after its initiation (or within such a time period as is mutually agreeable). If the BA is not initiated within 90 days of receipt of the list, the accuracy of the species list should be informally verified with our Service. No irreversible commitment of resources is to be made during the BA process which would foreclose reasonable and prudent alternatives to protect endangered species. Planning, design, and administrative actions may proceed; however, no construction may begin.

We recommend the following for inclusion in the BA: an on-site inspection of the area affected by the proposal which may include a detailed survey of the area to determine if the species or suitable habitat is present; a review of literature and scientific data to determine species' distribution, habitat needs, and other biological requirement; interviews with experts, including those within FWS, State conservation departments, universities and others who may have data not yet published in scientific literature; an analysis of the effects of the proposal on the species in terms of individuals and populations, including consideration of indirect effects of the proposal on the species and its habitat; an analysis of alternative actions considered. The BA should document the results, including a discussion of study methods used, and problems encountered, and other relevant information. The BA should conclude whether or not a listed or proposed species will be affected. Upon completion, the BA should be forwarded to our office.

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[1] A construction project (or other undertaking having similar physical impacts) which is a major federal action significantly affecting the quality of the human environment as referred to in NEPA (42 U.S.C. 4332(2)C).

[2] "Effects of the action" refers to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action.

Attachment C

GUIDELINES FOR CONDUCTING AND REPORTING BOTANICAL INVENTORIES FOR FEDERALLY LISTED, PROPOSED AND CANDIDATE PLANTS

(September 23, 1996)

These guidelines describe protocols for conducting botanical inventories for federally listed, proposed and candidate plants, and describe minimum standards for reporting results. The Service will use, in part, the information outlined below in determining whether the project under consideration may affect any listed, proposed or candidate plants, and in determining the direct, indirect, and cumulative effects.

Field inventories should be conducted in a manner that will locate listed, proposed, or candidate species (target species) that may be present. The entire project area requires a botanical inventory, except developed agricultural lands. The field investigator(s) should:

1. Conduct inventories at the appropriate times of year when target species are present and identifiable. Inventories will include all potential habitats. Multiple site visits during a field season may be necessary to make observations during the appropriate phenological stage of all target species.

2. If available, use a regional or local reference population to obtain a visual image of the target species and associated habitat(s). If access to reference populations(s) is not available, investigators should study specimens from local herbaria.

3. List every species observed and compile a comprehensive list of vascular plants for the entire project site. Vascular plants need to be identified to a taxonomic level which allows rarity to be determined.

4. Report results of botanical field inventories that include:

   a. a description of the biological setting, including plant community, topography, soils, potential habitat of target species, and an evaluation of environmental conditions, such as timing or quantity of rainfall, which may influence the performance and expression of target species

   b. a map of project location showing scale, orientation, project boundaries, parcel size, and map quadrangle name

   c. survey dates and survey methodology(ies)

   d. if a reference population is available, provide a written narrative describing the target species reference population(s) used, and date(s) when observations were made

e. a comprehensive list of all vascular plants occurring on the project site for each habitat type

f. current and historic land uses of the habitat(s) and degree of site alteration

g. presence of target species off-site on adjacent parcels, if known.

h. an assessment of the biological significance or ecological quality of the project site in a local and regional context

5. If target species is(are) found, report results that additionally include:

a. a map showing federally listed, proposed and candidate species distribution as they relate to the proposed project

b. if target species is (are) associated with wetlands, a description of the direction and integrity of flow of surface hydrology. If target species is (are) affected by adjacent off-site hydrological influences, describe these factors.

c. the target species phenology and microhabitat, an estimate of the number of individuals of each target species per unit area; identify areas of high, medium and low density of target species over the project site, and provide acres of occupied habitat of target species. Investigators could provide color slides, photos or color copies of photos of target species or representative habitats to support information or descriptions contained in reports.

d. the degree of impact(s), if any, of the proposed project as it relates to the potential unoccupied habitat of target habitat.

6. Document findings of target species by completing California Native Species Field Survey Form(s) and submit form(s) to the Natural Diversity Data Base. Documentation of determinations and/or voucher specimens may be useful in cases of taxonomic ambiguities, habitat or range extensions.

7. Report as an addendum to the original survey, any change in abundance and distribution of target plants in subsequent years. Project sites with inventories older than 3 years from the current date of project proposal submission will likely need additional survey. Investigators need to assess whether an additional survey(s) is (are) needed.

8. Adverse conditions may prevent investigator(s) from determining presence or identifying some target species in potential habitat(s) of target species. Disease, drought, predation, or herbivory may preclude the presence or identification of target species in any year. An

additional botanical inventory(ies) in a subsequent year(s) may be required if adverse conditions occur in a potential habitat(s). Investigator(s) may need to discuss such conditions.

9. Guidance from California Department of Fish and Game (CDFG) regarding plant and plant community surveys can be found in Guidelines for Assessing the Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities, 1984. Please contact the CDFG Regional Office for questions regarding the CDFG guidelines and for assistance in determining any applicable State regulatory requirements.

Groundwater Appendix C

Clear Creek drains an area of approximately 4,500 acres on its north side between Saeltzer Dam and the intersection with the Anderson-Cottonwood Irrigation District (ACID) canal. Groundwater in this area generally flows to the southeast toward Clear Creek and the Sacramento River. Lawrence & Associates (L&A) performed a water budget analysis for the Townsend Flat Water Ditch (Townsend Ditch) in January 2000 (L&A, 2000). Their results indicate that Saeltzer Dam diverts approximately 12,500 acre-feet of water annually to the Townsend Ditch. The ditch starts on the north and downstream end of Saeltzer Dam and runs subparallel with Clear Creek toward the east, until it veers north near the western edge of the ACID canal, and ultimately terminates at Olney Creek. The total length of the ditch is approximately 6.4 miles from Saeltzer Dam to Olney Creek.

CH2M HILL reviewed the water budget estimated by L&A to evaluate the following questions:

1. How much influence does the Townsend Ditch have on the water budget in the dredge tailings area?
2. What would be the impact of ceasing ditch flows to groundwater and surface-water levels in the dredge tailings area?
3. What could local pond owners do to offset the impacts of cessation of ditch flows?

Dredge Tailings Area Water Budget with Saeltzer Dam

Using information from the L&A ditch water budget, CH2M HILL estimated a water budget for the dredge tailings area south of the ditch. Figure C-1 illustrates the dredge tailings area for which the following water budget was estimated. The water budget in the area was estimated with the assumption that all inflows equal the outflows on an annual basis and that water levels in ponds are expressions of the groundwater table. Therefore, the following water budget is presented in terms of a groundwater budget for the dredge tailings area. Table C-1 shows the water budget for the dredge tailings area.

The primary water budget components in the dredge tailings area are as follows:

Inflows

- *Deep percolation of upgradient water from precipitation (hatched area shown in blue on Figure C-1)* - Precipitation enters a 2,500-acre area that is tributary to the dredge tailings area. As the precipitation lands on the ground surface, a portion of the water runs off and infiltrates into the groundwater system at the northern end of the dredge tailings area. A method of analysis provided by Turner (1985) was used to estimate the portion of water that would infiltrate into the area as follows:

$$\text{Recharge [in/year]} = \text{Annual Precipitation [in/year]} - 2.32(\text{Precipitation [in/year]})^{0.66}$$

Table C-1. Water Budget, Dredge Tailings Area with Ditch			
Inflow Component	**Winter Season (Nov-Apr)**	**Irrigation Season (May-Oct)**	**Annual Total**
Deep percolation of upgradient water from precipitation	2,250	450	2,700
Leakage from Townsend Ditch	165	1,008	1,173
Deep percolation of direct precipitation onto dredge tailings area	1,250	250	1,500
Deep percolation of applied water	0	1,410	1,410
Total In	***3,665***	***3,118***	***6,783***
Outflow Component	**Winter Season (Nov-Apr)**	**Irrigation Season (May-Oct)**	**Annual Total**
Phreatophyte evapotranspiration	400	1,300	1,700
Pond evaporation	100	500	600
Unknown outflow (subsurface outflow, waste gate outflow, etc.)	3,165	1,318	4,483
Total Out	***3,665***	***3,118***	***6,783***
Note: units in acre-feet			

Using Turner's method along with an appropriate precipitation rate of 39 inches per year for the Redding area, approximately 13 inches per year of recharge would occur in the northern dredge tailings area. This can be multiplied by the 2,500-acre area that is tributary to the dredge tailings area and divided by 12 to convert from acre-inches to acre-feet to get about 2,700 acre-feet (see Table C-1).

- *Leakage from the Townsend Ditch* - A portion of the water flowing in the ditch infiltrates the banks and the bottom of the ditch and enters the underlying groundwater system. Ditch leakage rates from the ditch were taken from the L&A water budget. However, the ditch leakage rate provided by L&A was for the entire 6.4-mile length of the ditch. Therefore, the ditch leakage number presented in this evaluation represents 50 percent of the L&A estimate because only about half of the ditch length contributes water through leakage to the dredge tailings area.
- *Deep percolation of direct precipitation onto the dredge tailings area* – A portion of the precipitation that lands on the ground surface in the 1,400-acre dredge tailings area infiltrates into the groundwater system. Again, Turner's method was used to estimate

this portion of water from precipitation that would infiltrate into the subsurface and collect on the groundwater table. For example, 13 inches of recharge per year multiplied by 1,400 acres and divided by 12 to convert from acre-inches to acre-feet gives about 1,500 acre-feet per year (see Table C-1).

- *Deep percolation of applied water* – A portion of the irrigation water from the ditch infiltrates into the groundwater system. Values presented in Table C-1 for deep percolation of applied water were taken directly from the L&A water budget.

Outflows

- *Phreatophyte evapotranspiration* – A portion of the groundwater in the dredge tailings area is consumed by phreatophytes and evaporated from the vegetation into the atmosphere. Upon examining an aerial photograph of the area, which was taken in July 1998, it was estimated that phreatophytes make up approximately 30 percent, or 420 acres, of the total dredge tailings area. Evapotranspiration occurs at a rate of about 49 inches per year in the Redding area (University of California, 1989). Phreatophytic evapotranspiration, therefore, removes about 1,700 acre-feet of water per year (420 acres x 49 in/year x 1 foot/12 in).

- *Pond evaporation* – A portion of the water in the ponds is lost to direct evaporation into the atmosphere. Upon examining the July 1998 aerial photograph of the area, it was estimated that ponds comprise approximately 160 acres of the total dredge tailings area. Pan evaporation occurs at a rate of about 64 inches per year in the Redding area. Using a pan evaporation coefficient of 0.7, the volume of water that is evaporated annually from the ponds is approximately 600 acre-feet (160 acres x 64 in/year x 0.70 x 1 foot/12 in).

- *Unknown outflow* – Much of the outflows from the area are not well defined. Subsurface outflow and waste gate discharge make up the largest and most uncertain portion of the total outflows. A portion of the groundwater system leaves the dredge tailings area under the prevailing hydraulic gradient to downgradient locations to the southeast. This component is known as subsurface outflow. Some water from local ponds vacate the area through waste gates and or seeps. This "unknown outflow" term encompasses outflows from these components that are not known without significant uncertainty, based on the available data for the area. This term is calculated by subtracting the phreatophyte evapotranspiration and the pond evaporation from the total inflows to balance the water budget.

Dredge Tailings Area Water Budget without Saeltzer Dam

As shown in Table C-1, the inflows from the Townsend Ditch make up approximately 38 percent of the total inflows into the dredge tailings area ((1,173+1,410)/6,783). If Saeltzer Dam were removed and the diversions to the Townsend Ditch cease, the groundwater and surface-water levels in the dredge tailings area would be impacted. The degree to which they would be impacted is difficult to quantify, because of the uncertainty related to inflows and outflows in the dredge tailings area.

The annual groundwater inflows resulting from the presence of water in the Townsend Ditch equate to approximately 2,600 acre-feet (1,173+1,410; see Table C-1). By assuming a

specific yield of 20 percent for the subsurface porous medium and a specific yield of 1 for the ponds, one can estimate the maximum decrease in water levels that would occur from the removal of 2,600 acre-feet of water as follows:

$$\Delta h = \frac{\Delta Vw_{\text{Tailings Area}}}{\text{Area}_{\text{Tailings}} \cdot Sy_{\text{Tailings}}} + \frac{\Delta Vw_{\text{Pond Area}}}{\text{Area}_{\text{Ponds}} \cdot Sy_{\text{Ponds}}}$$

where

Δh = change in head or water levels
$\Delta Vw_{\text{Tailings Area}}$, $\Delta Vw_{\text{Pond Area}}$ = water volume reduction in tailings/pond areas, respectively
$\text{Area}_{\text{Tailings}}$, $\text{Area}_{\text{Ponds}}$ = area of tailings/ponds, respectively
Sy_{Tailings}, Sy_{Ponds} = specific yield of the tailings/ponds, respectively

and where

$$\Delta Vw_{\text{Tailings Area}} + \Delta Vw_{\text{Pond Area}} = 2{,}600 \text{ acre-feet per year}$$

Using the above equations, the maximum decrease in water levels that would occur in response to cessation of ditch flows in the dredge tailings area would be approximately 6.5 feet.

In reality, the decrease in inflows would be offset, to some degree, by a decrease in outflows. A decrease in outflows would occur, because as water levels drop in the dredge tailings area, the hydraulic gradient would also decrease, thereby decreasing the volume of subsurface outflow. Furthermore, as water levels drop in ponds, their surface areas are reduced, thereby decreasing the amount of evaporation from the ponds. Therefore, the forecast 6.5-foot decrease in water levels should be viewed as an upper limit to the average decrease in water levels in the dredge tailings area that would occur in response to cessation of the ditch flows. The degree to which the decrease in outflows would offset the reduction in inflows, if the dam were removed, is not known.

During the rainy season, the net precipitation rates in the area would likely overcome the average infiltration rates of the ponds during the rainy season. Therefore, local ponds would likely fill with water during the rainy season, as they currently do. However, once the rainy season ends, water in the ponds would continue to leak and evaporate water throughout the summer season without any additional inflows when surface-water diversions to the ditch cease. The overall reduction in water levels of a given pond would depend on the average infiltration rate of the pond sediments, the degree to which the groundwater table interacts with the pond, and the evaporation and evapotranspiration rates at and surrounding a given pond. Once the ditch is no longer used, water level fluctuations in a given pond may be greater over the course of a year than are currently observed. This hypothesis assumes that the area that was irrigated by the ditch is no longer irrigated once diversions to the ditch cease. If irrigation during the summer season in currently irrigated areas continues once the ditch flows cease, then this may help maintain water levels in ponds to some degree.

Mitigation

If local pond owners are interested in maintaining water levels, they may want to consider drilling a well and pumping groundwater into the ponds to offset the effects of reduced inflows. Another option may be to use ACID water to maintain pond water levels, if that option is available.

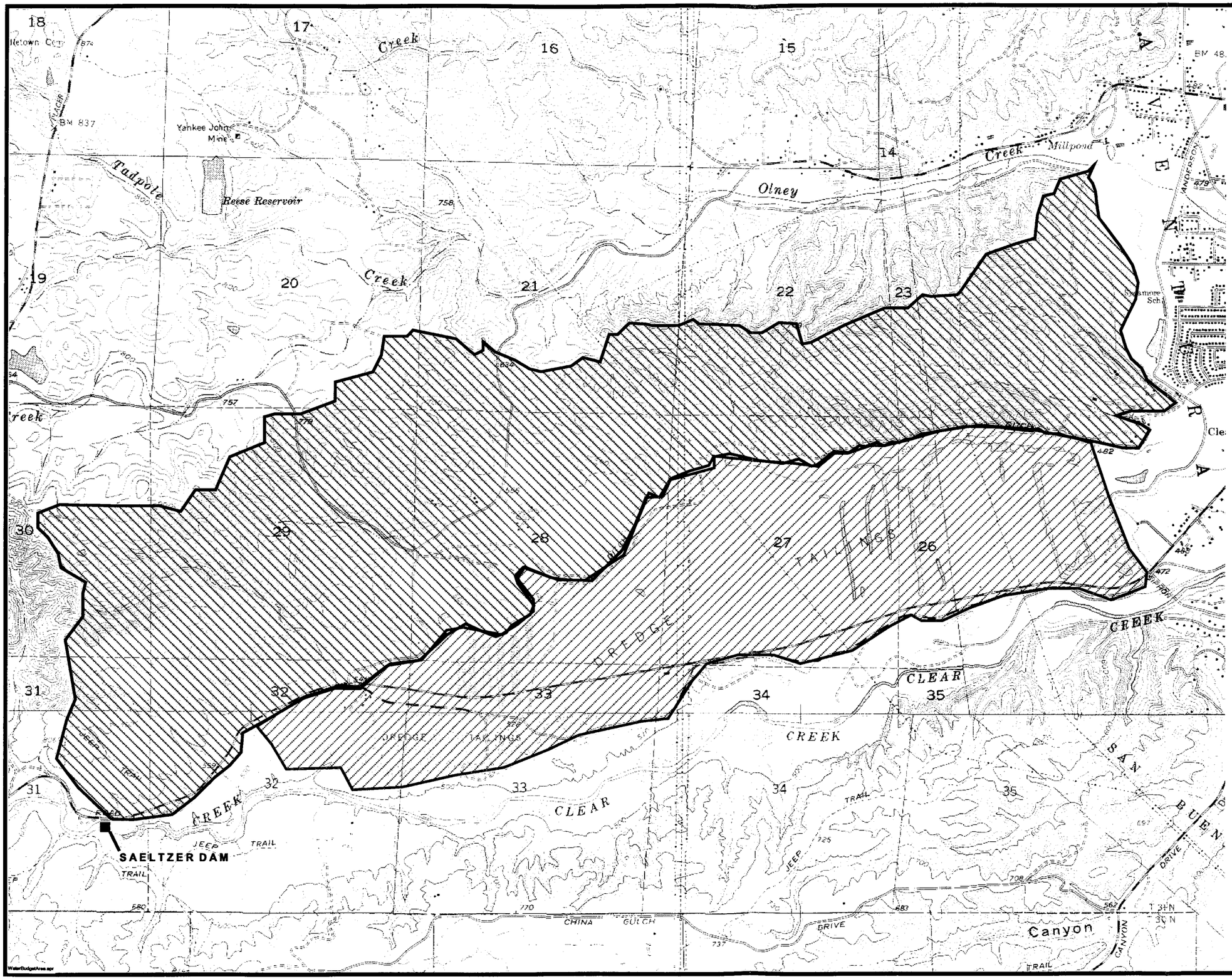
SWN	Easting (ft)	Northing (ft)	GS Elevation (ft)	Date	Head (ft-msl)	DTW (ft-bgs)	Comment
31N05W32A01M	6436151.797	2066098.436	545	06/13/79	538.81	6.19	Near intersection of Townsend Ditch with Clear Creek Road
31N05W32A01M	6436151.797	2066098.436	545	04/02/80	537.80	7.2	Northwest of dredge tailings area
31N05W28L01M	6439644.027	2069318.829	560	08/09/78	535.00	25	South-central dredge tailings area
31N05W28L01M	6439644.027	2069318.829	560	06/12/79	541.90	18.1	
31N05W28L01M	6439644.027	2069318.829	560	04/02/80	548.27	11.73	
31N05W27Q01M	6446047.384	2067769.826	500	01/30/76	464.00	36	
31N05W27Q01M	6446047.384	2067769.826	500	06/13/79	492.78	7.2231	
N05W27Q01M	6446047.384	2067769.826	500	04/02/80	491.23	8.77	

Works Cited

Lawrence & Associates (L&A). 2000. Water Budget Analysis: Townsend Flat Water Ditch, Clear Creek, Redding, California. January.

Turner, K.E. 1985. Water Loss from Forest and Range Lands in California, presented at the Chaparral Ecosystems Research: Meetings and Field Conference, Santa Barbara. May 16-17.

University of California, Davis. 1989. Irrigation Scheduling: A Guide for Efficient On-Farm Water Management. Division of Agriculture and Natural Resources. Publication 21454. 68 p.



LEGEND

- Area Tributary to Ditch (2,500 acres)
- Dredge Tailings Area (1,400 acres) (Water Budget Area)

N

0 2000 4000 Feet

FIGURE C-1
GEOGRAPHIC EXTENT OF WATER BUDGET AREA
SAELTZER DAM FISH PASSAGE AND FLOW PROTECTION PROJECT
NORTH STATE RESOURCES, INC.

WaterBudgetArea.apr

California Regional Water Quality Control Board

Central Valley Region

Steven T. Butler, Chair

Winston H. Hickox
Secretary for Environmental Protection

Redding Branch Office
Internet Address: http://www.swrcb.ca.gov/~rwqcb5
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Gray Davis
Governor

25 May 2000

Mr. Harry Rectenwald, E.S. IV
Department of Fish and Game
601 Locust Street
Redding, Ca 96001

WAIVER OF WASTE DISCHARGE REQUIREMENTS AND WATER QUALITY CERTIFICATION: SAELTZER DAM EXPLORATORY TYPE BORE HOLE AND CORING OF STREAM SUBSTRATE FOR POSSIBLE CONTAMINATES, CLEAR CREEK ROAD, SHASTA COUNTY

This letter responds to your request for a water quality certification (per Section 401 of the Clean Water Act) that your proposed project will not violate State water quality standards.

Project Description: The project involves exploratory type boreholes and coring of stream substrate for possible contaminates behind Saeltzer Dam. The project will impact approximately 0.3 acres of streambed. This project qualifies for Clean Water Act §404 Nationwide Permit #6.

Receiving Water: (Hydrologic Unit Enterprise Flat subarea #5.08.10).

Filled or Excavated Area: 0.3 acres

Dredge Volume: 3 to 6 cubic yards

Permits: The project will be covered under a Nationwide Permit #6 from the Army Corps of Engineers. The project proponent has a Streambed Alteration Agreement from the Department of Fish and Game No. #00-0269. The applicant has prepared a Notice of Exemption on 24 May 2000 to the State Clearinghouse for the project, per Section 15306 of CEQA guidelines (Use of scientific equipment to collect samples for information) for the project. The application for water quality certification was publicly noticed from 8 May 2000 through 24 May 2000, with no comments received.

Compensatory Mitigation: No compensatory mitigation is planned.

Pursuant to Resolution 82-036, waste discharge requirements are waived for the subject project with the following conditions:

1. The Discharger shall notify the Board in writing of the start of any in-water activities.

2. Except for activities permitted by the U.S. Army Corps under Section 404 of the Clean Water Act, soil, silt, or other organic or earthen materials shall not be placed where such materials could pass into surface waters or surface water drainage courses.

3. The discharge of petroleum products or other excavated materials to surface waters is prohibited.

4. Activities shall not cause turbidity increases in surface waters to exceed: (a) 20 percent if background turbidity is between 0 and 50 NTU; (b) 10 NTU if background turbidity is between 50 and 100 NTU; and, (c) ten percent if background turbidity is greater than 100 NTU, except during in-water working periods when these limits will be eased to allow a turbidity increase of 15 NTU over background turbidity as measured in surface waters 200 feet downstream from the project.

5. Activities shall not cause settleable matter to exceed 0.1 ml/l in surface waters as measured in Clear Creek 200 feet downstream from the project.

6. Activities shall not cause visible oil, grease, or foam in the work area or downstream.

7. All areas disturbed by project activities shall be protected from washout or erosion.

8. In the event that project activities result in the deposition of soil materials or creation of a visible plume in surface waters, the following monitoring shall be conducted immediately upstream and 200 feet downstream of the work site and the results reported to this office within two weeks:

Parameter	Unit	Type of Sample	Frequency of Sample
Turbidity	NT	Grab	Every four hours during in-water work.
Settleable Material	ml/l	Grab	Same as above.

9. The Discharger shall notify the Board immediately if the above criteria for turbidity, settleable matter, oil/grease, or foam are exceeded.

10. The Discharger shall notify the Board immediately of any spill of petroleum products or other organic or earthen materials.

11. The Discharger complies with all Department of Fish and Game 1600 requirements for the project.

12. The Discharger shall sample Clear Creek 200 feet downstream of the project and at the inflow to the Townsend ditch for total and soluble mercury during any visible turbidity event. Total and soluble mercury sampling shall occur for each turbidity event up to three sampling events per day. The samples must be analyzed for total and soluble mercury (0.2 ppb) on a 48-hour turn around, and the results reported immediately to this office.

Pursuant to California Code of Regulations §3857, this action is equivalent to waiver of water quality certification. We anticipate no further action on your application; however, should new information come to our attention that indicates a water quality problem, we may issue waste discharge requirements.

If you have questions please call Scott A. Zaitz at (530) 224-4784.

GARY M. CARLTON
Executive Officer

By: James C. Pedri, P.E.
Assistant Executive Officer

SAZ:sae

cc: Mr. David Tedrick, U.S. Army Corps of Engineers, Sacramento
Wetlands Section Chief (W-3-3) U.S. Environmental Protection Agency, Region IX, San Francisco
Ms. Francis McChesney, Office of Chief Counsel, State Water Resources Control Board, Sacramento
Department of Fish and Game, Region 1, Redding
Mr. Bill Campbell, Division of Water Quality, State Water Resources Control Board, Sacramento

FINAL

SAMPLING AND ANALYSIS PLAN FOR SUBMERGED SEDIMENT AT SAELTZER DAM CLEAR CREEK, CALIFORNIA

Prepared for
US Bureau of Reclamation
Denver, Colorado

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Project No. 68FUSBR191.00

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This Sampling and Analysis Plan (SAP) presents the requirements and procedures for conducting field sampling operations for the physical and chemical characterization of sediments associated with the Saeltzer Dam Removal Project. The objective of the plan is to obtain the necessary data to allow appropriate removal and disposal of sediment upstream of the dam (i.e., ponded area) prior to dam removal. Sediment characterization is required in order to identify the material as hazardous or non-hazardous waste for potential removal and off-site disposal in accordance with the regulatory requirements of the State of California. In addition, the characterization of sediment left in place will be performed to evaluate potential ecological impacts to stream fauna. This project-specific SAP has been prepared to ensure that (1) field sampling associated with the project follows appropriate protocols and field activities are fully documented, and (2) the data collected are scientifically valid and defensible. URS Greiner Woodward Clyde (URSGWC) prepared this SAP under Bureau of Reclamation (BOR) Contract # 1425-97-CA-81-2003, Delivery Order # 191(97F381003).

1.1 SITE BACKGROUND INFORMATION

Saeltzer Dam is located on Clear Creek in Shasta County, California, about 6 miles upstream from the creek's confluence with the Sacramento River, and about 10 miles downstream of Whiskeytown Dam (Figure 1-1). Saeltzer Dam was completed in 1912 by Rudolf Saeltzer at the site of an older masonry dam. Various improvements have been made to the dam over the years. The dam partially failed in 1958, when the southernmost portion of the dam (right abutment) failed during high winter flows and was replaced the following summer. The dam also reportedly failed in 1964 during a flood event (Rectenwald, personal communication). The current dam is a gravity structure consisting of a reinforced concrete wall anchored to a timber crib structure, ranging in height from about 3 feet to over 20 feet, with a crest length of about 185 feet, and a crest width of 2 to 3 feet. An aerial view of the existing dam is provided as Figure 1-2. Today the physical condition of the dam is considered to be very poor by the California Department of Water Resources (DWR), with extensive deterioration and cracking, and evidence of numerous leaks and concrete repairs.

The planned dam deconstruction is designed to restore anadromous fisheries resources in Clear Creek. Two previous attempts to provide for fish passage at the dam have been unsuccessful, primarily due to site characteristics. The removal of Saeltzer Dam would provide an effective means to address fish passage, and make approximately 10 miles of prime habitat along Clear Creek accessible to spring-run Chinook salmon and steelhead trout. Dam removal would also have a secondary benefit of removing the inherent risk of dam failure, which would potentially cause an uncontrolled sediment release.

Historical dredge mining in the area has potentially elevated the metals content in sediments behind Saeltzer Dam. The Clear Creek Fishery Study (DWR, 1986) states that the lower 8 miles of Clear Creek were mined by gold dredges several decades ago. A report by the Department of Agriculture (USDA), Natural Resources Conservation Service (1997) indicated that this would include the reservoir area of Saeltzer Dam. Dredge tailings upstream of Saeltzer Dam are evident on the Olinda, CA USGS 7.5 minute quadrangle topographic map of the area. Historic dredging operations may have extracted gold using a mercury amalgamation process, potentially elevating mercury levels in the mining spoils and tailings, ultimately transported into Clear Creek and dam sediments.

1.2 PREVIOUS INVESTIGATIONS

Several investigations have been conducted for the Saeltzer Dam area. Most recently, BOR published the 'Reconnaissance Report for Removal of Saeltzer Dam, Including Diversion Flow Alternatives' (BOR 2000). This report describes the removal of the dam and up to 20,000 yd^3 of deposited sediment behind the dam. Alternatives for flow diversion to the Townsend Ditch (for agricultural purposes) in the report include (1) no diversion provision, (2) a 42-inch-diameter pipeline, (3) a 24-inch diameter pipeline, and (4) a diversion weir. Previous studies discussing the diversion weir alternative were prepared by Norman S. Braithwaite Inc. (1997) and the California Department of Water Resources. In addition, a comprehensive feasibility study addressing numerous fish passage alternatives at Saeltzer Dam was also completed by DWR in December 1997.

1.3 PREVIOUS SEDIMENT SAMPLING

Mercury analysis was performed for six samples of Saeltzer Dam sediments collected on March 24, 1997 by BOR personnel. Samples were collected from depths of 3 to 6 feet using a backhoe. Exact sampling locations were not documented. The samples were analyzed by Method SW 7471 on February 10, 1998 by CH2M Hill Analytical Services in Redding, California. Sample results may be inaccurate due to analysis beyond method holding time, and the fact that samples were frozen between the time of collection until analyses were performed. Two of the samples for mercury were below the reporting limit of 0.03 mg/kg. The highest detection was 0.1 mg/kg mercury, with the remaining four samples 0.06 mg/kg or less.

1.4 SITE GEOLOGY

Saeltzer Dam is located on the southern slopes of the Klamath Mountains. Bedrock in the site area is composed of Devonian-age metamorphic rocks derived from interbedded volcanics, tuffs, and agglomerates, and is intruded by igneous dikes and sills (known as the Copley Greenstone). Stream channel and bank terrace materials, derived from the nearby mountains, are comprised of alluvial sediments that range from 0 to 20 feet thick. These deposits are composed of varying percentages of poorly graded gravel with sand and cobbles, poorly graded sand with gravel and cobbles, silty sand, and silty sand with gravel and cobbles.

1.5 PROJECT OBJECTIVES

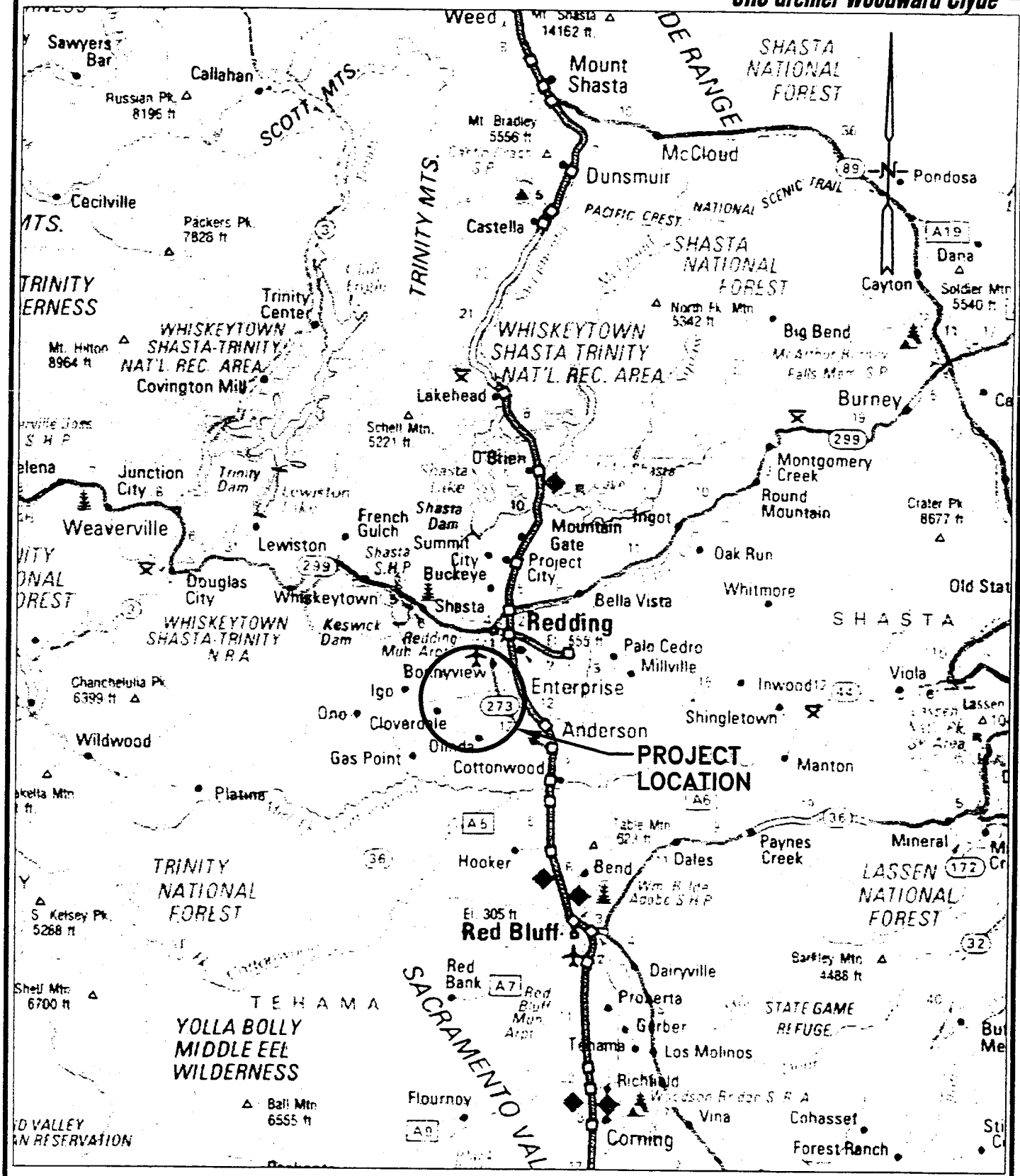
The objectives of this Sampling and Analysis Plan are twofold: (1) to provide a defensible characterization for sediments behind Saeltzer Dam in order to determine if excavated materials require special handling and disposal as hazardous waste if they are transported offsite, and (2) to provide a defensible characterization for materials to be left in place in order to determine if these sediments pose an unacceptable ecological risk to creek biota. If it is determined that ecological risk-based levels are exceeded for un-excavated sediments, then additional alluvial material removal or other actions may need to be considered.

Sediments behind the dam may be vertically stratified, as well as laterally size sorted. The occurrence of finer grained sediments close to the dam with a coarsening grain size in the upstream direction is a common sorting condition for dams of this size, and has been observed in the field at Saeltzer Dam (Rectenwald – personal communication). This type of upstream

coarsening results from the lower velocity flow condition of the stream within the dam reservoir pool. Heavier components of the stream bed load tend to drop out first, followed by lighter grains, producing the grain-size gradation.

Contaminants of concern at Saeltzer Dam include metals, primarily mercury, and are likely associated with the finer grained sediments. Therefore, with the occurrence of finer sediments near the dam, the potential is also greater that metals of concern are elevated close to the dam. If present, potential metal contamination from upstream historical dredge mining is expected to occur within the lower and bottom portions of reservoir sediments. It is also expected that metal concentrations likely decrease with increasing distance upstream of the dam in coarse-grained sediments.

The sediment sampling program proposed for Saeltzer Dam is statistically based, and takes into consideration a three dimensional sampling domain. The sediment thickness has been estimated for several cross-sections of the proposed excavation area, but actual sediment depths are not well known (USDA 1997). Therefore, objectives of the SAP incorporate a flexible sampling approach, due to the uncertainties associated with sediment grain sizes and thickness.



0 5.5 11 22

APPROXIMATE SCALE IN MILES

Job No. : 68FUSBR191.00	PROJECT LOCATION MAP
Prepared By : MLS	
Date : 5/01/00	SAELTZER DAM

SAEL-06

FIG. 1-1

This section describes the overall work approach for sediment characterization at Saeltzer Dam and upstream/downstream segments of the creek bed. This approach is outlined in a work flow diagram presented in Figure 2-1. The site has been divided into four sampling areas where sediments will be characterized to support dam deconstruction. Upon completion of sampling and analysis, a characterization report will be produced. The field sampling activities, study results and conclusions will be presented in the characterization report.

Project objectives necessitate the designation of four separate sampling areas (Figure 2-2). These areas are (1) the Near-Dam sampling area; (2) the Upstream Reservoir sampling area; (3) the Upstream Creek Bed sampling area; and (4) the Downstream Creek Bed sampling area. The Near-Dam sampling area (Area 1) is close to the dam and is believed to contain finer-grained sediments, which have been identified for removal during dam deconstruction. The Upstream Reservoir sampling area (Area 2) includes the vicinity immediately upstream of the Near-Dam sampling area, and includes the remaining reservoir pool area to the inlet point of Clear Creek. This area is expected to contain coarser grained sediments, which have been identified to remain after deconstruction completion. The Upstream Creek Bed sampling area (Area 3) extends approximately 2,000 feet upstream of Saeltzer Dam. Area 3 begins at the inlet to the Saeltzer Dam pool, and ends in the proximity of a proposed dam site called Alternative 1 (BOR 2000). The Downstream Creek Bed sampling area (Area 4, Figure 2-3) begins downstream of the small gorge below the dam and will terminate approximately 2,000 feet downstream.

Data collected in the four study areas will be used for both metal content and grain-size characterization of the sediments, as well as a statistical comparison to regulatory standards and ecologically-based benchmarks. The sampling approach for each of the sampling areas is discussed below.

2.1 NEAR-DAM SAMPLING (AREA 1)

The Area 1 sampling area is located in the vicinity where finer-grained sediments are expected to occur within the dam reservoir (shown in Figure 2-2). This area is approximately 180 feet wide (at the dam face) by 80 feet long. The 80-foot distance from the dam face upstream into the reservoir pool was selected based on field observations by California Department of Fish and Game (DFG) personnel. The area beyond 80 feet upstream of the dam is expected to contain coarser sediments that may have beneficial use as fish spawning habitat, and therefore, may be desirable to be left in place. DFG has indicated that favorable gravel sizes for spawning habitats range from approximately ¾-inch to approximately 4-inches. The finer grained sediments expected to occur in the proximity of the dam have been identified for removal and off-site disposal prior to dam deconstruction. Obtaining representative samples of these sediments (both horizontally and vertically) is an important step in estimating their volume and in determining the proper disposal methods. The sampling design for this area (sampling rationale, locations, number of samples, laboratory requirements, etc.) is discussed in Section 3.1 of this SAP.

2.1.1 Area 1 Sediment Sampling Using a Barge Mounted Vibracore Unit

The fine-grained nature of sediments expected to occur in this sampling area will require the use of a small work barge equipped with a 'moonlight hole.' This hole allows for coring pipe to be directed through the barge floor and into the water/sediment in the reservoir. A special motorized vibrating head (Vibracore unit) is attached to the top of the core pipe and the pipe is

directed into the sediment. The vibrating motion of the head transfers energy to the pipe and facilitates the cutting action of the pipe into the sediment. This method has been developed specifically for obtaining fine-grained sediment cores, and can work in sediments up to medium-coarse sand. Unsatisfactory results may occur using this method in larger grained sediments.

2.1.2 Laboratory Analyses

Select samples collected in Area 1 will be analyzed for California Title 22 metals (Table 2-1) in order for sediments to be characterized as hazardous or non-hazardous. Sediment disposal characterization is further discussed in Section 2.6 below. In addition to chemical analysis, approximately 20 percent of Area 1 samples will be submitted for grain size analysis. Obtaining grain-size distribution characterization of these sediments is important to determine if these sediments would adversely impact fish habitat by mobilizing significant amounts of fine-grained particles under natural erosion processes that may occur subsequent to dam deconstruction.

2.2 UPSTREAM RESERVOIR SAMPLING (AREA 2)

The Area 2 sampling area is located adjacent to and upstream of the Near-Dam sampling area, and includes the remaining upstream reservoir pool up to the estimated inlet point of Clear Creek (Figure 2-2). This area is approximately 100 feet wide by 480 feet long. This area of the reservoir is expected to contain coarser sediments (gravel to cobble size) that may have beneficial use as fish spawning habitat, and have been proposed to be left in place. These sediments will be analyzed for metals content (of the finer grained fraction, if any), and grain-size. Obtaining representative samples of these sediments (both horizontally and vertically) is an important step in estimating their volume and in determining if they pose an ecological risk to benthic organisms. Ecologically-based metal concentration benchmarks for sediment are discussed in Section 2.7 below. The sampling design for this area (sampling rationale, locations, number taken, laboratory requirements, etc.) is discussed in Section 3.2 of this SAP.

2.2.1 Area 2 Sediment Sampling Using Barge Mounted Rotary Drill Rig Method

The coarse-grained nature of sediments expected to occur in this sampling area requires the use of a work barge equipped with a small rotary drill rig. The rotary drill will be advanced to the desired sampling depth (through a sampling hole on the barge), and a push-type sampler will be advanced into the sediment ahead of the drill bit for sample collection. Due to the uncertainty of the sediment grain sizes that may be encountered, several types and sizes of sampling devices will be available. These samplers include split-spoons, Shelby tubes, and piston collection devices.

2.2.2 Laboratory Analyses

Select samples collected in the Upstream Reservoir will be analyzed for California Title 22 metals (Table 2-1) in order for sediments to be compared to ecologically-based sediment benchmarks for those metals. In addition to chemical analysis, approximately 20 percent of Area 2 samples will be submitted for grain size analysis. Obtaining grain-size distribution characterization of these sediments is important for the evaluation of whether the sediment may be left in place for use as fish habitat, and to determine if the finer fraction of these sediments

will be harmful to fish habitat under natural erosion processes that may occur subsequent to dam deconstruction.

2.3 UPSTREAM CREEK BED SAMPLING (AREA 3)

The Area 3 sampling area (Figure 2-2) extends approximately 2,000 feet upstream of Saeltzer Dam, and begins at the inlet to the Saeltzer Dam pool. The upstream segment ends in the proximity of a proposed dam site called Alternative 1, where it appears that Clear Creek runs on bedrock (BOR 2000). This area has been identified as a potential source of sediment that could migrate down stream once the Saeltzer Dam is removed. Sampling of Area 3 sediment is needed in order to characterize the materials that may move downstream as increased currents erode the bed sediments down to bedrock or to the original streambed gradient. The expected limits of this movement has been estimated to be from Saeltzer Dam to a bedrock 'nick point' approximately 2,000 feet upstream (near Alternative 1). Both grain size and metals content data will be collected at sampling locations in Area 3. Ecologically-based metal concentration benchmarks for sediment are discussed in Section 2.7 below. The sampling design for this area (sampling rationale, locations, number taken, laboratory requirements, etc.) is discussed in Section 3.3 of this SAP.

2.3.1 Area 3 Sediment Sampling Using A Backhoe Method

Sediment sampling in Area 3 will be performed using a backhoe. A backhoe bucket will be used to excavate, sample, and backfill test pits along the sampling area. Reasonably discrete sampling depths can be achieved with this method (on approximately 3 foot lifts). Sampling will continue to a depth determined to be the point at which sediment migration (or movement) is unlikely to occur under the altered flow regime.

2.3.2 Laboratory Analyses

Samples collected in Area 3 will be analyzed for California Title 22 metals (Table 2-1) in order to be compared to ecologically-based sediment benchmarks for these metals. Also, similar to Area 1, obtaining grain-size distribution characterization of these sediments is important for the evaluation of whether the sediment should be left in place for use as fish habitat, and to determine if the finer fraction of these sediments will be harmful to fish habitat under natural erosion processes that may occur subsequent to dam deconstruction. Therefore, these samples will also be submitted for grain-size analysis.

2.4 DOWNSTREAM CREEK BED SAMPLING (AREA 4)

The Area 4 sampling area is located downstream of Saeltzer Dam. Figure 2-3 shows the estimated extent of sampling. However, actual sampling sites will be selected based on field observations. Sediment samples will be collected downstream of Saeltzer Dam and reservoir to characterize the metals content and grain size within the fine-grained sediments located downstream of the dam. It is necessary to characterize this area in order to evaluate if there will be any adverse impacts due to the dam removal (e.g., increased metals content) to the sediments in quiescent areas of the creek.

The sampling design for this area (sampling rationale, locations, number taken, laboratory requirements, etc.) is discussed in Section 3.4 of this SAP.

2.4.1 Area 4 Sediment Sampling Using a Hand Auger

Sediment sampling in Area 4 will be performed using a hand auger. Sampling depths and locations will be determined in the field, as directed by a representative of the California Department of Fish and Game.

2.4.2 Laboratory Analyses

Samples collected in Area 4 will be analyzed for California Title 22 metals (Table 2-1) in order to be compared to ecologically-based sediment benchmarks for these metals. These samples will also be submitted for grain-size analysis.

2.5 PERMIT COMPLIANCE MONITORING

During in-water work activities, stream turbidity measurements will be taken for permit requirement compliance. In addition, permit requirements state that surface water is to be sampled during the first day of in-water work activity (for total mercury levels) in each area for Areas 1, 2, and 3. The turbidity monitoring results will be reported at the end of each sampling day to California Department of Fish and Game office in Redding, California, as well as the California Regional Water Quality Control Board (also in Redding). Surface water analyses will be sent to the laboratory on a 48-hour turn around time basis, and results will be faxed as soon as possible to the California Regional Water Control Board.

Details of the compliance monitoring are provided in Sections 3.5 and 3.6 of this SAP.

2.6 SEDIMENT DISPOSAL CHARACTERIZATION

The chemicals of concern (COC) in sediment for the Saeltzer Dam removal project are metals. Based on limited previous sampling, the presence of mercury in fine-grained sediment closer to the dam face is of particular concern. However, concentrations of other metals were not evaluated in previous field investigations. Currently, the removal of fine-grained sediment prior to dam deconstruction is planned. California Department of Fish and Game staff have estimated that as much as 5,000 cubic yards of fine-grained material will require removal and disposal.

In order to plan and budget for disposal of the removed material, it is necessary to characterize the sediment as hazardous or non-hazardous in accordance with California regulations. These regulations are contained in the California Code of Regulations, Title 22, Chapter 11, Identification and Listing of Hazardous Waste. Article 3, Section 66261.24, Characteristic of Toxicity, discusses the approach for determining whether a material is hazardous or not. In summary, if the concentration of a metal were greater than its Total Threshold Limit Concentration (TTLC) as listed in the regulations, the waste would be considered hazardous. Additionally, if a metal concentration is less than the TTLC, but exceeds the Soluble Threshold Limit Concentration (STLC), the waste would also be considered hazardous.

STLC and TTLC limits for metals listed in the Title 22 regulations are presented in Table 2-1. Sediment samples selected for laboratory analysis for this project will first be analyzed for TTLC metals listed in Table 2-1. If site sample results are below TTLC regulatory limits, a second step will involve comparison of the sample results to 10 times the corresponding STLC values for a given metal shown in Table 2-1. If the site sample result for a given metal is greater than 10 times the STLC limit the sample will be analyzed for STLC using the Waste Extraction Test (WET). The 10 times STLC limit comparison to the sample result is an appropriate approach for assessing the need to run the STLC since it represents the theoretical maximum concentration of the analyte in the leachate assuming all of the analyte in soil is soluble.

If TTLC and STLC sample results (if STLC is run) exceed the regulatory limits, appropriate measures will be taken to handle and dispose of the sediment determined to be hazardous.

Grain size analyses will also be performed on select samples collected during the project to help evaluate potential ecological impacts from sediment left in place after dam deconstruction.

2.7 ECOLOGICALLY-BASED SEDIMENT BENCHMARKS

Results of the chemical analysis of fine-grain sediments will be compared with ecologically-based freshwater sediment benchmarks in addition to the California Title 22 TTLC thresholds. The overall purpose of these comparisons with ecological sediment benchmarks is to evaluate if the fine-grain sediment currently entrained behind Saeltzer Dam may present an unacceptable chemical risk to benthic organisms downstream of the dam after the dam is removed and residual fine-grain sediment moves downstream. In addition to testing fine-grained sediments in the reservoir (Area 1 and Area 2), samples collected from two additional sampling areas (Area 3 and Area 4) will be analyzed and compared with sediment benchmarks.

Freshwater sediment benchmarks for Title 22 metals are presented in Table 2-2. The primary set of benchmarks shown are the National Oceanic and Atmospheric Administration (NOAA) Effect Range-Low (ERL) benchmarks from Long and Morgan (1990). These are the sediment benchmarks suggested by the California Environmental Protection Agency-Department of Toxic Substances Control (DTSC) for use in screening sediments for potential ecological risk (DTSC, 1996). Because sediment benchmarks are not considered to be criteria or standards and are not enforceable as are water quality criteria, three additional sets of sediment benchmarks are presented in order to aid in interpretation of the measured sediment metals concentrations:

- Threshold Effect Concentrations (TECs) – consensus-based concentrations below which adverse impacts are not likely (MacDonald et al., 1999);
- Effects Range-Lows (ERLs) – this set of ERLs is separate and unique from the NOAA ERLs described above. This set is from the USEPA ARCs Program; the concentrations are the 15th percentile of effects concentrations, the concentrations above which adverse effects on sensitive species are expected (Ingersoll et al., 1996); and
- Lowest Effect Levels (LELs) – from the Ontario, Canada Ministry of Environment and Energy; levels of chemicals which have no adverse effect on the majority of benthic organisms (Persaud and Jaagumagi, 1993).

Additional benchmarks are presented for the two metals (cobalt and selenium) that have no benchmarks available in the primary sources. No applicable benchmarks were found for five metals (barium, beryllium, molybdenum, thallium, and vanadium).

For the Saeltzer Dam project, the DTSC sediment benchmarks will be used to evaluate data collected under this SAP.

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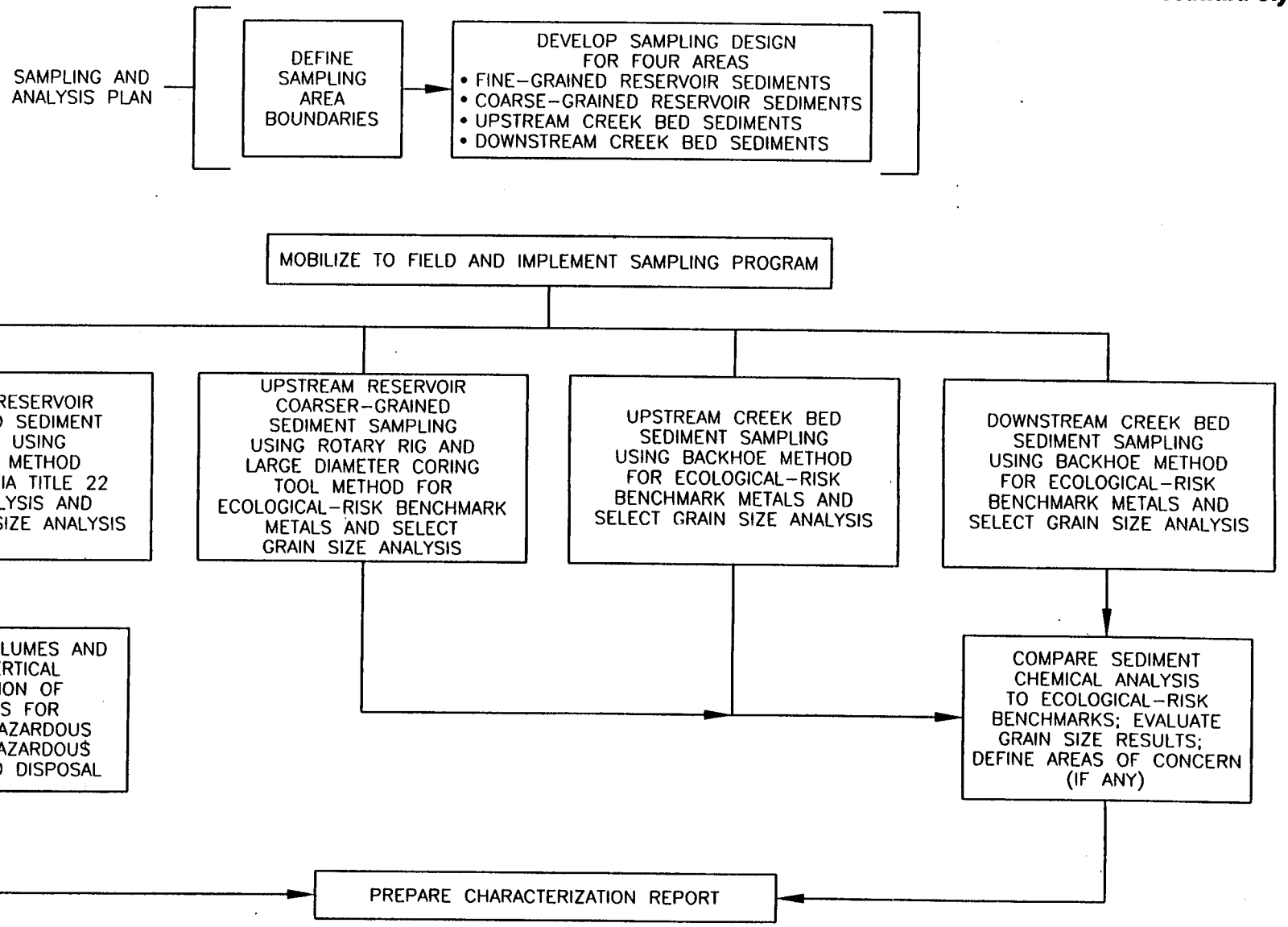


Job No. :	68FUSBR191.00
Prepared By :	MLS
Date :	4/27/00

WORK APPROACH FLOW DIAGRAM

SAELTZER DAM

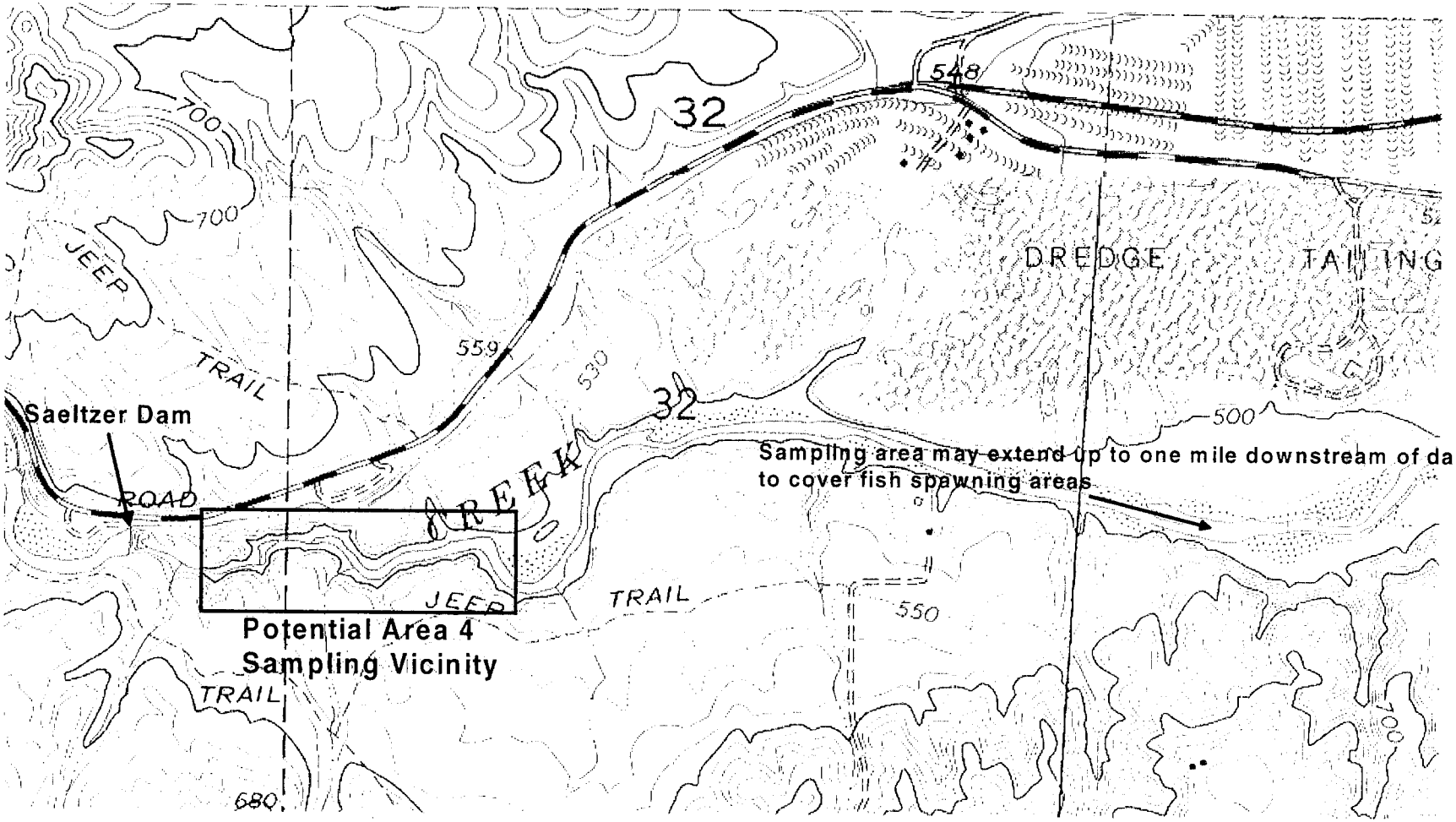
SAEL-02

FIG. 2-1

Job No. : 68FUSBR191.00	UPSTREAM SAMPLING AREAS
Prepared By : MLS	
Date : 4/28/00	SAELTZER DAM

SAEL-05

FIG. 2-2



Downstream Sampling Area 4

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Figure 2-3

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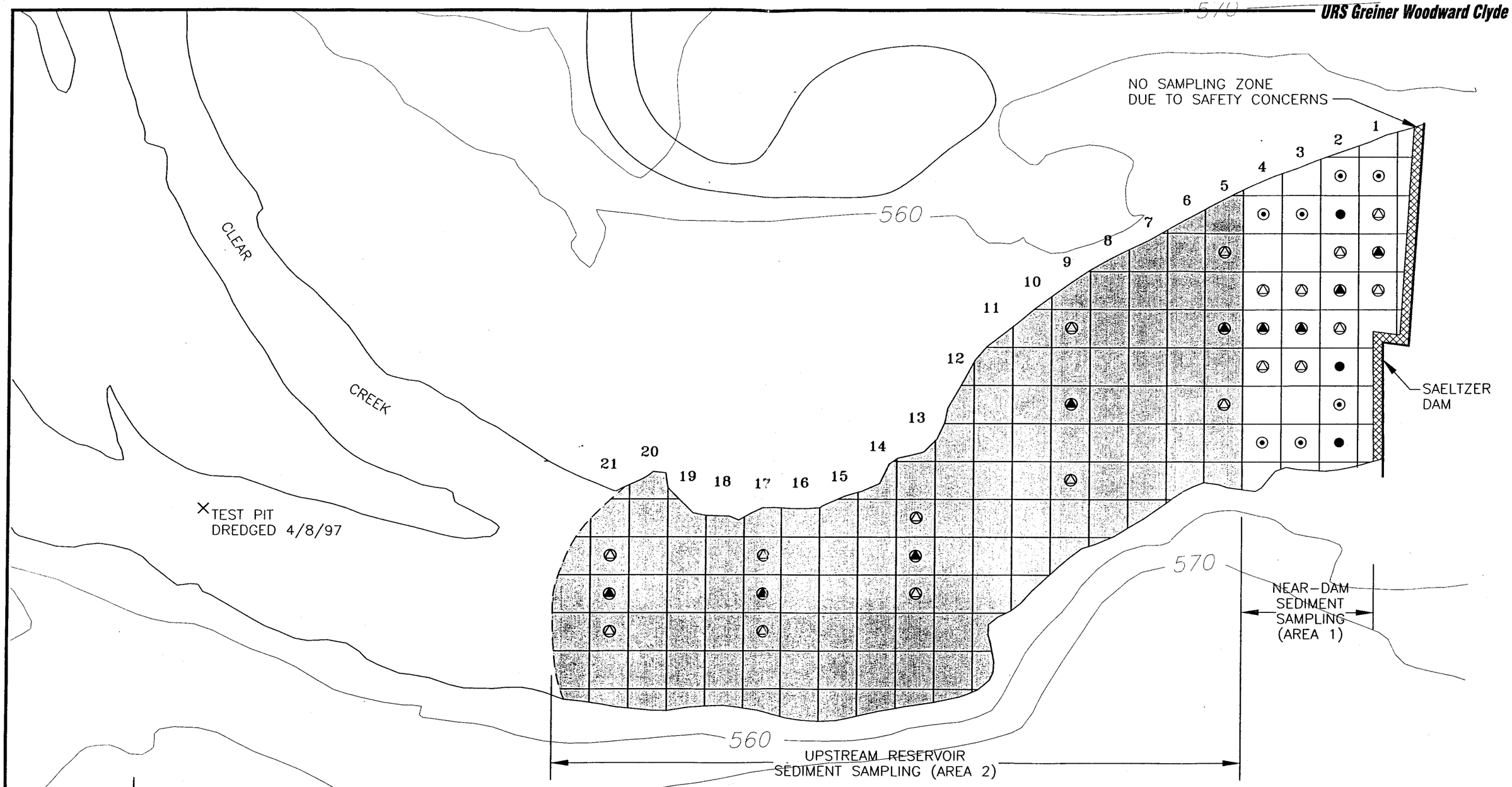

LEGEND

- INITIAL TRANSECT BORING
- ASSUMED THALWEG BORING
- ADJACENT THALWEG BORING
- OUTLYING BORING
- 6 COLUMN NUMBER
- NO SAMPLING ZONE AT DAM FACE
- 20'X20' SAMPLE GRID
- X APPROXIMATE LOCATION OF TEST PIT (GRAIN SIZE ANALYSIS PERFORMED ON DREDGED MATERIAL)

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Date :	4/28/00

AREAS 1 AND 2 RESERVOIR SAMPLING LOCATIONS

SAELTZER DAM

SAEL-03

FIG. 3-1

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N

0 50 100 200

SCALE IN FEET

APPROXIMATE ALTERNATIVE 1 DAM SITE

CLEAR CREEK

560

570

AREA 3

SAELTZER DAM

LEGEND

● APPROXIMATE CREEK BED SAMPLING LOCATIONS

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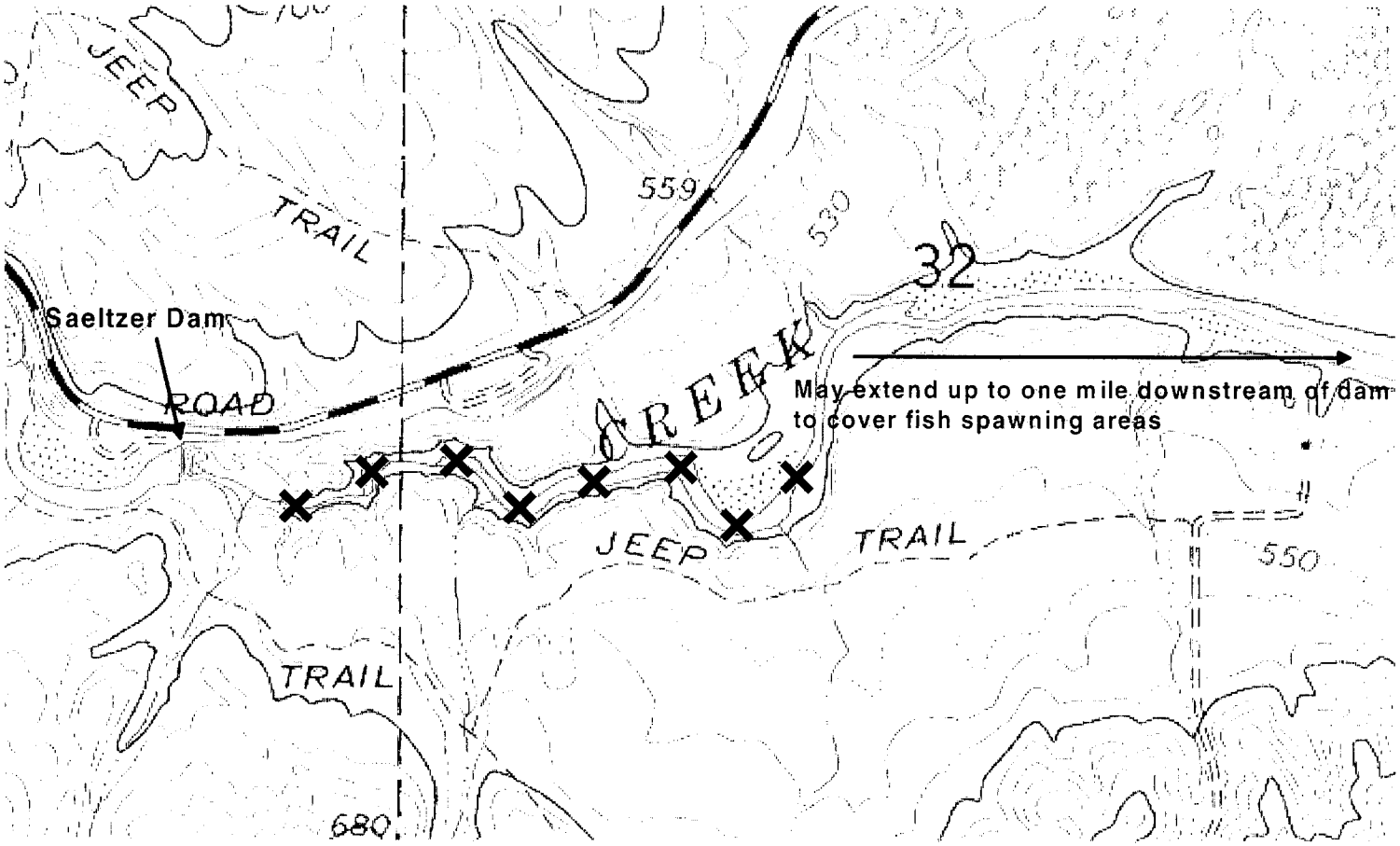
Date :	4/28/00

AREA 3 PROPOSED SAMPLING LOCATIONS

SAELTZER DAM

SAEL-U4

FIG. 3-2



✕ Potential sampling locations in Area 4
(actual locations will be based on field observations)

0 Approximate Scale (Feet) 2000

Area 4 Proposed Sampling Locations

URS

Figure 3-3