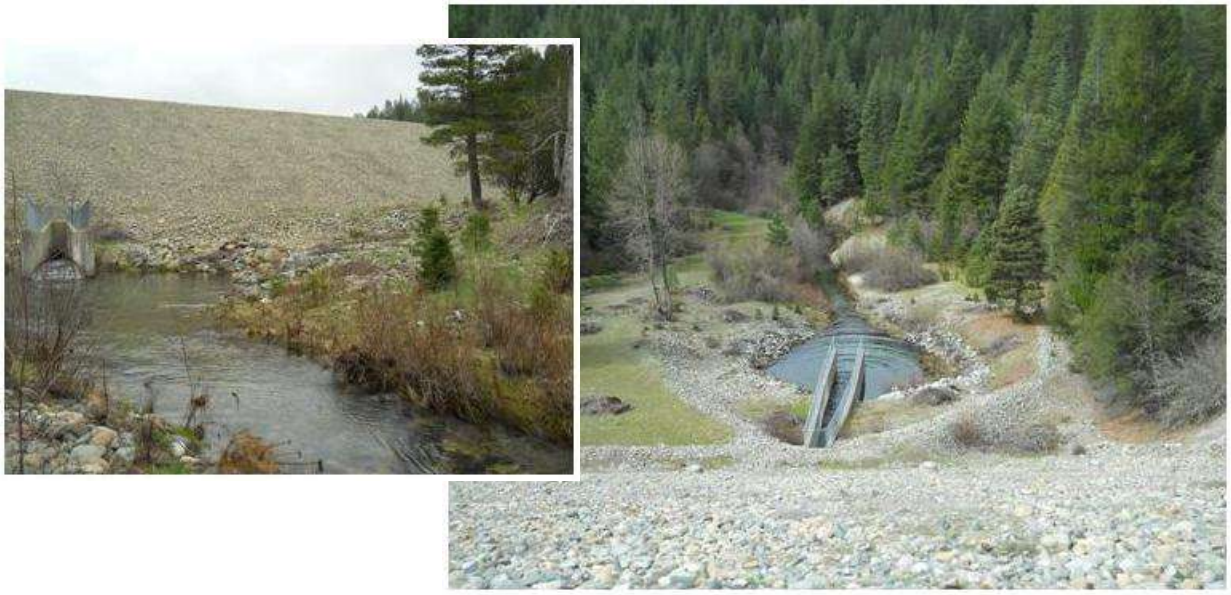
Buckhorn Dam/Grass Valley Creek Toe Drain and Channel Rehabilitation Project

ENVIRONMENTAL ASSESSMENT / INITIAL STUDY

Trinity County, California

November 2011



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U. S. Department of the Interior
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Northern California Area Office

California Lead Agency for CEQA
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Acronyms

APE	Area of Potential Effect
ARPA	Archaeological Resources Protection Act
BA	Biological Assessment
BLM	Bureau of Land Management
BMP	Best Management Practice
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDF	California Department of Forestry and Fire Protection
CDFG	California Department of Fish and Game
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CY	cubic yard
CH_4	methane
CHP	California Highway Patrol
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO_2	carbon dioxide
CRHP	California Register of Historic Places
DG	Decomposed Granite
EA	Environmental Assessment
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gas
GVC	Grass Valley Creek
HAP	Hazardous Air Pollutant
HVT	Hoopa Valley Tribe
ID Team	Interdisciplinary Team
IS	Initial Study
KMP	Klamath Mountains Province
KOP	Key Observation Point
LCSD	Lewiston Community Services District
LWD	Large Woody Debris
MMRP	Mitigation Monitoring and Reporting Program

MP220	Mid-Pacific Regional Office, Survey and Mapping Division
NAGPRA	Native American Graves Protection and Repatriation Act
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCAO	Northern California Area Offices
NCRWQCB	North Coast Region Water Quality Control Board
NCUAQMD	North Coast Unified Air Quality Management District
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
N_2O	nitrous oxide
NRHP	National Register of Historic Places
NTU	Nephelometric Turbidity Units
OHWM	Ordinary High Water Mark
PA	Programmatic Agreement
PM_{10}	Suspended particulate matter less than 10 microns in diameter
PMF	Probable Maximum Flood
PRC	Public Resources Code
Reclamation	Bureau of Reclamation
SHPO	State Historic Preservation Office
SONCC	Southern Oregon/Northern California Coasts
SR	State Route
SRA	Shaded Riverine Aquatic
SWPPP	Storm Water Pollution Prevention Plan
TAC	Toxic Air Contaminant
TCRCD	Trinity County Resource Conservation District
TRRP	Trinity River Restoration Program
TRRPO	Trinity River Restoration Program Office
USACE	United States Army Corps of Engineers
USC	United States Code
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
VAU	Visual Assessment Unit
VFD	Volunteer Fire Department
YT	Yurok Tribe

1 PURPOSE OF AND NEED FOR ACTION

1.1 Introduction

The United States Department of Interior (USDI) Bureau of Reclamation (Reclamation), Northern California Area Office (NCAO), with assistance from Reclamation's Trinity River Restoration Program Office (TRRPO) staff, has prepared this environmental review document for construction and aquatic habitat work planned as part of the Buckhorn Dam/Grass Valley Creek (GVC) Toe Drain and Channel Rehabilitation Project. This review was completed in coordination with the Trinity County Resource Conservation District (TCRCD) as the California state lead agency under the California Environmental Quality Act (CEQA). The review analyzes the potential impacts of the proposed activities according to National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321 et seq.) and CEQA (California Public Resources Code [PRC], Section 21000 et seq.) guidelines. The results of these analyses are recorded in this project Environmental Assessment/Initial Study (EA/IS).

This combined NEPA/CEQA document evaluates the environmental impacts of the proposed actions in the Buckhorn Dam outlet channel at the base of Buckhorn Dam. For purposes of this document, the two water-bearing channels at the base of the dam are defined as: 1) GVC which flows downstream of the spillway and receives all overflow from the Buckhorn Dam Reservoir, and 2) the Buckhorn Dam outlet channel which essentially is the "headwaters of GVC," that has remained at approximately constant flows (6-10 cubic feet per second [cfs]) since the dam was built. This EA/IS provides site-specific details for environmental impact analyses and discloses the direct, indirect, and cumulative environmental effects that would result from the proposed actions as required by NEPA, CEQA, the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] 1500-1508), as well as Reclamation's NEPA Handbook. The EA/IS provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI) that presents the reasons why implementation of the proposed action would not result in "significant" environmental effects under NEPA (40 CFR 1508.27). Similarly, under CEQA, TCRCD will either adopt a Negative Declaration, a Mitigated Negative Declaration, or decide to prepare an Environmental Impact Report (EIR).

Many concepts are common between NEPA and CEQA although the laws sometimes use different terminology for common concepts. For the purposes of this document, NEPA standard language is used where there is a difference in terminology between the two acts. The EA is organized following guidance in Reclamation's NEPA Handbook with additional documentation in the project file, as applicable.

1.2 Background

Buckhorn Dam is located in Trinity County along the eastern border with Shasta County near Buckhorn summit. The dam is approximately 1 mile south of Highway 299, 13 miles southeast of the town of Weaverville, and 25 miles west-northwest of Redding, California (Figure 1). The proposed project is located west of the Buckhorn Dam outlet works, primarily within the Buckhorn Dam outlet channel and includes portions of Sections 15, 16, and 22, Township 32 North, Range 8 West, of the Mount Diablo Meridian. The project area extends from the Buckhorn Dam outlet works plunge pool downstream approximately 800 feet within the

Buckhorn Dam outlet channel (Figure 2). This channel continues for another 1,500 feet to where it confluences with GVC below the spillway. Since the construction of Buckhorn Dam, this outlet channel has been considered the headwaters of GVC. GVC is a fourth order stream that extends approximately 10.8 miles from Buckhorn Dam to the Trinity River. Proposed actions would occur entirely on Reclamation managed lands.

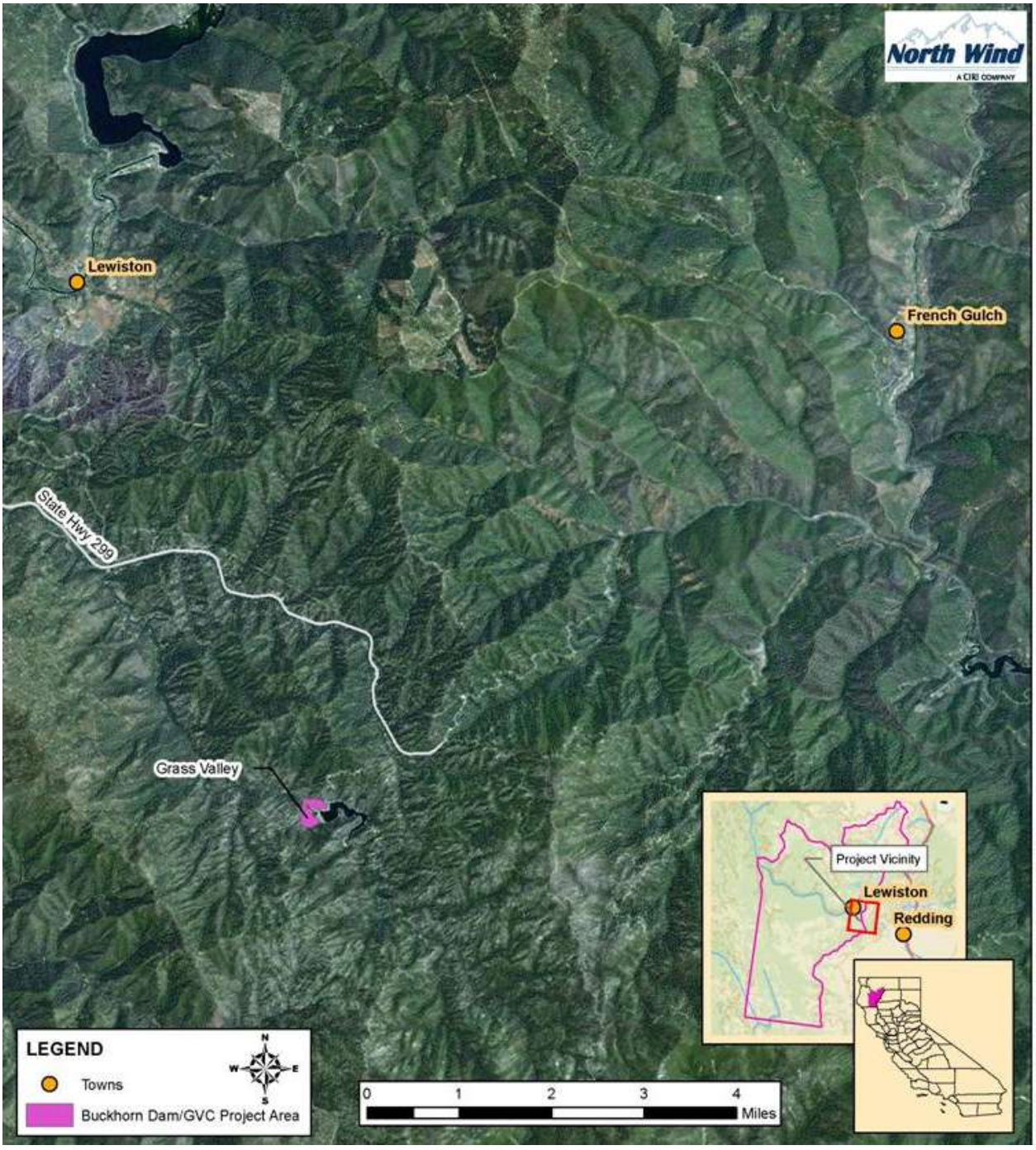

Figure 1. General project location.

Reclamation began construction on the Buckhorn Dam in 1988, with construction completed in November 1991. The dam was built to trap fine sediment eroding from upper GVC watershed in order to reduce fine sediment input into the Trinity River. The dam has an uncontrolled/ungated "run of the river" concrete spillway on the north end of the dam that spills during the winter-spring runoff period or storm events. The dam also has a buried 800 foot long gated conduit system as the main outlet works. This provides water to the outlet channel where work is proposed. Reclamation historically has managed the outlet works discharge level between 6 and 10 cfs throughout the calendar year. Since construction of the dam in 1991, the outlet channel has been filling with sediment and the water surface elevation in the outlet channel has correspondingly risen. The toe-drains, which are designed to be dry and to serve as an indicator of dam integrity, are currently submerged and thus not useful for measuring dam seepage. The inability to measure dam seepage has created a "Safety of Dams" issue.

1.3 Purpose of and Need for Action

NEPA regulations require that an EA briefly specify the need that an agency is responding to in proposing an action (40 CFR, Section 1508.9(a)). Similarly, CEQA requires that an IS include a statement of the objectives to be achieved by a proposed project (CEQA Guidelines, Section 15124(b)). The information in this section addresses both of those requirements.

Soon after Buckhorn Dam was completed, deposition began occurring immediately downstream of the outlet works discharge pipe. This has caused the Buckhorn Dam outlet channel to aggrade (fill) approximately 1-3 feet in elevation immediately downstream of the dam outlet works for approximately 600 feet resulting in a corresponding increase in the water surface elevation. Toe drains located at the downstream side of the dam near the outlet works are designed to be dry; the increased water surface elevation in the Buckhorn Dam outlet channel does not allow measurement of dam seepage because the streambed aggradation has caused water to back up into the outlet works and toe drains. The inability to measure dam seepage hinders assessment of the dam's structural integrity; without the ability to measure toe drain flows, it is likely that seepage could go undetected and could possibly result in dam failure.

A dam failure is typically the result of neglect, poor design, or structural damage caused by a major event such as an earthquake. If Buckhorn Dam were to fail or make unusually high discharges, human lives and/or property downstream would be in danger (Trinity County 2002). According to Reclamation's Emergency Action Plan for Buckhorn Dam, a release of the Probable Maximum Flood (PMF) would result in the following (Trinity County 2002; USBR 2007):

- Endanger people along GVC downstream from the dam involved in fishing, picnicking, and hiking.
- Flood an Independent Order of Odd Fellows (IOOF) Camp 3.5 miles downstream to a maximum depth along the channel of 31 feet within 21 minutes, washing away two vehicle bridges, a foot bridge, and several houses and potentially affecting people at the camp.
- Inundate State Highway 299 from a point 4.5 miles to 6.5 miles downstream from the dam, within 25 minutes.

- Inundate California Department of Forestry and Fire Protection (CDF) Station #61 and other residential dwellings in close proximity to the station, 6.1 miles downstream, within 30 minutes, to a maximum depth of 15 to 20 feet.
- Reach the Trinity River 9 miles downstream within 45 minutes, bringing tons of sediment and other debris into the river, which would have at least a short-term severe negative impact on fisheries and other aquatic life.
- Pose a potential threat to low-lying areas of the floodplain along the Trinity River for approximately 10 miles downstream from its confluence with GVC.
- Pose a potential threat to any house situated within the floodplain of GVC.

In addition to the need to correct the dam safety issue, the Buckhorn Dam outlet works could be enhanced to provide additional fish habitat. GVC is a fourth order stream that has coho salmon (*Oncorhynchus kisutch*) living throughout the 10.8 miles of stream length from Buckhorn Dam to the Trinity River. The dam does not have a fish passage system and thus eliminates migration to the upper 9 miles of historic headwater habitat. GVC currently serves as one of the vital production tributaries to the Trinity River for coho. The Southern Oregon Northern California Coast Evolutionarily Significant Unit (SONCC ESU) of coho salmon was listed as a threatened population under the Endangered Species Act (ESA) on May 6, 1997. The GVC watershed geology is composed primarily of weathered quartz diorite, commonly referred to as "Decomposed Granite" or "DG", which is easily erodible throughout the stream corridor. Historic poor logging practices in the upper GVC watershed has caused the DG to erode more severely resulting in deposition in critical spawning gravel substrate. In addition, approximately 600 feet downstream of the outlet works is an exposed bedrock outcrop that is causing a natural hydraulic control and raised water surface elevation within the channel. Beaver have taken advantage of this feature and have strategically raised the water an additional foot or more above the bedrock, effectively blocking all coho salmon and all but a few steelhead from accessing this segment of the channel.

As a result of the needs identified above, there are two primary design objectives for this project: 1) Reduce water surface elevations in the Buckhorn Dam outlet works/toe drain system and throughout the initial 600 feet of the Buckhorn Dam outlet channel; 2) Develop coho salmon rearing and potential spawning habitat within the reach. Reclamation and TCRCD are proposing to excavate approximately 4,500 cubic yards (CY) of material from the outlet channel in order to lower the water surface elevation and dry out the toe drains. This would correct submergence problems on the toe drain system so that toe drain measurements can be made at any time during outlet works releases. An additional 4,500 CY of excavation would occur to remove the bedrock intrusion and enhance rearing habitat for juvenile coho salmon and steelhead. It is expected and desired that low velocity and protected habitat enhancements for coho salmon would also benefit other native riparian species (e.g., migratory birds and amphibians). Therefore, a secondary objective is for long-term enhancement of fish and wildlife habitat within the reach; design elements are included in the proposed action to achieve this habitat objective.

1.4 Use Authorization

As stated previously, this site-specific EA/IS for the Buckhorn Dam/GVC Toe Drain and Channel Rehabilitation Project has been prepared to comply with NEPA (42 USC 4321 et seq.) and CEQA (California PRC, Section 21000 et seq.). Reclamation is responsible for funding and implementation of the project activities and is the federal lead agency under NEPA. TCRCD is

the California lead for CEQA and is working with Reclamation to ensure that CEQA guidelines are fulfilled. Both statutes generally require that governmental agencies disclose information about proposed activities that may affect the environment, evaluate the potential environmental impacts of their proposed actions before making formal commitments to implement them, and involve the public in the environmental review process. Physical implementation/construction of the project cannot begin until the environmental review under NEPA and CEQA is completed.

In addition to CEQA and NEPA, the Proposed Action is subject to a variety of federal, state, and local statutes, regulations, policies, and other authorities. The Proposed Action may require approval of federal, state, and local agencies, which would generally be granted in the form of permits. Permit approval for the Proposed Action would be largely based on information contained within the EA/IS. However, additional data may be needed before permits can be granted. Permits and/or approvals that may be needed for this project are included in Table 1.

Coordination with the National Marine Fisheries Service (NMFS) on the project is ongoing and a project Biological Assessment (BA) will be completed prior to project implementation. Coordination with the California Department of Fish and Game (CDFG) is not anticipated since this is a federal project occurring entirely on federally-managed lands. A cultural resource survey has been completed and approved by Reclamation's Mid-Pacific Region office and the California State Historic Preservation Office (SHPO). A wetland delineation was completed by North Wind, Inc on April 18 and 19, 2011, a verification visit was conducted by the U.S. Army Corps of Engineers (USACE) on September 13, 2011, and written confirmation of the preliminary jurisdiction was provided on September 27, 2011.

Table 1. Potentially required permits and approvals.

PERMITS AND APPROVALS	RESPONSIBLE AGENCY
Section 401, Clean Water Act, water quality certification	North Coast Region Water Quality Control Board
Section 402, Clean Water Act, National Pollution Discharge Elimination System – Construction Activities Storm Water General Permit	State Water Resources Control Board
Section 404, Clean Water Act, discharge of dredged and fill material into waters of the United States, including wetlands	U.S. Army Corps of Engineers
Biological Opinion under the Endangered Species Act	National Marine Fisheries Service
Section 106 consultation, National Historic Preservation Act	California State Historic Preservation Office and Reclamation

1.5 Public Involvement, Consultation and Coordination

Reclamation, represented by members of the TRRPO and TCRCD, held a public meeting to inform the public about the preparation of the EA/IS for this project. The public meeting was held on July 20 at 7:00 pm, during the TCRCD Board meeting, at which comments (written and oral) were invited. Notice of the time and location for the public meeting was posted on the Trinity River Restoration Program (TRRP) website (http://www.trrp.net) and in the local Trinity Journal newspaper. No substantive comments were received at this public scoping meeting. This current EA/IS is posted on Reclamation's website at:

http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=8562 and on the TCRCD's website at: http://www.tcrcd.net/.

All written comments and questions regarding this environmental document and impacts evaluated under NEPA and/or CEQA, should be addressed to:

Alex Cousins
Trinity County RCD
P.O. Box 1450
Weaverville, California 96093
acousins@tcrcd.net
Phone: (530) 623-6004
Fax: (530) 623-6006

The official public review period for the EA/IS will begin when the document is submitted to the State Clearinghouse in fall 2011. The document will be circulated to local, state, and federal agencies and to interested organizations and individuals for review and comment on the analysis provided in this document. The public scoping period will run for 30 days from the time the EA/IS is submitted to the State Clearinghouse. Concurrent with this review period, public notice will be provided to solicit additional comments from the public and interested parties. Public notice will include: advertisement in the local Trinity Journal newspaper, letters mailed to local landowners, and public notice posted at the project site informing the public of the availability of the EA/IS for review.

Copies of this document will be made available for review at the following locations:

U.S. Department of Interior
Bureau of Reclamation
Trinity River Restoration Program
1313 South Main Street
Weaverville, California 96093

U.S. Department of Interior
Bureau of Land Management
Redding Field Office
355 Hemsted Drive
Redding, California 96002

Trinity County Resource Conservation District
#1 Horseshoe Square
Weaverville, California 96093

Trinity County Library, Weaverville Branch
211 Main Street
Weaverville, California 96093

Bureau of Reclamation – at Shasta Dam
16349 Shasta Dam Boulevard
Shasta Lake, California 96019

2 PROPOSED ACTION AND ALTERNATIVES

This chapter describes the alternatives considered for the Buckhorn Dam outlet channel rehabilitation project. A full description of the Proposed Action Alternative is presented along with a description of the No Action Alternative as required by CEQ regulations (40 CFR §1502.14d).

2.1 Alternative Development

The Proposed Action Alternative was developed by an interdisciplinary team (ID Team) of engineers and resource specialists based on issues identified during internal scoping and an understanding of the purpose and need for the project. Appropriate resource protective measures were considered as part of development of the alternative.

To date there have been three design surveys conducted at the project site. In the fall of 2009 Reclamation's Mid-Pacific Regional Office, Survey and Mapping Division (MP220) performed an initial topographic and water surface elevation survey of the project site. In December 2010 Reclamation performed a follow up topographic and water elevation survey to expand the original MP220 survey extents both downstream and laterally onto the floodplain/upland areas. In April 2011 Reclamation surveyed surface elevation limits during a 100 cfs high water flushing peak release to calibrate future hydraulic model development. On-site geological investigations were not conducted due to an abundance of existing historic data that was initially collected along this reach during the Buckhorn Dam pre-construction and construction phases. The preliminary design has received initial review by the TRRPO, other Reclamation offices, and the TCRCD. Comments received through this review would be incorporated into the design as applicable.

2.2 Alternative 1 – No Action

Under the No Action Alternative, Reclamation would not fund or participate in any rehabilitation work at the Buckhorn Dam outlet channel at this time. As a result, 1) the toe drains would remain submerged resulting in a continued inability to measure dam seepage, thus hindering assessment of the dam's structural integrity, and 2) no additional juvenile coho salmon rearing areas would be created. The environmental consequences (described in Chapter 3) of not lowering the water level are related to the potential for resource impacts if the toe drains were to continue to operate impaired and if a dam failure were to occur. The No Action provides the basis of comparison with the Proposed Action and is a description of the most likely future condition that could occur if the Proposed Action were not implemented.

2.3 Alternative 2 – Proposed Action

The Proposed Action includes two primary design objectives: 1) Reduce water surface elevations in the Buckhorn Dam outlet works/toe drain system and throughout the initial 600 feet of the outlet channel reach; 2) Develop coho salmon rearing and potentially spawning habitat within the project area (Figure 2).

The project will require approximately 9,000 CY of earthen excavation material in order to lower the outlet channel and to develop coho salmon habitat features. Approximately half of the excavation volume is for lowering and re-alignment of the outlet channel within the project reach and the remaining volume is to excavate slow water habitat ponds and side channels. The

project reach extends from the Buckhorn Dam outlet works plunge pool downstream to where the outlet channel confluences with GVC below the spillway (Figure 2). The primary work area is located within approximately 800 feet of the outlet structure along the outlet channel corridor. The design alters the centerline alignment and profile of the outlet channel, creating more sinuosity, building pool/riffle habitat, lowering streambed elevations, increasing slope, widening the cross-sectional area, and developing inset floodplain benches. The design also redevelops the meander pattern of the 800 feet outlet channel by increasing the meander wavelength to an average of 225 feet (Figure 3).

Two coho salmon rearing ponds are included in the project design; both have an approximate area of 6,000 ft^2 (Figure 3). The rearing ponds are adjacent to the outlet channel and are connected with side channels that allow a percentage of flow to divert into the slow water pond habitat. The ponds are designed with an average depth of 6 feet but will be built with a variable bottom elevation for diversity of water depth. These pond areas will also be filled with wood material to serve as shelter for rearing salmonids. Large Woody Debris (LWD) structures will be incorporated into the final design for both habitat and geomorphic/hydraulic purposes. LWD will create cover for coho and provide hard points for necessary flow portioning into the side channel/pond areas.

Implementation of the Buckhorn Dam/GVC project would take place during the late summer or early fall 2012. All spoils generated during excavation would be placed at strategic upland locations in approximate locations shown in Figure 2. Access roads and contractor staging are indicated on Figure 2 and Figure 4 and will remain in as good or better condition as compared with pre-construction. Most of the bedrock encountered during construction will be the weathered quartz diorite and can be penetrated with a 40,000 pound excavator.

Dewatering of the project area would be essential during construction and would be implemented by diverting the normal base flow through a pump system. The flow would be pumped and rerouted from behind the outlet works wing walls, around the project reach, and back into the outlet channel downstream of the construction area. Capture and relocation of fish from within the project area to downstream of the confluence with the spillway outlet would be mandatory before excavation begins.

Figure 2. Buckhorn Dam outlet channel rehabilitation project area.

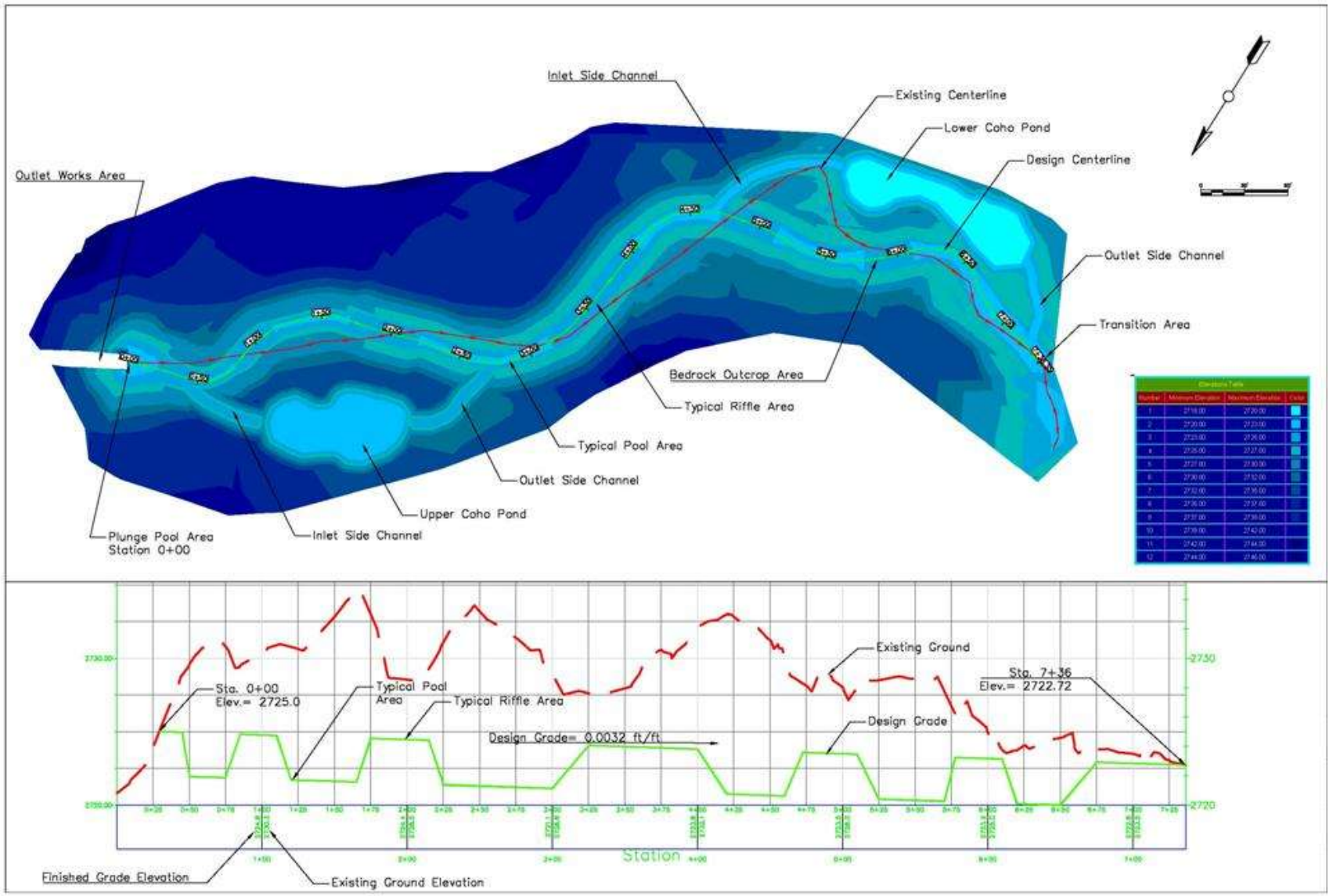

Figure 3. Proposed design of channel rehabilitation activities.

Figure 4. Existing roads within the project area.

2.3.1 Requirements and Mitigations Incorporated into the Proposed Action

The dredging work would take place in a highly sensitive area. Coho salmon, a listed species, are known to use the Buckhorn Dam outlet channel just downstream of the bedrock intrusion for rearing. Steelhead that have passed through the outlet works also reside in the outlet channel where rehabilitation activities are proposed. Thus, precautions (fish rescue) would be taken to guarantee the welfare of the listed species as well as to protect other resources. Because there is little existing fish and wildlife habitat within the project reach during low flow conditions, and because few fish were observed there in pre-project investigations (Gutermuth 2011), mitigation during construction activities would only require that species of concern be moved out of the area prior to dewatering and summer 2012 proposed project implementation.

Reclamation would ensure that the following requirements are performed before or during project implementation, as applicable:

- A fish rescue shall be conducted according to the NMFS Section 7 Consultation and Biological Opinion.
- Contractor shall dewater approximately the first 800 feet of Buckhorn Dam outlet channel area directly downstream of the outlet works plunge pool (Figure 3).
- Contractor shall strictly maintain a minimum flow of approximately 5 cfs through the portion of the Buckhorn Dam outlet channel that does not require excavation.
- Contractor shall document and replant disturbed riparian vegetation according to the USACE Section 404 or Nationwide Permit.
- Contractor shall excavate the Buckhorn dam outlet channel to approximate the design displayed in Figure 3.
- Contractor shall lay back the sides of the new channel to 2:1 side slopes or greater where possible. Side slopes may alternatively be graded to match existing contours.
- Contractor shall remove from the creek, place, and spread the dredged material at a predetermined onsite spoil site (see proposed locations in Figure 2).
- Contractor shall place clean spawning gravel at appropriate locations within the newly excavated channel.
- Contractor shall rewater the newly excavated section of the Buckhorn Dam outlet channel in a manner that maintains North Coast Region Water Quality Control Board

(NCRWQCB) Water Quality Certification requirements. Contractor shall take water samples and test turbidity, as required.

- Contractor shall clean up the site to pre-construction conditions.

2.4 Alternatives Considered but Dismissed

One other alternative was considered but dismissed from further analysis. This alternative is similar to the Proposed Action Alternative but instead of constructing cofferdams, Reclamation would dewater the entire segment of the Buckhorn Dam outlet channel from the outlet works to the confluence of the channel with the spillway channel. Water would be pumped over the spillway channel to maintain water in GVC during reconstruction activities, but no water would remain in the outlet channel. Because coho salmon are known to use portions of the outlet channel upstream of the spillway confluence for rearing and spawning, dewatering the entire outlet channel would pose an unacceptable risk to this listed species that could be avoided by implementing the recommendations described in the Proposed Action Alternative.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Chapter 3 sets the framework for understanding the baseline environment – the existing physical, biological, and socioeconomic characteristics of the area that would be affected by the alternatives described in Chapter 2. The affected environment/environmental setting section for each resource area describes the existing conditions using the most current information available. Throughout the remainder of this document, this baseline will provide the basis for determining whether the Proposed Action's environmental impacts are likely to be significant.

In addition to describing the affected environment, this chapter also assists the reader in understanding the analysis of environmental impacts that would result from implementation of the alternatives. The analysis of anticipated impacts includes those required for both CEQA and NEPA. Under NEPA, actions that could significantly affect the quality of the human environment must be disclosed and analyzed in terms of direct and indirect impacts, whether beneficial or adverse, as well as short and long term, and cumulative effects. Under CEQA, the concept of environmental "impacts" or environmental "effects" (the terms are used synonymously), as well as the determination of the significance of those impacts, is focused on changes in the existing physical conditions in the affected environment.

An environmental effect or impact is defined as a modification or change in the existing environment brought about by the action taken. The analysis of the alternatives is focused on identifying the types of impacts anticipated to occur and estimating their potential intensity. Direct impacts are those that are caused by an action and occur at the same time and place as the action. Indirect impacts are caused by an action but occur later or farther away from the resource although they are still reasonably foreseeable. Beneficial impacts are those that involve a positive change in the condition or appearance of a resource or a change that moves the resource toward a desired condition. In contrast, adverse impacts involve a change that moves the resource away from a desired condition or detracts from its appearance or condition. For this analysis, short-term effects are defined as occurring during the project. Long-term effects are those that would remain for a longer duration after actual project activities have ceased. Cumulative impacts are the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7). Cumulative impacts are discussed at the end of the chapter. The impact analysis for the No Action Alternative was prepared first and serves as a baseline against which to evaluate the environmental consequences of the Proposed Action Alternative. The analysis of the No Action Alternative is based on the assumption that in the absence of any action to address the inability to measure dam seepage, dam failure could occur.

Within the Environmental Impacts analysis for each resource area a statement is included that identifies the methods used to analyze impacts, as well as the key assumptions used in the analysis process. The criteria and thresholds used to identify potentially significant effects on the environment, in accordance with California PRC Section 21082.2 and CEQA Guidelines Sections 15064 and 15065, are also included. "Thresholds" include guidance provided by the CEQA Guidelines, agency standards, legislative or regulatory requirements as applicable, and

professional judgment. All impacts that do not exceed the stated significance criteria described for each section are assumed to be less than significant and are therefore not discussed in detail in the document (PRC Section 21100 and CEQA Guidelines Section 15128). Mitigation measures that would reduce significant impacts associated with the Proposed Action to less than significant levels are identified in each impact discussion.

California PRC section 21081.6(a), subdivision (a), requires lead agencies under CEQA to "adopt a reporting and mitigation monitoring program… in order to mitigate or avoid significant effects on the environment." Mitigation measures that will be implemented in association with the Proposed Action are clearly identified and presented in the "Impacts and Mitigation Measures" section for each resource in language that will facilitate establishment of a monitoring and reporting program. In addition, the design elements and construction criteria that are incorporated into the Proposed Action, as described in Chapter 2, will be included as environmental commitments in conjunction with any mitigation measures adopted by the TCRCD as conditions of project approval. These conditions of project approval will be included in a Mitigation Monitoring and Reporting Program (MMRP) to verify compliance (Appendix A).

3.1 General Setting

Buckhorn Dam is located within the GVC watershed along Upper GVC in a narrow, V-shaped valley (Figure 5). The GVC watershed encompasses 23,525 acres within steep, mountainous terrain ranging in elevation from around 1,600 to 5,950 feet and is an important watershed of the Trinity River Basin. GVC flows northwesterly into the Trinity River about 6 miles downstream from the old Lewiston Bridge. The project area is located in the area surrounding the Buckhorn Dam, continuing approximately 750 feet downstream of the outlet.

Figure 5. Overview photo of GVC and the Buckhorn Dam.

The Buckhorn Dam/GVC project site is accessible off State Route (SR) 299 between Weaverville and Redding, California. The project area can be reached from Weaverville by traveling east on SR 299 for approximately 13.5 miles, turning south onto Shingle Shanty Road

just before Buckhorn Summit. The access road is gated as is the dam itself, which is located approximately 1.65 miles further along the road.

The climate of Trinity County is characterized by hot, dry summers and cold, moderately wet winters (NRCS 1998). Most precipitation in the county results from major storms originating in the Pacific Ocean; however, short thunderstorms occur in the summer months as a result of localized climate conditions. Precipitation in the lower elevations is dominantly rainfall, with occasional snow in the winter while the higher mountain ridges receive precipitation as snow and hold most of it until late spring (North Coast Unified Air Quality Management District 1995). Trinity County has an average summer high temperature of 93.9°F and winter low of 27.3°F.

3.2 Land Use

3.2.1 Affected Environment

The Federal government owns a large percentage of the land in Trinity County, approximately 70 percent. Mining, timber harvesting, and agricultural activities are the main land uses in the county. Timber production, mining, water resources, and recreation are the primary uses on the Federal land (USBR 1986). Land use in the GVC watershed is developed in accordance with the Lewiston/Douglas City Community Plan. Land within the watershed is primarily designated as resource land, which is designated for production of natural resources such as timber production, the primary land use within the GVC watershed. Other designations include several rural residential and agricultural areas along the lower reach of GVC. Planning policy from the Lewiston/Douglas City Community Plan includes maintaining and enhancing the recreational and resource values of the Trinity River. The area offers water, aquatic and terrestrial wildlife habitat, as well as scenery, clean air, and recreation opportunities for human enjoyment.

There are approximately 200 privately owned parcels within the GVC watershed. Most of the land in private ownership is managed for industrial forest products. Many of the private individual parcel owners use the land as primary residences while other parcels are used for vacation homes or for investments. Rural residential areas are concentrated along the lower reaches of GVC and Little GVC and along Lewiston and Browns Mountain Roads (USBR 1986). The community of Lewiston lies about 6 air miles north and just west of the project area.

3.2.2 Environmental Consequences/Impacts and Mitigation Measures

The methodology used for the land use impact analysis involved an assessment of the compatibility of the Proposed Action with relevant plans and policies, and a review of the Trinity County General Plan, Lewiston/Douglas City Community Plan, and zoning in relation to surrounding land uses and site features. The analysis was conducted through a literature review and site visit.

Impacts to land uses would be significant if they would:

- Result in land uses that are incompatible with existing and planned land uses adjacent to actions described as part of the project;
- Conflict with any applicable land use plan, policy, ordinance, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect;
- Disrupt or divide the physical arrangement of an established community; or

- Result in substantial nuisance effects on sensitive land uses that would disrupt use over an extended time period.

3.2.2.1 No Action Alternative

Under the No Action Alternative, no activities would occur. Therefore, there would be no direct impacts to land use. In the event of dam failure resulting from lack of measures to address the identified safety of dam issue, flood waters could indirectly impact land use downstream by damaging roads and/or bridges and flooding the I.O.O.F. Camp, CDF Station #61, and other residential dwellings. This would disrupt existing uses for an extended period of time.

3.2.2.2 Proposed Action Alternative

The Proposed Action Alternative is consistent with the goals, policies, and objectives of existing plans, including the Trinity County General Plan, as well as the Lewiston/Douglas City Community Plan. During project implementation construction crews and equipment would be present in the project area for up to three months during the late summer or early fall 2012. This would not interfere with, preclude, or conflict with existing land uses adjacent to the project area. Based on the analysis above, potential conflicts with or disruptions to adjacent land uses resulting from activities associated with the Proposed Action would be less than significant. Because this potential impact is less than significant, no mitigation is required.

3.3 Soils and Geology

3.3.1 Affected Environment

Most of the GVC drainage basin is located within the Shasta Bally Batholith, which is an igneous pluton that intruded the older assemblage of quartz-mica schists, felsic and mafic volcanic rocks, conglomeratic and shaly sedimentary rocks ranging in age from the Precambrian to the Mississippian (USBR 2010). The rocks of the batholith range in composition from granite to diorite. Much of the area is covered in an accumulation of Cenozoic era alluvial deposits. Quaternary alluvial deposits occur within the tributary drainages and creek bed. On the hillsides, quartz diorite is usually covered by slopewash consisting primarily of silty sand.

The GVC watershed geology is unique in that the stream corridor contains easily erodible weathered quartz diorite, commonly referred to as "decomposed granite" or "DG" soils. Soils developing on granitic rocks are sandy and have weak or no profile development. Erosion hazards are high when these soils are disturbed and weathered parent material is exposed (USBR 1986). Historic logging practices in the upper GVC watershed have caused the DG to erode more severely and cause deposition in critical spawning gravel substrate. These DG soils are a chronic source of fine sediment to streams and rivers (USBR 2010).

Within the project area, the outlet channel meanders across an alluvium-filled floodplain which ranges from 240 to 460 feet in width, composed largely of loose to firm silty sand and poorly graded sand with silt. Terrace deposit remnants scattered on hillsides above the present-day creek bed consist of mostly silty sand, poorly graded to silty sand and sandy lean clay. The project area contains three main soil map units (NRCS 2011). A brief characterization of the soil map units found within the site is presented below.

Haploxerolls, 2 to 9 percent slopes (148). This map unit is found on stream terraces and alluvial fans. This unit is about 85 percent Haploxerolls and similar soils and 4 percent minor

components consisting of xerofluvents (2 percent) and riverwash (2 percent). The Haploxerolls soil is well drained with a high infiltration rate. Available water capacity is low. Runoff is slow and the hazard of water erosion is slight.

Minersville Sandy Loam, 50 to 75 percent slopes (177). This map unit is found on mountain slopes. It is composed of about 85 percent Minersville and similar soils and 2 percent minor components consisting of xerofluvents (2 percent). The Minersville Sandy Loam soil is well drained with a moderate infiltration rate when thoroughly wet. Available water capacity is high. This soil map unit is located on the hillslope above the creek and floodplain and is not subject to flooding or ponding.

Valcreek–Minersville–Choop Complex, 30 to 50 percent slopes (204). This map unit is found on mountain slopes. This unit is about 35 percent Valcreek and similar soils, 25 percent Minersville and similar soils, 20 percent Choop and similar soils, and 2 percent minor components consisting of xerofluvents (2 percent). The Valcreek soil is excessively drained with a moderate infiltration rate. Available water capacity is very low. Runoff is slow and the hazard of water erosion is very severe. This soil map unit is on the hillslope above the outlet channel and its floodplain and is not subject to ponding or flooding.

3.3.2 Environmental Consequences/Impacts and Mitigation Measures

Data for the following analysis were taken from existing reports on regional and local geology as well as on-site assessments during field reviews. These reports include the following documents: Soil Survey of Trinity County, California, Weaverville Area (NRCS 1998); site-specific report documenting wetland delineations performed by North Wind, Inc. for Reclamation (North Wind, Inc. 2011); Trinity County General Plan (Trinity County 2003); and the WebSoilSurvey (NRCS 2011).

Significant impacts would occur if the project would:

- Expose people, structures, or critical utility facilities to major geologic hazards (including seismicity, landslides, seiches, and liquefaction);
- Interfere with existing, proposed, or potential development of mineral resources;
- Involve changes in topography that would result in unstable soil conditions; or
- Increase erosion rates to a level at which associated sedimentation levels could affect streams, rivers, or other water bodies.

3.3.2.1 No Action Alternative

The No Action Alternative eliminates any direct soil erosion or sedimentation effects. Because no construction activities would occur, there would be no new exposure of structures and people to geologic hazards. There would not be any interference with existing, proposed, or potential development of mineral resources. Furthermore there would be no construction-related erosion or associated sedimentation of GVC. Indirectly however, lack of measures to address the identified safety of dam issue could result in increased erosion and sedimentation in the event of dam failure. The PMF would bring tons of sediment and other debris into GVC and the Trinity River, which would have at least a short-term severe adverse impact on fisheries and other aquatic life.

3.3.2.2 Proposed Action Alternative

Under the Proposed Action, no permanent structures or facilities would be constructed. There would be no exposure of structures and/or people to geologic hazards, including ground shaking and liquefaction, a process whereby water-saturated granular soils are transformed to a liquid state during ground shaking. The type of activities described in Chapter 2 would not affect the potential for liquefaction or be affected by liquefaction were it to occur.

There is little known mineral development within the GVC watershed. Therefore, implementation of the project is not expected to interfere with existing, proposed, or potential development of mineral resources.

Construction activities associated with the project could result in increased erosion and short-term sedimentation of the outlet channel and GVC. Implementation would involve dredging to lower the streambed between 1 and 3 feet, including removal of a bedrock intrusion that is preventing coho salmon from using part of this reach, and restoration activities to improve fish habitat, including removing stream-side vegetation, grading stream edges, revegetating reconstructed floodplains, and adding gravels to the stream. The project would require approximately 9,000 CY of excavation for these activities.

The exposure of DG soils during and after construction would increase the potential for soil erosion and sedimentation. (Impacts of turbidity levels specific to water quality degradation are analyzed below, in Section 3.4, Water Resources, and associated impacts to anadromous fisheries are analyzed in Section 3.6, Fishery Resources.)

Dewatering of the project area as described in Chapter 2 would be essential during construction in order to reduce the potential for exposing newly disturbed and/or stable sediments and other alluvial materials to flowing water. Sediment exposed to flowing water has an increased potential to mobilize and be transported downstream resulting in impacts such as short-term increases in surficial and channel erosional processes; increases in turbidity levels downstream; and changes to type, volume and character of deposition downstream. As described in Section 2.3.1, *Requirements and Mitigations Incorporated into the Proposed Action*, the contractor would rewater the newly dredged section of the outlet channel in a manner that strictly maintains NCRWQCB Water Quality Certification requirements after project activities have been completed. The contractor would take water samples and test turbidity/settleable solid levels and present the sampling data to Reclamation for compliance verification. Monitoring results from previous TRRP channel rehabilitation projects that included actions similar to those proposed here (i.e., Hocker Flat, Canyon Creek, Indian Creek, and Lewiston-Dark Gulch) demonstrate that these impacts decrease rapidly once construction activities have ceased.

The use of heavy equipment for project activities would likely increase soil compaction and potentially surface water runoff. An increase in the volume of surface water runoff increases the potential for erosion. Thus, any significant increase in soil compaction would cause a potentially significant increase in erosion. Therefore, this impact is significant.

Because construction activities associated with the Proposed Action could result in increased erosion and short-term sedimentation of the outlet channel and GVC, the mitigation measures identified below will be implemented to reduce the potential for impacts. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

SOIL-1: Areas where ground disturbance will occur will be identified in advance of construction and limited to only those areas that have been approved by Reclamation.

SOIL-2: All vehicular construction traffic will be confined to the designated access routes and staging areas.

SOIL-3: Disturbance will be limited to the minimum necessary to complete all project activities.

SOIL-4: All supervisory construction personnel will be informed of environmental concerns, permit conditions, and final project specifications.

SOIL-5: Reclamation will prepare an erosion and sedimentation control plan (Storm Water Pollution Prevention Plan [SWPPP]) and will ensure that its measures for erosion control will be prioritized based on proximity to the stream. The following will be used as a guide to develop this plan:

- Restore disturbed areas to pre-construction contours to the fullest extent feasible.
- Salvage, store, and use the highest quality soil for revegetation.
- Discourage noxious weed competition and control noxious weeds.
- Leave drainage gaps in topsoil and spoil piles to accommodate surface water runoff.
- To the fullest extent possible, cease excavation activities during significantly wet or windy weather.
- Use bales, wattles, and/or silt fencing as appropriate.
- Before seeding disturbed soils, work the topsoil to reduce compaction caused by construction vehicle traffic.
- Post construction, rip project edges to encourage revegetation.
- Spoil sites will be located such that they do not drain directly into a surface water feature, if possible. If a spoil site will drain into a surface water feature, catch basins will be constructed to intercept sediment before it reaches the feature. Spoil sites will be graded and vegetated to reduce the potential for erosion.
- Sediment control measures will be in place prior to the onset of the rainy season to ensure that surface water runoff does not occur. Project areas will be monitored and maintained in good working condition until disturbed areas have been seeded and mulched or revegetated in another fashion. If work activities take place during the rainy season, erosion control structures will be in place and operational at the end of each construction day.

3.4 Water Resources and Water Quality

3.4.1 Affected Environment

In 1963, through construction of the Trinity and Lewiston Dams, the Central Valley Water Project began diverting 90 percent of the upper Klamath River Basin natural flows of the Trinity River. The tributary component of total Trinity River basin runoff has increased because of this diversion. GVC is a tributary of the Trinity River that flows through the southeastern portion of the basin and is located about 7 miles downstream of the dams (USBR 2010). Average rainfall in the watershed is between 50 and 70 inches per year. A portion of this precipitation becomes runoff to the Trinity River, via GVC. Runoff patterns are characterized by high winter and spring flows and low summer flows (USBR 1986).

The Buckhorn Dam is an embankment dam with a reservoir capacity of 1,100 acre-feet at normal water surface. Gauge records at the mouth of GVC since the dam was constructed indicate a variable hydrology with a mean average flow of approximately 20 cfs. Discharge fluctuations range from a minimum of 6 cfs which is controlled by the Buckhorn Dam outlet works and winter-spring runoff events that can reach up to 1,000 cfs for a short multiple hour duration. Approximately 600 feet downstream of the plunge pool within the outlet channel, there is an exposed bedrock outcrop that is causing a natural hydraulic control and raised water surface elevations. Beaver have taken advantage of this feature and have strategically raised the water an additional foot or more above the bedrock.

The hydrology of the site is influenced almost exclusively by GVC and intermittent springs surfacing at the base of the valley. From the adjacent quartz diorite ridge, the water table slopes toward GVC. Active springs, seeps and a swamp area are confined to the channel area (USBR 2011). Since flows into the outlet channel are regulated between 6 to 10 cfs throughout the year, the ground water level in the adjacent soils remains rather constant. Flows in GVC, downstream of the spillway, can rise to 1,000 cfs during winter or spring runoff events.

Before the dam was constructed the water quality of GVC was considered to be excellent with the exception of sediment (USBR 1986). Prior to the dam, significant quantities of sediment, particularly sand-size decomposed granite particles, would be eroded during periods of high flow. This sediment would enter GVC and the Trinity River resulting in sedimentation problems and increased turbidity in both of those waterbodies. Construction of the sediment dam and sediment retention ponds at the mouth of GVC in 1991 (the Hamilton ponds), has reduced the amount of sediment input that is occurring.

In general, GVC has good water quality during the summer. The riparian overstory canopy is moderately dense to dense along most stream reaches, which helps moderate water temperatures (Baldwin 2002). Figure 6 shows typical riparian vegetation along the stream within the project area. Spawning habitat was improved downstream from the Buckhorn Dam after its construction, but there are still many potential sources of sediment from tributaries to GVC and Little GVC. If sedimentation from these subwatersheds is maintained at current rates or reduced, it is likely that habitat will be maintained or improved (Baldwin 2002).

Figure 6. Photos of typical riparian vegetation density along the outlet channel.

Trinity County adopted its first floodplain ordinance in 1988, with revisions in 1993 and 2000. The 2000 amendment addressed growing concerns about development within mapped floodplain

areas. Though the project area is located along the outlet channel, and portions lie within the 100-year floodplain, no detailed floodplain studies have been prepared for this undeveloped area.

3.4.2 Environmental Consequences/Impacts and Mitigation Measures

Reclamation and the TCRCD have implemented similar activities (excavation and dewatering during aquatic habitat restoration) to those proposed for the project area. While the type and intensity of these activities have varied, the effects of these activities on water quality are well understood. Impacts on water quality were evaluated analyzing whether the proposed modification of the physical features and biological conditions at the project area would comply with Basin Plan objectives for the Trinity River and its tributaries.

The Proposed Action would have a significant impact related to water resources if one of the following conditions occurred:

- It could subject people, structures, or other resources to substantial changes in flood hazards; or
- It would result in modification of groundwater resources.

The Proposed Action would result in a significant impact related to hydraulics if one of the following conditions occurred:

- The base floodwater surface elevation would increase by more than 1 foot;
- There would be a substantial alteration of the existing drainage pattern of a site or area, including the alteration of the course of a stream or river, or a substantial increase in the rate or amount of surface runoff in a manner that would result in flooding on- or off-site; or
- It would 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.

The Proposed Action would result in a significant impact to groundwater if one of the following conditions occurred:

- There would be a long-term decline in groundwater elevations (or a net reduction in groundwater storage) due to interference with recharge;
- There would be detectable land subsidence;
- Any water quality standards or waste discharge requirements intended to protect groundwater quality would be violated; or
- There would be a detectable degradation of groundwater quality.

The Proposed Action would result in significant adverse impacts to water quality if it would result in any of the following:

- Violations of state or federal numerical water quality standards or state or federal narrative water quality objectives;
- Substantial degradation of water quality, such that existing beneficial uses are precluded specifically because of degraded water quality;
- Violation of any waste discharge requirements and/or Section 401 Certification conditions; or
- Substantial alterations of the course of a stream or river in a manner that would result in substantial erosion or siltation onsite or offsite.

3.4.2.1 No-Action Alternative

The No Action Alternative would eliminate all construction activities associated with the Proposed Action; thus there would be no direct impacts to water resources. There would be no effects on local groundwater levels and the out-flow channel floodplain would not be altered and the existing base floodwater elevation would not change. No construction-related contamination of the outlet channel or GVC from spills of hazardous materials would occur because the project would not be constructed. There would be no increases in stormwater runoff and the potential for subsequent erosion.

However, the No Action Alternative has a higher potential to indirectly degrade water quality and contribute to or cause violation of water quality standards than the Proposed Action due to the increased likelihood of dam failure. In the absence of measures to address the identified safety of dam issue, dam failure would contribute tons of sediment and other debris into GVC and the Trinity River, which would have at least a short-term severe adverse impact on water resources.

3.4.2.2 Proposed Action Alternative

The elevation and extent of the Buckhorn Dam outlet channel floodplain would be modified through activities associated with the Proposed Action; however, this would not result in an increase in the base floodwater elevation. Therefore, the impact would be less than significant.

The displacement of channel and floodplain materials has only a minimal potential to change groundwater hydraulics within the project area boundaries. The tendency of the surface water-groundwater system to move to equilibrium conditions and the overall absence of impacts to the regional driving mechanisms of groundwater recharge, such as seasonal precipitation, suggest that no long-term impacts on water table elevations would occur. Therefore, this impact would be less than significant.

The Proposed Action would not result in activities that would increase base floodwater elevations in the project area. The main objective of activities associated with the Proposed Action is to reduce the risk of dam failure and subsequent flooding. Measures would be employed as part of the Proposed Action to stabilize disturbed areas to reduce the potential for erosion. Because the Proposed Action is designed to avoid exposing people or structures to a significant risk of injury, death, or loss involving flooding, this impact would be less than significant.

The outlet channel would be dewatered before and during in-channel construction activities. Therefore, there would not be an increase in turbidity and total suspended solids during construction. However, increases in turbidity levels could occur when water is returned to the outlet channel because of disturbance to alluvial material related to removal of approximately 9,000 CY of excavated material in order to lower the outlet channel water surface and to develop coho salmon habitat features. Fine sediments may be suspended in the stream for several hours following construction activities. The extent of downstream sedimentation would be a function of the size and mobility of the substrate. For example, fine-grained sediments like silts and clays could be carried several thousand feet downstream of construction zones, while larger-sized sediments like coarse sands and gravels tend to drop out of the water column within several feet of the construction zone. Collectively, the activities included in the Proposed Action could result in short-term increases in turbidity and suspended solids concentrations in the water column.

Post-construction exposure of sediments to rainfall and/or flows would also result in short-term increases in turbidity and suspended solids concentrations in the water column. These short-term increases in turbidity and suspended solids levels after construction would be a significant impact. Therefore, the following mitigation measures will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

WATER-1: To ensure that turbidity levels do not exceed the thresholds listed in the Basin Plan for the North Coast Region (North Coast Regional Water Quality Control Board 2007), after in-stream project construction activities, Reclamation shall monitor turbidity levels upstream within 50 feet of project activities (i.e., natural background) and 500 feet downstream of the in-stream construction activities that could increase turbidity. At a minimum, field turbidity measurements shall be collected whenever a visible increase in turbidity is observed. Monitoring frequency shall be a minimum of every two hours during in-stream work periods and when activities commence that are likely to increase turbidity levels above any previously monitored levels.

If grab sample results indicate that turbidity levels exceed 20 nephelometric turbidity units (NTU) at 500 feet downstream from project activities, remedial actions will be implemented to reduce and maintain turbidity at or below 20 NTU immediately downstream of the 500 linear foot zone of dilution. Potential remedial actions include halting or slowing construction activities and implementation of additional best management practices (BMPs) until turbidity levels are at or below 20 NTU.

WATER-2: Fill gravels used on the streambeds and stream banks will be composed of washed, spawning-sized gravels from a local Trinity River Basin source. Gravel will be washed to remove any silts, sand, clay, and organic matter and will be free of contaminants such as petroleum products.

WATER-3: Reclamation will prepare and implement a SWPPP that describes BMPs for the project, including silt fences, sediment filters, and routine monitoring to verify effectiveness. Proper implementation of erosion and sediment controls will be adequate to minimize sediment inputs into the Trinity River until vegetation regrowth occurs. All required controls and BMPs, including sediment and erosion control devices, will be inspected daily during the construction period to ensure that the devices are properly functioning. Excavated and stored materials will be kept in upland activity areas with erosion control properly installed and maintained. Excavated and stored materials will be staged in stable upland activity areas. All applicable erosion control standards will be required during stockpiling of materials.

WATER-4: To minimize the potential for increases in turbidity and suspended sediments entering GVC as a result of access routes, Reclamation will implement the following protocols:

- Keep bare soil to the minimum required by designs. Erosion control devices/measures will be applied to areas where vegetation has been removed as needed to reduce short-term erosion prior to the start of the rainy season.
- Keep runoff from bare soil areas well dispersed. Dispersing runoff keeps sediment on-site and prevents sediment delivery to streams. Direct any concentrated runoff from bare soil areas into natural buffers of vegetation or areas with more gentle slopes where sediment can settle out.

- Disconnect and disperse flow paths that might otherwise deliver fine sediment to the stream channel.
- Decompact or rip disturbed areas so that surfaces are permeable and no surface water runoff occurs.

Construction staging activities could result in a spill of hazardous materials (e.g., oil, grease, gasoline, and solvents) into the outlet channel and GVC. Operation of construction equipment in or adjacent to the stream could also increase the risk of a hazardous material spill into the river (e.g., from leaking of fluids from construction equipment). Spills of hazardous materials into or adjacent to the outlet channel could degrade water quality and have deleterious effects on salmonids of any life stage that are in close proximity to construction activities. Section 3.14, Hazards and Hazardous Wastes, evaluates potential effects to the public associated with the transportation and use of hazardous materials at the rehabilitation site. Design elements and construction criteria would be incorporated into the project description to reduce the potential impact. However, construction activities could result in a spill of hazardous material, which would be a significant impact. Therefore, the following mitigation measures will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of these mitigation measures would reduce the impacts to less than significant.

WATER-5: Reclamation will prepare and implement a spill prevention and containment plan in accordance with applicable federal and state requirements.

WATER-6: Reclamation will ensure that any construction equipment that will come in contact with outlet channel waters will be inspected daily for leaks prior to entering the dewatered or flowing channel. External oil, grease, and mud will be removed from equipment using steam cleaning. Untreated wash and rinse water will be adequately treated prior to discharge if that is the desired disposal option.

WATER-7: Reclamation will ensure that hazardous materials, including fuels, oils, and solvents, not be stored or transferred within 150 feet of the active stream channel. Areas for fuel storage, refueling, and servicing will be located at least 150 feet from the active channel or within an adequate secondary fueling containment area. Gas pumps and engines will be stored and maintained on impermeable barriers so that any leaking petroleum products are isolated from the ground. In addition, the construction contractor will be responsible for maintaining spill containment booms onsite at all times during construction operations and/or staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times.

Implementation of the Proposed Action would not result in an increase in impervious surface areas that could subsequently generate additional stormwater runoff and potential for erosion. Grading activities, including the use of rippers during grading activities, are expected to eliminate surface runoff during the first year after construction. The impact associated with runoff and erosion would, therefore, be less than significant.

3.5 Vegetation

3.5.1 Affected Environment

Vegetation within the project area is relatively dense and consists of three main habitats: Klamath mixed conifer, montane hardwood-conifer, and riverine (Mayer and Laudenslayer 1988). These plant community descriptions are included below following the nomenclature used

in *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988). A list of the trees, herbs, and grasses observed in the project area during surveys conducted in April 2011 is included in Table 2.

Table 2. Vegetation present within the project area.

Common Name	Scientific Name[1]
TREE	
California black oak	*Quercus kelloggii*
Canyon live oak	*Quercus chrysolepis*
Douglas-fir	*Pseudotsuga menziesii*
Incense cedar	*Calocedrus decurrens*
Oregon white oak	*Quercus garryana*
Pacific yew	*Taxus breviolia*
Ponderosa pine	*Pinus ponderosa*
Red willow	*Salix laevigata*
Shiny willow	*Salix lucida* ssp. *lasiandra*
White alder	*Alnus rhombifolia*
White fir	*Abies concolor*
Arroyo willow	*Salix lasiolepis*
Buck brush	*Ceanothus cuneatus*
Greenleaf manzanita	*Arctostaphylos patula*
Hazelnut	*Corylus cornuta*
Huckleberry	*Vaccinium sp.*
Red-osier dogwood	*Cornus stolonifera* (*Cornus sericea*)
Whitestem gooseberry	*Ribes inerme*
HERB and GRASS	
Bracken fern	*Pteridium aquilinum*
Bull thistle	*Circium arvense*
California fescue	*Festuca californica*
Common rush	*Juncus effusus*
Common sheep sorrel	*Rumex acetosella* L.
Dalmatian toadflax	*Linaria genistifolia*
Himalayan blackberry	*Rubus discolor*
Intermediate wheatgrass	*Elytrigia intermedia* (*Thinopyrum intermedium*)
Mugwort	*Artemisia douglasiana*
Naked buckwheat	*Eriogonum nudum*
Naked sedge	*Carex nudata*
Nebraska sedge	*Carex nebrascensis*
Pearly everlasting	*Anaphalis margaritacia*
Reed canarygrass	*Phalaris arundinacea*
Smooth scouring rush	*Equisetum laevigatum*
Spreading rush	*Juncus balticus*
Spring draba	*Draba verna*
St. Johnswort	*Hypericum perforatum*
Sticky cinquefoil	*Potentilla glandulosa*
Stork's bill	*Erodium botrys*
Sweet-cicely	*Osmorhiza chilensis* (*Osmorhiza berteroi*)
Virgate phacelia	*Phacelia heterophylla* ssp. *virgata*
Western columbine	*Aquilegia formosa*
Western yarrow	*Achillea millefolium*
Woodland madia	*Madia madioides*
Woodland pinedrops	*Pterospora andromedea*
Woolly mullein	*Verbascum thapsus*
WOODY VINE	
California greenbriar	*Smilax californica*

1. Scientific name follows NWI/USFWS (Reed 1988/Reg 0 Suppl). Name in parenthesis is currently accepted scientific name from ITIS (ITIS 2011).

The Klamath mixed conifer habitat type occurs on the fringe of this site. Klamath mixed conifer habitats typically are tall, dense to moderately open, needle-leaved evergreen forests with patches of broad-leaved evergreen and deciduous low trees and shrubs. The habitat is dominated by tall evergreen conifers with a rich shrub layer and well-developed herbaceous layers. On more xeric sites, the habitat is generally open, but very diverse forestland, having a well-developed shrub layer. The overstory layer is characterized by a mixture of conifers. Dominant conifers are white fir and Douglas-fir. Occasional broadleaf trees include canyon live oak, and black oak.

The montane hardwood-conifer habitat type occupies the area near Buckhorn Dam. This habitat type generally occurs on coarse well-drained soils on slopes over 50 percent. Dominant tree species observed within this plant community include Douglas-fir, canyon live oak, and black oak. Figure 7 shows the types of upland conifer vegetation present around the outlet channel. Shrub species observed include greenleaf manzanita, buck brush, and hazelnut. The underlying herbaceous layer includes bracken fern, intermediate wheatgrass, and St. Johnswort.

Figure 7. Photographs of conifer vegetation surrounding the project area.

Riverine habitat within the out-flow channel project area is dominated by run and riffle habitats, with boulder, cobble, gravel, and sand substrates. Vegetation within the active channel (Figure 8) consist of arroyo willow, smooth scouring rush, common rush, and spreading rush. Riparian habitat that occurs within the riparian fringe is characterized as a wetland type, including various annual grasses and forbs, willow (*Salix* ssp.), cottonwood (*Populus* ssp.), red and white alder (*Alnus* ssp.), horsetail (*Equisetum* ssp.), dog rose (*Rosa canina*), and Himalayan blackberry (*Rubus* ssp.). In those portions of the project area located within the second creek terrace and above, the floral over- and understory vegetation is predominately composed of ponderosa pine, Douglas-fir, madrone (*Arbutus menziesii*), canyon live oak, and manzanita.

Figure 8. Photographs of riparian vegetation along the outlet channel.

Special Status Plant Species

For the purposes of this evaluation, special-status species are (1) designated as rare by the CDFG or the US Fish and Wildlife Service (USFWS) or are listed as threatened or endangered under the California Endangered Species Act (CESA) or the federal ESA; (2) proposed for designation as rare or listing as threatened or endangered; (3) state or federal candidate species for listing as threatened or endangered; (4) identified by the CDFG as Species of Special Concern or California Fully Protected Species; (5) designated as sensitive by the Bureau of Land Management (BLM) or USFWS; or (6) plants designated as California Native Plant Society (CNPS) List 1A, 1B, or 2 (CNPS 2008).

Species designated "BLM sensitive" are not federally or state listed as endangered or threatened, nor are they proposed or candidates for listing; rather, they are designated by BLM's State Director for special management consideration. BLM Manual Section 6840 defines sensitive species as "…those species (1) that are under status review by the USFWS/NMFS; or (2) whose numbers are declining so rapidly that Federal listing may become necessary, or (3) with typically small and widely dispersed populations; or (4) that are inhabiting ecological refugia or other specialized or unique habitats." Existing California-BLM policy concerning the designation of sensitive species identifies two conditions that must be met before a species may be designated sensitive: (1) a significant population of the species must occur on BLM-administered lands, and (2) the potential must exist for improvement of the species' condition through BLM management. BLM's policy provides sensitive species with the same level of protection afforded federal candidate species.

A US Forest Service (USFS) "sensitive species" is any species of plant that has been recognized by the Regional Forester to need special management in order to prevent it from becoming threatened or endangered. The National Forest Management Act requires the USFS to "provide for a diversity of plant and animal communities" [16 U.S.C. 1604(g)(3)(B)] as part of its multiple use mandate. The USFS must maintain "viable populations of existing native and desired non-native species in the planning area" (36 CFR 219.19). The sensitive species program is designed to meet this mandate and to demonstrate the USFS' commitment to maintaining biodiversity on National Forest System lands.

A list of special-status plant species considered for the Proposed Action was compiled by performing searches of the California Natural Diversity Database (CNDDB) and CNPS Electronic Inventory database and reviewing biological literature for the project region, including BLM's special-status plants list for the Redding Field Office (BLM 2005). Table 3 lists the special-status plant species analyzed for their potential to occur in the project area based on their habitat type requirements. No federally listed threatened or endangered plants were identified with the potential to occur in the project area.

Table 3. Special status plant species with the potential to occur in the project area.

COMMON NAME	SCIENTIFIC NAME	STATUS[1] (FED/STATE/ CNPS)
Baker's globemallow	Iliamna bakeri	†/—/1B
Bottlebrush sedge	*Carex hystericina*	*/—/2
California globemallow	*Iliamna latibracteata*	†/—/1B
Canyon Creek stonecrop	*Sedum paradisum*	*†/—/1B
Clustered lady's-slipper	*Cypripedium fasciculatum*	*†/—/4
Dudley's rush	*Juncus dudleyi*	—/—/2
English Peak greenbriar	*Smilax jamesii*	*/—/1B
Flaccid sedge	*Carex leptalea*	—/—/2
Fox sedge	*Carex vulpinoidea*	—/—/2
Heckner's lewisia	*Lewisia cotyledon* var. *heckneri*	*/—/1B
Howell's lewisia	*Lewisia cotyledon* var. *howellii*	*/—/3
Howell's montia	*Montia howellii*	†/—/2
Moonwort, grape-fern	*Botrychium* subgenus *Botrychium*	†/—/2
Mountain lady's-slipper	*Cypripedium montanum*	*†/—/4
Northern adder's-tongue fern	*Ophioglossum pusillum*	†/—/1B
Northern clarkia	*Clarkia borealis* ssp. *borealis*	*†/—/1B
Oregon willow herb	*Epilobium oreganum*	*†/—/1B
Regel's rush	*Juncus regelii*	—/—/2
Scott Mountain fawn lily	*Erythronium citrinum* var. *roderickii*	*†/—/1B
Tracy's eriastrum	*Eriastrum tracyi*	†/R/1B
Veiny arnica	*Arnica venosa*	†/—/4
Wolf's evening primrose	*Oenothera wolfii*	—/—/1B
White beaked-rush	*Rhynchospora alba*	—/—/2

[1]Status Codes

Federal and State Codes:
† = USFS Sensitive or Endemic;
* = BLM Sensitive

CNPS Codes:
List 1B = Rare, Threatened or Endangered in CA and elsewhere
List 2 = Rare, Threatened, or Endangered in CA but common elsewhere
List 3 = More information is needed
List 4 = Limited distribution

Surveys of the project area were conducted on April 18 and July 6, 2011. All areas of proposed disturbance were surveyed. No special status plants were identified as a result of the surveys.

Non-Native and Invasive Plant Species

Non-native and invasive plant species occur throughout the Trinity River corridor and project area, particularly in locations that have been subject to ground-disturbing activities (e.g., roads and recreation sites). There are numerous non-native species present in the watershed. Some of the non-native grasses include cheatgrass (*Bromus tectorum*), silver European hairgrass (*Aria caryophyllea*), rattail fescue (*Vulpia myuros*), and soft chess (*Bromus hordeaceus*). There are also scattered infestations of bull thistle (*Cirsium vulgaris*), yellow starthistle (*Centaurea solstitailis*), prickly lettuce (*Lactuca serriola*), and mullein (*Verbascum thapsus*). Such exotic plants species tend to colonize disturbed areas, such as construction sites, landings, crossings, and skid roads (BLM 2010). Some of the invasive, non-native species present in the watershed

were introduced via contaminated heavy equipment and/or straw mulch while others were used in seed mixes of past restoration work including rose clover (*Trifolium hirtum*), orchard grass (*Dactylis glomerata*), and pubescent wheatgrass (*Elytrigia intermedia* ssp. *intermedia*) (BLM 2010). Species-specific management recommendations have been developed in the past to provide Reclamation with recommendations for applied control and management of invasive species to ensure that Trinity River channel rehabilitation projects do not introduce or further spread non-native plants along the mainstem; these recommendations would be applied to this project as well.

3.5.2 Environmental Consequences/Impacts and Mitigation Measures

Methods used to assess potential impacts of the Proposed Action on vegetation resources included a review of pertinent literature and data and field surveys. Evaluation of the presence of special-status species and sensitive habitats within the boundaries of the site was conducted by performing a database search of the CNDDB. This information provided an overview of the quality and character of potential habitat present within the project area.

Impacts on vegetation would be significant if implementation of the project would result in any of the following:

- Potential to substantially reduce the number or restrict the range of an endangered or threatened plant species or a plant species that is a candidate for state listing or proposed for federal listing as endangered or threatened;
- Potential for substantial reductions in the habitat of any native plant species including those that are listed as endangered or threatened or are candidates or proposed for endangered or threatened status;
- Potential for causing a native plant population to drop below self-sustaining levels;
- Potential to eliminate a native plant community;
- Substantial adverse effect, either directly or through habitat modifications, on any plant identified as a sensitive or special-status species in local or regional plans, policies, or regulations;
- Substantial adverse effect on the quantity or quality of riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations;
- A conflict with any local policies or ordinances regarding protection or control of vegetation resources;
- A conflict with, or violation of, the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, state, or federal habitat conservation plan relating to the protection of plant resources; or
- An increased potential for spread of non-native and invasive plant species.

3.5.2.1 No Action Alternative

Under the No Action alternative, no construction-related impacts to upland plant communities, including special-status plant species, would occur because the project would not be constructed. The No Action Alternative eliminates the potential for direct introduction of invasive species into the project area.

3.5.2.2 Proposed Action Alternative

The Proposed Action would result in the temporary disturbance of upland plant communities. Upland areas that would be disturbed consist of previously disturbed areas that were used during the construction of the dam; project activities would include driving on these areas and possibly using them for spoils. While project activities would modify some upland areas, these areas would be subject to natural recruitment of native plants, supplemented by revegetation efforts. Over time, these upland areas would be revegetated to the degree that site conditions allow. A combination of replanting and natural revegetation would occur to ensure that upland habitat values meet wildlife needs for the long term. The need for revegetation would be determined via monitoring, coordination with local resource agencies, and adaptively managing to meet changing needs and desired future conditions. Disturbed areas would be restored to their original condition upon completion of work. Therefore this impact would be less than significant.

Pre-construction botanical surveys were conducted within the project area on April 18 and July 6, 2011 following established protocols. No special status plants were identified as a result of the surveys. Therefore, this impact would be less than significant.

Project implementation could result in the spread of non-native and invasive plant species during ground-disturbing activities. This would be considered a significant impact. Therefore, the following mitigation measures will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of these mitigation measures would reduce the impacts to less than significant.

VEG-1: When using imported erosion control materials (as opposed to rock and dirt berms), use only certified weed-free materials, mulch, and seed.

VEG-2: Preclude the use of rice straw in riparian areas.

VEG-3: Limit any import or export of fill to materials to those that are known to be weed free.

VEG-4: Ensure all construction equipment is thoroughly washed prior to entering the worksite. Equipment will be inspected to ensure that it is free of plant parts as well as soils, mud, or other debris that may carry weed seeds.

VEG-5: Use a mix of native grasses, forbs, and non-persistent non-native species for seeding disturbed areas that are subject to infestation by non-native and invasive plant species. Where appropriate, a heavy application of mulch will be used to discourage introduction of these species. Use of planting plugs of native grass species may also be used to accelerate occupation of disturbed sites and increase the likelihood of reestablishing a self-sustaining population of native plant species.

VEG-6: Within the first 3 to 5 years post-project, if it is determined that the project has caused non-native invasive vegetation to out-compete desired planted or native colonizing riparian vegetation, opportunities to control these non-native species will be considered. When implementing weed control techniques, the approach will consider using all available control methods known for a weed species.

3.6 Fishery Resources

3.6.1 Affected Environment

Buckhorn Dam is located approximately 10.7 miles from the mouth of GVC, a tributary to the Trinity River (USBR 1986). The native anadromous salmonid species in the mainstem Trinity

River and its tributaries are chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*Oncorhynchus kisutch*), and steelhead (*Oncorhynchus mykiss irideus*). Resident native fish species found in the Trinity River Basin include game fish such as rainbow trout (*Oncorhynchus mykiss*) and non-game fish such as speckled dace (*Rhinichthys osculus*), Klamath smallscale sucker (*Catostomus rimiculus*), Pacific lamprey (*Lampetra tridentata*), Klamath River lamprey (*Lampetra similis*), *three-spined stickleback (Gasterosteus aculeatus*), coast range sculpin (*Cottus aleuticus*), and marbled sculpin (*Cottus klamathensis*). Non-native fish species found in the Trinity River Basins include American shad (*Alosa sapidissima*), brown bullhead (*Ameiurus nebulosus*), green sunfish (*Lepomis cyanellus*), brown trout (*Salmo trutta*), and brook trout (*Salvelinus fontinalis*) (USFWS, unpublished data).

GVC is a fourth order stream that has coho salmon and other fish species living throughout the 10.8 miles of stream length from Buckhorn Dam to the Trinity River. The dam does not have a fish passage system and thus migration to the upper 9 miles of historic headwater habitat has been eliminated. It was estimated that construction of the dam would eliminate approximately 9,650 feet of stream available to steelhead trout, representing a small fraction of the total habitat available in GVC. Chinook and coho salmon spawning and rearing habitat and steelhead trout rearing habitat were expected to be improved following dam construction due to the reduction in sediment loads. GVC currently serves as one of the vital production tributaries to the Trinity River for coho.

In general, water quality of GVC is good during the summer. The riparian overstory canopy is moderately dense to dense along the stream, which helps moderate water temperatures. For 1.2 miles above the reservoir and from the dam to the mouth, GVC is a fish bearing Class I waterbody, supporting chinook and coho salmon, steelhead, rainbow and brown trout, Klamath small-scale sucker, and lamprey. Steelhead trout are found as far as the dam and Chinook are found 7.5 miles up from the mouth of the dam (Baldwin 2002). Surveys conducted by TRRPO and NMFS on June 23, 2011 observed coho salmon in the outlet channel, although no coho were observed above an exposed bedrock outcrop located approximately 600 feet downstream of the outlet works (Gutermuth 2011).

Spawning habitat was improved downstream from the Buckhorn Dam after its construction, but there are still many potential sources of sediment from tributaries to GVC. Historic poor logging practices in the upper GVC watershed has caused the decomposed granite to erode more severely and cause deposition in critical spawning gravel substrate. If sedimentation from the subwatersheds is maintained at current rates or reduced, it is expected that habitat will be maintained or even improved over the long term (Baldwin 2002).

Gauge records at the mouth of GVC over the past ten years indicate a variable hydrology with a mean average flow of approximately 20 cfs. Discharge fluctuations range from the low end of 6 cfs which is controlled by the Buckhorn Dam outlet works and winter-spring runoff events that can reach up to 1,000 cfs for a short multiple hour duration. Approximately 600 feet downstream of the outlet works there is an exposed bedrock outcrop that is causing a natural hydraulic control resulting in raised surface water elevations. Beaver have taken advantage of this feature and have strategically raised the water an additional foot or more above the bedrock.

Coho Salmon

The SONCC ESU of coho salmon was listed as threatened pursuant to the federal ESA on May 6, 1997. This listing includes coho salmon from the Trinity River Basin. Critical habitat for the

SONCC ESU coho salmon was designated on May 5, 1999; in the Trinity River Basin, designated critical habitat for this species consists of the water, substrate, and adjacent riparian zone of those estuarine and riverine reaches (including off-channel habitats and accessible tributaries) downstream of Lewiston Dam (CFR Vol. 64, No. 86, May 5, 1999). Coho were determined to be present in the outlet channel during surveys for this species conducted on June 23, 2011 (Figure 9).

Figure 9. Coho fry present in the Buckhorn Dam outlet channel.

Steelhead

The Klamath Mountains Province (KMP) ESU of steelhead, which includes stocks from the Trinity River, was proposed for federal listing as threatened on March 16, 1995; however, on February 7, 1998, NMFS determined that the population did not warrant threatened status, but that it did warrant candidate status (as defined by NMFS). Subsequent information on the KMP ESU steelhead was evaluated and NMFS made a final listing determination that the ESU did not warrant listing in April 2001 (CFR Vol. 66, No. 65). The summer-run population segment of this ESU remains a California Species of Special Concern, as well as a USFS sensitive species (Moyle et al. 1995; USFS 1995). Steelhead are known to occur in GVC as well as the outlet channel.

Chinook

In a 1998 status review of all west coast chinook salmon stocks (Myers et al. 1998), the Upper Klamath-Trinity Rivers ESU chinook salmon was determined to not warrant listing as a threatened or endangered species. However, spring-run chinook salmon within the Klamath-Trinity Basin is a California Species of Special Concern (Moyle et al. 1995). Chinook are known to occur in GVC.

Pacific Lamprey

The Pacific lamprey was petitioned for federal listing in 2003. On December 27, 2004, the USFWS announced that the petition along with additional information does not present substantial scientific or commercial information indicating that listing of these species may be warranted (CFR Vol. 64, No. 86, December 27, 2004). Pacific lamprey are known to occur in GVC.

A BA will be developed for this project and consultation with NMFS will occur. The BA will address potential project impacts to SONCC coho salmon and its essential fish habitat. Essential habitat is defined as habitat necessary for the continued existence of the species and includes all types of aquatic habitat where federally-listed species spawn, breed, feed, or grow to maturity.

3.6.2 Environmental Consequences/Impacts and Mitigation Measures

Methods used to assess potential impacts of the Proposed Action on fishery resources included a review of pertinent literature and data and field surveys. Evaluation of the presence of special-status species and sensitive habitats within the boundaries of the site was conducted by performing a database search of the CNDDB and informally consulting with resource agencies (e.g., NMFS) regarding biological resource issues associated with the implementation of the Proposed Action. These efforts provided an overview of the quality and character of potential habitat present within this reach.

Impacts on fishery resources would be significant if implementation of the project would result in any of the following:

- Mortality of state or federally listed fish species, or species that are candidates for listing or proposed for listing;
- Potential for reductions in the number, or restrictions of the range, of an endangered or threatened fish species or a fish species that is a candidate for state listing or proposed for federal listing as endangered or threatened;
- Potential for substantial reductions in the habitat of any fish species, including those that are listed as endangered or threatened or are candidates or proposed for endangered or threatened status;
- Potential for causing a fish population to drop below self-sustaining levels;
- Substantial adverse effect, either directly or through habitat modifications, on any fish species identified as a sensitive or special-status species in local or regional plans, policies, or regulations;
- A conflict with any state or local policies or ordinances protecting fish resources; or
- A conflict with, or violation of, the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, state, or federal habitat conservation plan relating to the protection of fish species.

3.6.2.1 No Action Alternative

Under the No Action Alternative, there would be no direct effects on spawning and rearing habitat or construction-related mortality to rearing salmonids because the project would not be constructed. There would be no increase in erosion or sedimentation levels that could adversely affect fish species. There would be no risk of accidental spills of hazardous material because the project would not be constructed. Over the long-term the indirect effects of dam failure may result in temporary increases in sediment and turbidity as a result of flood waters.

3.6.2.2 Proposed Action Alternative

Under the Proposed Action, no permanent adverse effects to coho salmon spawning habitat would occur within the project area. Rather, the Proposed Action is expected to result in immediate as well as long-term improvements by developing additional rearing habitat in the

outlet channel. Adverse effects on spawning habitat are expected to be limited to short-term, localized sedimentation caused by settling of silt disturbed by bank-side excavation activities and contouring and grading in the channel. Silt suspended by these activities may be dispersed and re-settle on downstream suitable spawning areas near the construction area. However, all in-channel work would be conducted only during late-summer or early fall low-flow conditions to avoid impacts to spawning anadromous salmonids.

Some temporary effects on the quality of habitat for juvenile salmonids would occur through disturbance of riparian vegetation that contributes to shaded riverine aquatic (SRA) habitat in the project reach. However, the project reach is largely inaccessible now (Gutermuth 2011) and the project would increase access to the area. The adverse impacts on habitat are expected to be offset in the long-term by benefits associated with implementing the Proposed Action by improving rearing habitat abundance for all anadromous salmonids. LWD would be strategically placed within the project area to provide complex physical habitat for juvenile and adult fish. Large wood hydraulic and habitat structures would create spawning and rearing habitat, increase nutrient and organic matter retention (which increases food production in the system), and provide refuge from predators and cover during high winter flows (Bustard and Narver 1975; Lestelle 1978; Lestelle and Cederholm 1982; Hicks et al. 1991; Cederholm et al. 1997).

No potential impacts and or benefits to chinook salmon and Pacific lamprey are expected as these species are rare or non-existent at this elevation in the GVC watershed.

Potential impacts and benefits to steelhead resulting from implementation of the Proposed Action would be generally similar to those previously described for coho and chinook salmon. Summer, fall, and winter runs of steelhead may migrate and stage within or near the site and may spawn (as adults) and rear (as juveniles).

Although the impacts to coho salmon and other anadromous fish under the Proposed Action would be temporary and localized, they would be significant. Implementation of the project could result in effects on potential spawning and rearing habitat for anadromous fishes, including the federally and state-listed coho salmon. Therefore, the following mitigation measures will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

FISH-1: Reclamation will ensure that all in-channel construction activities are conducted during late-summer, early fall, low-flow conditions and the outlet channel will be dewatered prior to construction. There is little existing fish and wildlife habitat within the project reach during low flow conditions. As the project area drains of water, fish would be captured and relocated downstream. Capture and relocation of fish from within the project area would be mandatory before channel rehabilitation can begin. The fish rescue will be performed according to the NMFS Section 7 Consultation and Biological Opinion. After construction, the newly dredged section of the outlet channel will be rewatered in a manner that strictly maintains NCRWQCB Water Quality Certification requirements.

FISH-2: Alluvial material used for coarse sediment additions will be composed of washed, spawning-sized gravels (3/8- to 3-inches diameter) from a local Trinity River Basin source. Gravel will be washed to remove any silts, sand, clay, and organic matter; will be free of contaminants, such as petroleum products.

Activities related to implementation of the Proposed Action would result in the localized loss of vegetation and general disturbance to the bed and banks of the outlet channel within the project area. Removal of vegetation and soil could accelerate erosion processes within the project area boundaries and increase the potential for sediment delivery to GVC. The turbidity of a water body is related to the concentration of suspended solids. Suspended solids and turbidity generally do not acutely affect aquatic organisms unless they reach extremely high levels (i.e., levels of suspended solids reaching 25 mg/L). At these high levels, suspended solids can adversely affect the physiology and behavior of aquatic organisms and may suppress photosynthetic activity at the base of food webs, affecting aquatic organisms either directly or indirectly (Alabaster and Lloyd 1980).

In-channel activities would disturb the alluvial materials that constitute the bed and banks of the outlet channel. These streambed sediments could be temporarily resuspended when the water is put back into the channel. In addition, exposed soils on the upland and staging areas are susceptible to mobilization from rainfall during early season runoff events. Any juvenile coho salmon rearing in the area after construction may be temporarily displaced or their social behavior may be temporarily disrupted by turbidity created during this activity.

Erosion and deposition of fine sediments associated with implementation of the Proposed Action are expected to be localized and temporary. Some fine-textured materials may settle near or on spawning habitats located downstream, but these materials are not expected to impair redd excavation or spawning. All activity within the channel would occur only after the project reach is dewatered, minimizing the potential for adverse effects on all life stages of coho salmon. Any juvenile coho salmon rearing in the area during this timeframe could be temporarily displaced or their social behavior could be temporarily disrupted by an increase in turbidity. Behavioral disruption, even temporarily, could result in some increased vulnerability to competitive interactions or predation for juvenile coho salmon (Berg and Northcote 1985).

Potential impacts to steelhead populations in GVC resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon. Summer and winter runs of KMP ESU steelhead are known to migrate, stage (as adults), and rear (as juveniles) throughout the proposed construction season. Both runs generally spawn during the winter.

While the Proposed Action would improve aquatic habitat within the project area, the proposed construction activities would result in an increase in erosion and sedimentation in the short-term. While the long-term impact would be beneficial, the short-term impacts on fishes within GVC would be significant. Implementation of the project could result in increased erosion and sedimentation levels that could adversely affect fishes, including the federally and state-listed coho salmon. Therefore, mitigation measures WATER-1 through WATER-4 will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Construction activities typically include the refueling of construction equipment on location. The Proposed Action also includes activities that would place mechanized equipment (e.g., trucks, excavators) within the active channel for short periods. As a result, minor fuel and oil spills could occur and there would be a risk of larger releases. Without rapid containment and clean up, these materials could be toxic, depending on the location of the spill in proximity to

surface water features. Oils, fuels, and other contaminants could have deleterious effects on all life stages of salmonids and other anadromous fish within close proximity to construction activities. Although short-term, these impacts are considered significant. Therefore, the following mitigation measure will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measure would reduce the impacts to less than significant. Section 3.4, *Water Resources*, and Section 3.14, *Hazards and Hazardous Wastes*, provide additional details on mitigation measures developed for water quality standards, hazards, and hazardous materials.

FISH-3: Construction specifications will include measures to reduce potential impacts associated with accidental spills of pollutants (fuel, oil, grease, etc.) on vegetation and aquatic habitat resources within the project boundary.

FISH-4: Equipment and materials will be stored away from wetland and surface water features.

FISH-5: Vehicles and equipment used during construction will receive proper and timely maintenance to reduce the potential for mechanical breakdowns leading to a spill of materials. Maintenance and fueling will be conducted in an area at least 150 feet away from waters of the Trinity River or within an appropriate secondary fueling containment area. Gasoline engines and pumps operated on the floodplain will be isolated from the ground by an impermeable barrier. The contractor will develop and implement site-specific BMPs, a water pollution control plan, and emergency spill control plan. The contractor will be responsible for immediate containment and removal of any toxins released.

The project area would be dewatered prior to construction and fish would be captured and relocated downstream. These activities would be conducted only during late-summer or early fall low-flow conditions, thus, minimizing the potential for direct mortality to rearing coho, because this period corresponds to a time of the year when the fewest number of juvenile coho salmon are known to occur in the area. It is expected that all relocated juvenile fish, including coho salmon, would find suitable habitat downstream of the project. The construction period identified above would completely avoid the spawning period for coho salmon; therefore, direct impacts to adult coho salmon or their eggs/alevins (yolk-sac fry) would not occur.

Potential impacts to steelhead populations resulting from implementation of the Proposed Action would be similar to those previously described for coho. While the activities included in the Proposed Action are intended to benefit salmonids and other aquatic organisms, the short-term construction impacts would be significant.

Construction activities associated with the project could result in the mortality of rearing fishes, including the federally and state-listed coho salmon. Therefore, the mitigation measure FISH-1 described above will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measure would reduce the impacts to less than significant.

Removal of montane riparian wetland vegetation along the banks of the stream could adversely affect the quality of habitat used by rearing salmonids. Riparian vegetation is important to the maintenance of healthy fish habitat. Riparian areas provide shade and temperature benefits, sediment, nutrient and chemical regulation, stream bank stability, and inputs of LWD and organic matter to the channel. Riparian vegetation that is adjacent to the stream, a component of SRA habitat, is an element of designated critical habitat for coho salmon and a component of

essential fish habitat for chinook and coho salmon. Riparian habitat removed under the Proposed Action would be replaced during the revegetation efforts to ensure no net loss of riparian vegetation. While no permanent net loss of SRA features would necessarily occur, the short-term impact of removing riparian vegetation is considered a significant impact. Therefore, the following mitigation measures will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

FISH-6: Prior to the start of construction activities, Reclamation will retain a qualified biologist to identify potential construction access routes necessary for the project to ensure that these features avoid and/or minimize to the fullest extent impacts to riparian habitats and wetland waters. In addition, Reclamation will clearly identify, and flag in the field, biologically sensitive areas (e.g., jurisdictional waters and riparian habitat) to be protected, and will provide the contractor with specific instructions to avoid any construction activity within these features. Reclamation will inspect and maintain flagged areas on a regular basis throughout the construction phase.

FISH-7: Reclamation will implement a riparian revegetation plan to enhance and maintain functional riparian habitat within the project area. There will be no net long-term loss of wetlands and riparian habitat. After a period of 5 years, riparian and wetland habitat will be evaluated in a post-project delineation report.

3.7 Wildlife

3.7.1 Affected Environment

There are numerous wildlife species known or suspected to occur in or near the project area due to the different habitat types present, including elk, black-tailed deer, black bear, coyote, gray fox, weasel, bobcat, mountain lion, pine marten, ring-tailed cat, muskrat, mink, skunks, raccoon, gray squirrel, ground squirrel, northern flying squirrel, yellow-pine chipmunk, dusky footed wood rat, gophers, shrews, moles, red tree voles, mice, and bats. Bird species present in the area include: red-tailed hawk, Cooper's hawk, great horned owl, pygmy owl, turkey, hairy woodpecker, Downy woodpecker, pileated woodpecker, flicker, raven, Steller's jay, California and mountain quail, blue grouse, great blue heron, belted kingfisher, merganser, wood duck, teal, mallards, hummingbirds, flycatchers, swallows, varied thrush, chickadees, nuthatches, warblers, towhees, sparrows, finches, blackbirds and numerous other species (Baldwin 2002). Amphibian species present include the western toad, bull frog, and Pacific tree frog. Among the reptiles commonly found in the area are the racer snake, gopher snake, garter snake, common and mountain kingsnake, and the western rattlesnake.

Existing wildlife habitat in the watershed has changed substantially since intensive logging began in the late 1940s and then again on a more localized level with the construction of the dam. Forests are now primarily early to mid-seral forests, some of which are now mixed conifer-hardwood forests and some of which have more open canopies, as compared to what were once primarily dense old-growth conifer and hardwood forests. In general, vegetation in earlier successional stages will support a greater number of species and an overall greater biomass while later successional stages will support fewer species but greater populations of those species (Baldwin 2002).

Special Status Species

Under Section 7 of the ESA, federal agencies are required to consult with the USFWS regarding the degree of impact to federally proposed and listed species and critical habitat from program actions, together with necessary protective measures to avoid or minimize adverse effects. A BA will be developed for this project and consultation with USFWS will occur. The BA will address the ESA-listed species and the potential for impacts from the Proposed Action.

A number of special status wildlife species may occur in or near the project area based on the habitat types present (Table 4). Special status bird species known to occur in the area include bald and golden eagle, northern goshawk, northern spotted owl, and willow flycatcher. Special status amphibians present include foothill yellow-legged frog, California red-legged frog, and tailed frog (Baldwin 2002). The northern spotted owl is a federally listed threatened species that may be present in the watershed, but is unlikely to be found within the project area habitat. Surveying will be required prior to initiating vegetation disturbing projects and protection measures will need to be established if this species is found. Though species may be present in the watershed, they are generally not within the project area (Table 4).

Table 4. Special status wildlife species considered for analysis.

COMMON NAME *SCIENTIFIC NAME*	STATUS[1] (FED/STATE)	GENERAL HABITAT
Federally or State Listed Species		
Trinity bristle snail *Monadenia setosa*	—/T	Riparian corridors and canyon slopes with dense deciduous understory in Trinity County. Not adequate deciduous coverage in the project area.
California red-legged frog *Rana aurora draytonii*	T/SC	Requires aquatic habitat for breeding; also uses a variety of other habitat types, including riparian and upland areas. Not seen in project area surveys.
American peregrine falcon *Falco peregrinus anatum*	D/E, FP	Forages in many habitats; requires cliffs for nesting. May occur as a forager.
Bald eagle *Haliaeetus leucocephalus*	D/E	Uncommon to common in riverine and open wetland habitats. Requires large bodies of water or free-flowing rivers with abundant fish for foraging. Nests in large, live trees, usually near water and free from human disturbance. May fly up GVC on occasion and use the Buckhorn Dam Reservoir.
Northern spotted owl *Strix occidentalis caurina*	T/—	In northern California, resides in large stands of old growth, multi-layered, mixed conifer, redwood, and Douglas-fir habitats. There is not adequate old growth within ¼ mile of the project.
Bank swallow *Riparia riparia*	—/T	Colonial nester on vertical banks or cliffs with fine-textured soils near water. Not located in project area.
Marbled murrelet *Brachyramphus marmoratus*	T/E	Marine subtidal and pelagic habitats; requires dense, mature forests of redwood and Douglas-fir for breeding. Area is not within the known range of the species.

COMMON NAME *SCIENTIFIC NAME*	STATUS[1] (FED/STATE)	GENERAL HABITAT
Little willow flycatcher *Empidonax traillii brewsteri*	†/E	Rare summer resident in wet meadow and montane riparian habitats at 2,000 to 8,000 feet elevation. Marginal habitat exists and the species has not been observed along in this location (Wilson 1995; Miller et al. 2003; Herrera 2006).
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	C†/E	Occurs in cottonwood/willow riparian forest. Project area is not within the currently known range of the species.
California wolverine *Gulo gulo luteus*	†/T, FP	A variety of habitats at elevations between 1,600 and 14,200 feet. Most commonly inhabits open terrain above timberline. Project area is not within the currently known range of the species.
Pacific fisher *Martes pennanti pacifica*	C*†/SC	Dens and forages in intermediate to large stands of old-growth forests or mixed stands of old-growth and mature trees with greater than 50% canopy closure. May use riparian corridors for movement.
Other Special-Status Species		
Tailed frog *Ascaphus truei*	—/SC	Clear, rocky, swift, cool perennial streams in densely forested habitats. Not observed in the project area.
Foothill yellow-legged frog *Rana boylii*	*†/SC	Cool, fast-moving, rocky streams in a variety of habitats. The species is known to occur in the Trinity River from the Lewiston Dam to the North Fork Trinity (California Department of Fish and Game 2003) and within the tributaries. May be present.
Cascades frog *Rana cascadae*	—/SC†	Open coniferous forests along the sunny, rocky banks of ponds, lakes, streams, and meadow potholes. From 2,600 to 9,000 feet elevation in Cascades and Trinity mountains. May be present.
Western pond turtle *Actinemys marmorata*	†/SC	Slow water aquatic habitat with available basking sites. Require an upland egg laying site near the aquatic site. Not present in area.
Black swift *Cypseloides niger*	—/SC	Nests in moist crevices or caves or sea cliffs above the surf, or on cliffs behind, or adjacent to, waterfalls in deep canyons; forages widely over many habitats. The project area does not provide suitable breeding habitat; however, the species may forage over the sites while migrating.
California yellow warbler *Dendroica petechia brewsteri*	—/SC	Breeds in riparian woodlands, particularly those dominated by willows and cottonwoods. Riparian habitat in the project area provides suitable nesting and foraging habitats.
Golden eagle *Aquila chrysaetos*	—/SC, FP	Breeds on cliffs or in large trees or electrical towers, forages in open areas. The species may occur as a forager.
Northern goshawk *Accipiter gentilis*	†/SC	Breeds in dense, mature conifer and deciduous forests, interspersed with meadows, other openings and riparian areas; nesting habitat includes north-facing slopes near water. Project area does not provide suitable nesting and foraging habitats.
Vaux's swift *Chaetura vauxi*	—/SC	Prefers redwood and Douglas-fir habitats; nests in hollow trees and snags or, occasionally, in chimneys.

COMMON NAME *SCIENTIFIC NAME*	STATUS[1] (FED/STATE)	GENERAL HABITAT
Yellow-breasted chat *Icteria virens*	—/SC	Breeds in riparian habitats having dense understory vegetation, such as willow and blackberry.
Fringed myotis *Myotis thysanodes*	*/—	In mesic habitats, roosts in caves, mines, tunnels, and buildings. Roosts typically in valley foothill hardwood and hardwood-conifer habitats, but forages in open, early-successional-stage habitats near water. Generally at 4,000-7,000 feet.
Long-eared myotis *Myotis evotis*	*/—	Found in most habitats, but prefers coniferous woodlands. Roosts in buildings, crevices, spaces under bark, and snags. Forages among trees and over brush, usually in close association with water.
Pallid bat *Antrozous pallidus*	*†/SC	Forages over many habitats; roosts in buildings, large oaks or redwoods, rocky outcrops and rocky crevices in mines and caves.
Ring-tailed cat *Bassariscus astutus*	—/FP	Occurs in riparian habitats and brush stands of most forest and shrub habitats. Nests in rock recesses, hollow trees, logs, snags, abandoned burrows, and woodrat nests. Generally found at lower elevations than the project.
Townsend's western big-eared bat *Corynorhinus townsendii*	*†/SC	Roosts in colonies in caves, mines, bridges, buildings, and hollow trees in a range of habitats. Forages along habitat edges. Habitat must include appropriate roosting, maternity, and hibernacula sites free from disturbance by humans.
American marten *Martes americana*	†/—	Mixed evergreen forests with abundant cavities for denning and nesting and open areas for foraging.
Yuma myotis *Myotis yumanensis*	*/—	Forages over water such as ponds, streams, and stock tanks in open woodlands. Roosts in buildings, caves, mines, abandoned swallow nests, bridges, and rock crevices.

[1]Status Codes:
Federal and State Codes: E = Endangered; T = Threatened; D = Delisted; C = Candidate; SC = Species of Special Concern (State);
FP = California Fully Protected species
* = BLM Sensitive † = USFS Sensitive

Migratory Birds

The Migratory Bird Treaty Act of 1918, as amended, protects more than 800 species of birds that regularly visit or reside in North America. Migratory species traveling south of the U.S.-Mexico border are termed neotropical migrants, and are of particular concern as many are experiencing significant population declines. Migratory birds are found in many different habitat types, but riparian areas typically support the greatest diversity of species, including neotropical migrants. Consequently, migratory birds may nest within, or in close proximity to, the project area.

3.7.2 Environmental Consequences/Impacts and Mitigation Measures

Methods used to assess potential impacts of the Proposed Action on wildlife resources included a review of pertinent literature and data and field surveys. Evaluation of the presence of special-status species and sensitive habitats within the boundaries of the site was conducted by performing a database search of the CNDDB and informally consulting with resource agencies (e.g., CDFG, NMFS, and USFWS) regarding biological resource issues associated with the

implementation of Proposed Action. These efforts provided an overview of the quality and character of potential habitat present within this reach.

Impacts on wildlife would be significant if implementation of the project would result in any of the following:

- Mortality of state or federally listed wildlife species, or species that are candidates for listing or proposed for listing;
- Potential for reductions in the number, or restrictions of the range, of an endangered or threatened wildlife species or a wildlife species that is a candidate for state listing or proposed for federal listing as endangered or threatened;
- Potential for substantial reductions in the habitat of any wildlife species, including those that are listed as endangered or threatened or are candidates or proposed for endangered or threatened status;
- Potential for causing a wildlife population to drop below self-sustaining levels;
- Substantially blocking or disrupting major terrestrial wildlife migration, or travel corridors;
- Substantial adverse effect, either directly or through habitat modifications, on any wildlife species identified as a sensitive or special-status species in local or regional plans, policies, or regulations;
- Substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations;
- A conflict with any state or local policies or ordinances protecting wildlife resources; or
- A conflict with, or violation of, the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, state, or federal habitat conservation plan relating to the protection of wildlife species.

3.7.2.1 No Action Alternative

Under the No Action Alternative, there would be no construction-related impacts to wildlife, including special status species, because the project would not be constructed. There would be no restriction of terrestrial wildlife movement through the project area or impacts to non-breeding habitat for special status species.

3.7.2.2 Proposed Action

Construction noise and activity would not significantly impede movement of wildlife in the project vicinity. Construction noise could temporarily alter foraging patterns of resident wildlife species, and vegetation removal along the river could temporarily disrupt wildlife movement through the area. However, no long-term impediments to wildlife movement within the project area are anticipated as a result of implementing the Proposed Action. Therefore, this would be a less than significant impact.

Suitable habitat for the little willow flycatcher may be present in the project area, but the species has not been detected at this location. Implementation of mitigation measures FISH-6 and FISH-7 would ensure that there is no net loss of riparian habitat and a long-term increase in riparian habitat diversity. Due to the temporary nature of the impacts and the regional abundance of similar habitats, the project is not expected to have a significant impact on habitat for the little willow flycatcher. However, the removal of riparian vegetation and the noise associated with

construction activities could disturb individuals nesting on or adjacent to the site. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Loss of fertile eggs or nesting little willow flycatchers or any activities resulting in nest abandonment would be considered a significant impact. Therefore, the following mitigation measures will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

WLDLF-1: Prior to the start of construction, a qualified biologist will conduct a survey of the project area to determine whether suitable nesting habitat for the little willow flycatcher is present. If suitable habitat is present, Mitigation Measure WLDLF-2 will be implemented.

WLDLF-2: Grading and other construction activities will be scheduled to avoid the nesting season to the extent possible. The nesting season for this species in Trinity County extends from June 1 through July 31. If construction occurs outside of the breeding season, no further mitigation is necessary. If the breeding season cannot be completely avoided, Mitigation Measures WLDLF-3 and WLDLF-4 will be implemented.

WLDLF-3: A qualified biologist will conduct a minimum of one pre-construction survey for the little willow flycatcher within the project area and a 250-foot buffer around the site. The survey will be conducted no more than 15 days prior to the initiation of construction in any given area. The pre-construction survey(s) will be used to ensure that no nests of this species within or immediately adjacent to the project area will be disturbed during project implementation. To the extent possible given timing for construction and with the contract award, pre-construction surveys will conform to methodologies identified in a Willow Fly Catcher Survey Protocol for California available online at: http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html#Birds. If an active nest is found, CDFG will be contacted prior to the start of construction to determine the appropriate mitigation measures.

WLDLF-4: If vegetation is to be removed by the project and all necessary approvals have been obtained, potential nesting substrate (e.g., shrubs and trees) that will be removed by the project will be removed before the onset of the nesting season, if feasible. This will help preclude nesting and substantially decrease the likelihood of direct impacts.

Activities associated with the Proposed Action may affect foothill yellow-legged frogs. Potential direct effects include mortality of individuals due to equipment and vehicle traffic, disturbance of boulders or cobbles that support egg masses, and the loss of riparian vegetation cover. The species may also be indirectly affected if construction activities result in degradation of aquatic habitat and water quality due to erosion and sedimentation, accidental fuel leaks, and spills. These impacts would be significant. Therefore, the following mitigation measures will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measures would reduce the impacts to less than significant. Over the long term, the project would benefit the species through the creation of additional and higher quality habitat.

WLDLF-5: If any construction will occur prior to August 1 of any construction season, a pre-construction survey for the foothill yellow-legged frog larvae and/or eggs will be conducted by a qualified biologist. This survey will be conducted within the construction boundary no more than 2 weeks prior to the start of in-stream construction activities. If larvae or eggs are

detected, the biologist will relocate them to a suitable location downstream of the construction boundary.

WLDLF-6: In the event that a foothill yellow-legged frog is observed within the construction boundary, the contractor will temporarily halt in-stream construction activities until qualified personnel have moved the frog(s) to a safe location within suitable habitat outside of the construction limits. Planned locations for placement of transferred animals will be downstream of the construction limits and will be reported to the CDFG if used.

WLDLF-7: Mitigation measures identified in Section 3.4, *Water Resources and Water Quality*, of this EA/IS for addressing erosion and sedimentation and accidental spills will be fully implemented to mitigate for potential indirect impacts to dispersal habitat for the foothill yellow-legged frog due to sedimentation and accidental spills.

WLDLF-8: The mitigation measure associated with the disturbance to riparian habitat (mitigation measures FISH-6 and FISH-7) will be fully implemented.

Though no western pond turtles have been found in the project area, construction activities associated with the Proposed Action could affect pond turtles. Potential direct effects include mortality of individuals due to equipment and vehicle traffic, disturbance to nests in upland areas, and the loss of riparian cover. The species may also be indirectly affected if construction activities result in degradation of aquatic habitat and water quality due to erosion and sedimentation, accidental fuel leaks, and spills. These impacts would be significant. The following mitigation measures will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measures would reduce the impacts to less than significant. Over the long term, the project would benefit the species through the creation of additional and higher quality habitat.

WLDLF-9: A minimum of one survey for aquatic animals of concern, including western pond turtle nests will be conducted during the nesting season (generally late June-July) prior to construction. A qualified biologist will be retained by Reclamation to conduct the survey. If a western pond turtle nest is found, the biologist will flag the site and determine whether construction activities can avoid affecting the nest. If the nest cannot be avoided, the nest will be excavated by the biologist and reburied at a suitable location outside of the construction limits.

WLDLF-10: Prior to construction in open water habitat, a qualified biologist will trap and move western pond turtles out of the construction area to nearby suitable habitats.

WLDLF-11: During construction, in the event that a western pond turtle is observed within the construction limits, the contractor will temporarily halt construction activities until qualified personnel have moved the turtle(s) to a safe location within suitable habitat outside of the construction limits. Planned locations for placement of transferred animals will be downstream of the construction limits and will be reported to the CDFG prior to construction.

WLDLF-12: Mitigation measures presented in Section 3.4, *Water Resources*, for addressing erosion and sedimentation and accidental spills will be fully implemented to mitigate for the potential indirect impacts to potential dispersal habitat due to sedimentation and accidental spills.

WLDLF-13: The mitigation measure associated with the disturbance to riparian habitat (mitigation measures FISH-6 and FISH-7) will be fully implemented.

The riparian community commonly found in the project region provides suitable nesting and foraging habitat for the California yellow warbler and yellow-breasted chat. The conifer habitat in the region also provides habitat for the Vaux's swift. Consequently, project activities may result in impacts to these California Species of Special Concern. The Proposed Action may result in a temporary reduction of foraging and/or roosting habitat for these species. However, implementation of mitigation measures FISH-6 and FISH-7 in Section 3.6 Fisheries, would ensure that there is no net loss of riparian habitat. Furthermore, project implementation would result in a long-term increase in riparian habitat diversity, increasing the quality of the habitat for the California yellow warbler and yellow-breasted chat. Due to the temporary nature of the impacts and the regional abundance of similar habitats, the project is not expected to have a significant impact on habitat for the California yellow warbler, yellow-breasted chat, or Vaux's swift. However, the removal of vegetation and the noise associated with construction activities could disturb individuals nesting on or adjacent to the sites. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Loss of fertile eggs or nesting individuals or any activities resulting in nest abandonment would be a significant impact. Therefore, the following mitigation measures will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

WLDLF-14: Prior to the start of construction, a qualified biologist will conduct a survey of the project area to determine whether suitable nesting habitat for any of these species is present. If suitable habitat is present, Mitigation Measure WLDLF-15 will be implemented.

WLDLF-15: Grading and other construction activities will be scheduled to avoid the nesting season for these species to the extent possible. The nesting season for these species in Trinity County extends from March 15 through July 31. If construction occurs outside the breeding season, no further mitigation is necessary. If construction during the breeding season cannot be completely avoided, Mitigation Measures WLDLF-16 and WLDLF-17 will be implemented.

WLDLF-16: A qualified biologist will conduct a minimum of one preconstruction survey for these species within the project area and a 250-foot buffer around the site. The survey will be conducted no more than 15 days prior to the initiation of construction in any given area. The preconstruction survey will be used to ensure that no nests of these species within or immediately adjacent to the rehabilitation site will be disturbed during project implementation. If an active nest is found, a qualified biologist will determine the extent of a construction-free buffer zone to be established around the nest.

WLDLF-17: If vegetation is to be removed by the project and all necessary approvals have been obtained, potential nesting habitat (e.g., shrubs and trees) that will be removed by the project will be removed before the onset of the nesting season, if feasible. This will help preclude nesting and substantially decrease the likelihood of direct impacts.

The hardwood and conifer communities found in the GVC watershed provide suitable nesting and foraging habitat for the bald eagle, designated by the State of California as endangered, and the northern goshawk, designated as a California Species of Special Concern. The Proposed Action may result in a temporary reduction of foraging and/or roosting habitat for these species. However, due to the temporary nature of the impacts and the regional abundance of similar habitats, the project is not expected to have a significant impact on habitat for the bald eagle or

northern goshawk. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Loss of fertile eggs or nesting bald eagles or goshawks, or any activities resulting in nest abandonment, would be a significant impact. Therefore, the following mitigation measures will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

WLDLF-18: Prior to the start of construction, a qualified biologist will conduct a survey of the rehabilitation site to determine whether suitable nesting habitat for these species is present. If suitable habitat is present, Mitigation Measure WLDLF-19 will be implemented.

WLDLF-19: Construction will be scheduled to avoid the nesting season for bald eagles and northern goshawks to the extent feasible. The nesting season for most raptors in Trinity County extends from February 15 through July 31. Thus, if construction can be scheduled to occur between August 1 and February 14, the nesting season will be avoided and no impacts to nesting bald eagles and northern goshawks will be expected. If it is not possible to schedule construction during this time, mitigation measures WLDLF-20 and WLDLF-21 will be implemented.

WLDLF-20: Pre-construction surveys for nesting bald eagles and northern goshawks will be conducted by a qualified biologist to ensure that no nests will be disturbed during project implementation. These surveys will be conducted no more than 14 days prior to the initiation of construction activities. During this survey, the biologist will inspect all trees immediately adjacent to the impact areas for bald eagle and northern goshawk nests. If an active nest is found within 500 feet of the construction area to be disturbed by these activities, the biologist, in consultation with the CDFG, will determine the extent of a construction-free buffer zone to be established around the nest.

WLDLF-21: If vegetation is to be removed as part of the project and all necessary approvals have been obtained, potential nesting habitat (i.e., trees) that will be removed by the project will be removed before the onset of the nesting season, if feasible. This will help preclude nesting and substantially decrease the likelihood of direct impacts.

The riparian corridor along the outlet channel and GVC provides suitable roosting and/or foraging habitat for four bat species: the long-eared myotis, pallid bat, Yuma myotis, and Townsend's western big-eared bat. Two of these bat species (long-eared myotis bat and pallid bat) may roost in trees (e.g., spaces under tree bark or in cavities) as well as caves and buildings, while the other two species (Townsend's western big-eared bat and Yuma myotis) prefer to nest in structures such as buildings, bridges, caves, and mines. For the long-eared myotis and pallid bat (species that roost in trees), habitat preference is typically woodland and forest habitat. It is unlikely that these bats would roost in the willows and alders and oaks typically found immediately along the outlet channel. However, they may roost in habitats more likely to contain large trees with cavities or loose bark, such as montane hardwood. Noise and visual disturbances associated with construction activities may disrupt bats roosting within and directly adjacent to the project area. Each of these bat species has the potential to forage in the project area. Foraging habitat typically consists of forested habitats in close association with water. Construction activities associated with the Proposed Action could temporarily alter the foraging patterns of these species. However, this would be considered a less-than-significant impact based on the abundance of suitable foraging habitat in the region. No long-term adverse impacts to foraging habitat associated with project implementation are anticipated.

The riparian corridor along GVC provides both foraging and perching habitat for golden eagles, American peregrine falcons, and black swifts. Construction activities associated with the project could temporarily alter the foraging patterns of these species; however, this impact would be considered less than significant based on the abundance of suitable foraging habitat in the vicinity of the Proposed Action. No long-term adverse impacts to foraging habitat associated with project implementation are anticipated. The loss of potential perch trees would not affect the abundance of these species or their use of GVC for foraging habitat.

3.8 Wetlands

3.8.1 Affected Environment

Waters of the U.S. and wetlands were mapped within the site boundaries in April 2011 by North Wind, Inc. These included: perennial stream, riparian wetland, seasonal wet meadow, and seep/spring. The delineation of these wetlands was verified for permitting purposes by the USACE on September 13, 2011. These jurisdictional features occupy a total of 0.683 acres within the boundary of the project area (Figure 10). Acreages and approximate linear footage for all the jurisdictional features at the site are presented in Table 5. The perennial stream (outlet channel)/riparian wetland complex is the most common attribute found throughout the project area, and constitutes the largest acreage total. The other delineated wetland features are largely site specific and related to the historic and current human uses of the site, or the natural lay of the land.

Table 5. Summary of USACE jurisdictional waters within the Buckhorn Dam/GVC project area.

Feature Type	**TOTAL**
Waters of the U.S.	
Perennial Stream	0.112 acres (890 linear feet)
Wetlands	
Riparian Wetland	0.410 acres
Spring/Seep	0.091 acres
Season Wetland	0.070 acres
Total Wetlands	0.571 acres
Total Jurisdictional Waters	0.683 acres (890 linear feet)

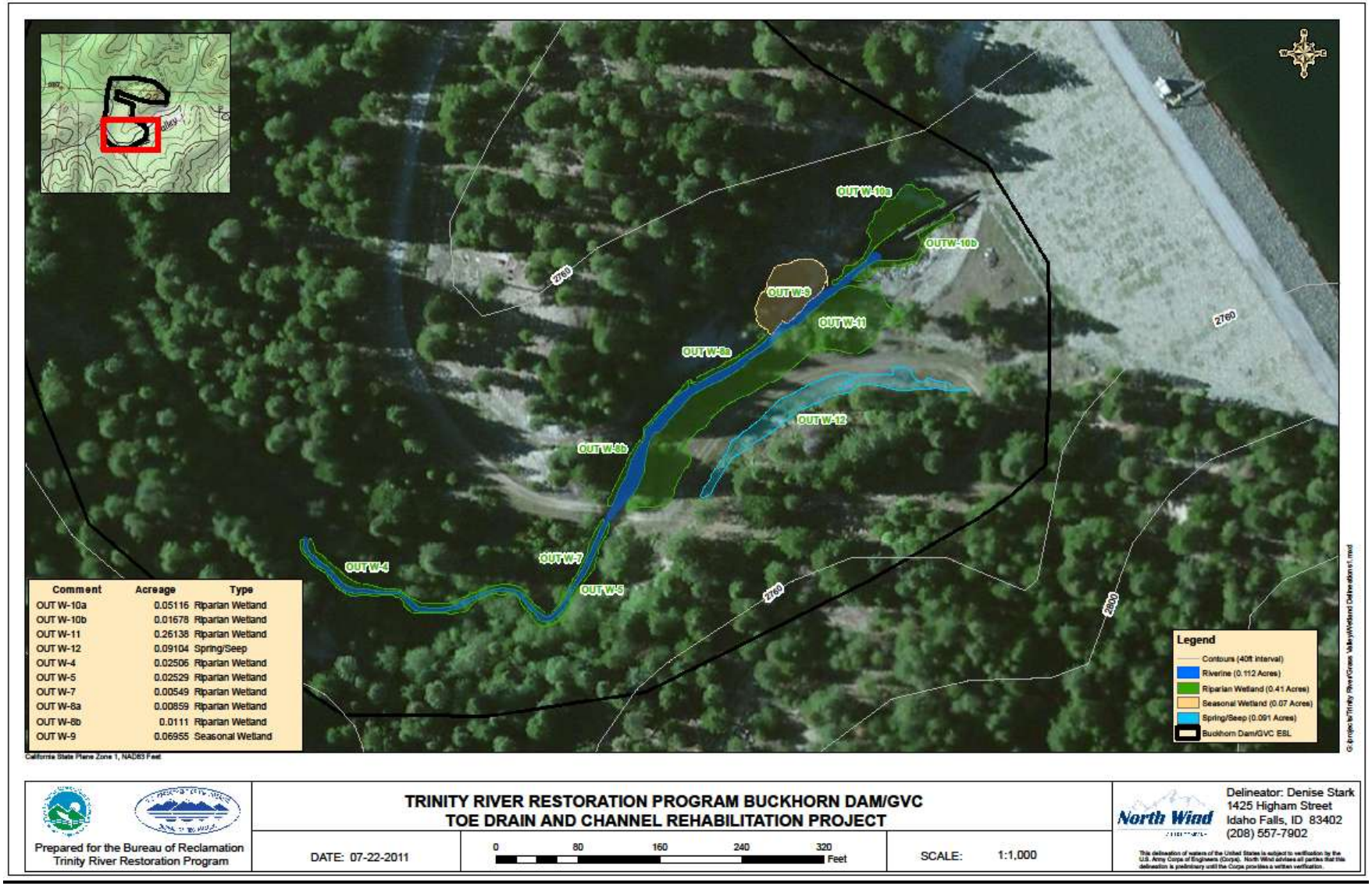

Figure 10. Wetland delineation for the Buckhorn Dam/GVC toe drain project area.

Perennial Stream
The largest delineated feature at this site is the Buckhorn Dam outlet channel. The feature exhibits a distinct bed and bank, as well as perennial flow, scour and deposition. However, due to the consistent low flows and the incised nature of the channel, watermarks, drift and sediment deposits are not clearly visible on the floodplain. Any indicators of inundation beyond the ordinary high water mark (OHWM) were mapped as riparian wetland. During the April field delineation, the outlet channel was at approximately 12 cfs, decreasing from a special release peak of 100 cfs.

Riparian Wetland
Riparian wetland features line the outlet channel. These features are dominated by hydrophytic vegetation that is influenced directly by the creek. In most cases, the features fall within the OHWM, and it is this periodic inundation that distinguishes the riparian wetland from the montane riparian habitat (an upland type) that fails to meet the wetland hydrology parameter.

Riparian wetlands are typically dominated by a complex of woody riparian species and open to dense emergent herbaceous species. Common vegetation observed in riparian wetland features include: white alder, Himalayan blackberry, arroyo willow, mugwort, smooth scouring rush (*Equisetum laevigatum*), and reed canary grass (*Phalaris arundinacea*).

Spring/Seep
Only one spring/seep feature type was located in the project area. The feature appears to have water seeping from the adjacent hill slope. This location is dominated by reed canarygrass (*Phalaris arundinacea*), and California fescue (*Festuca californica*). The soils are sandy loam and the feature was inundated and saturated. The feature is likely a result of subsurface water being forced to the surface by shallow bedrock, an outcropping of which is present just downslope from the feature.

Seasonal Wetland
A seasonal wetland was identified adjacent to the outlet channel downslope of a previously used road. This area was damp at the time of the field surveys and vegetated by white alder, arroyo willow, smooth scouring rush, spreading rush (*Juncus balticus*), and mugwort. This feature is located on the slope above the creek and fed by the runoff from the adjacent road and valley slopes.

3.8.2 Environmental Consequences/Impacts and Mitigation Measures

Methods used to assess potential impacts of the Proposed Action on wetland resources included a review of pertinent literature and data and field surveys. These efforts provided an overview of the quality and character of wetlands present within the project area.

Impacts on wetlands would be significant if they would result in any of the following:

- Substantial adverse effect on any riparian habitat;
- Substantial adverse effect on federally protected wetlands as defined by section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means;
- A conflict with any state or local policies or ordinances protecting wetland and/or riparian resources; or

- A conflict with, or violation of, the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, state, or federal habitat conservation plan relating to the protection of wetland resources.

3.8.2.1 No Action Alternative

Under the No Action Alternative no direct impacts to jurisdictional wetlands would occur because the project would not be constructed. Therefore, there would be no impact. Indirect impacts could occur in the result of dam failure that would lead to inundation of floodplain surfaces.

3.8.2.2 Proposed Action

Construction activities associated with the Proposed Action would result in temporary impacts to jurisdictional waters, including wetland features in the project area. The Proposed Action would impact 0.683 acres of wetlands – 0.112 acres (up to 890 feet) of the outlet channel itself and 0.571 acres of adjacent wetland vegetation. These impacts would be considered significant. Reclamation would take advantage of opportunities during or after project construction to enhance wetland functions within the project boundaries or to create conditions required for functional jurisdictional wetlands (i.e., hydrology, vegetation, and hydric soils) to persist over time. Mitigation measures FISH-6 and FISH-7 will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

3.9 Recreation

3.9.1 Affected Environment

There are no picnic areas, campgrounds, nor designated hiking trails in the GVC watershed. Observations of recreation use indicate that the most common uses are hunting, hiking, and fishing – fishermen hike on the gated Dam Access Road to the Buckhorn Dam Reservoir (BLM 2010). Fishing is primarily confined to the reservoir and directly downstream of the spillway. Little is known about the current recreational mineral collection use in the GVC area, however because there is no historical evidence that indicates any substantial locations of precious metals it is suspected to be minimal. Some illegal off-highway vehicle use is occurring in the northern portion of the GVC watershed, which is resulting in damage to vegetation and soil structure, and creating severe gully and surface-erosion problems (Baldwin 2002).

3.9.2 Environmental Consequences/Impacts and Mitigation Measures

The analysis of the potential effect on recreation resources as a result of the Proposed Action consists of identifying recreational resources near the project area and determining whether implementation of the action would impact these resources. This analysis is qualitative. In addition to evaluating the impacts on recreational resources, an evaluation was made of the project's consistency with Trinity County recreation objectives.

Impacts associated with recreational uses would be significant if the project would:

- Conflict with established or planned recreational uses within the project boundary;
- Substantially affect existing recreational opportunities; or

- Result in an increase in the use of the existing neighborhood, regional parks, public lands in general, or other recreational facilities such that substantial deterioration of these facilities would occur or be accelerated.

The following criteria were used to determine if project impacts to riverine recreation would be significant:

- A substantial increase in turbidity so as to negatively affect recreation aesthetics;
- Incompatibility with the federal or state wild and scenic river designation, which is defined as jeopardizing the river's scenic, recreational, or fish and wildlife resources; or
- Non-compliance with Trinity County recreation resource objectives.

3.9.2.1 No Action Alternative

No direct impacts to recreational resources within the project area would result from the No Action Alternative. Turbidity levels in the outlet channel and GVC would not increase because the project would not be constructed. There would be no safety risks to recreational users or resource damage to lands within the project boundaries nor would there be any disruption of recreation activities in GVC. In the event of dam failure resulting from the absence of action to address the identified safety of dam issue, flood waters would indirectly impact recreation resources.

3.9.2.2 Proposed Action Alternative

During implementation of the Proposed Action, there would be construction equipment and activity within the active channel, the floodplain, and adjacent upland areas in close proximity to the Buckhorn Dam outlet channel. However, given the remoteness of the area and that no fishing/visitation occurs in the outlet channel, there would be no recreational impact from implementing the Proposed Action.

Implementation of the Proposed Action could increase turbidity in the outlet channel and GVC for some distance downstream. The level of this increase would largely be dependent on the flow regime at the time of the discharge. Flows that typically contribute to good fishing tend to be clear thus, nominal increases in turbidity may affect the recreational experience of anglers and the aesthetic values held by other user groups. Water quality objectives for the Trinity River specifically prohibit the discharge of any materials into the river that could cause a nuisance or adversely affects beneficial uses (e.g., recreation).

The Regional Water Board's Basin Plan (North Coast Regional Water Quality Control Board 2007) includes two specific prohibitions directed at construction, logging, and other associated non-point source activities:

- The discharge of soil, silt, bark, sawdust, or other organic and earthen material from any logging, construction, or associated activity of whatever nature into any stream or watercourse in the basin in quantities deleterious to fish, wildlife, or other beneficial uses is prohibited.
- The placing or disposal of soil, silt, bark, slash, or sawdust or other organic and earthen material from any logging, construction or associated activity of whatever nature at locations where such material could pass into any stream or watercourse in the basin in quantities deleterious to fish, wildlife, or other beneficial uses is prohibited.

Implementation of the Proposed Action would increase the potential for turbidity and total suspended solids during construction activities. Fine sediments could be suspended in the stream for several hours following in-channel activities. The extent of downstream sedimentation would be a function of the instream flow velocity and particle size. For example, fine-grained sediments like silts and clays could be carried several thousand feet downstream of the activity area, while larger-sized sediments like sands and gravels would tend to drop out of the water column within several feet of the construction limit. Increased turbidity and suspended solids levels would adversely affect water quality and could adversely affect anadromous fish species that are known to occur in GVC, and could have a noticeable effect on the Trinity River's aesthetics. Increases in turbidity would be a significant impact. Therefore, the mitigation measures WATER-1 through WATER-4 described in Section 3.4 above will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of these mitigation measures would reduce the impacts to less than significant.

3.10 Socioeconomic Values

3.10.1 Affected Environment

Trinity County's population was ranked 54th in total population out of 58 California counties by the U.S. Census Bureau and continues to grow at a considerably lower rate than California on average (U.S. Census Bureau 2008). Declines in the timber industry and an attendant loss of jobs have had a significant effect on the county's population. The population of Trinity County is generally characterized by a higher proportion of white and retirement-age persons and lower proportions of Native American, Hispanic, and young working-age persons (Center for Economic Development 2007). Lewiston is the nearest community to the project area. The estimated population of the unincorporated Lewiston area from 2005 to 2009 was 1,186 people.

The county's demographics are influenced by the large amount of federally owned land in combination with land used for private industrial timber production (10 percent), much of which is restricted from development due to zoning as a Timber Production Zone (Trinity County 2003). Thus, only about 15 percent of the county is private land usable for development purposes. The county's rugged terrain and remote location also influence its demographics by limiting the developable area. Most of the population of Trinity County is concentrated in Weaverville, Hayfork, and Lewiston. Education levels of residents are typical of most rural northern California counties, with a greater proportion of high school graduates and a smaller proportion of college graduates (Center for Economic Development 2007).

The average total labor force in Trinity County between the years of 1991 and 2006 was 5,250 people (California Employment Development Department 2008; Center for Economic Development 2007). Annual variations have ranged from 4,850 people in 1999 to 5,420 people in 2003 (California Employment Development Department 2008; Center for Economic Development 2007). The majority of Trinity County's labor force is concentrated in Weaverville and Hayfork. Trinity County's unemployment rate has been and continues to be consistently higher than the California average. In December 2010 unemployment in Trinity County was 20.5 percent (California Employment Development Department 2011). The county's labor market depends on such factors as distance to SR 299 and Weaverville, the county's business center and largest labor market. Communities located on SR 299, such as Lewiston, from which Weaverville or Redding can be accessed directly, have lower unemployment rates.

The community of Lewiston offers only limited services, including several commercial enterprises, a U.S. Post Office, and Lewiston Elementary School. The community also has several recreation-based businesses including the Trinity River Resort and RV Park, the Old Lewiston Bridge RV Resort, and the River Oaks Resort. These businesses provide economic benefits to the local community and the county, however, the Lewiston community is primarily residential. Existing land uses are primarily rural residential or lands managed by federal or state agencies.

Zoning designations within the community of Lewiston are largely residential, with minimum parcel sizes ranging from 1 to 40 acres (Trinity County 2003). Rural Residential zoning within the community requires a minimum parcel size of 1 to 5 acres to retain the rural character of the area. Many of these parcels do not have access to community services, and rely on individual sewer and water services. The total number of housing units in Trinity County in 2006 was estimated at 8,251 (U.S. Census Bureau 2008). The total number of occupied housing units was estimated at 5,587 (U.S. Census Bureau 2008). The area surrounding the community of Lewiston is primarily a rural residential area. Few rental opportunities exist in this community plan area. What rental property does occur in adjacent rural residential areas is typically seasonal rental property available for recreational pursuits. More readily available short-term apartment and single-family rentals are concentrated in the nearby community of Weaverville and, to a lesser degree, Hayfork.

3.10.2 Environmental Consequences/Impacts and Mitigation Measures

Analysis of the potential socioeconomic impacts of the Proposed Action included qualitative assessments of potential impacts associated with employment, income, conflicts with county and local plans, population growth, displacement of persons and businesses, and community disruption.

The project would have a significant impact if it:

- Induces substantial growth in an area, either directly or indirectly;
- Displaces substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; and/or
- Displaces substantial numbers of people, necessitating the construction of replacement housing elsewhere.

3.10.2.1 No Action Alternative

Under the No Action Alternative, no employment opportunities would be created because the project would not occur. There would be no disruption or displacement of local businesses nor increased demand for housing during construction. No population increases would occur during or after activities are implemented because the Proposed Action would not occur. Therefore, there would be no direct impacts to socioeconomic conditions. However, in the event of dam failure indirect effects could occur. Housing units and businesses located along GVC and the Trinity River downstream of the Buckhorn Dam could be damaged or destroyed by floodwaters.

3.10.2.2 Proposed Action Alternative

Implementation of the Proposed Action would generate temporary construction-related employment in Trinity County. The generation of employment would be a beneficial effect in

the local economy, even if the employment is short-lived. The exact number of design, construction, and clerical positions required to complete the Proposed Action is unknown, but implementation of the project is expected to add a small percentage to existing local jobs for the project duration (anticipated to be approximately three months). Although the Proposed Action would provide direct local employment opportunities only if workers are hired from the local labor force, this potential impact would be beneficial.

No existing businesses are located within or adjacent to the project area. Local businesses in the vicinity would not be disrupted or displaced by activities associated with the Proposed Action. Construction equipment and vehicle access would not impair access to local businesses, and business operations would not be impaired. Therefore, the impact would be less than significant.

The area surrounding the community of Lewiston is primarily a rural residential area, and few rental opportunities are available. More readily available short-term apartment and single-family rentals are concentrated in the nearby community of Weaverville and, to a lesser degree, Hayfork. Implementation of the Proposed Action would not result in the displacement of any individual from his or her home. It is not anticipated that any short-term increase in the demand for housing in Weaverville would occur as a result of construction workers seeking lodging during the project staging and construction period for the project. Nearby communities have been capable of meeting short-term increases in housing demands resulting from a large influx of fire suppression personnel on a recurring basis. This project would generate a much smaller number of housing needs in comparison to the housing demands generated by wildland fires, and the impact would occur only in the short term. Therefore, the impact would be less than significant.

Implementation of the Proposed Action would require approximately 10 individuals at the project area during implementation. An increase in population is not anticipated. Based on current populations in the local communities, the projected number of workers that could move to the greater Weaverville area would result in a localized increase of less than 1 percent on a temporary basis. This amount would not constitute a significant change in population. Workers would likely be drawn from the local work force, which would further lessen population growth associated with project implementation. Overall, this impact would be less than significant.

3.11 Cultural Resources

3.11.1 Affected Environment

Cultural resources include prehistoric, historic, architectural, and traditional cultural properties. Protection of cultural resources is mandated by a number of cultural resources laws and regulations including, but not limited to, the National Historic Preservation Act (NHPA), Native American Graves Protection and Repatriation Act (NAGPRA), and the Archaeological Resources Protection Act (ARPA). Those cultural resources that are listed on, or are eligible for inclusion in, the National Register of Historic Places (NRHP) are referred to as historic properties. The criteria for NRHP eligibility are outlined at 36 CFR Part 60.

Compliance with Section 106 of the NHPA (CFR Part 800) follows a series of steps that are designed to identify and consult with interested parties, determine the area of potential effect (APE), determine if historic properties are present within the APE, and assess the effects the undertaking will have on historic properties. Section 106 requires consultation with Indian Tribes concerning the identification of sites of religious or cultural significance and with

individuals or groups who are entitled, or requested, to be consulting parties. The regulations at 36 CFR Part 800.5 require federal agencies to apply the criteria of adverse effect to the historic properties identified within the APE. The criteria of adverse affect, defined at 36 CFR Part 800.5(a)(1), states that: "An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association."

Reclamation implemented a Programmatic Agreement (PA) among the U.S. Bureau of Reclamation, the U.S. Fish and Wildlife Service, the U.S. Bureau of Land Management, Hoopa Valley Tribe, California State Historic Preservation Officer, and the Advisory Council on Historic Preservation on October 26th, 2000 that provides for Section 106 compliance with regard to the TRRP. The PA outlines how Reclamation conducts Section 106 compliance, and provides direction on the discovery, treatment, and management of cultural resources identified within the APE. A cultural resource report (USBR 2010) was prepared to serve as Section 106 compliance documentation for the Proposed Action, pursuant to the stipulations of the PA.

The proposed action APE (encompassing approximately 57.5 contiguous acres) was subject to a literature review, record search, and pedestrian surface survey by Reclamation staff. An archaeological investigation report documenting the results has been provided to the California SHPO pursuant to Stipulation VII (b) of the PA. The PA allows Reclamation to navigate the Section 106 process for projects affiliated with TRRP under a variety of circumstances. The cultural report (USBR 2010) describes the prehistory, ethnography, and history of the Trinity River region and summarizes the findings of the cultural resources records search and field inventory prepared by Reclamation and serves as Section 106 compliance documentation for the proposed action, pursuant to the stipulations of the PA. The results of the report are summarized below.

A literature review, record search, consultation with federally recognized Indian Tribes in an effort to identify sites of religious and cultural significance, and pedestrian surface survey of the Proposed Action (57.5 acres) were conducted by Reclamation staff in August 2010. The intensive surface survey was conducted by Reclamation archaeologists on August 30, 2010. Together, these identification efforts constitute a Class III cultural resource inventory effort pursuant to Reclamation's Directives and Standards (LND 02-01). No artifacts, features, or anthropogenic soils were observed during the survey and nothing was identified in the APE as a result of the records search. Much of the landscape within the APE appears to have been directly or indirectly disturbed by dam and spillway construction and/or frequent episodes of logging. While evidence of the latter is apparent in several locations throughout the APE in the form of informal roadways, skid trails, and log landings, none of these features could be unequivocally attributed to historic-era activity. Further, no historic era artifacts were observed, either in association with logging landscape features or elsewhere in the APE. Consequently, it has been determined that implementation of the proposed undertaking would have no effect on any historic properties currently included or eligible for listing on the NRHP, pursuant to the regulations in 36 CFR Part 800.4(d)(1). SHPO concurred with this finding in a letter dated December 27, 2010.

3.11.2 Environmental Consequences/Impacts and Mitigation Measures

The APE for the cultural resource inventory and evaluation was established by Reclamation in accordance with the PA. Reclamation negotiated a PA with the California SHPO and the Advisory Council on Historic Preservation in November of 2000 for Section 106 compliance regarding the Trinity River Main Stem Fishery Restoration Project. The PA outlines how Reclamation conducts Section 106 compliance as well as provides direction on how to deal with resources identified within the programmatic APE.

Impacts on cultural resources are considered significant if implementation of the proposed action would potentially disturb unique cultural resources or properties on, or eligible for, the NRHP. For historical resources, the lead agencies have reviewed both the federal NHPA and CEQA in order to determine thresholds of significance. CEQA provides that a project may cause a significant environmental effect if the project "may cause a substantial adverse change in the significance of an historical resource" (PRC, Section 21084.1). CEQA Guidelines Section 15064.5 defines a substantial adverse change in the significance of an historical resource to mean "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (CEQA Guidelines, Section 15064.5, subd. (b)(1)). CEQA Guidelines Section 15064.5, subdivision (b)(2), states that the significance of a historical resource is materially impaired when a project:

- Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historic Places (CRHP);
- Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the PRC or its identification in a historical resources survey meeting the requirements of Section 5024.1(g) of the PRC, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
- Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the CRHP as determined by a lead agency for purposes of CEQA.

With these definitions in mind, impacts on historical resources eligible for the NRHP or CRHP are considered to be significant if the project would alter their eligibility for the NRHP or CRHP by:

- Physically destroying or materially altering the characteristics of the historical resource that convey its historical significance and justify its eligibility for listing on the NRHP or CRHP;
- Introducing visual, audible, or atmospheric elements out of character with the historical resource and its setting in such a way as to demolish or materially alter the characteristics that convey its historical significance and justify its eligibility for listing on the NRHP or CRHP;
- Causing the historical resource to be subject to neglect to such a degree that the characteristics that convey its historical significance and justify its eligibility for listing on the NRHP or CRHP would be materially impaired; or

- Resulting in the historical resource being transferred, leased, or sold, with the probability that the characteristics that convey its historical significance and justify its eligibility for listing on the NRHP or CRHP would be materially impaired.

In addition, based on CEQA Guidelines Section 15064.5 and Appendix G of the CEQA Guidelines, the Proposed Action would have significant effects if they would:

- Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5;
- Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5;
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

3.11.2.1 No Action Alternative

The No Action Alternative eliminates the potential for direct adverse effects to cultural resources. However, indirect effect to cultural resources present along the GVC floodplain could occur as a result of dam failure. Floodwaters could uncover previously unknown archeological materials in the area as well as cause damage to historic properties downstream.

3.11.2.2 Proposed Action Alternative

Implementation of the Proposed Action would not adversely affect historic properties pursuant to 36 CFR Part 800.5(b). As previously discussed, the APE was surveyed for the presence of cultural resources and no sites were discovered. Because no historic properties were identified within or adjacent to the Proposed Action APE, the Proposed Action would have no effect on any historic properties currently included or eligible for listing on the NRHP, pursuant to the regulations in 36 CFR Part 800.4(d)(1).

Project activities have the potential to affect unknown cultural resources that may be present in the project area. In the event that any cultural resources or human remains are encountered during project implementation, all work in the area of the find would halt and Reclamation's Regional Archeologist would be immediately notified. Reclamation would follow the stipulations of the PA for compliance with the NHPA. If the discovery is determined to be a historic property that would be adversely affected by the rehabilitation activities, Reclamation would resolve the adverse affect by preparing a Historic Property Treatment Plan in accordance with Section III(d) of the PA. If human remains are discovered and identified as Native American, they would be treated according to provisions set forth in Section IV of the PA as well as the NAGPRA. Any such impact related to the Proposed Action would be potentially significant. Therefore, the following mitigation measures will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

CULT-1: Prior to initiation of construction or ground-disturbing activities, all construction workers will be alerted to the possibility of discovering cultural resources. This includes prehistoric and/or historic resources. Personnel will be instructed that upon discovery of buried cultural resources, work within 50 feet of the find will be halted and Reclamation's designated archaeologist will be consulted. Once the find has been identified, Reclamation

will be responsible for developing a treatment plan for the cultural resource including an assessment of its historic properties and methods for avoiding any adverse effects, pursuant to the PA and in compliance with the NHPA.

CULT-2: If human remains are encountered during construction on non-federal lands, work in that area will be halted and the Trinity County Coroner's Office will be immediately contacted. If the remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) will be notified within 24 hours of determination, as required by PRC, Section 5097. The NAHC will notify designated Most Likely Descendants, who will provide recommendations for the treatment of the remains within 24 hours. The NAHC will mediate any disputes regarding treatment of remains. If Native American human remains and associated items are discovered on federal lands, they will be treated according to provisions set forth in the Native American Protection and Repatriation Act (25 USC 3001) as well as Reclamation's Directives and Standards LND 02-01. If the find is determined to be a historical resource or a unique archaeological resource, as defined by CEQA, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or other appropriate mitigation will be made available. Work may continue on other parts of the project while mitigation for historical or unique archaeological resources takes place.

3.12 Air Quality

3.12.1 Affected Environment

The 1977 federal Clean Air Act (CAA) requires the U.S. Environmental Protection Agency (EPA) to identify National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. Trinity County is part of the North Coast Air Basin, and is under the jurisdiction of the North Coast Unified Air Quality Management District (NCUAQMD). Similar to federal requirements, the 1988 California Clean Air Act (CCAA) outlines a program to attain the California Ambient Air Quality Standards (CAAQS). The California Air Resources Board (CARB), California's state air quality management agency, regulates mobile source emissions and oversees the activities of the NCUAQMD. Trinity County's air quality is generally good. The low population density, limited number of industrial and agricultural operations, and minimal traffic congestion problems contribute to the good air quality. The county is currently in attainment with all federal air quality standards and most state air quality standards; however, the county is in non-attainment for the state particulate matter standards for particulate matter less than 10 microns in diameter (PM_{10}).

Proximity to sensitive receptors is a concern in air quality analyses. A sensitive receptor is a location where human populations, particularly children, seniors, and sick individuals, are present and where there is a reasonable expectation of continuous human exposure to pollutants. The project is not located near a school, hospital, or senior housing. However, the project is near residential areas and outdoor recreation areas.

Climate Change and Greenhouse Gases

Climate change refers to a significant change in measures of climate, such as average temperatures, precipitation, and wind patterns, over time. Significant changes in global climate patterns have recently been associated with global warming, an average increase in the

temperature of the atmosphere near the Earth's surface, attributed to the accumulation of greenhouse gas (GHG) emissions in the atmosphere.

As of August 2007, CEQA lead agencies are required by law to analyze the potential of a proposed action to produce GHG emissions, which consist primarily of carbon dioxide (CO_2), nitrous oxide (N_2O), and methane (CH_4) (PRC Section 21083.05). The Governor's Office of Planning and Research released a Technical Advisory in June 2008 (California Office of Planning and Research 2008) that provides guidance for addressing CEQA GHG environmental impacts. In particular, "Lead agencies should make a good faith effort, based on available information, to calculate, model, or estimate the amount of CO_2 and other GHG emissions associated with vehicular traffic, energy consumption, water usage and construction activities" (California Office of Planning and Research 2008).

3.12.2 Environmental Consequences/Impacts and Mitigation Measures

Data for the impacts analysis were taken from the following reports on local and regional air quality: Particulate Matter Attainment Plan (North Coast Unified Air Quality Management District 1995), California Air quality data statistics (California Air Resources Board 2008), North Coast Rules and Regulations (North Coast Unified Air Quality Management District 2005), and the Trinity County General Plan (Trinity County 2003). The air quality analysis is qualitative, and was conducted by assessing anticipated construction-related impacts of the project and comparing them to existing and anticipated future air quality conditions.

The project would have a significant impact if it:

- Violates any ambient air quality standard;
- Contributes substantially to an existing or projected air quality violation;
- Conflicts with or obstructs implementation of any applicable air quality plan;
- Results in a cumulatively considerable net increase of any criteria pollutant (e.g., PM_{10}) for which the region is in non-attainment under an applicable state ambient air quality standard;
- Exposes sensitive receptors to substantial pollutant concentrations;
- Results in substantial air emissions or deterioration of air quality;
- Creates objectionable odors;
- Alter air movement, moisture, or temperature, or result in any change in climate, either locally or regionally;
- Produces toxic air contaminant emissions that exceed the air pollution control district's threshold level for health risk; or
- Results in a substantial increase or cumulatively considerable net increase in GHG emissions (e.g., CO_2).

3.12.2.1 No Action Alternative

Regarding air quality effects, the No Action Alternative would eliminate all construction related air pollutant emissions and fugitive dust associated with the Proposed Action. Because the No Action Alternative would not cause any direct emissions in the short-term it would remain consistent and in conformity with applicable plans. Because no activities would occur, the No Action Alternative would not adversely affect any sensitive receptors. No long-term indirect impacts to air quality have been identified.

3.12.2.2 Proposed Action

Activities associated with the Proposed Action would require excavation, grading, vegetation removal, disposal of earthen materials, and the use of heavy equipment and travel on unpaved roads, which would temporarily contribute fugitive dust in the project area. As discussed previously, these sources of fugitive dust are associated with PM_{10}, a criteria pollutant, for which the air basin is in non-attainment. Fugitive dust resulting from project activities would occur during the dry summer and early fall months, when PM_{10} levels may be elevated by wood stove use, brush burning, or wildland fires. Once activities cease at the project area, the resulting impact on air quality would also cease. While measures would be taken to minimize fugitive dust, project generated fugitive dust would be considered a significant impact because the air basin is in non-attainment status for particulate matter. Therefore, the following mitigation measure will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measure would reduce the impacts to less than significant.

AIR-1: Reclamation will implement a dust control program to limit fugitive dust and particulate matter emissions. The dust control program will include the following elements as appropriate:

- Inactive construction areas will be watered as needed to ensure dust control.
- Pursuant to the California Vehicle Code (Section 23114), all trucks hauling soil or other loose material to and from the construction site will be covered or will maintain adequate freeboard to ensure retention of materials within the truck's bed (e.g., ensure 1-2 feet vertical distance between top of load and the trailer).
- Excavation activities and other soil-disturbing activities will minimize disturbance to reduce the amount of bare soil exposed at any one time. Mulching with weed-free materials will be used to minimize soil erosion.
- Watering (using equipment and/or manually) will be conducted on all stockpiles, dirt/gravel roads, and exposed or disturbed soil surfaces, as necessary, to reduce airborne dust.
- Paved roads will be swept (with water sweepers) if visible soil material is carried onto adjacent private and public roads, as required by Reclamation.
- Reclamation or its contractor will designate a person to monitor dust control and to order increased watering as necessary to prevent transport of dust offsite. This person will also respond to citizen complaints.

Construction associated with the Proposed Action would require the use of equipment that would temporarily contribute to air pollution in the Trinity River Basin. Exhaust emissions from heavy equipment during construction could contribute to air pollution. Project construction activities would generate emissions from diesel- and gasoline-powered equipment and vehicles. Diesel particulate is an identified Hazardous Air Pollutant (HAP) and Toxic Air Contaminant (TAC), emissions of which should be minimized. In this regard, construction activities would require the contractor to comply with NCUAQMD Rule 104 (3.0) Particulate Matter or use portable internal combustion engines registered and certified under the state portable equipment regulation. Because diesel particulate matter is both a HAP and a TAC, and because these pollutants would be emitted as a result of project implementation, the Proposed Action would have a significant impact on air quality. Therefore, the following mitigation measure will be

implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measure would reduce the impacts to less than significant.

AIR-2: Reclamation will comply with NCUAQMD Rule 104 (4.0) Particulate Matter. This compliance could occur by using portable internal combustion engines registered and certified under the state portable equipment regulation (Health & Safety Code 41750 through 41755).

Implementation of the Proposed Action would include vegetation removal resulting in vegetative material that would be buried, piled to create wildlife habitat, chipped, or burned. Though vegetative materials are most frequently chipped and added back to the floodplain or upland area to enhance growing conditions, occasionally burning of vegetation (e.g., weedy materials) is completed. Piling and burning is a quick and economical way to eliminate flammable biomass and reduce concentrations of wildland fuels. Brush piles set aside for burning would be left intact until site construction is finished, and subsequently burned under the direction of Reclamation, consistent with USFS, BLM, and Cal Fire requirements. Burning vegetation in the fall/winter period (November-April) would eliminate effects to nesting birds. In the event that piles are burned, smoke would temporarily contribute to air pollution in the Trinity River Basin. Burning vegetation would contribute particulate matter to the air, a criteria pollutant for which the basin in is non-attainment. Therefore, the impact would be significant. Therefore, the following mitigation measures will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

AIR-3: Vegetative piles to be burned will consist only of dried vegetative materials. Burn piles will be no larger than 10 feet in diameter. Field personnel will be on site during all hours of burning, and materials necessary to extinguish fires will be available at all times.

AIR-4: In general, all requirements of a NCUAQMD "NON-Standard" burn permit will be met for burning. Burn management planning will include but not be limited to the following:

- Ensure that burning occurs only on approved burn days as defined by the NCUAQMD (determined by calling 1-866-BURN-DAY).
- Burning will only occur during suitable conditions to ensure control of ignited fires. For instance, water to wet the litter and duff layer and penetrate the mineral soil layer to 1/4 inch or more will be present, wind speeds will be low (<10 mph), and temperature will be low (<80 ºF).
- Piles will be covered with a 5-foot x 5-foot sheet of 4-mil polyethylene plastic to promote drying of the slash. At least 3/4 of each pile surface will be covered and the plastic anchored to preserve a dry ignition point. Dry fuel conditions will minimize smoke emissions.
- Slash piles will not be constructed on logs, stumps, or talus slopes within 25 feet of wildlife trees with nest structures, in roadways, or in drainage ditches. Piles will not be placed within 10 feet of trees intended to be saved (reserved trees) or within 25 feet of a unit boundary.

AIR-5: Reclamation will notify the public each day that burning is to occur. Signs or personnel will notify residents and traffic on nearby access routes.

Transportation and construction activity associated with project implementation would generate GHG emissions from diesel- and gasoline-powered vehicles and equipment. Burning vegetation would also emit CO_2, which is a GHG. The following measures would be used to enhance the awareness of global warming in conjunction with the Proposed Action:

- Provide project contractors with educational material about fuel efficiency and incentives;
- Promote incentives for contractors to initiate ride-sharing programs;
- Promote the use of energy efficient and alternative fuel construction equipment and transportation fleets through contract incentives;
- Require contractors to provide recycling bins for on-site waste materials;
- Provide incentives for contractors to use re-usable water containers rather than plastic bottled water;
- Provide incentives for contractors to hire locally;
- Require re-useable batteries for equipment that can use them.

Analysis has been completed for similar projects with the determination that several rehabilitation projects similar to the Proposed Action would produce approximately 3 metric tons of CO_2 per day over the life of the project (NCRWQCB and USBR 2009). Vegetation replanting and natural re-seeding within the existing riparian area would offset the total project GHG emissions in the long term. Additionally, project activities may result in opportunities to increase the amount of riparian and upland vegetation. The prior analysis completed, which estimated a project's carbon emission, determined that rehabilitation would not generate significant increases in GHGs or an ongoing increase in the demand for off-site energy production because there would be no new facilities constructed. While the project's GHG emissions associated with the use of heavy equipment would be measurable over the course of the project, GHG emissions and any effects on global climate change would not be cumulatively significant considering the amount of GHG emissions generated by the project and the current local air quality conditions. Overall, the impacts of the project activities would be less than significant with respect to GHG.

Construction activity associated with the Proposed Action would generate fugitive dust, gas, and diesel emissions and the project could generate smoke from vegetation burn piles; however, due to the distance of the project area from any residences and the Lewiston Elementary School it is unlikely that these localized pollutants would reach these sensitive receptors. Therefore, this would not be a significant impact.

3.13 Aesthetics

3.13.1 Affected Environment

The visual environment, or character, is a function of both the natural and artificial landscape features that make up a view. Geologic, hydrologic, botanical, wildlife, recreational, and urban features such as roads, homes, and earthworks directly influence the visual character of an area. Form, line, color, and texture are the basic components used to describe visual character and quality for most visual assessments (Federal Highway Administration 1983). The dominance of each of these components on the landscape serves to form the viewer's impression of the area. A viewer's impression directly corresponds to the aesthetic value of the landscape. The aesthetic

value of an area is a measure of its visual character and scenic quality combined with the viewer response.

The GVC watershed is comprised of steep, mountainous terrain and foothills. Vegetation is predominantly mixed conifer species, with hardwoods at the lower elevations and true fir stands at the upper elevations. Construction of the dam changed the visual character of the watershed. Prior to construction of the dam the primary land use within the GVC watershed was the harvest of trees in support of the forest products industry. Significant areas in the watershed have sparse vegetative cover and experience accelerated surface erosion as a result of those past activities. Various corporations logged much of the watershed roughly between 1940 and 1990 while others continue logging of the private lands to the present. The remains of an extensive timber harvesting road and skid trail network created in the 1950s and 1960s continues to be visible in areas of the watershed (TCRCD, date unknown). While logging continues on private lands most of the undeveloped forested land is now publicly owned and as such have been the focus of significant rehabilitation efforts. Forest management is currently geared toward the maintenance of watershed health, through activities such as reducing fuel loading that could contribute to intensive fires and subsequent erosion events (BLM 2010).

The visual character of the project area is typified by the stream channel, bordered by bands of riparian vegetation which transitions to upland vegetation as the viewer moves away from the stream. The dam is the dominant visual feature in the area and provides the backdrop to the project area. Views of the project area are shown in Figure 11.

Figure 11. View of the Buckhorn Dam outlet channel.

The Federal Highway Administration (1983) defines a viewshed as all of the surface area visible from a particular location (e.g., a highway pull-out) or sequence of locations (e.g., a highway or trail). Viewsheds are referred to as Visual Assessment Units (VAUs) throughout this section of the document. VAUs are established to represent views of visually sensitive resources observed from various locations surrounding homes, public access areas, or roads in the project vicinity. VAUs provide a framework for comparing the visual effects of a proposed project.

A single VAU was identified for the project area, containing one key observation point[1] (KOP). The KOP was identified based on the likelihood a representative group (e.g., recreationists) could view the project area. The project area would not be visible from any residential areas or travel routes. Work on the outlet channel would only be visible from the top of the dam itself by recreationists fishing in the reservoir or briefly by recreationists walking across the dam to access other areas of the reservoir.

3.13.2 Environmental Consequences/Impacts and Mitigation Measures

Analysis of potential impacts to aesthetic resources relative to the project area is based on the significance criteria described in Appendix G of the CEQA Guidelines (Association of Environmental Professionals 2008). TCRCD, acting as the CEQA lead agency, has used these criteria to develop significance thresholds. Significance thresholds are used to evaluate the proposed project's potential impact on the visual character of the project area with an emphasis on VAUs that are selected to characterize the aesthetic values and visual resources. This section provides a general discussion of the type and magnitude of impacts that could occur as a result of the project. The assessment is qualitative, with the potential impacts of the Proposed Action to the viewshed evaluated in the context of the GVC watershed.

The project would have a significant impact if it:

- Obstructs a scenic view from public viewing areas;
- Has a substantial adverse effect on a scenic vista;
- Substantially damages scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrades the existing visual character or quality of the project area and its surroundings;
- Introduces physical features that are substantially out of character with adjacent residential areas;
- Alters the site so that the scale or degree of change appears as a substantial, obvious, and disharmonious modification of the overall scene (to the extent that it clearly dominates the view);
- Creates substantial daytime glare associated with new construction;
- Disrupts adjacent residential areas because of new night-time lighting;
- Creates a new source of substantial light or glare that would adversely affect day or nighttime views in the site; or
- Is inconsistent with the policies of the Trinity County and local general plans relating to aesthetics.

3.13.2.1 No Action Alternative

Implementing the No Action Alternative would eliminate all potential direct changes in the project area visual setting that would result from implementation of the Proposed Action. Because the Proposed Action would not be constructed no changes would occur to the character or harmony of aesthetic features and existing land uses. There would be no changes in daytime

1 Points from which the project boundary or portions thereof are visible from sensitive receptor areas, such as major travel routes and/or surrounding homes.

glare or nighttime lighting would occur because the Proposed Action would not be constructed. There would be no degradation and/or obstruction of a scenic view from a key observation area. Indirect effects to aesthetic resources could result from dam failure. Floodwaters would damage resources and structures downstream of the dam, thus changing the visual character of the area.

3.13.2.2 Proposed Action Alternative

Potential impacts of this alternative within the VAU would include changes brought about by various activities intended to improve fish habitat in the stream channel, thereby enhancing the overall aesthetic values and visual resources associated with the stream and the surrounding landscape. While these impacts are expected to be temporary in nature and the long-term outcome should improve the visual diversity of the corridor, the short-term impacts would persist for some period. Proposed activities in the channel would have a significant albeit short-term impact on the visual environment.

The activity area would be visible from the KOP on top of the dam as recreationists fish in that area or walk across the dam to access other portions of the reservoir. The elevation of the dam allows for views of the outlet channel before it turns to the north. Consequently, under the Proposed Action, virtually all of the construction activities in this portion of the site would be visible from this KOP. However, most recreationists would be facing toward the reservoir with the majority of the actions behind them.

Because implementation of the project could result in the degradation of a scenic view, mitigation measures FISH-6, FISH-7, and WATER-1 through WATER-7 will be implemented where applicable. Visual impacts related to water quality (e.g., the potential for increased turbidity to adversely impact the aesthetic quality of the stream) would be mitigated through the implementation of mitigation measures. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Activities associated with the Proposed Action are intended to be not only functional (e.g., enhance fisheries and restore river sinuosity), but to complement the aesthetic values and visual resources associated with the project area. Excavated materials would be removed to upland areas and would be placed in a manner that blends the materials into the contours of the topography. Retention of existing topographic features would significantly lessen the degree of visual impact. Over time, the Proposed Action would produce gradual, ever-improving changes in the aesthetic quality of this reach. These changes would retain the character of existing land uses and features; therefore, implementation would result in a less than significant impact on aesthetic resources.

Under the Proposed Action, significant increases in daytime glare and/or nighttime lighting are not anticipated to occur. Construction activities would not take place during nighttime hours; therefore, recreationists in the area would not be subjected to the headlights of construction equipment or stationary spotlights. Material removed from the floodplain and deposited at various activity areas is generally not reflective and would not increase the level of daytime glare observable to the viewer. Some changes may occur in the locations and amounts of glare produced by water over the constructed inundation surfaces, but, overall, these changes would be short-lived and variable by day, as well as season. The impacts of these changes would therefore be less than significant.

3.14 Hazards and Hazardous Wastes

3.14.1 Affected Environment

Hazardous Material and Hazardous Waste

Hazardous materials management involves the prevention of illegal hazardous materials actions on public lands; the proper authorization, permitting, and regulation of the uses of hazardous materials; and the timely, efficient, and safe responses to hazardous materials incidences. Federal, state, and local agencies regulate hazardous materials and hazardous waste. Nonetheless, illegal storage and disposal and unintentional releases of hazardous materials or waste from leaks and accidents can occur when hazardous materials are used or hazardous waste is generated by a project. Regional roadways including SR 299 are frequently used to transport hazardous materials throughout Trinity County. Under the California Code of Regulations (CCR), Title 13, Section 1150-1194, and CFR, Title 49, the California Highway Patrol (CHP) regulates the transport of hazardous materials. When a spill of hazardous material or waste occurs on a highway, the CHP is responsible for directing cleanup and enforcement (CCR Section 2450-2453b).

Wildland Fire

A mosaic of vegetation types, sizes and densities covers GVC watershed, including conifers, mixed hardwoods and conifers, and hardwoods ranging in size from seedlings/saplings to large sawtimber in dense to open stands, young to mature shrubs ranging from 2 to 6 feet tall in dense brush fields or as scattered patches, and annual and perennial grasslands (Baldwin 2002). Narrow zones of riparian vegetation are found along perennial creeks including GVC. Fire access into and within the watershed is limited, mainly as a result of the following three factors: past decommissioning of roads to reduce sedimentation into GVC and the Trinity River; dense brush fields in portions of the watershed; and steep slopes found throughout the watershed (Baldwin 2002). These conditions, in conjunction with the variable mosaic of vegetation, lend themselves to a full range of fire behaviors, severities, and sizes up to and including crown fires.

Human-caused fires, particularly along roadways and other developed areas, are relatively common, although the county is also frequently subject to lightning-caused fires. Wildland fire, regardless of the cause, can be detrimental to watershed function. Effects include killing vegetation, burning the organic matter in litter and soil, and forming impervious soil layers, all of which can contribute to accelerated runoff and erosion from the watershed during and immediately after a storm event.

Trinity County fire protection needs are met by 16 volunteer fire departments dispersed throughout the county, Cal Fire, and the USFS. Cal Fire is responsible for wildland fire protection on all private lands in Trinity County, and the USFS is responsible for wildland fire protection on all federal National Forest lands. However, Cal Fire also contracts with the BLM to provide wildland fire protection on its public lands. The Lewiston Volunteer Fire Department (VFD) provides services within their general plan area and is responsible for structural fire protection and rescue services in Trinity County throughout the year. The GVC Watershed Fire Management Plan was developed by the BLM in 2002 to address fire concerns within the watershed (Baldwin 2002).

Flooding and Seismic Events

According to the 2007 Bureau of Reclamation Comprehensive Facility Review, dam failure is unlikely, but still probable (USBR 2007). Information about the potential effects of a flood from the dam was presented in Section 1.3, *Purpose of and Need for Action*. These possible effects from failure of the dam (worst case scenario) include endangering people downstream from the dam, flooding structures including houses, washing away bridges, inundating roads, delivering tons of sediment and other debris into the Trinity River, and affecting fisheries and other aquatic life. The population at risk is approximately 1400; loss of life is estimated to be from 2 to 26.

Infrequently, seismic events occur in the region generally in the form of low to moderate levels of ground shaking associated with nearby or distant earthquakes. The potential for landslides triggered by seismic events is not significant within the GVC watershed, due to the low level of historical occurrence of seismic activity in the region. However, the steep topography and shallow, erosive soils found in much of the region increase the potential for landslides and rockfalls triggered by seismic events, precipitation, or other types of disturbances.

3.14.2 Environmental Consequences/Impacts and Mitigation Measures

Hazards and hazardous materials associated with the project area were assessed in the field by North Wind, Inc. during surveys conducted in April 2011.

An impact related to hazards and hazardous materials would be significant if the project would:

- Involve the use, production, or disposal of materials that pose a hazard to people or to animal or plant populations in the area affected;
- Create a substantial potential public health or safety hazard due to risk of accidents;
- Create a substantial potential public health or safety hazard due to a reasonably foreseeable release of hazardous materials and/or hazardous waste (i.e., from contaminated soil);
- Violate applicable laws intended to protect human health and safety or expose employees to working situations that do not meet health standards;
- Physically interfere with, or impair implementation of, emergency response plans or emergency evacuation plans;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to *California Government Code* Section 65962.5 and, as a result, create a significant hazard to the public or the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school; or
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires or floods.

3.14.2.1 No Action Alternative

Under the No Action Alternative no direct use or generation of hazardous materials or wastes would need to be transported within the project area. However, in the event of dam failure, indirect impacts could result from hazardous material present on site or downstream that would

potentially mix with the floodwaters and debris. Because no project would take place, no construction activities would occur that could interfere with emergency response and evacuation plans. Similarly, there would be no impact on wildland fire potential or catastrophic fire behavior because the project would not be constructed.

The No Action Alternative would indirectly have an impact on the potential for landslides or flooding because the safety of dams issue would not be addressed, thereby increasing the potential for dam failure.

3.14.2.2 Proposed Action Alternative

Activities associated with the Proposed Action would utilize potentially hazardous materials (e.g., oil and fuels) associated with the operation of vehicles and construction equipment during implementation. These materials are similar to those routinely used for other types of construction projects throughout Trinity County. The widespread use and associated transport of these materials along the highways and county roads that traverse Trinity County, combined with the low level of incidents (spills), suggest that impacts related to project activities would be similar to that elsewhere in Trinity County. Given the temporary nature of construction and the distance from residences, schools, and frequently used recreation areas, implementation of BMPs would minimize the potential for any project-related hazardous materials becoming a public hazard. This impact would be less than significant; therefore, no mitigation is required.

Under the Proposed Action, construction traffic would include the mobilization and demobilization of construction equipment (e.g., excavators and bulldozers) to and from the site over the course of the construction period. Once the equipment is on the site, construction traffic would be limited to daily trips for personnel and routine service and supply vehicles. Construction activities would be managed to ensure that emergency response and evacuation plans are not impeded. The impacts created would be less than significant; therefore, no mitigation is required.

Under the Proposed Action, the activities described in Chapter 2 would occur within or adjacent to the riparian corridor of the Buckhorn Dam outlet channel. Potential fuels within the boundaries of the site (e.g., grasses and herbaceous weeds) are generally noncontiguous and the creek serves as a substantial natural firebreak. The types and amounts of fuels and their continuity may be decreased temporarily by implementation of this alternative, particularly in areas subject to vegetation removal, but any such changes would not be significant with respect to fire potential and behavior. In the long-term, potential fire conditions would be similar to those that currently exist. The Proposed Action would have a less than significant impact on wildland fire potential and behavior; therefore, no mitigation is required.

The activities described in Chapter 2 would take place in the stream channel or floodplain, both of which have relatively flat topography; the action does not involve alteration of toe-slopes adjacent to any geologically unstable areas (e.g., landslides). The potential for flooding would not be increased under the Proposed Action. Rather, it would actually be decreased because lowering the streambed elevation and removing bedrock intrusions under this alternative would reduce the water surface elevation and expose the toe drains, thereby allowing accurate seepage measurements to be taken. Because there would be no significant adverse impacts, no mitigation is required.

3.15 Noise

3.15.1 Affected Environment

Noise is generally defined as excessive and unwanted sound emanating from noise-producing objects. Noise is not considered a problem in Trinity County. A community noise survey was conducted in Trinity County in 2002 (Brown-Buntin 2002) as part of an update that was being developed for the noise element of the County's General Plan. The community noise survey results indicate that typical noise levels in noise-sensitive areas range from approximately 44 to 52 dB Ldn[2]. These are low noise levels and are representative of small communities and rural areas. Noise along GVC is minimal and infrequent due to the lack of population and highways. Man-made noise is generally related to timber harvesting and recreation.

Noise-sensitive receptors that have been identified in the general vicinity of the project area include persons, primarily recreationists (e.g., hikers, hunters, and anglers), and wildlife that use the GVC corridor. Noise tolerance levels for these groups are subjective, varying widely between individuals. Intensity, duration, frequency, time pattern of noise, and existing background noises are some factors that can influence individual responses to noise.

The noise levels of typical construction equipment that could be used to implement the project are shown in Table 6. To varying degrees, construction vehicles entering and leaving the project area would temporarily increase traffic levels and, thus, ambient noise levels along SR 299.

Table 6. Typical construction equipment noise.

TYPE OF EQUIPMENT	MAXIMUM LEVEL (DBA AT 50 FEET)
Truck	75
Scrapers	80
Bulldozers	75
Backhoe	75
Pneumatic tools	80

Source: Sincero and Sincero 1996

3.15.2 Environmental Consequences/Impacts and Mitigation Measures

Since the Proposed Action would not result in a noticeable increase in traffic volume, construction-related noise is the focus of this impact analysis. Construction noise impacts are based on an assumed mixture of construction equipment and related noise levels. Assumptions related to construction equipment and industry noise averages were used to evaluate construction-related noise impacts, including noise levels at the nearest sensitive receptors.

Based on Appendix G of the CEQA Guidelines (Association of Environmental Professionals 2008) the Proposed Action would have a significant direct noise impact if they would result in:

- Exposure of persons to, or generation of, excessive ground-borne vibration or ground-borne noise levels;

[2]dB L_{dn} = The average equivalent sound level during a 24-hour day, obtained after addition of 10 A-weighted decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m. A-weighted decibels, abbreviated dBA, or dBa, or dB(a), are an expression of the relative loudness of sounds in air as perceived by the human ear.

- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above existing levels; or
- Exposure of persons to, or generation of, noise levels in excess of standards established in the Trinity County General Plan noise element, or applicable standards of other agencies.

3.15.2.1 No Action Alternative

Under the No Action Alternative no direct generation of noise/vibration would occur over the short-term or long-term. There would be no change in ambient noise levels because the project would not be constructed. In addition, no indirect impacts to this resource are anticipated. Therefore, there would be no impact.

3.15.2.2 Proposed Action Alternative

During the construction phase of the project, noise from construction activities would temporarily dominate the noise environment in the immediate area. Construction activities would generate maximum noise levels ranging from 65 to 84 dBA at a distance of 50 feet, although intervening terrain and vegetation could reduce these noise levels. Construction noise would be temporary and is expected to occur primarily between the months of July and December. There would be no permanent noise impacts resulting from implementation of the Proposed Action. There are no residences immediately adjacent to the project area; residences on Shingle Shanty Road would not be subjected to increased noise levels as a result of construction. It is not anticipated that ground vibration created by project activities would be detectable at any sensitive receptor location and would not result in any structural damage. Recreational users in the general vicinity of the site could encounter increased ambient noise levels during construction activities if they were fishing on or near the dam. While such an increase in noise would be significant, its impact would be temporary and localized. Therefore, the following mitigation measures will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

NOISE-1: Construction activities will be scheduled between 7:00 a.m. and 7:00 p.m., Monday through Saturday. No construction activities will be scheduled for Sundays or other hours and days established by the local jurisdiction (i.e., Trinity County). The contractor may submit a request for variances in construction activity hours, as needed.

NOISE-2: Reclamation will require that all construction equipment be equipped with manufacturer's specified noise muffling devices.

NOISE-3: Reclamation will require placement of all stationary noise-generating equipment as far away as feasibly possible from sensitive noise receptors or in an orientation minimizing noise impacts (e.g., behind existing barriers, storage piles, unused equipment).

3.16 Public Services and Utilities/Energy

3.16.1 Affected Environment

Mutual and private water systems, wells, springs, and river intake systems serve development in the Lewiston community. Lewiston has two small water companies that serve the community core area, the Lewiston Park Mutual Water Company and the Lewiston Valley Water Company. Bucktail Mutual Water Company is a community system that serves the entire Bucktail subdivision. Development outside of the Lewiston community core area and Bucktail subdivision relies primarily on individual and shared wells, springs, and river intake systems; several small community well systems are also maintained. Surface water is provided by pumps and stilling wells and by developed springs throughout the area. Surface water is primarily used for domestic purposes, including incidental use for gardens, livestock, and fire protection. Groundwater wells provide water for domestic and commercial purposes near the project area.

Trinity County has very limited wastewater collection and treatment facilities. A community wastewater collection and treatment facility serves portions of Lewiston. Individual, on-site septic tanks and drainage fields are used throughout most of the county. Trinity County does not operate a solid waste landfill, but does operate several transfer stations that collect residential, commercial, and industrial refuse; green waste; recyclables; and household hazardous waste. All materials collected at the county transfer stations are transported to the Anderson-Cottonwood Disposal Service landfill in Anderson, California.

The Lewiston Elementary School in Lewiston consists of grades kindergarten through eight. The elementary school district provides bus services for residents in the community. Bus service is also provided for students attending Trinity High School in Weaverville.

The rural character of the county and limited fire station locations result in relatively slow response times to wildland fires, particularly during the winter. During the summer, a USFS helicopter and five-person crew are available during daylight hours. During daylight, Cal Fire also can provide automatic dispatch of a fire retardant bomber and lead plane from Redding. The Lewiston Community Services District (LCSD) provides fire protection in the vicinity of Lewiston. LCSD maintains three engines, a rescue vehicle, and an ambulance at its Texas Street station and responds to fires and aid calls year-round. The station has a 23-person volunteer crew and chief. LCSD crews respond to approximately four structure fires (not including flue fires) and 10 wildland fires a year.

3.16.2 Environmental Consequences/Impacts and Mitigation Measures

The analysis addresses potential impacts from implementation of activities on a number of public services and facilities. The analysis is based on a review of planning documents applicable to the site, communications with various agencies, and field reconnaissance.

A project would normally have a significant impact on public services or utilities under CEQA if it would:

- Not comply with published national, state, or local statues, regulations, or standards relating to solid waste;
- Interfere with emergency services;
- Degrade the level of service of a public service or utility;

- Require relocating infrastructure;
- Result in substantial adverse physical impacts associated with the provision of, or 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 fire protection, police protection, schools, parks, or other public services;
- Require substantial improvements to the infrastructure or level of staffing of a public service or utility to maintain its existing level of service;
- Require or result in the construction of new water treatment, wastewater treatment, or storm water drainage facilities, or the expansion of such existing facilities, the construction of which could cause significant environmental effects;
- Be served by a landfill without sufficient permitted capacity to accommodate the project's solid waste disposal needs;
- Disrupt utilities service to create a public health hazard or extended service disruption; or
- Encourage activities that result in the use of large amounts of fuel or energy, or would use fuel or energy in a wasteful manner.

3.16.2.1 No Action Alternative

Under the No Action Alternative no direct demand for public services would occur over the short-term or long-term. Indirectly, if dam failure were to occur there could be disruption of public services and utilities as a result of damage from flood waters.

3.16.2.2 Proposed Action Alternative

Under the Proposed Action, no activities would occur to disrupt electrical or telephone service within or adjacent to the site. There are no utility poles or underground lines located within the boundaries of the project area. A number of electrical and phone lines cross access roads to the site, typically in a manner that provides adequate vehicular clearance for phone lines and utility lines. These clearances would be adequate to allow access by construction equipment. Potential impacts on electrical and phone utilities and services in the project area as a result of the Proposed Action would be less than significant; therefore, no mitigation is required.

Under the Proposed Action, construction would result in the generation of solid waste associated with the removal of vegetation and other construction-related waste (e.g., garbage, containers, and oil). Vegetative materials (e.g., stumps, roots, and branches) would be disposed of within the site. Disposal methods for vegetative materials could include chipping to provide mulch, burial, piling to provide wildlife habitat on site, burning, or integration into the activity areas to provide structural habitat for juvenile fish. Solid waste generated by construction activities would either be disposed of at a local transfer station (Weaverville) or transported by truck to the Anderson Landfill in Shasta County. The Anderson Landfill currently has sufficient capacity and the necessary permits to accommodate non-hazardous construction waste. The contractor would be responsible for ensuring appropriate disposal of any hazardous waste, as approved by Reclamation. Disposal of potentially hazardous waste is evaluated in Section 3.14, *Hazards and Hazardous Materials*.

Temporary access routes built for project implementation would be closed and/or decommissioned to ensure that the number of public access points on public lands would not

increase, which could require the provision of public services (e.g., solid waste disposal) at locations that are inconsistent with agency management plans, guidelines, and policies. Therefore, this impact would be less than significant.

Construction activities at the site would be confined within the project boundaries described in Chapter 2. Construction personnel and service vehicles would use designated routes to and from the site. Traffic control associated with site activities would be minimal and is not expected to cause more than minimal disruptions to public services. Access for mobilization and demobilization of heavy equipment, however, may require a higher level of traffic control for local roadways and may disrupt traffic flow and circulation before, during, and after construction. Therefore, effects on emergency services, school bus routes, and student travel routes resulting from heavy equipment would be significant.

No road/bridge closures are planned for project implementation; however, in the event that it becomes necessary to close temporarily a road or bridge as a result of project activities, the road/bridge closures would occur during non-peak hours to avoid traffic circulation impacts associated with emergency services and school bus services. A closure, even during non-peak hours (i.e., 11:00 p.m. to 6:00 a.m.) could have the potential to increase significantly the response time for law enforcement, fire protection, and other emergency services. In the event that road closures would be required during the school year (mid-August through mid-June), these closures could delay school bus services. While this impact would be temporary, it could interfere with student access to bus service and, thus, school attendance. Because of the potential for temporary traffic controls on local roadways, increased response time for emergency services, and interference with student travel, the impact would be significant. Therefore, the following mitigation measures will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

PUBLIC-1: Reclamation will require that staging and construction work, including temporary road or bridge closures occurs in a manner that allows for access by emergency service providers.

PUBLIC-2: Reclamation will provide 72-hour notice to the local emergency providers and affected users prior to the start of temporary closures.

PUBLIC-3: Reclamation will coordinate road closures occurring during the school year (mid-August through mid-June) with the appropriate school districts to avoid disruption of school attendance and student access to bus service.

Energy expenditures associated with construction at the site would include both direct and indirect uses of energy. Combustion of the refined petroleum products needed to operate construction equipment would be part of the direct energy use. Indirect energy use typically represents about three-quarters of total construction energy usage, with direct energy use constituting the remaining quarter. Though construction energy would be consumed only during the construction phase, it would represent an irreversible consumption of finite natural energy resources. Construction would directly consume fuel and electricity. Construction would also indirectly consume fuel and electricity because of the energy used to provide the materials necessary for construction. Fuel would be consumed by both construction equipment and construction-worker vehicle trips. Minor electrical use might be required for some construction equipment, such as welding machines, power tools, and pumps. Construction energy

consumption would be a short-term impact and would not be an ongoing drain on finite natural resources. Construction would consume energy primarily in the form of fuel from local commercial sources and would not have a significant effect on local or regional energy sources. Therefore, this impact would be less than significant and no mitigation is required.

3.17 Transportation

3.17.1 Affected Environment

SR 299 is the main artery that connects Trinity County to communities and resources in Shasta County and the rest of California. SR 299 runs along little GVC from the upper reaches to the confluence with GVC and along GVC for approximately 4.5 miles. SR 299 provides the main access to the project area. From SR 299 the project area would be accessed via Shingle Shanty Road located just before Buckhorn Summit. The Dam Access Road is accessed via Shingle Shanty Road. The access road and the dam itself, which is located approximately 1.65 miles further along the road, are both gated and locked.

Shingle Shanty Road is a 1½ lane surfaced road that accesses the private parcels, known as Shingle Shanty, northwest of the Dam Access Road. This road is maintained by the property owners. The road commonly known as the Dam Access Road, is a gated, 1½-lane chip sealed road that accesses the Buckhorn Dam Reservoir. It is passable by 2-wheel drive vehicles all the way to GVC below the dam. From that point to its end it is a 4-wheel drive road due to large waterbars. This road is periodically maintained by the TCRCD as there is currently little use (Baldwin 2002).

Vehicular and heavy machinery access to the project area would occur via existing roads and, to the extent possible, existing parking areas would be employed for equipment staging. No new road construction (or maintenance to existing roads) is planned in conjunction with the project.

3.17.2 Environmental Consequences/Impacts and Mitigation Measures

A qualitative assessment of traffic impacts was performed, based on the construction procedures and equipment that would be used, local transportation policies, site review of existing conditions, and traffic levels on key roadways.

Significance criteria were developed based on Appendix G of the CEQA Guidelines, as well as project-specific issues identified during the scoping process (e.g., access during construction). For the project, significant construction-related impacts would result if the project would:

- Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections);
- Exceed, either individually or cumulatively, a level of service standard established by the county for designated roads or highways;
- Affect the form or function of SR 299, specifically bridges extending over the Trinity River and its tributaries;
- Affect the form or function of bridges under the jurisdiction of Trinity County or private parties;
- Disrupt existing traffic operations, including vehicular and bicycle traffic;
- Significantly degrade the existing conditions of local private roads;

- Obstruct access to adjacent land uses, including emergency access;
- Affect the operation of the local transit system;
- Conflict with adopted policies, plans, or projects supporting alternative transportation;
- Pose a safety hazard to motorists, bicyclists, equestrians or pedestrians;
- Cause substantial damage to or wear of public and private roadways; or
- Reduce available parking capacity.

3.17.2.1 No Action Alternative

The No Action Alternative would not produce any potential direct transportation/traffic effects. Indirect effects could result in the event of dam failure. It is anticipated that PMF would damage vehicle bridges and SR 299, thereby affecting the function of this route and disrupting traffic operations. This could affect access to existing land uses, including emergency access.

3.17.2.2 Proposed Action

Construction activities associated with the Proposed Action would be managed to ensure that SR-299, the road serving as access for the site, as well as Shingle Shanty Road and the Dam Access Road would remain open to through-traffic. Temporary traffic control may be necessary during the mobilization and demobilization of heavy equipment; however, no road closures are planned. Passage for emergency vehicles would not be restricted. Because construction activities would not reduce/close existing traffic lanes this impact would be less than significant.

Construction activities associated with the Proposed Action would require truck and worker vehicle trips on SR 299, Shingle Shanty Road, and the Dam Access Road leading to and from the project area; thus, vehicle trips would increase on these routes. Construction equipment (e.g., large trucks and excavators) would be mobilized to the site prior to project activities and would be removed upon completion of these activities. During the construction period, when the greatest number of workers and trucks would be required, approximately 10 construction workers and their vehicles would need access to the site daily. These vehicle trips would be added to area roads on a recurring basis for the duration of rehabilitation activities at the site.

Throughout construction, Reclamation would limit the amount of daily construction equipment traffic by staging the construction equipment and vehicles in the project boundary for the duration of work. Post-construction activities (i.e., revegetation, maintenance, and monitoring) would require intermittent access for 3 to 5 years. Existing traffic volumes along SR-299 are moderate, and the potential increase in traffic generated from construction would be localized and minimal. The following mitigation measure will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measure would reduce the impacts to less than significant.

TRANS-1: Reclamation will post signs during gravel haul activities notifying travelers of trucks entering the roadway. Reclamation will ensure that the gravel trucks maintain a speed limit of 15 mph on residential roads and private roads and operate only between the hours of 7 a.m. and 7 p.m., Monday through Saturday.

Land uses in and adjacent to the project area consist mainly of public and private forestry and other resource lands. It is not anticipated that access to the adjacent public or private lands would be restricted. Short-term recreational access to the outlet channel could be restricted, to varying degrees, during construction activities. Impacts related to recreational access and other

recreational resources are discussed under Section 3.9, *Recreation*. These impacts would be less than significant.

SR 299 is a designated truck route that was built to withstand occasional use by heavy equipment. Other local roads over which project-related trucks and heavy equipment must pass may not be constructed or maintained to support substantial volumes of truck traffic. Numerous local roadways would provide access for construction-related activities. Use of these roads by project-related trucks and heavy equipment would increase wear and tear on the local roadways and could result in adverse impacts on the road conditions. The degree of impact would depend on roadway design and existing condition prior to the onset of project activities. Because SR-299 was designed to accommodate a mix of vehicle types, including heavy trucks, the project is not expected to add significantly to roadway wear-and-tear on this highway. However, the level of construction traffic could require additional maintenance for some road segments in conjunction with various activities. Although standard construction and transportation practices would be implemented to reduce the potential adverse impacts on roadway conditions, the potential wear and tear on some roads under the Proposed Action would be a significant impact. The following mitigation measure will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measure would reduce the impacts to less than significant.

TRANS-2: Reclamation will perform a pre-construction survey of local federal and state roads to determine the existing roadway conditions of the construction access routes, and will consult with the relevant agencies/private parties about road conditions prior to construction activity and post construction activity. An agreement will be entered into prior to construction that will detail the pre-construction conditions and post-construction requirements for potential roadway rehabilitation.

Traffic safety hazards could arise for motorists, bicyclists, pedestrians, and equestrians in the vicinity of the construction access routes for the Proposed Action as a result of the movement of project-related trucks and heavy construction equipment. Trucks entering and exiting access roads off SR 299 may pose a particular hazard to motorists, cyclists, and equestrians using the roadway. The safety hazard would be limited to brief and intermittent time periods; nevertheless, it would be significant. The following mitigation measure will be implemented to reduce the potential for impacts associated with the Proposed Action. Implementation of the specified mitigation measure would reduce the impacts to less than significant.

TRANS-3: Reclamation will prepare and implement a traffic control plan that will include provision and maintenance of temporary access through the construction zone, reduction in speed limits though the construction zone, signage and appropriate traffic control devices, illumination during hours of darkness or limited visibility, use of safety clothing/vests to ensure visibility of construction workers by motorists, and fencing as appropriate to separate bicyclists, pedestrians, and equestrians from construction activities. If required, Reclamation will obtain an encroachment permit from Caltrans to work within the SR-299 easement. This permit will require traffic control and signage to meet California state standards.

3.18 Tribal Trust

3.18.1 Affected Environment

The United States has a trust responsibility to protect and maintain rights reserved by, or granted to, federally recognized Indian tribes and individual Indians by treaties, statutes, and executive orders. The Secretary of the Interior is the trustee for the United States on behalf of Indian tribes and individuals. The trust responsibility requires that all federal agencies, including Reclamation, take all actions reasonably necessary to protect and maintain Indian trust assets. The discussion of tribal trust resources focuses principally on the interests of the Hoopa Valley Tribe (HVT) and Yurok Tribe (YT) because, of the Indian tribes of the Klamath/Trinity Region, their interests could be the most directly affected by the project. It should be understood, however, that potential project impacts are pertinent to the Karuk and Klamath people as well, since they share a common regional heritage.

Indian trust assets are legal interests in property held in trust by the federal government for federally recognized Indian tribes or individual Indians. "Assets" are anything owned that has monetary value. "Legal interest" means that a property interest exists for which there is a legal remedy, such as compensation or injunction, if there is improper interference. Indian trust assets can be real property, physical assets, or intangible property rights, such as a lease or a right of use. While most Indian trust assets are located on-reservation, they can also be located off-reservation. Examples of Indian trust assets include, but are not necessarily limited to, land, natural resources, native plants and wildlife, cultural resources, minerals, hunting and fishing rights, water rights, and instream flow.

The tribal trust responsibility requires the United States to protect tribal fishing and water rights, which are held in trust for the benefit of the tribes (U.S. Department of the Interior 1995). The Trinity River Basin Fish and Wildlife Restoration Act of 1984 (Public Law 98-541) acknowledges tribal interests in the basin's fishery resources by declaring that the measure of successful restoration of the Trinity River fishery includes the "ability of dependent tribal…fisheries" to participate fully, through enhanced in-river "harvest opportunities, in the benefits of restoration." In addition, the 1992 Central Valley Project Improvement Act specifically recognizes the federal trust responsibility in regard to the Trinity River fishery. The project could potentially affect anadromous fish, non-anadromous fish, water, wildlife, vegetation, and overall riverine health; these impacts in turn could affect the sociocultures and economics of tribes. Reclamation is obligated to ensure that its projects do not interfere with the tribes' senior water rights. Pursuant to its trust responsibility and consistent with its other legal obligations, Reclamation must also prevent activities under its control that would adversely affect Tribal fishing rights, even when those activities take place off-reservation.

The federally reserved fishing rights of the YT and HVT entitle them to take fish for ceremonial, subsistence, and commercial purposes. The federal government, as trustee, has as affirmative obligation to manage federally reserved Indian rights for the benefit of federally recognized Indian tribes. Federally reserved Indian fishing rights are vested property rights held in trust by the United States for the benefit of the Indians.

In addition to fish, the tribes have reserved rights to water. The concept of reserved rights in general, and Indian reserved water rights specifically, originated just after the start of the 20th century with *Winters v. United States*, 207 U.S. 564 (1908). The ruling in this case states that

when the federal government established a reservation, it implicitly reserved a quantity of water necessary to fulfill the purpose of said reservation. The Department of Interior Solicitor's office reaffirmed these rights with respect to Reclamation's activities, stating "Reclamation is obligated to ensure that project operations not interfere with the Tribes' senior water rights."

Other resources, such as wildlife and vegetation, are also extremely important to the tribes, and the tribes have asserted that these resources are no less reserved. In the case of the HVT and YT, the decline in the health of the region's rivers has limited the availability of grasses and other plants important to traditional basketry, art, and medicine. Thus, other trust assets, such as vegetation, are embodied in the federal government's trust responsibility and, accordingly, need to be considered in the decision-making process.

3.18.2 Environmental Consequences/Impacts and Mitigation Measures

As directed in the Department of Interior Departmental Manual (Part 512, Chapter 2), and Reclamation's Indian Trust Asset Policy an assessment of how project construction may actually affect the Indian trust assets of the HVT and YT must be performed. Toward this end, the Indian trust asset impact evaluation focuses on the potential effects of the action described in Chapter 2 on the health of GVC and the Trinity River. Because overall health of these water's is a primary factor in determining the availability of fish, the potential tribal trust impacts are not evaluated on an asset-by-asset basis.

Under CEQA, lead agencies are not explicitly required to consider projects' impacts on tribal trust assets as a distinct category of impacts. With its focus on the physical environment, CEQA requires agencies to focus on impacts to environmental resources, some of which, such as fish, wildlife, and water quality, would be related to tribal trust values. Therefore, the significance criteria applied in this evaluation of potential consequences on tribal trust assets are general and based on the potential for components of the Proposed Action to result in any modification of, or change in, the quantity or quality of tribal trust assets.

Although CEQA does not expressly require the application of specific significance criteria for potential impacts to Indian trust assets, federal lead agencies evaluating proposed actions under NEPA typically include the evaluation of potential impacts to Indian trust assets as a distinct category of impacts. Accordingly, this evaluation assessed the impacts of the proposed activities described in this document relative to any modification or change in the value, use, quantity, quality, or enjoyment of downstream Indian trust assets.

3.18.2.1 No Action Alternative

Under the No Action Alternative, channel lowering and restoration activities would not be implemented in the project area; therefore, no direct impact to Tribal trust assets would occur as a result of the project. However, in the absence of actions to facilitate measuring toe drain flows, it is likely that seepage could go undetected and possibly result in dam failure. Dam failure would affect resources in the Trinity River by delivering tons of sediment and other debris into the river, which would have at least a short-term severe negative impact on tribal trust resources such as fisheries. In addition because habitat for coho and other fish species would not be improved under this alternative, habitat for these species could continue to decline.

3.18.2.2 Proposed Action

Under the Proposed Action, GVC and the Trinity River downstream would continue to support tribal trust assets. The impacts described in previous sections that would occur if the project is implemented are expected to be short-term and to be outweighed by the overall benefits to Tribal trust assets gained through implementation of the project. Implementation of the project would not reduce the quantity or quality of Tribal trust assets. Therefore, this impact is less than significant.

3.19 Environmental Justice

3.19.1 Affected Environment

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," dated February 11, 1994, requires federal agencies to identify and address adverse human health or environmental effects of their actions on minorities and low-income populations and communities as well as the equity of the distribution of the benefits and risks of their decisions. Environmental justice addresses the fair treatment of people of all races and incomes with respect to actions affecting the environment. Fair treatment implies that no group of people should bear a disproportionate share of negative impacts from an environmental action.

To comply with the environmental justice policy established by the Secretary of the Interior, all Department of Interior agencies are to identify and evaluate any anticipated effects, direct or indirect, from a project, action, or decision on minority and low-income populations and communities, including the equity of the distribution of the benefits and risks. Accordingly, this section examines the anticipated impacts of the Proposed Action with respect to potentially affected minority and economically disadvantaged groups. Socioeconomic issues, including population and housing, are evaluated in this document in Section 3.10, *Socioeconomics*. This section does not function as part of the IS portion of this joint document, because CEQA does not require state or local agencies to address environmental justice concerns in an IS.

In 2010 the vast majority of the population in Trinity County (approximately 87 percent) consisted of white individuals (U.S. Census Bureau 2011). The largest minority population in the county is Hispanics. In 1990, the Hispanic population was 3.3 percent of the county's total population. By 2010, the percentage had increased to 7.0 percent of the total, compared to 37.6 percent in California as a whole. The American Indian population constitutes the next largest minority group. In 2010, American Indians constituted 4.8 percent of the total county population, compared to 1 percent for California (U.S. Census Bureau 2011). The percentage of black and Asian residents in the county is small (each less than 1 percent). In 2000 the population of the Lewiston community was predominately white (89.9 percent) (U.S. Census Bureau 2000). The proportion of people living below the poverty level at that time was higher (20.2 percent) for this area than for the balance of the United States (12.4 percent) (U.S. Census Bureau 2000).

The Lewiston Elementary School, which includes grades kindergarten through eight, was composed of 76.1 percent white (non-Hispanic), 6.5 percent Hispanic or Latino, 6.5 percent American Indian or Alaska Native, 6.5 percent African American, and 3.3 percent Pacific Islander in 2008 (California Department of Education 2008). The ethnicity of the children attending the Lewiston Elementary School corresponds to the general ethnic composition of the

Lewiston community and its environs. At the Lewiston Elementary School, 88 percent of the children participate in the free/reduced-fee lunch program (California Department of Education 2008).

In 2009, 18.2 percent of the population in Trinity County was living in poverty compared to 14.2 percent for the state of California as a whole. The 2009 median household income for Trinity County was $33,546, compared to the median California income of $58,925 (U.S. Census Bureau 2011). The Trinity River is a valuable economic resource for Trinity County. Its popularity as a recreation destination, particularly for fishing, white-water recreation, gold panning, and as an access point to the Salmon-Trinity Alps, directly benefits communities such as Lewiston through increased business patronage.

3.19.2 Environmental Consequences/Impacts and Mitigation Measures

The EPA compares three factors—minority representation, low-income representation, and environmental burden—for a community of concern and one or more reference areas—for example, an entire county—to analyze potential environmental justice impacts. A community of concern can be defined in a number of ways, including a municipality, a census block group, a user-defined radius around a source of pollution, or a boundary drawn along physical features such as streets, streams, or railroad tracks. The demographic data for the community of concern can then be analyzed to determine whether there would be a potential environmental justice concern in the area. As part of this analysis, poverty levels and minority population levels were examined for Trinity County as a whole and for the residential area associated with Lewiston, although only a limited amount of information was available for the area.

Because environmental justice is not a CEQA issue, specific significance criteria were not applied in evaluating potential environmental justice consequences. Instead, any modification or change in environmental justice factors that would occur in response to the Proposed Action is evaluated in accordance with NEPA requirements.

3.19.2.1 No Action Alternative

Under the No Action Alternative, no direct impact to a minority or low-income population or community would take place because the project would not be constructed. Therefore, there would be no impact.

3.19.2.2 Proposed Action Alternative

Minority and low-income residents live in the general vicinity of the project area; however, there is no evidence to suggest that the project would cause a disproportionately high adverse human health or environmental effect on minority and low-income populations compared to other residents of the area. The known health risks to residents that could be associated with the project are evaluated in the sections of this document related to Water Quality, Air Quality, Hazardous Materials, and Noise. For the most part, these health risks are associated with the construction aspects of the project, in that residents and construction workers could be exposed to hazardous materials that may be associated with the project. Reclamation would manage the project to minimize these risks, as required by applicable federal and state safety regulations. Therefore, no specific or disproportionate health risks or other impacts to low-income groups would be associated with the Proposed Action.

3.20 Cumulative Effects and Other CEQA and NEPA Considerations

This EA/IS includes a discussion of statutory considerations required under CEQA, such as cumulative impacts, the significant environmental effects of the Proposed Action, the significant effects that cannot be avoided if the Proposed Action is implemented, and growth-inducing effects of the project. Additional discussions are also required under NEPA, such as the significant irreversible and irretrievable commitments of resources and the relationship between local short-term uses of the environment and the maintenance of long-term productivity. These considerations are addressed below.

3.20.1 Cumulative Effects

This section provides a description of other actions in the area and a discussion of the cumulative impacts of those projects, in combination with the previously identified effects of the Proposed Action. A cumulative impact is defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR, Part 1508.7). CEQA Guidelines Section 15355 states that "cumulative impacts refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.

> (a) The individual effects may be changes resulting from a single project or a number of separate projects.
>
> (b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time."

The Proposed Action has been assessed for cumulative impacts with other actions in the project vicinity. Identified ongoing and reasonably foreseeable actions in the affected region are described below.

As stated previously, the watershed had been managed for timber production since the 1940s. Widespread land disturbance from commercial timber harvesting operations added significantly to the already high natural rates of erosion in the watershed. Roads, skid trails, landings and other man-made features used in past timber operations have been the primary source of sediment discharge into GVC. In 1993 the BLM began purchasing lands in the GVC watershed for the purpose of preventing further degradation of anadromous fish habitat in GVC and the Trinity River caused by sedimentation from eroding granitic soils exposed by the poor roading and logging practices. As a result of those purchases, the BLM administers the majority (61 percent) of the ownership in the watershed (96 percent of the public lands). A private company is the second largest landowner, with 18 percent of the watershed; these privately held lands are primarily in the northwestern portion of the watershed and are zoned Timberland Production Zone, which requires long-term forest management for timber production. Private residential parcels make up the next largest portion, with 15 percent of the watershed comprised of these lands.

After purchasing a majority of the lands in the watershed, the BLM began making efforts to reduce erosion and sedimentation, through extensive rehabilitation and/or decommissioning of roads and landings, stabilization of watercourses, and revegetation of eroding slopes. This change from the GVC watershed being primarily used for timber production to erosion control and watershed restoration was important for improving the GVC and Trinity River fishery. The combination of physical and revegetation treatments has reduced the total year mean sediment runoff amount leaving the GVC watershed (Graham Matthews & Associates 2001).

The restoration efforts and timber production will continue to be the two main activities occurring within the project vicinity for the reasonably foreseeable future. Overall, the Proposed Action would cause short term impacts to some of the resources. Mitigation measures would result in these impacts being less than significant. Analysis for the individual resources considered in this EA/IS are included below.

Land Use
Implementation of the Proposed Action is not anticipated to impact land use. In combination with the other activities occurring in the area, the Proposed Action would not contribute to significant cumulative impacts in the area.

Soils
The Proposed Action would have short-term impacts to soils. Appropriate implementation of prescribed mitigation measures would reduce potential impacts to a less than significant level. The other activities in the area also have the potential to disturb soils and contribute to soil loss and erosion. However, all projects would implement measures similar to those planned here (e.g., SWPPP, erosion control plan, etc.) to reduce impacts on soils. Therefore, the less than significant impacts on soils as a result of the Proposed Action are not expected to contribute to significant cumulative impacts in the area of the Buckhorn Dam.

Water Resources
Implementation of the Proposed Action would result in short-term, temporary effects on water resources. Appropriate implementation of prescribed mitigation measures would reduce potential impacts to a less than significant level. In combination with other activities in the area, the Proposed Action would not have cumulatively considerable impacts on water resources or result in changes in the quantities of water available. No significant cumulative impacts to water quality are anticipated to occur as a result of implementation of the Proposed Action in combination with other related projects.

Vegetation
The Proposed Action would not have significant impacts on vegetation resources in the project area. Other activities occurring in the vicinity would include mitigation measures similar to those planned for the Proposed Action, such as special-status species surveys, noxious weed mitigations, etc. These measures are intended to reduce impacts on sensitive habitats as well as on special status plants. Therefore, the less than significant impacts on vegetation resources as a result of the Proposed Action are not expected to contribute to significant cumulative impacts in the Buckhorn Dam area.

Fishery Resources
No significant, adverse, cumulative impacts to fisheries resources are anticipated to occur as a result of the implementation of the Proposed Action. The effect of the Proposed Action is expected to be beneficial in terms of the rehabilitation of habitat and fisheries resources.

Similarly the restoration activities occurring on BLM lands are expected to have beneficial impacts on this resource. Timber harvesting that is occurring in the watershed has the potential to impact the fishery resource; however, mitigations in place for this activity should reduce the potential for impacts. Implementation of the Proposed Action as mitigated would benefit, rather than adversely affect, fishery resources of GVC in the long term.

Wildlife
The Proposed Action would have temporary impacts on wildlife; mitigations in place will reduce the potential impacts to less than significant. In combination with the other activities occurring in the area, the Proposed Action would not contribute to significant cumulative impacts.

Wetlands
Construction activities associated with the Proposed Action would result in temporary impacts to 0.683 acres of wetlands in the project area. Mitigation measures will be implemented to reduce the potential for impacts associated with the Proposed Action, reducing the impacts to less than significant. The less than significant impacts on wetlands as a result of the Proposed Action are not expected to contribute to significant cumulative impacts in the Buckhorn Dam area.

Recreation
The Proposed Action would not result in significant effects to recreation in the Buckhorn Dam area. No significant cumulative impacts to recreational resources are anticipated to occur as a result of implementation of the Proposed Action in combination with other actions.

Socioeconomics
No significant impacts to socioeconomics, population, and housing are anticipated to occur as a result of implementation of the Proposed Action. Therefore, the Proposed Action would not contribute to significant cumulative impacts in the area.

Cultural Resources
Existing activities could impact cultural resources through ground disturbing activities. However, these projects would comply with relevant cultural resource laws and regulations similar to the Proposed Action and measures similar to those planned for this action would be implemented (e.g., surveys of potential impact areas by a professional archaeologist prior to construction, stop-work orders to reduce impacts on any undiscovered cultural resources, and protection of potentially significant cultural sites). Based on these factors, the Proposed Action is not expected to contribute to significant cumulative impacts on cultural resources.

Air Quality
The NCUAQMD requirements would be addressed by implementation of prescribed mitigation measures; therefore no significant cumulative impacts to air quality are anticipated to occur as a result of implementation of the Proposed Action. The Proposed Action, in conjunction with the other activities occurring within the area, would contribute cumulatively to global climate change. Implementation of mitigation measures would reduce the cumulative contribution to global climate change to a less than significant level.

Aesthetics
The Proposed Action would increase the amount of activities around Buckhorn Dam in the short term during construction. No significant cumulative impacts to aesthetics are anticipated to occur as a result of implementation of the Proposed Action. Implementation of the restoration activities on BLM would benefit, rather than adversely affect, aesthetics in the long term.

Hazards and Hazardous Wastes
No significant cumulative impacts related to hazardous materials are anticipated as a result of implementing the Proposed Action in combination with other related projects

Noise
The Proposed Action would have less than significant noise impacts. It is possible that construction of the Proposed Action may overlap with some of the other ongoing activities in the area. Given the intermittent condition of noise impacts for most construction sites and the distance from most of these sites, cumulative noise impacts from construction activities would be less than significant.

Public Services and Utilities/Energy
The Proposed Action would not impact public services. No significant cumulative impacts related to public services and utilities/energy are anticipated as a result of implementation of the Proposed Action in combination with other ongoing activities.

Transportation/ Traffic Circulation
The Proposed Action may result in localized and temporary traffic increases. No significant cumulative impacts related to transportation/traffic circulation are anticipated through the implementation of the Proposed Action in combination with other ongoing activities.

Tribal Trust Assets
No significant cumulative impacts to tribal trust assets are anticipated to occur as a result of implementation of the Proposed Action. Restoration activities on BLM land, in combination with the Proposed Action, are expected to cumulatively result in beneficial effects to the tribal trust assets, including the overall health of the watershed and its fishery resources.

Environmental Justice
No disproportionate environmental effects on minority or low-income populations have been identified for the Proposed Action. No significant cumulative impacts to environmental justice are anticipated to occur as a result of the implementation of the Proposed Action in combination with other actions occurring in the area.

3.20.2 Irreversible and Irretrievable Commitments of Resources

NEPA (Section 102) and the CEQ NEPA implementing regulations (40 CFR 1502.16), require a discussion of "any irreversible and irretrievable commitments of resources which would be involved in a Proposed Action should it be implemented." Section 15126.2(c) of the CEQA Guidelines also requires a discussion of the significant irreversible environmental changes that would result from implementation of a Proposed Action.

Implementation of the Proposed Action would not involve the substantial use of nonrenewable resources in such a way that would result in conditions that would be irreversible though removal or nonuse thereafter. Implementation of the Proposed Action would result in the use of fossil fuels, a nonrenewable form of energy. A relatively minor amount of nonrenewable resources would be used in the rehabilitation of the stream channel, transport of equipment and personnel, and related activities at the project area. The material requirements for this project would be relatively minor compared to the overall demand for such materials, and the use of these materials would not have a significant adverse effect on their continued availability. Future generations would not be committed to irreversible consequences or uses; the effect on future generations would be beneficial as a result of the enhanced dam safety and improved river

system and related fishery resources. No irreversible damage from environmental accidents would be foreseeable in association with the Proposed Action.

3.20.3 Relationship between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

Section 102 of the CEQ NEPA Regulations and CFR 1501.16 require that an environmental document include a discussion of "the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity." The Proposed Action does not involve a trade-off between a "local short-term use" of the environment and the maintenance and enhancement of the environment in the sense contemplated by NEPA. Implementation of the Proposed Action is intentionally aimed at maintaining and enhancing the long-term biological and environmental productivity of the fishery resource in GVC and downstream in the Trinity River system. Construction impacts associated with the Proposed Action would be short term and temporary. Short-term effects to the environment from construction include soil erosion, air quality emissions, disturbance to wildlife, vegetation disturbance, and temporary surface water quality impacts. In the long term, the Proposed Action would improve dam safety and enhance fish habitat. Implementation of the Proposed Action would not sacrifice the long-term productivity of the project area for short-term uses during construction.

3.20.4 Growth-Inducing Impacts

Under CEQA, growth itself is not assumed to be particularly beneficial, detrimental, or insignificant to the environment. If an action is determined to be growth inducing, an evaluation is made to determine whether significant impacts on the physical environment would result from that growth. Analysis of growth-inducing impacts includes those characteristics of an action that may encourage and facilitate activities that would affect the environment, either individually or cumulatively. For example, an increase in population may impose new burdens on community service facilities. Similarly, access route improvements may encourage growth in previously undeveloped areas. Implementation of the Proposed Action would not contribute to significant development or economic growth in the vicinity. No businesses would be established or housing required as a result of this project. Therefore, no growth inducement would result from implementing any of the Proposed Action.

3.20.5 Environmental Commitments and Mitigation Measures

Reclamation's NEPA implementation guidance recommends that a list of environmental commitments for the preferred alternative be included in an EA. The list should contain all mitigation measures and management actions that are incorporated in the project as part of the proposal. Because this document is a joint NEPA/CEQA document, mitigation measures have been identified throughout the EA for potentially significant impacts in compliance with CEQA requirements. Under CEQA, lead agencies are required to adopt a program for monitoring or reporting on the revisions that they required be made part of the project and other measures required to mitigate or avoid significant environmental effects. An MMRP for implementation of the Proposed Action will be developed to comply with Reclamation's practice to include a list of environmental commitments in an EA/IS. The mitigation measures identified as part of this analysis and that will be included in the MMRP are listed in Appendix A.

3.20.6 Significant Effects

CEQA establishes a duty for public agencies to avoid or minimize environmental damage where feasible (CEQA Guidelines Section 15021), and determinations of significance play a critical role in the CEQA process (CEQA Guidelines 15064). Potentially significant effects associated with implementation of the Proposed Action have been identified in the areas of soils; water quality; fishery resources; vegetation; wildlife; and wetlands. These potential effects are discussed in the individual resource sections in this chapter. As part of the environmental impact assessment for each resource area, mitigation measures have been identified that reduce potential impacts to less-than-significant levels. The environmental analysis conducted for the Proposed Action did not identify any effects that, after mitigation, remained significant and therefore unavoidable; no significant irreversible effects were identified associated with the Proposed Action.

4 Consultation and Coordination

This chapter lists individual Reclamation resource specialists who participated in the preparation of this EA, as well as others who contributed or were contacted during its development. The alternatives and issues analyzed in detail were produced through input from those identified below.

4.1 Public Notice

Public notice on the TRRP website (www.trrp.net) and in the local Trinity Journal newspaper was provided for a meeting to discuss the Proposed Action. The meeting was held July 20 during the TCRCD board meeting. The meeting was held at the TCRCD office at #6 Horseshoe Lane in Weaverville, California. Ten members of the public attended the meeting. Reclamation staff described the initial project plans to interested parties and gained input during a presentation. Questions were asked regarding the timing of the work and for clarification of the need for the project. It was explained that the project would be conducted in late summer 2012 and that the project is required for safety. Construction of coho rearing habitat is proposed as a benefit to support the Trinity River population of this federally threatened species. During the meeting the TCRCD board, as the CEQA lead, approved support of the project.

Notice of availability of the EA/IS will be released requesting public comment before a decision is issued.

4.2 Tribes, Agencies, and Organizations Contacted or Consulted

In addition to the opportunity described above for the public to provide input into the process, the following Native American Tribes and agencies were informed of the project and were given an opportunity to provide comments and request a copy of the EA for review. In accordance with the American Indian Religious Freedom Act (1979), the Native American Graves Protection and Repatriation Act, the NHPA, and other statutes, Native American tribes were consulted as part of the government-to-government consultation process that is required of federal agencies. During the preparation of this EA, letters were sent to the tribes requesting their comments concerning any religious or cultural areas within the potential treatment areas. No concerns have been identified. The California SHPO, NMFS, and USACE were also consulted during the project. A record of this correspondence is included in the project file.

4.3 List of Preparers

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4.3.1.1 Northern California Area Office

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4.3.2 Trinity County Resource Conservation District

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Denise Stark	Natural Scientist/Wetland Scientist
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Appendix A – Mitigation Monitoring and Reporting Program for the Buckhorn Dam/GVC Toe Drain and Channel Rehabilitation Project

The following specific elements are part of the mitigation monitoring and reporting program that will be implemented for the Buckhorn Dam/GVC Toe Drain and Channel Rehabilitation Project. These elements would be included as part of the Proposed Action to reduce impacts on resources to less than significant. Elements are reported for each resource that would have significant impacts under the Proposed Action in the absence of these mitigation monitoring and reporting measures.

SOILS AND GEOLOGY

SOIL-1: Areas where ground disturbance will occur will be identified in advance of construction and limited to only those areas that have been approved by Reclamation.

SOIL-2: All vehicular construction traffic will be confined to the designated access routes and staging areas.

SOIL-3: Disturbance will be limited to the minimum necessary to complete all project activities.

SOIL-4: All supervisory construction personnel will be informed of environmental concerns, permit conditions, and final project specifications.

SOIL-5: Reclamation will prepare an erosion and sedimentation control plan (Storm Water Pollution Prevention Plan [SWPPP]) and will ensure that its measures for erosion control will be prioritized based on proximity to the stream. The following will be used as a guide to develop this plan:

- Restore disturbed areas to pre-construction contours to the fullest extent feasible.
- Salvage, store, and use the highest quality soil for revegetation.
- Discourage noxious weed competition and control noxious weeds.
- Leave drainage gaps in topsoil and spoil piles to accommodate surface water runoff.
- To the fullest extent possible, cease excavation activities during significantly wet or windy weather.
- Use bales, wattles, and/or silt fencing as appropriate.
- Before seeding disturbed soils, work the topsoil to reduce compaction caused by construction vehicle traffic.
- Post construction, rip project edges to encourage revegetation.
- Spoil sites will be located such that they do not drain directly into a surface water feature, if possible. If a spoil site will drain into a surface water feature, catch basins will be constructed to intercept sediment before it reaches the feature. Spoil sites will be graded and vegetated to reduce the potential for erosion.
- Sediment control measures will be in place prior to the onset of the rainy season to ensure that surface water runoff does not occur. Project areas will be monitored and maintained in good working condition until disturbed areas have been seeded and mulched or revegetated in another fashion. If work activities

take place during the rainy season, erosion control structures will be in place and operational at the end of each construction day.

WATER RESOURCES AND WATER QUALITY

WATER-1: To ensure that turbidity levels do not exceed the thresholds listed in the Basin Plan for the North Coast Region (North Coast Regional Water Quality Control Board 2007), after in-stream project construction activities, Reclamation shall monitor turbidity levels upstream within 50 feet of project activities (i.e., natural background) and 500 feet downstream of the in-stream construction activities that could increase turbidity. At a minimum, field turbidity measurements shall be collected whenever a visible increase in turbidity is observed. Monitoring frequency shall be a minimum of every two hours during in-stream work periods and when activities commence that are likely to increase turbidity levels above any previously monitored levels.

If grab sample results indicate that turbidity levels exceed 20 nephelometric turbidity units (NTU) at 500 feet downstream from project activities, remedial actions will be implemented to reduce and maintain turbidity at or below 20 NTU immediately downstream of the 500 linear foot zone of dilution. Potential remedial actions include halting or slowing construction activities and implementation of additional BMPs until turbidity levels are at or below 20 NTU.

WATER-2: Fill gravels used on the streambeds and stream banks will be composed of washed, spawning-sized gravels from a local Trinity River Basin source. Gravel will be washed to remove any silts, sand, clay, and organic matter and will be free of contaminants such as petroleum products.

WATER-3: Reclamation will prepare and implement a SWPPP that describes BMPs for the project, including silt fences, sediment filters, and routine monitoring to verify effectiveness. Proper implementation of erosion and sediment controls will be adequate to minimize sediment inputs into the Trinity River until vegetation regrowth occurs. All required controls and BMPs, including sediment and erosion control devices, will be inspected daily during the construction period to ensure that the devices are properly functioning. Excavated and stored materials will be kept in upland activity areas with erosion control properly installed and maintained. Excavated and stored materials will be staged in stable upland activity areas. All applicable erosion control standards will be required during stockpiling of materials.

WATER-4: To minimize the potential for increases in turbidity and suspended sediments entering the outlet channel and GVC as a result of access routes, Reclamation will implement the following protocols:

- Keep bare soil to the minimum required by designs. Erosion control devices/measures will be applied to areas where vegetation has been removed as needed to reduce short-term erosion prior to the start of the rainy season.
- Keep runoff from bare soil areas well dispersed. Dispersing runoff keeps sediment on-site and prevents sediment delivery to streams. Direct any concentrated runoff from bare soil areas into natural buffers of vegetation or areas with more gentle slopes where sediment can settle out.
- Disconnect and disperse flow paths that might otherwise deliver fine sediment to the stream channel.

- Decompact or rip disturbed areas so that surfaces are permeable and no surface water runoff occurs.

WATER-5: Reclamation will prepare and implement a spill prevention and containment plan in accordance with applicable federal and state requirements.

WATER-6: Reclamation will ensure that any construction equipment that will come in contact with the outlet channel and GVC waters will be inspected daily for leaks prior to entering the dewatered or flowing channel. External oil, grease, and mud will be removed from equipment using steam cleaning. Untreated wash and rinse water will be adequately treated prior to discharge if that is the desired disposal option.

WATER-7: Reclamation will ensure that hazardous materials, including fuels, oils, and solvents, not be stored or transferred within 150 feet of the active stream channel. Areas for fuel storage, refueling, and servicing will be located at least 150 feet from the active channel or within an adequate secondary fueling containment area. Gas pumps and engines will be stored and maintained on impermeable barriers so that any leaking petroleum products are isolated from the ground. In addition, the construction contractor will be responsible for maintaining spill containment booms onsite at all times during construction operations and/or staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times.

VEGETATION

VEG-1: When using imported erosion control materials (as opposed to rock and dirt berms), use only certified weed-free materials, mulch, and seed.

VEG-2: Preclude the use of rice straw in riparian areas.

VEG-3: Limit any import or export of fill to materials to those that are known to be weed free.

VEG-4: Ensure all construction equipment is thoroughly washed prior to entering the worksite. Equipment will be inspected to ensure that it is free of plant parts as well as soils, mud, or other debris that may carry weed seeds.

VEG-5: Use a mix of native grasses, forbs, and non-persistent non-native species for seeding disturbed areas that are subject to infestation by non-native and invasive plant species. Where appropriate, a heavy application of mulch will be used to discourage introduction of these species. Use of planting plugs of native grass species may also be used to accelerate occupation of disturbed sites and increase the likelihood of reestablishing a self-sustaining population of native plant species.

VEG-6: Within the first 3 to 5 years post-project, if it is determined that the project has caused non-native invasive vegetation to out-compete desired planted or native colonizing riparian vegetation, opportunities to control these non-native species will be considered. When implementing weed control techniques, the approach will consider using all available control methods known for a weed species.

FISHERY RESOURCES

FISH-1: Reclamation will ensure that all in-channel construction activities are conducted during late-summer, early fall, low-flow conditions and the outlet channel will be dewatered prior to construction. There is little existing fish and wildlife habitat within the project reach during low flow conditions. As the project area drains of water, fish would be captured and relocated downstream. Capture and relocation of fish from within the project area would be

mandatory before channel rehabilitation can begin. The fish rescue will be performed according to the NMFS Section 7 Consultation and Biological Opinion. After construction, the newly dredged section of the outlet channel will be rewatered in a manner that strictly maintains NCRWQCB Water Quality Certification requirements.

FISH-2: Alluvial material used for coarse sediment additions will be composed of washed, spawning-sized gravels (3/8- to 3-inches diameter) from a local Trinity River Basin source. Gravel will be washed to remove any silts, sand, clay, and organic matter; will be free of contaminants, such as petroleum products.

FISH-3: Construction specifications will include measures to reduce potential impacts associated with accidental spills of pollutants (fuel, oil, grease, etc.) on vegetation and aquatic habitat resources within the project boundary.

FISH-4: Equipment and materials will be stored away from wetland and surface water features.

FISH-5: Vehicles and equipment used during construction will receive proper and timely maintenance to reduce the potential for mechanical breakdowns leading to a spill of materials. Maintenance and fueling will be conducted in an area at least 150 feet away from waters of the Trinity River or within an appropriate secondary fueling containment area. Gasoline engines and pumps operated on the floodplain will be isolated from the ground by an impermeable barrier. The contractor will develop and implement site-specific BMPs, a water pollution control plan, and emergency spill control plan. The contractor will be responsible for immediate containment and removal of any toxins released.

FISH-6: Prior to the start of construction activities, Reclamation will retain a qualified biologist to identify potential construction access routes necessary for the project to ensure that these features avoid and/or minimize to the fullest extent impacts to riparian habitats and wetland waters. In addition, Reclamation will clearly identify, and flag in the field, biologically sensitive areas (e.g., jurisdictional waters and riparian habitat) to be protected, and will provide the contractor with specific instructions to avoid any construction activity within these features. Reclamation will inspect and maintain flagged areas on a regular basis throughout the construction phase.

FISH-7: Reclamation will implement a riparian revegetation plan to enhance and maintain functional riparian habitat within the project area. There will be no net long-term loss of wetlands and riparian habitat. After a period of 5 years, riparian and wetland habitat will be evaluated in a post-project delineation report.

WILDLIFE

WLDLF-1: Prior to the start of construction, a qualified biologist will conduct a survey of the project area to determine whether suitable nesting habitat for the little willow flycatcher is present. If suitable habitat is present, Mitigation Measure WLDLF-2 will be implemented.

WLDLF-2: Grading and other construction activities will be scheduled to avoid the nesting season to the extent possible. The nesting season for this species in Trinity County extends from June 1 through July 31. If construction occurs outside of the breeding season, no further mitigation is necessary. If the breeding season cannot be completely avoided, Mitigation Measures WLDLF-3 and WLDLF-4 will be implemented.

WLDLF-3: A qualified biologist will conduct a minimum of one pre-construction survey for the little willow flycatcher within the project area and a 250-foot buffer around the site. The

survey will be conducted no more than 15 days prior to the initiation of construction in any given area. The pre-construction survey(s) will be used to ensure that no nests of this species within or immediately adjacent to the project area will be disturbed during project implementation. To the extent possible given timing for construction and with the contract award, pre-construction surveys will conform to methodologies identified in a Willow Fly Catcher Survey Protocol for California available online at: http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html#Birds. If an active nest is found, CDFG will be contacted prior to the start of construction to determine the appropriate mitigation measures.

WLDLF-4: If vegetation is to be removed by the project and all necessary approvals have been obtained, potential nesting substrate (e.g., shrubs and trees) that will be removed by the project will be removed before the onset of the nesting season, if feasible. This will help preclude nesting and substantially decrease the likelihood of direct impacts.

WLDLF-5: If any construction will occur prior to August 1 of any construction season, a pre-construction survey for the foothill yellow-legged frog larvae and/or eggs will be conducted by a qualified biologist. This survey will be conducted within the construction boundary no more than 2 weeks prior to the start of in-stream construction activities. If larvae or eggs are detected, the biologist will relocate them to a suitable location downstream of the construction boundary.

WLDLF-6: In the event that a foothill yellow-legged frog is observed within the construction boundary, the contractor will temporarily halt in-stream construction activities until qualified personnel have moved the frog(s) to a safe location within suitable habitat outside of the construction limits. Planned locations for placement of transferred animals will be downstream of the construction limits and will be reported to the CDFG if used.

WLDLF-7: Mitigation measures identified in Section 3.4, *Water Resources and Water Quality*, of this EA/IS for addressing erosion and sedimentation and accidental spills will be fully implemented to mitigate for potential indirect impacts to dispersal habitat for the foothill yellow-legged frog due to sedimentation and accidental spills.

WLDLF-8: The mitigation measure associated with the disturbance to riparian habitat (mitigation measures FISH-6 and FISH-7) will be fully implemented.

WLDLF-9: A minimum of one survey for aquatic animals of concern, including western pond turtle nests will be conducted during the nesting season (generally late June-July) prior to construction. A qualified biologist will be retained by Reclamation to conduct the survey. If a western pond turtle nest is found, the biologist will flag the site and determine whether construction activities can avoid affecting the nest. If the nest cannot be avoided, the nest will be excavated by the biologist and reburied at a suitable location outside of the construction limits.

WLDLF-10: Prior to construction in open water habitat, a qualified biologist will trap and move western pond turtles out of the construction area to nearby suitable habitats.

WLDLF-11: During construction, in the event that a western pond turtle is observed within the construction limits, the contractor will temporarily halt construction activities until qualified personnel have moved the turtle(s) to a safe location within suitable habitat outside of the construction limits. Planned locations for placement of transferred animals will be downstream of the construction limits and will be reported to the CDFG prior to construction.

WLDLF-12: Mitigation measures presented in Section 3.4, *Water Resources*, for addressing erosion and sedimentation and accidental spills will be fully implemented to mitigate for the potential indirect impacts to potential dispersal habitat due to sedimentation and accidental spills.

WLDLF-13: The mitigation measure associated with the disturbance to riparian habitat (mitigation measures FISH-6 and FISH-7) will be fully implemented.

WLDLF-14: Prior to the start of construction, a qualified biologist will conduct a survey of the project area to determine whether suitable nesting habitat for any of these species is present. If suitable habitat is present, Mitigation Measure WLDLF-15 will be implemented.

WLDLF-15: Grading and other construction activities will be scheduled to avoid the nesting season for these species to the extent possible. The nesting season for these species in Trinity County extends from March 15 through July 31. If construction occurs outside the breeding season, no further mitigation is necessary. If construction during the breeding season cannot be completely avoided, Mitigation Measures WLDLF-16 and WLDLF-17 will be implemented.

WLDLF-16: A qualified biologist will conduct a minimum of one preconstruction survey for these species within the project area and a 250-foot buffer around the site. The survey will be conducted no more than 15 days prior to the initiation of construction in any given area. The preconstruction survey will be used to ensure that no nests of these species within or immediately adjacent to the rehabilitation site will be disturbed during project implementation. If an active nest is found, a qualified biologist will determine the extent of a construction-free buffer zone to be established around the nest.

WLDLF-17: If vegetation is to be removed by the project and all necessary approvals have been obtained, potential nesting habitat (e.g., shrubs and trees) that will be removed by the project will be removed before the onset of the nesting season, if feasible. This will help preclude nesting and substantially decrease the likelihood of direct impacts.

WLDLF-18: Prior to the start of construction, a qualified biologist will conduct a survey of the rehabilitation site to determine whether suitable nesting habitat for these species is present. If suitable habitat is present, Mitigation Measure WLDLF-19 will be implemented.

WLDLF-19: Construction will be scheduled to avoid the nesting season for bald eagles and northern goshawks to the extent feasible. The nesting season for most raptors in Trinity County extends from February 15 through July 31. Thus, if construction can be scheduled to occur between August 1 and February 14, the nesting season will be avoided and no impacts to nesting bald eagles and northern goshawks will be expected. If it is not possible to schedule construction during this time, mitigation measures WLDLF-20 and WLDLF-21 will be implemented.

WLDLF-20: Pre-construction surveys for nesting bald eagles and northern goshawks will be conducted by a qualified biologist to ensure that no nests will be disturbed during project implementation. These surveys will be conducted no more than 14 days prior to the initiation of construction activities. During this survey, the biologist will inspect all trees immediately adjacent to the impact areas for bald eagle and northern goshawk nests. If an active nest is found within 500 feet of the construction area to be disturbed by these activities, the biologist, in consultation with the CDFG, will determine the extent of a construction-free buffer zone to be established around the nest.

WLDLF-21: If vegetation is to be removed as part of the project and all necessary approvals have been obtained, potential nesting habitat (i.e., trees) that will be removed by the project will be removed before the onset of the nesting season, if feasible. This will help preclude nesting and substantially decrease the likelihood of direct impacts.

CULTURAL RESOURCES

CULT-1: Prior to initiation of construction or ground-disturbing activities, all construction workers will be alerted to the possibility of discovering cultural resources. This includes prehistoric and/or historic resources. Personnel will be instructed that upon discovery of buried cultural resources, work within 50 feet of the find will be halted and Reclamation's designated archaeologist will be consulted. Once the find has been identified, Reclamation will be responsible for developing a treatment plan for the cultural resource including an assessment of its historic properties and methods for avoiding any adverse effects, pursuant to the PA and in compliance with the NHPA.

CULT-2: If human remains are encountered during construction on non-federal lands, work in that area will be halted and the Trinity County Coroner's Office will be immediately contacted. If the remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) will be notified within 24 hours of determination, as required by PRC, Section 5097. The NAHC will notify designated Most Likely Descendants, who will provide recommendations for the treatment of the remains within 24 hours. The NAHC will mediate any disputes regarding treatment of remains. If Native American human remains and associated items are discovered on federal lands, they will be treated according to provisions set forth in the Native American Protection and Repatriation Act (25 USC 3001) as well as Reclamation's Directives and Standards LND 02-01. If the find is determined to be a historical resource or a unique archaeological resource, as defined by CEQA, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or other appropriate mitigation will be made available. Work may continue on other parts of the project while mitigation for historical or unique archaeological resources takes place.

AIR QUALITY

AIR-1: Reclamation will implement a dust control program to limit fugitive dust and particulate matter emissions. The dust control program will include the following elements as appropriate:

- Inactive construction areas will be watered as needed to ensure dust control.
- Pursuant to the California Vehicle Code (Section 23114), all trucks hauling soil or other loose material to and from the construction site will be covered or will maintain adequate freeboard to ensure retention of materials within the truck's bed (e.g., ensure 1-2 feet vertical distance between top of load and the trailer).
- Excavation activities and other soil-disturbing activities will minimize disturbance to reduce the amount of bare soil exposed at any one time. Mulching with weed-free materials will be used to minimize soil erosion.
- Watering (using equipment and/or manually) will be conducted on all stockpiles, dirt/gravel roads, and exposed or disturbed soil surfaces, as necessary, to reduce airborne dust.

- Paved roads will be swept (with water sweepers) if visible soil material is carried onto adjacent private and public roads, as required by Reclamation.
- Reclamation or its contractor will designate a person to monitor dust control and to order increased watering as necessary to prevent transport of dust offsite. This person will also respond to citizen complaints.

AIR-2: Reclamation will comply with NCUAQMD Rule 104 (4.0) Particulate Matter. This compliance could occur by using portable internal combustion engines registered and certified under the state portable equipment regulation (Health & Safety Code 41750 through 41755).

AIR-3: Vegetative piles to be burned will consist only of dried vegetative materials. Burn piles will be no larger than 10 feet in diameter. Field personnel will be on site during all hours of burning, and materials necessary to extinguish fires will be available at all times.

AIR-4: In general, all requirements of a NCUAQMD "NON-Standard" burn permit will be met for burning. Burn management planning will include but not be limited to the following:

- Ensure that burning occurs only on approved burn days as defined by the NCUAQMD (determined by calling 1-866-BURN-DAY).
- Burning will only occur during suitable conditions to ensure control of ignited fires. For instance, water to wet the litter and duff layer and penetrate the mineral soil layer to 1/4 inch or more will be present, wind speeds will be low (<10 mph), and temperature will be low (<80 ºF).
- Piles will be covered with a 5-foot x 5-foot sheet of 4-mil polyethylene plastic to promote drying of the slash. At least 3/4 of each pile surface will be covered and the plastic anchored to preserve a dry ignition point. Dry fuel conditions will minimize smoke emissions.
- Slash piles will not be constructed on logs, stumps, or talus slopes within 25 feet of wildlife trees with nest structures, in roadways, or in drainage ditches. Piles will not be placed within 10 feet of trees intended to be saved (reserved trees) or within 25 feet of a unit boundary.

AIR-5: Reclamation will notify the public each day that burning is to occur. Signs or personnel will notify residents and traffic on nearby access routes.

NOISE

NOISE-1: Construction activities will be scheduled between 7:00 a.m. and 7:00 p.m., Monday through Saturday. No construction activities will be scheduled for Sundays or other hours and days established by the local jurisdiction (i.e., Trinity County). The contractor may submit a request for variances in construction activity hours, as needed.

NOISE-2: Reclamation will require that all construction equipment be equipped with manufacturer's specified noise muffling devices.

NOISE-3: Reclamation will require placement of all stationary noise-generating equipment as far away as feasibly possible from sensitive noise receptors or in an orientation minimizing noise impacts (e.g., behind existing barriers, storage piles, unused equipment).

PUBLIC SERVICES AND UTILITIES/ENERGY

PUBLIC-1: Reclamation will require that staging and construction work, including temporary road or bridge closures occurs in a manner that allows for access by emergency service providers.

PUBLIC-2: Reclamation will provide 72-hour notice to the local emergency providers and affected users prior to the start of temporary closures.

PUBLIC-3: Reclamation will coordinate road closures occurring during the school year (mid-August through mid-June) with the appropriate school districts to avoid disruption of school attendance and student access to bus service.

TRANSPORTATION

TRANS-1: Reclamation will post signs during gravel haul activities notifying travelers of trucks entering the roadway. Reclamation will ensure that the gravel trucks maintain a speed limit of 15 mph on residential roads and private roads and operate only between the hours of 7 a.m. and 7 p.m., Monday through Saturday.

TRANS-2: Reclamation will perform a pre-construction survey of local federal and state roads to determine the existing roadway conditions of the construction access routes, and will consult with the relevant agencies/private parties about road conditions prior to construction activity and post construction activity. An agreement will be entered into prior to construction that will detail the pre-construction conditions and post-construction requirements for potential roadway rehabilitation.

TRANS-3: Reclamation will prepare and implement a traffic control plan that will include provision and maintenance of temporary access through the construction zone, reduction in speed limits though the construction zone, signage and appropriate traffic control devices, illumination during hours of darkness or limited visibility, use of safety clothing/vests to ensure visibility of construction workers by motorists, and fencing as appropriate to separate bicyclists, pedestrians, and equestrians from construction activities. If required, Reclamation will obtain an encroachment permit from Caltrans to work within the SR-299 easement. This permit will require traffic control and signage to meet California state standards.