Channel Rehabilitation and Sediment Management for Remaining Phase 1 and Phase 2 Sites

Volume IV: Appendices
Part 1: Draft Master Environmental Impact Report
Part 2: Environmental Assessment/Draft Environmental Impact Report

June 2009

California Lead Agency for CEQA
North Coast Regional Water Quality Control Board

Project Proponent and Federal Lead Agency for NEPA
Trinity River Restoration Program
U.S. Department of the Interior
Bureau of Reclamation

Federal Cooperating Agencies for NEPA
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APPENDIX A

Aquatic Conservation Strategy Consistency Evaluation

Appendix A
Aquatic Conservation Strategy—Consistency Evaluation

Introduction

The Bureau of Reclamation (Reclamation), under the auspices of the Trinity River Restoration Program (TRRP) is the proponent for implementing a series of channel rehabilitation and sediment management activities throughout the 40-mile reach of the Trinity River below Lewiston Dam. Collectively, these activities are proposed at the Remaining Phase 1 and Phase 2 sites as described in Chapter 2 of the Master EIR.

This document evaluates and determines the consistency of the TRRP activities with the Aquatic Conservation Strategy (ACS) in the Record of Decision (ROD) for the Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Related Species within the Range of the Northern Spotted Owl. The ACS was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. The 1994 Shasta-Trinity National Forest (STNF) Land and Resource Management Plan (LRMP) incorporated the ACS in conjunction with the other aspects of the ROD. The ROD also amended the Redding Resource Management Plan (RRMP) prepared by the Bureau of Land Management (BLM) in 1994 as applicable.

The intent of this evaluation is to ensure that decision makers have the information necessary to determine whether the proposed TRRP activities are consistent with the ACS objectives. This evaluation incorporates information provided in the Upper Trinity River Watershed Analysis (Shasta-Trinity National Forest 2005) and the Mainstem Trinity River Watershed Analysis (U.S. Bureau of Land Management 1993), supported by the Master Environmental Impact Report for the project and other information in the administrative record to assist the decision maker. In order to make the finding that a project or management activity "meets" or "does not prevent attainment" of the ACS objectives, the decision maker must ensure that management actions that do not maintain the existing

condition or lead to improved conditions in the long term would not be implemented.

The ACS acknowledges that species-specific strategies aimed at defining explicit standards for habitat elements would be insufficient for protecting even the targeted species. The intent of the ACS is to maintain and restore ecosystem health at watershed and landscape scales to protect habitat for fish and other riparian-dependent species and resources and to restore currently degraded habitats. This approach seeks to prevent further habitat degradation and restore habitat over broad landscapes as opposed to implementing individual projects or focusing on small watersheds. Because the ACS is based on natural disturbance processes, the ROD recognized that it is a long-term strategy that may take decades, and possibly more than a century, to accomplish all of its objectives.

The ACS contains four components: riparian reserves, key watersheds, watershed analysis, and watershed restoration. Each component is integral to improving the health of the aquatic ecosystems encompassed by the ROD. A detailed discussion of these components is provided in the ROD.

As part of the 1994 LRMP, the STNF adopted the specific land allocations described in Attachment A to the ROD. Under the 1994 LRMP, these land allocations are managed primarily to protect and enhance late-successional and old growth forest–related species. Since the BLM's RRMP predated the ROD, it was subsequently amended by the ROD to include Attachment A.

Attachment A of the ROD includes the Standards and Guidelines (S&Gs) that were incorporated into the STNF LRMP and the BLM RRMP to ensure compliance with the ROD. This hierarchy of land allocations is described below.

1. Congressional Reserved Areas – Includes Wilderness, federal Wild and Scenic Rivers, National Monuments and other federal lands not administered by the Forest Service or Bureau of Land Management.

2. Late Successional Reserves – Lands identified with an objective to protect and enhance conditions for late-successional and old-growth forest ecosystems.

3. Adaptive Management Areas – Areas with objectives to develop and test new management approaches to integrate ecological and economic health and other social objectives.

4. Managed Late-Successional Areas – Specific Late Successional areas in the drier provinces where regular and frequent fire is a natural part of the ecosystem.

5. Administratively Withdrawn Areas – Areas identified in current Forest and District Plans or draft plan preferred alternatives. These areas include recreation and visual areas, back country and other areas where management emphasis precludes scheduled timber harvest.

6. Riparian Reserves – As a key component of the ACS, Riparian Reserves provide an area along all streams, wetlands, ponds, lakes and unstable/potentially unstable areas where riparian dependent resources receive primary emphasis. These reserves are important to the terrestrial ecosystem as well, providing connectivity corridors and dispersal habitat for certain terrestrial species.

7. Matrix – The matrix consists of those federal lands outside the six previous allocations.

The activities proposed by Reclamation are confined to a narrow corridor that parallels the Trinity River from Lewiston Dam, downstream to Helena California. This section of the Trinity River is designated as a Wild& Scenic River (federal and state); therefore it meets the definition of Congressionally Reserved Areas. Riparian Reserve and Matrix designations are also used to classify lands within this corridor. This evaluation focuses on Riparian Reserves as defined in the LRMP and RRMP respectively.

The following sections of this evaluation address the consistency of the TRRP's proposed activities at the Remaining Phase 1 and Phase 2 sites with the four components of the ACS and the nine ACS objectives described in Attachment B to the ROD.

Components of the Aquatic Conservation Strategy

Riparian Reserves

The project area contains Riparian Reserves, as defined in the Shasta-Trinity LRMP and BLM's RRMP. Although watershed analyses have been completed for federal lands within the Trinity River corridor, these analyses

did not modify the designated widths of the Riparian Reserves established by the S&Gs described in the Northwest Forest Plan and subsequently adopted by the STNF and BLM. The width of the Riparian Reserves essentially correlates with the floodplain of the Trinity River, as well as a buffer around riparian features identified during the wetland delineation process. Figure A-1 illustrates the general location of Riparian Reserves along this 40-mile reach. Table A-1 at the end of this document provides the S&Gs that were integrated into the project.

Key Watersheds

There are no key watersheds within or downstream of the Remaining Phase 1 or Phase 2 sites. The STNF does manage key watersheds in the upper Trinity River watershed, primarily associated with the Salmon-Trinity Alps Wilderness Area. This component of the ACS is therefore not applicable to the activities proposed by the TRRP in the Master EIR.

Watershed Analysis

The STNF and BLM conducted watershed analyses for the lands within the Trinity River corridor. These analyses did not identify specific recommendations regarding the Riparian Reserve widths; therefore, the S&Gs established under the ACS are applicable to this project. While Figure A-1 illustrates the general nature of these Riparian Reserves, any activities proposed within these Riparian Reserves will conform to the site-specific conditions established in the S&Gs to ensure consistency with the ACS.

Watershed Restoration

By its nature, the project is a comprehensive ecosystem restoration project intended to restore the physical processes and biological resources of the mainstem Trinity River. While some short-term impacts may occur to riparian-dependent species, the scale of the activities proposed by the TRRP, including this project, ensures that restoration of ecological processes and functions will be consistent with the ACS.

Aquatic Conservation Strategy Objectives

The following section evaluates the consistency of the preferred alternative with the nine ACS objectives listed in Attachment B of the ROD.

The lands managed by the STNF and BLM within the range of the northern spotted owl will be managed to:

1. *Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations, and communities are uniquely adapted.*

The project by its nature is intended to restore the landscape processes, specifically the alluvial and riparian functions that have been impaired by construction of the Trinity River Division of the Central Valley Project. The activities that are proposed on federal lands subject to the ACS are an integral part of the larger project and are intended to assist BLM and the STNF in attaining this ACS objective.

2. *Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.*

The project boundaries illustrated in the Master EIR ensure that project activities are implemented in a manner that complements the functional values offered by the Trinity River between the Lewiston and Helena. The TRRP, BLM, and STNF have been involved in the identification and prioritization of channel rehabilitation sites for a number of years. The project has been designed to acknowledge the inter-relationship between aquatic and riparian habitats that occur throughout this reach. Specifically, the project includes a number of activities to enhance the connectivity of aquatic and riparian habitat along a 40-mile reach of the Trinity River. Modifications of floodplains, removal of grade control structures and the construction of functional side-channel habitat are examples of restoring connectivity for a variety of aquatic and riparian-dependent species, including a number of special-status species recognized by BLM and the STNF. The intent of this project is to assist the BLM and STNF in attaining this ACS objective.

3. *Maintain and restore the physical integrity of the aquatic system, including shorelines, banks and bottom configurations.*

A fundamental component of the project is the activities intended to restore the bed, banks, and floodplain of the Trinity River. The modification of

grade control, expansion of functional floodplain habitat, and efforts to enhance the coarse sediment supply are examples of the activities intended to restore the physical integrity of the aquatic system. Collectively, these efforts are designed to restore the alluvial character of the Trinity River that was impaired by reductions in flow and sediment upstream. The intent of this project is to assist the BLM and STNF in attaining this ACS objective.

4. *Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.*

By its nature, the project will require removal of vegetation and extensive grading activities, including construction within the active channel of the Trinity River. The TRRP, in cooperation with BLM and the STNF, has incorporated Best Management Practices to ensure that effects on water quality are minimized. Additionally, mitigation measures were developed to further reduce potentially significant effects on water quality from construction activities. In addition to compliance with the ACS, the project will require the following discretionary approvals related to the Clean Water Act: Section 401 water quality certification and Section 404 permit and waste discharge requirements. These authorizations are intended to ensure that the selected alternative meets the water quality standards established by the Regional Water Quality Control Board, North Coast Region (Regional Water Board). As proposed, this project would be consistent with the requirements of the Regional Water Board and therefore would not prevent attainment of this ACS objective.

5. *Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.*

A fundamental element of the TRRP is restoration of the sediment regime in a manner that enhances the alluvial character of the 40-mile reach of the Trinity River downstream of Lewiston Dam. This project would ensure that the coarse sediment fraction of the sediment regime will be replenished on an ongoing basis consistent with the timing, volume, and rates appropriate for the scaled down channel. The project also incorporates elements of the larger coarse sediment supplementation plan prepared for the 40-mile reach of the Trinity River. While there may be a change in the timing or volume of sediment input, overall the project is intended to assist BLM and the STNF in attainment of this ACS objective.

6. *Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.*

The preferred alternative will not influence any in-stream flows. No modifications to the flow regime of the Trinity River or its tributaries are proposed; therefore, this ACS objective would be met.

7. *Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.*

The activities to modify the bed, banks, and floodplains of the Trinity River within the project boundaries are designed to maintain and/or restore the hydrologic connection between the river and adjacent wetland/riparian habitat. By reducing the floodplain elevations, the current flow regime could provide additional opportunities to establish functional, connected wetland habitat adjacent to the Trinity River. This project would be consistent with this ACS objective.

8. *Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.*

A fundamental objective of the TRRP is to restore the species composition and structural diversity of native plant communities that occur along the mainstem Trinity River. The modifications proposed to the active channel, floodplain and upland activity areas will provide conditions that are receptive to re-introduction of a diverse assemblage of native riparian vegetation, and reduce the potential for non-native, invasive, and noxious plant species. Woody material removed as part of the rehabilitation activities will be incorporated into the project as appropriate to enhance channel complexity and edge habitat. Overall, this natural recruitment of riparian communities, supplemented by riparian planting efforts, will ensure that this project meets this ACS objective.

9. *Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.*

A fundamental objective of the TRRP is to restore the aquatic, riparian, and upland habitat along the 40-mile reach of the mainstem Trinity River. The

project activities emphasize creation and/or rehabilitation of aquatic and riparian habitat within the project boundaries. Collectively these activities are intended to generate geomorphic responses downstream that will further the overall habitat enhancement objectives by reestablishing the alluvial processes that were impaired by the construction and operation of the TRD. The activities that are proposed on federal lands subject to the ACS are an integral part of the larger project and are intended to assist BLM and the STNF in attaining this ACS objective.

Conclusion

Based on this evaluation, we (BLM & STNF) find that the project described in the NEPA decision document has been designed and would be constructed in a manner that does not prevent future attainment of the Aquatic Conservation Strategy objectives. The management actions incorporated into the preferred alternative will maintain the existing condition or lead to improved conditions in the long term, consistent with the intent of the Aquatic Conservation Strategy.

Table A-1. ACS Applicable Standards and Guidelines

All Land Allocations		
Survey and Manage	2	Survey prior to ground disturbing activities.
Riparian Reserves		
Timber Management	TM 1-c	Apply silvicultural practices for Riparian Reserves to control stocking, reestablish and manage stands, and acquired desired vegetation characteristics needed to attain ACS objectives.
Roads Management	RF-1	Federal, state, and county agencies should cooperate to achieve consistency in road design, operation, and maintenance necessary to attain Aquatic Conservation Strategy objectives.
	RF-2	For each existing or planned road, meet Aquatic Conservation Strategy objectives by:
	RF-2a	Minimizing road and landing locations in Riparian Reserves.
	RF-2b	Completing watershed analyses (including appropriate geotechnical analyses) prior to construction of new roads or landings in Riparian Reserves.
	RF-2c	Preparing road design criteria, elements, and standards that govern construction and reconstruction.
	RF-2d	Preparing operation and maintenance criteria that govern road operation, maintenance, and management.

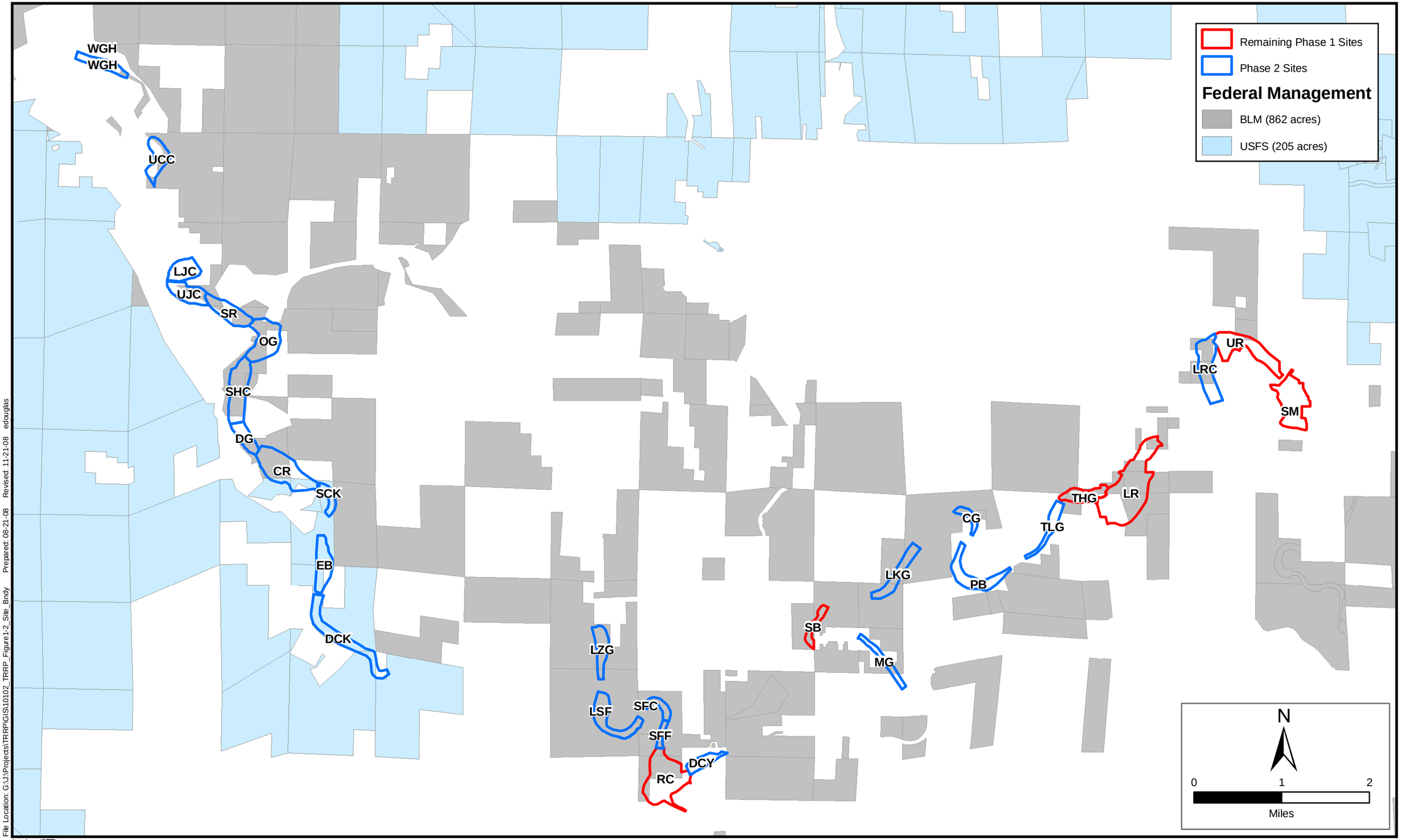
	RF-2e	Minimizing disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow.
	RF-2f	Restricting sidecasting as necessary to prevent the introduction of sediment to streams.
	RF-3	Determine the influence of each road on the Aquatic Conservation Strategy objectives through watershed analysis. Meet Aquatic Conservation Strategy objectives by:
	RF-3a	Reconstructing roads and associated drainage features that pose a substantial risk.
	RF-3b	Prioritizing reconstruction based on current and potential impact to riparian resources and the ecological value of the riparian resources affected.
	RF-3c	Closing and stabilizing, or obliterating and stabilizing roads based on the ongoing and potential effects to Aquatic Conservation Strategy objectives and considering short-term and long-term transportation needs.
	RF-4	New culverts, bridges and other stream crossings shall be constructed, and existing culverts, bridges and other stream crossings determined to pose a substantial risk to riparian conditions will be improved, to accommodate at least the 100-year flood, including associated bedload and debris. Priority for upgrading will be based on the potential impact and the ecological value of the riparian resources affected. Crossings will be constructed and maintained to prevent diversion of streamflow out of the channel and down the road in the event of crossing failure.
	RF-5	Minimize sediment delivery to streams from roads. Outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is unfeasible or unsafe. Route road drainage away from potentially unstable channels, fills, and hillslopes.
	RF-7	Develop and implement a Road Management Plan or a Transportation Management Plan that will meet the Aquatic Conservation Strategy objectives. As a minimum, this plan shall include provisions for the following activities:
	RF-7a	Inspections and maintenance during storm events.
	RF-7b	Inspections and maintenance after storm events.
	RF-7c	Road operation and maintenance, giving high priority to identifying and correcting road drainage problems that contribute to degrading riparian resources.
	RF-7d	Traffic regulation during wet periods to prevent damage to riparian resources.
	RF-7e	Establish the purpose of each road by developing the Road Management Objective.
Recreation Management	RM-1	New recreational facilities within Riparian Reserves, including trails and dispersed sites, should be designed to not prevent meeting Aquatic Conservation Strategy objectives. Construction of these facilities should not prevent future attainment of these objectives. For existing recreation facilities within Riparian Reserves, evaluate and mitigate impact to ensure that these do not prevent, and to the extent practicable contribute to, attainment of Aquatic Conservation Strategy objectives.

	LH-3	Locate new support facilities outside Riparian Reserves. For existing support facilities inside Riparian Reserves that are essential to proper management, provide recommendations to FERC that ensure Aquatic Conservation Strategy objectives are met. Where these objectives cannot be met, provide recommendations to FERC that such support facilities should be relocated. Existing support facilities that must be located in the Riparian Reserves will be located, operated, and maintained with an emphasis to eliminate adverse effects that retard or prevent attainment of Aquatic Conservation Strategy objectives.
	LH-4	For activities other than surface water developments, issue leases, permits, rights-of-way, and easements to avoid adverse effects that retard or prevent attainment of Aquatic Conservation Strategy objectives. Adjust existing leases, permits, rights-of-way, and easements to eliminate adverse effects that retard or prevent the attainment of Aquatic Conservation Strategy objectives. If adjustments are not effective, eliminate the activity. Priority for modifying existing leases, permits, rights-of-way and easements will be based on the actual or potential impact and the ecological value of the riparian resources affected.
General Riparian Area Management	RA-2	Fell trees in Riparian Reserves when they pose a safety risk. Keep felled trees on-site when needed to meet coarse woody debris objectives.
	RA-3	Herbicides, insecticides, and other toxicants, and other chemicals shall be applied only in a manner that avoids impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives.

References

Shasta-Trinity National Forest. 2005. Upper Trinity River watershed analysis. USDA Forest Service, Shasta-Trinity National Forest.

U.S. Bureau of Land Management. 1993. Redding resource management plan and record of decision.



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Trinity River Restoration Program: Phase 1 and Phase 2 Sites

Figure A-1
TRRP Project Sites - Federal Management

APPENDIX B

Wild and Scenic River
Section 7 Analysis and Determination

Appendix B
Wild and Scenic River
Section 7 Analysis and Determination

Introduction

The Proposed Project encompasses a 40-mile stretch of the Trinity River from Lewiston to the North Fork Trinity River. This entire stretch of river is federally designated under the Wild and Scenic System to preserve its Outstandingly Remarkable Values (ORV), which include the river's free-flowing condition, anadromous and resident fisheries, outstanding geologic resource values, scenic values, recreational values, cultural and historic values, and the values associated with water quality. The segment of the Trinity River encompassed by the Proposed Project is also classified as a Recreational River by the Bureau of Land Management (BLM) and the Shasta-Trinity National Forest (STNF). The Recreational River classification applies the Trinity River mainstem from 100 yards below Lewiston Dam downstream to Cedar Flat (a distance of approximately 97.5 miles).

The Wild and Scenic River Section 7 analysis and subsequent determination evaluate the effects of the Trinity River Channel Rehabilitation Projects: Remaining Phase 1 and Phase 2 Sites (Proposed Project) on the Trinity River's free-flowing attributes and other ORV's, and ensures their protection as required under Section 7 of the Wild and Scenic Rivers Act (WSA). The Proposed Project, which includes several short-term channel rehabilitation activities, is described and analyzed in detail in the Draft Master Environmental Impact Report (Draft MEIR) prepared for the Proposed Project. The Section 7 analysis is presented in a summary format and refers the reader to specific sections of the Draft MEIR for supporting information on water quality, fisheries, wildlife, flora and fauna, recreational, cultural resources and aesthetic values (chapters 2, 4, 5).

Section 7 Analysis

The Section 7 analysis and determination for the Proposed Project follows the Evaluation Procedure presented in Appendix C of the *Technical Report of the Interagency Wild and Scenic Rivers Coordinating Council, Wild and*

Scenic Rivers Act: Section 7. BLM generally has responsibility for conducting Section 7 determinations for the Trinity River WSA-designated river segment; this responsibility results from an interagency agreement between the National Park Service, BLM, and the U.S. Forest Service.

1) Establish Need

a. The specific purpose of the Proposed Project is to protect or enhance the values for which the river was designated as eligible; restore the natural characteristics of the river; and/or improve the water quality of the river. The project would initiate channel rehabilitation activities as described in Chapter 2 of the Draft MEIR. The Proposed Project was included in the Record of Decision (ROD) issued by the Department of the Interior (DOI) in 2000 and is intended to restore the river function and fish resources of the Trinity River. This project would be implemented in conjunction with other programs and projects under the direction of the Trinity River Restoration Program (TRRP). Implementation of the Proposed Project would include measures to assure that it is consistent with the goals established under the BLM's *Redding Resource Management Plan,* and the STNF Land and Resource Management Plan (LRMP) specifically to support management actions that would enhance Trinity River fisheries. The Proposed Project would not diminish the scenic, recreational, or water quality values associated with the river.

b. Project-related impacts to free-flowing characteristics of the river would be minimized to the extent practicable, and are described in detail in the following sections of the Draft MEIR: Chapter 2 (Proposed Project and Alternatives); section 4.3 (Geology); section 4.4 (Water Resources), section 4.16 (Transportation/Traffic Circulation).

c. The project proponent and manager is the Trinity River Restoration Program (TRRP). The TRRP is an administrative office of the Mid-Pacific Region of the Bureau of Reclamation (Reclamation) responsible for implementing the 2000 Record of Decision intended to restore the fishery resources of the Trinity River. The Proposed Project has been developed through a cooperative effort by Reclamation, BLM, STNF, the Regional Water Quality Control Board – North Coast Region (Regional Water Board), and the Hoopa Valley Tribe (HVT) under the direction of the TRRP. The Proposed Project would improve the conveyance of flows by reestablishing alluvial attributes of the Trinity River, namely floodplains, side channels, and transverse bars. These activities are intended to decrease the potential for channel constriction by removing riparian berms.

The Proposed Project is consistent with management goals and objectives for the Trinity River and is designed to maintain and/or enhance the ORV's. It is also consistent with BLM and STNF objectives that support the TRRP.

2) Define a Proposed Activity

The project proponent, the project purpose and need, and the geographic location of the project are described in Chapters 1 and 2 of the Draft MEIR. Figure 1-2 (Chapter 1) provides a project site location map, and Figure 4.2-1 (Chapter 4) presents public and private land ownership information adjacent to the Trinity River. In general, the Proposed Project is expected to take approximately 10 years to complete. River rehabilitation activities associated with the project, such as coarse gravel augmentation, could last for an additional 10 years. Specific information on the duration of construction of the project and the magnitude/extent of the proposed activities is provided in Chapter 2 of the Draft MEIR. Chapter 5 describes the relationship of the Proposed Project to past and future management activities with an emphasis on cumulative effects.

3) Describe How the Proposed Activities Would Directly Alter Within-Channel Conditions

Implementation of the proposed channel rehabilitation project would result in both short-term and long-term impacts for which mitigation is provided. A graphic overview of proposed channel rehabilitation activities can be seen in Figures 2-1a through 2-1f (Chapter 2). These impacts and relevant mitigation measures are described in the following sections of the Draft MEIR: 4.3 (Geology), 4.4 (Water Resources), 4.5 (Water Quality), and 4.6 (Fishery Resources).

The existing condition of the Proposed Project site is the result of natural processes, development, and resource management that has occurred along the river corridor over the past 75 years. Channelization of the Trinity River resulted from historic dredge mining activities. Modified river flows, associated with Trinity River Dam operations, further exacerbated channelization of the river. When the Trinity River was designated under the WSA, dam operations had altered the river's alluvial features for more than 20 years within the project boundaries. At that time, scientists recognized that the alluvial nature of the river had been modified extensively. Although recent changes in the flow regime provide some opportunity to rehabilitate the form and function of the Trinity River, the ROD (Department of Interior 2000) recognized that mechanical channel

rehabilitation would also be needed to reconfigure sections of the river and provide opportunities for alluvial processes to occur.

Collectively, in-channel rehabilitation efforts are designed to restore the alluvial character of the Trinity River that was impaired by reductions in flow and the resulting increase in sediment. While short-term impacts are anticipated during project implementation, primarily concerning water quality, juvenile salmonid rearing habitat, and riparian vegetation, mitigation measures are incorporated into the project to minimize potential impacts to a less than significant level. Additionally, the nature and scale of the proposed channel rehabilitation project is expected to provide positive and cumulatively beneficial long-term effects.

4) Describe How the Proposed Activity Would Directly Alter Riparian and/or Floodplain Condition

The Proposed Project, which consists of 29 rehabilitation sites, is anticipated to affect a 40-mile stretch of alluvial deposits in and adjacent to the mainstem Trinity River. It is generally recognized that these alluvial deposits existed at the time of the WSA designation; however, the dynamic and changing nature of riverine environments precludes a quantification of these features. The extensive body of scientific evidence available for the Trinity River suggests that the alluvial features (e.g., riparian berms and floodplains) supported extensive, well-established riparian, although somewhat homogenous communities at the time of the WSA designation. Because of modified flow regimes, alluvial deposits became immobilized by an inhabitation of monoculture riparian vegetation. The interaction between vegetation and fine sediment continued to exacerbate the channelized condition along the river corridor. While large floods, such as that which occurred in 1997, modified this riparian community to some degree and resulted in some berm erosion, the monoculture condition persists. To varying degrees, riparian berms tend to inhibit access to the floodplain throughout the 40-mile stretch of river encompassed by the Proposed Project.

Section 4.4 (Water Resources), section 4.6 (Fishery Resources), and section 4.7 (Vegetation, Wildlife, and Wetlands) discuss the specific impacts and relevant mitigation measures associated with the Proposed Project and Alternative 1 relative to existing riparian and floodplain conditions. Although short-term impacts are anticipated during construction, the long-term effects are expected to be positive and cumulatively beneficial. As a component of the TRRP, the Proposed Project is expected to benefit the Trinity River's ORV's, including anadromous fishery resources.

5) Describe How the Proposed Activity Would Directly Alter Upland Conditions

The Proposed Project would remove alluvial material from the channel bed, banks, and floodplains. This material would be placed on adjacent upland areas or processed on site for future use in the coarse gravel augmentation program. A riparian revegetation plan, that emphasizes the reestablishment of native species and vegetative community types throughout the entire project boundary, will be incorporated into the Proposed Project. The following sections of the Draft MEIR discuss the specific impacts and relevant mitigation measures relative to upland conditions as they relate to the ORV's for the Trinity River: section 4.4 (Water Resources), section 4.6 (Fishery Resources), section 4.7 (Vegetation, Wildlife and Wetlands), section 4.8 (Recreation), section 4.10 (Cultural Resources) and section 4.12 (Aesthetics).

6) Evaluate and Describe How Changes in On-Site Conditions Can/Would Alter Existing Hydrologic or Biologic Processes

As discussed in previous sections, the Draft MEIR provides a detailed description of the existing condition and environmental impacts associated with the Proposed Project, including a substantial number of mitigation measures. A primary objective of the Proposed Project is to re-establish alluvial processes within the 40-mile project area. This objective would be met by providing the river with the opportunity to return to the floodplain with greater frequency through channel modification. A basic premise of the TRRP is to promote changes to the alluvial reaches of the river in a manner that restores the physical processes and biological resources that were recognized as ORV's at the time of designation.

7) Estimate the Magnitude and Spatial Extent of Potential Off-Site Changes

Chapter 5 of the Draft MEIR discusses the magnitude and extent of potential off-site impacts resulting from the Proposed Project, including cumulative impacts that might result from project actions extending along the river corridor. With the exception of short-term water quality impacts (construction related turbidity), implementation of the Proposed Project would not adversely impact the Trinity River. In fact, the intent of the Proposed Project is to promote large-scale beneficial changes to the riverine environment and adjacent physical habitat. Such changes are expected to enhance efforts to restore the form and function of the Trinity River.

8) Define the Time Scale over Which Steps 3-7 are Likely to Occur

Project implementation is anticipated to occur between fall 2009 and fall 2020. Specific limitations on project operations will likely be incorporated into the project because of applicable legal requirements.

9) Compare Project Analyses to Management Goals

Management goals relative to free-flow, water quality, riparian area, and floodplain conditions would not be affected by the Proposed Project. It is expected that one of the primary benefits of this project would be to increase the ORV (specifically, anadromous fisheries) of the Trinity River. Impacts to the visual resources of the Trinity River would be minimal with the implementation of design criteria and mitigation measures. The Proposed Project would be consistent with any future actions taken by the TRRP.

10) Section 7 Determination

Implementation of the Proposed Project, as described in Chapter 2 and as analyzed in Chapters 4 and 5 of the Draft MEIR, would not affect the free-flowing condition of this segment of the Trinity River, would not affect the river's water quality, and would not have any effects on the ORVs for which the river was designated.

References

U.S. Department of Interior. 2000. Record of decision. Trinity River mainstem fishery restoration final environmental impact statement/environmental impact report. December 19, 2000.

APPENDIX C

Federally-Listed/Proposed Threatened and Endangered Species for Trinity County

Appendix C
Federally-Listed/Proposed Threatened and Endangered Species for Trinity County

Federally or State-Listed Species

American Peregrine Falcon (*Falco peregrinus anatum*). Federal status: Delisted; State status: Endangered, Fully Protected. The American peregrine falcon was removed from the Federal list of threatened and endangered species in the lower 48 states in 1999 (64 FR 46541 46558). In California, it is listed as threatened under the CESA, but has been recommended for delisting (California Department of Fish and Game 2008a).

Peregrine falcons are known as one of the fastest flying birds of prey, preying almost entirely on birds that they kill while in flight. These falcons nest primarily on high cliffs. However, they will also use human-made structures for nesting and, occasionally, tree cavities or the old nests of other raptors.

In California, American peregrine falcons are known to nest along the coast north of Santa Barbara, the northern Coast and Cascade ranges, and the Sierra Nevada. During winter and periods of migration, they can be found throughout most of the state, but are most likely to be encountered near wetland or aquatic habitats. The Proposed Project sites lack nesting habitat for this species; however, they may occur as foragers.

Bald Eagle (*Haliaeetus leucocephalus*). Federal status: Delisted; State status: Endangered. The bald eagle first gained federal protection in 1940 when Congress passed the Bald Eagle Protection Act. It was later amended to include golden eagles and renamed the Bald and Golden Eagle Protection Act. The species was first listed under the ESA on February 14, 1978, when it was designated as endangered throughout the lower 48 states except in Michigan, Minnesota, Wisconsin, and Oregon, where it was designated as threatened (43 FR 6233). The bald eagle was reclassified as threatened in all of the lower 48 states on July 12, 1995 (60 FR 36000).

The USFWS proposed to remove the species from the List of Endangered and Threatened Wildlife (delist) on July 6, 1999 (64 FR 36454) because they determined that the bald eagle was flourishing across the nation and no

longer needed the protection of the ESA. It was delisted on August 8, 2007 (72 FR 37346). However, the bald eagle continues to be federally protected under the Bald and Golden Eagle Protection Act. In addition, it is state listed as endangered in California.

The bald eagle is a large soaring bird, and most of its annual food requirements are derived from or obtained around aquatic habitats. The food most often consumed consists of fish, water birds, and small to medium-sized mammals. Because of the dietary association, nesting territories are usually found near water. Perches are used primarily during the day for resting, preening, and hunting, and may include human-made structures such as power poles. Roosting areas contain a night communal roosting tree that is easily accessible to the large birds and tall enough to provide safety from threats from the ground. Bald eagle nests and roosts are usually found where human activity is infrequent or muted. In California, breeding pairs are found mostly in Butte, Lake, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Trinity counties (California Department of Fish and Game 2008b). Bald eagles are not expected to nest at the Proposed Project sites due to the level of human disturbance and lack of dense, large trees. However, they may forage on the sites.

Little Willow Flycatcher (*Empidonax traillii brewsteri*). Federal status: None; State status: Endangered. The little willow flycatcher is one of five subspecies of the willow flycatcher. It breeds in California from Tulare County north, along the western side of the Sierra Nevada and Cascades, extending to the coast in northern California (Craig and Williams 1998). In California, the little willow flycatcher it is a rare to locally uncommon summer resident in wet meadows and montane riparian habitats from 2,000 – 8,000 feet in elevation and a common spring and fall migrant at lower elevations, primarily in riparian habitats, throughout the state exclusive of the North Coast (Zeiner et al. 1990a). This subspecies nests in dense riparian thickets and forages on insects, berries, and seeds. Suitable montane riparian habitat for the little willow flycatcher is present within some of the Proposed Project sites and the species has been observed along the Trinity River corridor in the project region (Wilson 1995; Miller, Ralph, and Herrera 2003; Herrera 2006).

Pacific Fisher (*Martes pennanti pacifica*). Federal status: Candidate; State status: Species of Special Concern. In California, fishers primarily inhabit mixed conifer forests composed of Douglas-fir and associated conifers, although they also are encountered frequently in higher elevation, fir and pine forests and mixed evergreen/broad leaf forest. Fishers den in cavities near the tops of large trees, in hollow logs, and in crevices in rock outcrops and talus. They are not expected to breed on any of the Proposed Project sites. However, this species has been recorded along the Trinity River in the project area (California Department of Fish and Game 2003), and may use the Trinity River as a travel corridor.

Other Special-Status Species

Foothill yellow-legged frog (*Rana boylii*). Federal status: None; State status: Species of Special Concern. The foothill yellow-legged frog is found in or near rocky streams in a variety of habitats, including valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadow. Adults often bask on exposed rock surfaces near streams. During periods of inactivity, especially during cold weather, individuals seek cover under rocks in the streams or on shore within a few yards of water. Unlike most other ranid frogs in California, this species is rarely encountered (even on rainy nights) far from permanent water.

Foothill yellow-legged frogs occur in the Coast Ranges from the Oregon border south to the Transverse Mountains, in most of northern California west of the Cascade crest, and along the western flank of the Sierra south to Kern County. This species is known to occur in the Trinity River from Lewiston Dam to the north fork of the river (California Department of Fish and Game 2003) and may occur at any of the Proposed Project sites.

Western Pond Turtle (*Actinemys marmorata*). Federal status: None; State status: Species of Special Concern. The western pond turtle occurs in a variety of riverine and wetland habitats. Pond turtles require basking sites, such as partially submerged logs, rocks, mats of floating vegetation, and open mud banks, but turtles slip from basking sites to underwater retreats at the approach of humans or potential predators. In colder areas, the turtles hibernate underwater in bottom mud (Zeiner et al. 1990b) This species is known to travel large distances upland for nesting and overwintering.

The western pond turtle has been recorded throughout the Trinity River Basin and is found in or near the main stem, larger tributaries, vernal pools, ponds, and lakes (Ashton, Lind, and Schlick 1997). The riverine and riparian habitat at the Proposed Project sites provide suitable habitat for the species.

Black Swift (*Cypseloides niger*). Federal status: None; State status: Species of Special Concern. In northern California, the black swift breeds only locally in the Sierra Nevada and Cascade Range. They nest in moist crevices or in caves on cliffs above the surf or near waterfalls. The black swift feeds exclusively on insects and forages over many habitats. Suitable nesting habitat for this species is absent from the project area; however, the species may forage over the Proposed Project sites during migration.

California Yellow Warbler (*Dendroica petechia*). Federal status: None; State status: Species of Special Concern. The yellow warbler is usually

found in dense riparian deciduous habitats with cottonwoods, willows, alders, and other small trees and shrubs typical of open-canopy riparian woodlands. Forage patterns usually involve gleaning and hovering for insects and spiders. The yellow warbler occurs as a summer resident in northern California, however, the number of breeding pairs in the Sacramento Valley has declined dramatically in recent decades. Riparian communities in the Proposed Project sites provide suitable nesting and foraging habitat for this species.

Golden Eagle (*Aquila chrysaetos*). Federal status: None; State status: Species of Special Concern, Fully Protected. Golden eagles are most common in rugged, open country bisected by canyons where there are ample nesting sites and food. Golden eagles nest on cliffs of all sizes or in the tops of large trees. The nests are very large stick nests, sometimes exceeding 10 feet across (Zeiner et al. 1990a). The species forages on rabbits and larger rodents, but may also take birds and reptiles; some also feed on carrion. The golden eagle is a rare permanent resident or migrant throughout California but is more common in the foothills surrounding the Sierra Nevada and Coast Ranges and in the southern California deserts. Suitable nesting habitat for this species is not present within the Proposed Project sites. However, it may occur as a forager.

Northern Goshawk (*Accipiter gentiles*). Federal status: None; State status: Species of Special Concern. The northern goshawk is found in dense, mature conifer and deciduous forests interspersed with openings and riparian habitat. Nests are typically constructed on north-facing slopes near water. They prey mainly on birds and small mammals. In California, northern goshawks breed in the North Coast Ranges through the Sierra Nevada, Klamath, Cascade, and Warner Mountains. Woodlands along the Trinity River corridor provide suitable nesting and foraging habitat for this species.

Vaux's Swift (*Chaetura vauxi*). Federal status: None; State status: Species of Special Concern. Vaux's swifts are a summer resident of northern California that forage over most terrains and habitats, commonly at lower levels in forest openings, above burns, and above rivers. The species roosts in hollow trees and snags and occasionally in chimneys and buildings. Suitable nesting (e.g., Douglas-fir) and foraging habitat for this species is present along portions of the Trinity River in the project area.

Yellow-Breasted Chat (*Icteria virens*). Federal status: None; State status: Species of Special Concern. The yellow-breasted chat is an uncommon Neotropical migrant in coastal California and in the foothills of the Sierra Nevada. They are often found in dense, brushy thickets and tangles near water, and in the thick understory of riparian woodlands. Foraging patterns usually involve gleaning insects, spiders, and berries from the foliage of shrubs and low trees. Nests are often in dense shrubs along

streams. Riparian communities in the Proposed Project sites provide suitable nesting and foraging habitat for this species.

Long-eared Myotis (*Myotis thysanodes*). Federal status: None; State status: None. The long-eared myotis occurs in a variety of brush, woodland, and forested habitats from sea level to at least 9,000 feet. It forages for a variety of arthropods in open habitats, along habitat edges, and over water. Long-eared myotis bats roost singly or in small groups in buildings, crevices, under bark, and in snags. In California, the species is widespread but avoids the Central Valley and hot deserts. Suitable roosting and foraging habitat for the long-eared myotis is present along portions of the Trinity River in the project area.

Pallid Bat (*Antrozous pallidus).* Federal status: None; State listing status: Species of Special Concern. The pallid bat is a medium-sized bat that occurs throughout much of California. It prefers foraging on terrestrial arthropods in dry open grasslands near water and rocky outcroppings or old structures. It may also occur in oak woodlands and at the edge of redwood forests along the coast. Roosting typically occurs in groups, and roosts often occur in caves and mine tunnels. Buildings and trees may be used for day roosts, and more open sites, such as buildings, porches, garages, highway bridges, and mines, may be used for night roosts. Pallid bats are sensitive to human disturbances at roost sites. Suitable roosting and foraging habitat for the long-eared myotis is present along portions of the Trinity River in the project area.

Ring-tailed Cat (*Bassariscus astutus*). Federal status: None; State status: Fully Protected Species. The ring-tailed cat is widely distributed in California, occurring in riparian habitats and brush stands of most forest and shrub communities. Nocturnal and primarily carnivorous, ring-tailed cats mainly eat small mammals but also feed on birds, reptiles, insects, and fruit. They forage on the ground, among rocks, and in trees, usually near water. Hollow trees and logs, cavities in rocky areas, and other recesses are used for cover. In the project area, montane riparian habitat along the Trinity River provides suitable nesting and foraging habitat for this species.

Townsend's Western Big-eared Bat (*Corynorhinus townsendii*). Federal status: None; State listing status: Species of Special Concern. The Townsend's western big-eared bat is found in a variety of habitats. It captures its prey, principally small moths, while in flight as well as gleaning them from foliage. The Townsend's big-eared bat is a colonial species, and females aggregate in the spring at nursery sites known as maternity colonies. Although this species is usually cave-dwelling, many colonies are found in human-made structures, such as the attics of buildings or old abandoned mines. It is easily disturbed while roosting in buildings, and females are known to abandon completely their young when disturbed. Suitable habitat for this species is present along the Trinity River in the project area.

Yuma Myotis (*Myotis yumanensis*). Federal status: None; State status: None. The Yuma myotis is found in a wide variety of habitats from sea level to 11,000 feet; however, it prefers open woodlands and forests near water. It forages for insects over water sources and roosts in buildings, mines, caves, crevices, abandoned swallow nests, and under bridges. Yuma myotis are widespread throughout California. Suitable habitat for this species is present along the Trinity River in the project area.

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Programmatic Agreement Among the U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, U.S. Bureau of Land Management, Hoopa Valley Tribe, California State Historic Preservation Officer, and The Advisory Council on Historic Preservation Regarding Implementation of the Trinity River Mainstem Fishery Restoration and Section 106 Consultation

PROGRAMMATIC AGREEMENT
AMONG THE U. S. BUREAU OF RECLAMATION,
U. S. FISH AND WILDLIFE SERVICE, U.S. BUREAU OF LAND MANAGEMENT,
HOOPA VALLEY TRIBE,
CALIFORNIA STATE HISTORIC PRESERVATION OFFICER, AND
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
REGARDING IMPLEMENTATION OF
THE TRINITY RIVER MAINSTEM FISHERY RESTORATION

WHEREAS, the U.S. Bureau of Reclamation (Reclamation), U. S. Fish and Wildlife Service (Service), U.S. Bureau of Land Management (Bureau), and the Hoopa Valley Tribe (Tribe) have determined that implementing the actions (Undertaking) outlined in the Trinity River Mainstem Fishery Restoration Environmental Impact Statement/Report (Trinity EIS/R) for purposes of protecting, restoring, and enhancing fish and wildlife, may affect historic properties; and

WHEREAS, Reclamation, the Service, the Bureau (agencies) and the Tribe have elected to comply with Section 106 of the National Historic Preservation Act(NHPA) for the Undertaking through execution and implementation of a Programmatic Agreement (Agreement) pursuant to 36 CFR Section 800.14, because not all Trinity EIS/R implementing actions have as yet been identified and because neither the scope and magnitude of the Undertaking's effects to historic properties nor the historic properties themselves have been identified at the time of execution of this Agreement; and

WHEREAS, the agencies, pursuant to 36 CFR 800.8(a)(1) and 800.8(a)(3), will coordinate compliance with the requirements of the National Environmental Policy Act (NEPA) for actions covered by this Agreement with the requirements of Subpart B of 36 CFR Part 800, and as part of this process of coordination, may use the NEPA process and associated documentation to supplement compliance with Subpart B; and

WHEREAS, pursuant to 36 CFR Section 800.2(c)(2)(ii), the Tribe=s representative shall be included in the term Tribal Historic Preservation Officer (THPO) for undertakings occurring on or affecting historic properties on its tribal lands and affecting properties of religious and cultural significance to the Tribe located on or off-tribal lands, and for any such undertakings, the primary responsible Federal agency (RFA) shall also consult with the THPO, in addition to the SHPO, where consultation is required under this Agreement; and

WHEREAS, the agencies have consulted with the California State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (Council) pursuant to Section 800.14 (b) of the regulations (36 CFR Part 800) implementing Section 106 of the National Historic Preservation Act (NHPA) (16 U.S.C. 470f) to resolve any adverse effects of the Undertaking on historic properties; and

WHEREAS, throughout the implementation of this Agreement, Reclamation and the Service the shall consult with Indian tribes, organizations and individuals that may attach religious and cultural significance to, or that may have concerns about the Undertaking's effects on historic properties,

NOW, THEREFORE, Reclamation, the Service, the Bureau, the Tribe, the SHPO, and the Council agree that the following stipulations shall be implemented in order to take into account the effects of the Undertaking on historic properties, and that these stipulations shall govern the Undertaking and all of its parts until this Agreement expires or is terminated.

STIPULATIONS

Reclamation and the Service shall ensure that the following measures are carried out:

I. ASSIGNMENT OF RESPONSIBILITY

Either Reclamation or the Service will be responsible for ensuring that the terms of this Agreement are carried out for all individual actions authorized or funded by the Department of the Interior comprising the Undertaking, irrespective of where or by whom the action will be carried out. Prior to preparation of environmental documentation for each action covered by this Agreement, Reclamation and the Service will consult to determine which agency will serve as primary responsible federal agency (RFA) for such action. The selected RFA will be responsible for implementing the terms of this Agreement with respect to the action proposed. The Service shall comply with the terms of this Agreement for the Undertaking and all individual actions therein, in lieu of the Programmatic Agreement among the Service, Council, and the SHPO executed on May 7, 1997.

II. AREAS OF POTENTIAL EFFECTS (APEs)

a. For purposes of this Agreement, the APE for the Undertaking in its entirety shall consist of the area within the 500 year floodplain of the Trinity River from the Trinity Reservoir downstream to the Hoopa Valley Indian Reservation, the area within the drawdown zones of the Trinity Reservoir, and ancillary areas within or outside of the 500 year floodplain that will be affected by implementing actions and associated facilities, such as material borrow sites, access roads, sediment pond construction and maintenance.

b. At the earliest stage of planning for any action comprising the Undertaking, the RFA will determine and document an area of potential effects (APE)in strict accordance with the definition set forth in 36 CFR 800.16(d). The APE for an action covered by this Agreement will be defined either before or concurrently with the earliest stages of NEPA compliance for the action.

III. REVIEW OF TRINITY EIS/R IMPLEMENTING ACTIONS

a. Coordination with NEPA

The RFA shall ensure that compliance with the terms of this Agreement is coordinated with NEPA compliance. When a specific Trinity EIS/R implementing action is identified, the RFA=s archaeologist will establish an APE pursuant to Stipulation III.B., below, and ensure that an appropriate level of effort is conducted to identify historic properties within that APE. Specific steps taken to comply with this Agreement will be included in an Environmental Assessment (EA) or categorical exclusion checklist (CEC) prepared for a Trinity EIS/R implementing action. An EA will, to the extent possible,

describe efforts to identify historic properties and, if applicable, identify and discuss measures that will avoid, minimize or mitigate potential adverse effects to historic properties. CECs will be prepared for minor actions where no historic properties have been identified within the APE. All CECs will be reviewed by Reclamation's Regional Archeologist, or by the Bureau=s Redding or Arcata Field Archeologist, or by the Service=s Regional Archeologist, to ensure that no historic properties will be affected by a proposed action. The final EIS or subsequent NEPA documentation for a Trinity EIS/R implementing action shall include, to the extent possible, appropriate documentation evidencing compliance with the terms of this Agreement. The RFA will ensure that the Finding of No Significant Impact or the Record of Decision for any action includes a plan for the treatment of historic properties adversely affected by such action.

b. IDENTIFYING HISTORIC PROPERTIES

36 CFR 800.4(b)(1) is the general standard which the RFA will use to determine the level of effort needed to identify historic properties within the APE of each Trinity EIS/R implementing action covered by this Agreement. In addition, as part of identification, the RFA will place special emphasis on the consultation prescribed by 36 CFR 800.4(a)(4) and by 36 CFR 800.4(b). The general standard set forth in 36 CFR 800.4(b)(1) will be supplemented by the following:

(1) The results of the cultural resources overview prepared for the Trinity River Mainstem Fishery Restoration EIS/R;

(2)Applicable inventory standards identified in Reclamation Instructions (376.3B) or in the Service's Administrative Manual and the Service's Cultural Resource Management Handbook (1985). Cultural resources and historic properties identified during inventory will be recorded as follows:

(a) A new or updated California Department of Parks and Recreation Form DPR 523 (series 1/95) will be completed in accordance with the Instructions for Recording Historical Resources (Office of Historic Preservation, March 1995). The RFA will ensure that forms are submitted to the appropriate Information Center of the California Historical Resources Information System (CHRIS) for assignment of permanent site numbers. These site numbers will be used to the extent possible as inventory reports are prepared.

(b) National Register Bulletin 38 will be the standard used by the RFA to identify and document traditional cultural properties, based on consultation with the Tribe and other tribes, organizations, or individuals who may attach religious and cultural significance to historic properties that may be affected by the Undertaking. Traditional cultural properties identified during inventory may be recorded on the DPR 523 unless the Tribe or another Indian tribe, organization or individual objects. If such objection arises, the properties may be recorded on a form and in a manner that is in accordance with the recommendations of the Tribe or other Indian tribes, organizations or individuals, subject to the confidentiality requirements set forth in Stipulation VI.C., below. If traditional cultural properties affiliated with

other parties are identified during inventory, these parties will be consulted by the RFA in accordance with 36 CFR 800.2(c)(6).

(c) The applicable cultural resource data base including information available from the appropriate Information Center of the California Historical Resources Information System (CHRIS), and professional staff estimation; and

(d) The National Park Service publication, "The Archeological Survey: Methods and Uses" (King 1978);

c. EVALUATING PROPERTIES AND DETERMINING EFFECTS

(1) A Trinity EIS/R implementing action will be exempt from further consideration under this Agreement if any of the following conditions are met:

(a) The RFA=s archaeologist determines that there are no cultural resources in the APE, based on the results of identification efforts outlined in Stipulation III.B. above; or

(b) The RFA=s archaeologist determines that no cultural resources will be affected, based on the results of identification efforts outlined in Stipulation III.B.and C.; or

(c) The RFA=s archaeologist determines that cultural resources may be affected, but based on the evaluation prescribed in paragraph C.2.of this stipulation, such resources are determined ineligible for inclusion in the National Register of Historic Places (NRHP).

(2) If the RFA=s archaeologist determines that an action covered by this Agreement may affect a cultural resource, the RFA=s archaeologist will evaluate the cultural resource in accordance with the process set forth in 36 CFR 800.4(c)(1) before any activity that may affect the resource is initiated. If the resource in question may be a traditional cultural property, the RFA will use National Register Bulletin 38 in conducting the evaluation.

(3) If the RFA determines pursuant to paragraph C.2. of this stipulation, that the cultural resources subject to effects are eligible for inclusion in the NRHP, the RFA=s archaeologist will follow 36 CFR 800.5 to determine whether such effects may be adverse.

(a) If this consultation results in a finding of no adverse effect to historic properties, the RFA=s archaeologist will conclude the consultation by complying with 36 CFR 800.5(d).

(b) If this consultation results in a finding that historic properties will be adversely affected, the RFA=s archaeologist will ensure that the adverse effects are taken into account in accordance with paragraph D. of this stipulation.

d. HISTORIC PROPERTY TREATMENT PLANS (HPTPs)

(1) The RFA=s archaeologist will develop HPTPs to resolve the adverse effects on historic properties of actions covered by this Agreement. Separate HPTPs may be prepared for individual Trinity EIS/R implementation actions. HPTPs will be developed by the RFA in consultation with the SHPO, the Tribe, other Indian tribes, organizations and individuals, and the Council if it so requests, and with any interested parties identified by the signatory parties to this Agreement. HPTPs will be submitted for review according to the procedures set forth in paragraph D.4. of this stipulation.

(2) HPTPs will be consistent with the AArchaeology and Historic Preservation: Secretary of Interior=s Standards and Guidelines (FR 44716-44742), including the "Secretary of the Interior's Standards and Guidelines for Archaeological Documentation" (48 FR 44734-37)" and the Council's "Recommended Approach for Consultation on Recovery of Significant Information from Archeological Sites" (64 FR 27085-87). HPTPs shall at a minimum:

Describe the historic property or portion of the property where treatment will be implemented. The HPTP shall contain a description of the values that make the property eligible for the National Register of Historic Places, and describe the measures proposed to protect each historic property. These measures may include, but not necessarily be limited to avoidance, monitoring, capping, fencing, land use policy and planning techniques such as zoning restrictions, protective covenants, etc. The preservation of historic properties is the preferred alternative, wherever feasible; if data recovery is proposed, the HPTP also shall:

(a) Specify the research questions to be addressed through recovery of data;

(b) Explain why it is in the public interest to address these research questions, including a description of any efforts to interpret the result of the investigations for the public;

(c) Explain how the historic properties subject to data recovery can address these research questions;

(d) Specify the methods to be used in field work and analysis, and explain how these methods are relevant to the research questions;

(e) Indicate how recovered material and records will be disposed of, taking into account the expressed wishes of the Tribe, of other Indian tribes, organizations, or individuals and, as applicable, of interested parties;

(f) Provide a schedule for completing data recovery, including analysis, reporting and disposition of materials and records;

(g) Include a schedule for providing the Tribe, other Indian tribes, organizations and individuals, SHPO and, as applicable, interested parties, with the opportunity to review and comment on reports documenting implementation of HPTPs.

(h) Include a schedule for completing final data recovery reports and specify when and to whom this report will be distributed;

(i) Provide for development and implementation of a Plan of Action in accordance with 43 CFR 10 for the management of Native American cultural items that will be repatriated to the Tribe or to other Indian tribes pursuant to the Native American Graves Protection and Repatriation Act (NAGPRA); or, where non-federal property is involved, a plan providing for the treatment of Native American human remains and items associated with Native American burials in accordance with the requirements of Sections 5097.98 and 5097.991 of the California Public Resources Code;

(j) Specify that, following any repatriation pursuant to item I., above, the RFA will ensure that all records and all non-repatriated objects resulting from data recovery are curated in accordance with 36 CFR 79;

(k) Include a plan for the treatment of properties discovered during implementation of an action covered by this Agreement;

(l) Include a plan for monitoring construction activities that may affect historic properties; this plan shall include a monitoring schedule, provide for the participation of a professional archeologist, and, as appropriate, Tribal member(s), members of other Indian tribes, organizations, individuals and interested parties.

(3) The RFA will submit draft HPTPs to the SHPO, the Tribe, other Indian tribes, organizations and individuals, the Council if it so requests after being informed of its development, and to any interested parties identified by the signatory parties, for review and comment. These parties shall have 30 days from receipt of any draft HPTP to comment. Failure to respond within this time frame shall not preclude the RFA from finalizing the HPTP. Before it finalizes the HPTP, the RFA will provide the reviewing parties with documentation indicating whether and how any comments from the parties will be incorporated into the final HPTP. Unless the reviewing parties object to this documentation within 15 days following receipt, the RFA may finalize the HPTP as it deems appropriate, and proceed to implement the final HPTP. If the RFA proposes to change a final HPTP, it will notify the reviewing parties about the proposed changes. Reviewing parties will have 10 days from receipt of notification to comment. Failure to respond within this time frame shall not preclude the RFA from changing the final HPTP. Before it changes the final HPTP, the RFA will provide the reviewing parties with documentation indicating whether and how any comments from the parties will be incorporated into the proposed changes. Unless the parties object to this documentation within 10 days following receipt, the RFA may change the final HPTP as it deems appropriate, and proceed to implement the amended final HPTP.

IV. NATIVE AMERICAN CONSULTATION, CURATION AND TREATMENT OF CULTURAL MATERIALS AND HUMAN REMAINS OF NATIVE AMERICAN ORIGIN

a. Reclamation and the Service will ensure that Indian tribes, organizations and individuals are consulted during, and are invited to participate in, the implementation of the terms of this Agreement. Such

consultation and participation shall include the preparation of reports that document such implementation.

b. Reclamation and the Service shall ensure that all records and materials resulting from activities carried out pursuant to this Agreement are curated pursuant to 36 CFR 79 and the provisions of the NAGPRA, 43 CFR 10, as applicable.

c. Reclamation and the Service shall ensure that any Native American human remains and objects defined under NAGPRA encountered through activities carried out pursuant to this Agreement are treated with due respect, and according to the provisions of NAGPRA, its implementing regulations, 43 CFR 10, and, as appropriate, in accordance with applicable state law.

d. Reclamation and the Service will ensure that the expressed wishes of Indian tribes, organizations, and individuals are taken into account when decisions are made relating to the treatment and disposition of Native American archaeological materials and records not subject to the provisions of NAGPRA.

V. PUBLIC PARTICIPATION

Reclamation and the Service shall use the NEPA process, and any other process they deem appropriate, to solicit public comment on the actions covered by this Agreement. The RFA shall ensure that historic preservation issues are included in notices of public meetings so that these issues can be considered and addressed in a timely manner.

VI. DOWNSTREAM AND RESERVOIR DRAWDOWN IMPACTS TO HISTORIC PROPERTIES

Reclamation and the Service shall incorporate and consider effects to historic properties in its conduct of the overall adaptive management program for the Trinity River, should such program be carried out.

Within 1 year of the execution of this Agreement, Reclamation and the Service shall ensure that a cultural resources management plan is developed addressing the identification, evaluation, and assessment of effects to historic properties within the APE downstream of and within the drawdown zone of Trinity Dam that may be affected by inundation, erosion, vandalism, and other indirect effects of the Undertaking. A draft version of the Plan shall be provided to the signatories to this Agreement for a 30-day review, revised to address the comments received, and then implemented. The Plan, developed in consultation with the SHPO, the Tribe, the agencies, and other tribes, organizations, and individuals who may attach religious and cultural significance to historic properties within this specified area, shall discuss:

a. How historic properties will be identified and evaluated for their National Register of Historic Places eligibility;

b. How changes to the integrity and physical condition of historic properties attributable to erosion, inundation, vandalism, and other effects of the Undertaking will be identified and treated; and

c. A schedule for carrying out items 1 and 2, above.

VII. ADMINISTRATIVE STIPULATIONS

a. PROFESSIONAL STANDARDS

(1) All work required by this Agreement that addresses the identification, evaluation, treatment and documentation of historic or potentially historic properties shall be carried out by or under the direct supervision of a person or persons meeting at a minimum the Secretary of Interior=s Professional Qualifications Standards (48 FR 44738-39) (PQS) in the appropriate disciplines. However, nothing in this stipulation may be interpreted to preclude Reclamation and/or Service or any agent or contractor thereof from using the properly supervised services of persons who do not meet the PQS.

(2) All documentation required by this Agreement that addresses the identification, evaluation, and treatment of historic or potentially historic properties shall be responsive to contemporary professional standards, to the Secretary of Interior=s Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716-40), National Park Service Bulletin 38, as well as to standards and guidelines established by the SHPO.

b. REPORT DISTRIBUTION

The RFA shall ensure that copies of all technical reports prepared to satisfy the terms of this Agreement are provided upon completion to the SHPO, the Tribe, other Indian tribes, the appropriate CHRIS Information Center, and to any interested parties designated by the signatory parties to this Agreement. The content of these reports shall be subject to the confidentiality requirements set forth in paragraph C. of this stipulation.

c. CONFIDENTIALITY

(1) Reclamation and the Service shall ensure that all sensitive information, as defined in Section 9 of the Archeological Resources Protection Act (ARPA), Section 304 of the NHPA, and NAGPRA, is managed in such a way that historic properties, traditional cultural properties, sacred objects, and human remains are not compromised, to the fullest extent available under law.

(2) Signatory and concurring parties to this Agreement shall safeguard information about the nature and location of archeological, historic, and traditional cultural properties, and not reveal that information to any additional parties, pursuant to Section 304 of the NHPA and Section 9 of the ARPA, without the express written permission of Reclamation or the Service.

d. REVIEWING IMPLEMENTATION OF THE AGREEMENT

(1) No later than one year after execution of this Agreement, and by the anniversary date of such execution each year thereafter, until the signatory parties to this Agreement agree in writing that its terms have been

fulfilled, Reclamation assisted by the Service, will prepare and provide to all parties to this Agreement, and to each Indian tribe involved in any action covered by this Agreement, a written report that includes, but is not necessarily limited to the following:

(a) A narrative that indicates how many actions were undertaken and that describes and discusses how and with what results, the requirements of Stipulations III. - V., inclusive, were met for each action;

(b) An assessment of the effectiveness of this Agreement;

(c) A discussion of any problems or unexpected issues encountered during the year;

(d) Any changes that Reclamation or the Service believe should be made in implementing this Agreement.

The reviewing parties shall have 45 days from the date of receipt to provide Reclamation and the Service with comments on the annual report. Reclamation and the Service shall take all comments received into account when considering modifications to this Agreement.

(2) At the request of any signatory, Reclamation or the Service shall hold a consultation meeting to facilitate review and comment on the annual report, or to resolve questions, issues or adverse comments that have been raised by the other signatories or by a member of the public. The signatory parties shall consult to identify other parties who may be invited to attend this meeting.

e. RESOLVING OBJECTIONS

(1) Should any signatory to this Agreement, any Indian tribe, organization or individual, or member of the public object in writing to Reclamation or to the Service regarding the manner in which the terms of this Agreement are carried out, or to any documentation prepared in accordance with and subject to the terms of this Agreement, the RFA shall consult with the objecting party to address the objection. The RFA shall determine a reasonable time frame for this consultation. If resolution is reached within this time frame, the RFA may proceed with its action in accordance with the terms of the resolution. If resolution is not reached within this time frame, the RFA shall forward all documentation relevant to the objection to the Council, including the RFA=s proposed response to the objection. Within 30 days after receipt of all pertinent documentation, the Council shall exercise one of the following options:

(a) Advise the RFA that the Council concurs in its proposed response to the objection, whereupon the RFA will respond to the objection accordingly. Thereafter, the RFA may proceed with its action in a manner consistent with its proposed response; or

(b) Provide the RFA with recommendations, which the RFA will take

into account in reaching a final decision regarding its response to the objection. Upon reaching its final decision, the RFA will notify the objecting party and the Council of its final decision, and may thereafter proceed with its action; or

(c) Notify the RFA that the objection will be referred for comment, pursuant to 36 CFR 800.7(a)(4), and proceed to refer the objection and comment. In this event, the RFA shall ensure that their agency heads are prepared to take the resulting comment into account in accordance with 36 CFR 800.7(c)(4) and Section 110(l) of the NHPA. Thereafter, the RFA shall notify the objecting party and the Council of its final decision regarding the objection ,and may thereafter proceed with its action.

(2) Should the Council not exercise one of the foregoing options within 30 days after receipt of all pertinent documentation, the RFA may assume the Council=s concurrence in its proposed response to the objection, advise the objecting party of that response and proceed with its action in a manner consistent with that response.

(3) Disputes pertaining to the NRHP eligibility of cultural resources covered by this Agreement shall be addressed through consultation among the signatories. If such consultation fails to resolve the dispute within a time frame deemed reasonable by the RFA, the dispute will be addressed by the RFA in accordance with 36 CFR ' 800.4(c)(2).

f. AMENDMENT AND TERMINATION

(1) If any signatory believes that this Agreement should be amended, that signatory may at any time propose amendments, whereupon the signatories will consult to consider the amendment pursuant to 36 CFR ' 800.6(c)(7) and 800.6(c)(8). This Agreement may be amended only upon the written concurrence of the signatory parties.

(2) Any signatory party may terminate this Agreement. Termination of this Agreement shall proceed in accordance with the applicable provisions of 36 CFR Part 800.

(3) If this Agreement is terminated and the RFAs elect to proceed with the Undertaking, the RFAs shall comply with 36 CFR ' 800.14(b)(2)(v).

g. DURATION OF THE AGREEMENT

This Agreement will remain in effect for a period of 20 years after all the signatory parties have executed it. At the end of this time period, the Agreement will become null and void, unless it is extended by written agreement of the signatory parties. Not later than 6 months prior to the expiration of the Agreement the RFAs will notify all other parties to the Agreement of its pending expiration and, if the parties choose to continue considering the Undertaking, the RFAs shall reinitiate review of the Undertaking in accordance with 36 CFR Part 800.

h. EFFECTIVE DATE

This Agreement shall take effect when it has been executed by all of the signatory parties.

EXECUTION of this Programmatic Agreement by Reclamation, the Service, the Bureau, the Tribe, the SHPO and the Council and implementation of its terms, evidence that Reclamation, the Service, the Bureau and the Tribe have afforded the Council a reasonable opportunity to comment on the implementation of the alternatives evaluated in the Trinity EIS/R and its effects on historic properties, and that Reclamation, the Service, the Bureau and the Tribe have taken into account the effects of each action comprising implementation of the Trinity River Mainstem Fishery Restoration program on historic properties.

APPENDIX E

Mitigation Monitoring and Reporting Program

Appendix E
Draft Mitigation Monitoring And Reporting Program

Channel Rehabilitation and Sediment Management for Remaining Phase 1 and Phase 2 Sites

June 2009

Project Proponent and NEPA Lead Agency
U. S. Department of the Interior
Bureau of Reclamation– Trinity River Restoration Program
P. O. Box 1300
1313 Main Street
Weaverville, CA 96093

California Lead Agency for CEQA
North Coast Regional Water Quality Control Board
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403

NEPA Cooperating Agencies
U. S. Department of Interior – Bureau of Land Management
Redding Field Office
U. S. Department of Agriculture – United States Forest Service
Shasta-Trinity National Forest

NEPA Cooperating Tribes
Hoopa Valley Tribe
Yurok Tribe

Applicant's Consultant
North State Resources, Inc

Draft Mitigation Monitoring and Reporting Program

Introduction

This document comprises the Draft Mitigation Monitoring and Reporting Program (MMRP) for the Trinity River Restoration Program Channel Rehabilitation and Sediment Management for Remaining Phase 1 and Phase 2 Sites (project). The purpose of providing the MMRP as a stand-alone document in the Draft Master Environmental Impact Report – Environmental Assessment/Draft Environmental Impact Report (Draft MEIR – EA/DEIR) is to make clear to the reader the mitigation responsibilities of the Bureau of Reclamation (Reclamation), and Regional Water Quality Control Board – North Coast Region (Regional Water Board) in implementing the project. The mitigation measures listed herein are required by law or regulation and will be adopted by the Regional Water Board as part of the overall project approval.

Mitigation is defined by both the California Environmental Quality Act (CEQA) – Section 15370 and the National Environmental Policy Act (NEPA) as a measure which:

- Avoids the impact altogether by not taking a certain action or parts of an action
- Minimizes impacts by limiting the degree or magnitude of the action and its implementation
- Rectifies the impact by repairing, rehabilitating, or restoring the impacted environment
- Reduces or eliminates the impact over time by preservation and maintenance operations during the life of the project
- Compensates for the impacts by replacing or providing substitute resources or environments

The mitigation program identified in the MMRP to reduce potential project impacts consists of mitigation measures, project design elements, and construction criteria and methods. Project design elements and construction criteria and methods provided in this MMRP have been identified in Chapter 2, Project Description and Alternative Development of the Draft MEIR – EA/Draft EIR. Mitigation measures provided in this MMRP have

been identified in Chapter 4, Environmental Impacts and Mitigation Measures of the Draft MEIR – EA/Draft EIR, as feasible and effective in mitigating project-related environmental impacts.

This MMRP includes the discussions on the following: legal requirements, intent of the MMRP, development and approval process for the MMRP, the authorities and responsibilities associated with the implementation of the MMRP, a description of the mitigation summary table, project design elements, construction criteria and methods, and resolution of noncompliance complaints.

Legal Requirements Intent of the Mitigation Monitoring and Reporting Program

The legal basis for the development and implementation of the MMRP lies within both CEQA (including the California Public Resources Code) and NEPA. Sections 21002 and 21002.1 of the California Public Resources Code state:

- Public agencies are not to approve projects as proposed if there are feasible alternatives or feasible mitigation measures available that would substantially lessen the significant environmental effects of such projects; and

- Each public agency shall mitigate or avoid the significant effects on the environment of projects that it carries out or approves whenever it is feasible to do so.

- Section 21081.6 of the California Public Resources Code further requires that: the public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation.

- The monitoring program must be adopted when a public agency makes its findings under CEQA so that the program can be made a condition of project approval in order to mitigate significant effects on the environment. The program must be designed to ensure compliance with mitigation measures during project implementation to mitigate or avoid significant environmental effects.

NEPA 40 CFR Sections 1502.14f requires:

- Agencies shall include appropriate mitigation measures not already included in the proposed action or alternatives

Intent Of The Mitigation Monitoring And Reporting Program

The MMRP is intended to satisfy the requirements of CEQA as they relate to the project. It is anticipated to be used by Reclamation and Regional Water Board staff, participating agencies, project contractors, and mitigation monitoring personnel during implementation of the project.

The primary objective of the MMRP is to ensure the effective implementation and enforcement of adopted mitigation measures and permit conditions. The MMRP will provide for monitoring of construction activities as needed, on-site identification and resolution of environmental problems, and proper reporting to lead agency staff.

Development And Approval Process

The timing elements for implementing mitigation measures and the definition of the approval process has been provided in detail through this MMRP to assist staff from Reclamation and the Regional Water Board by providing the most usable monitoring document possible.

Authorities And Responsibilities

Reclamation, functioning as the Trinity River Restoration Program (TRRP), will have the primary responsibility for the execution and proper implementation of the MRRP. The Regional Water Board may provide Reclamation with support, as warranted. Reclamation will be responsible for the following activities:

- Coordination of monitoring activities
- Management of the preparation and filing of monitoring compliance reports

- Maintenance of records concerning the status of all approved mitigation measures

Summary Of Monitoring Requirements

Table E-1, which follows, summarizes the mitigation measures and associated monitoring requirements proposed for the project. These mitigation measures are presented in the same form as originally prescribed in Chapter 4 of the Draft MEIR – EA/Draft EIR, Environmental Impacts and Mitigation Measures. The mitigation measures are organized by environmental issue area (i.e., Land Use, Water Quality, etc.) for both the Proposed Project and Alternative 1. Table E-1 is comprised of the following four columns:

- **Mitigation Measure:** Lists the mitigation measures identified for each significant impact discussed in the Draft MEIR-EA/Draft EIR for the project. The mitigation numbering system used in the Draft MEIR-EA/Draft EIR is carried forward in this MMRP.

- **Timing/Implementation:** Indicates at what point in time or project phase the mitigation measure will need to be implemented.

- **Responsible Parties (tasks):** Documents which agency or entity is responsible for implementing a mitigation measures and what, if any, coordination is required (e.g., approval from Caltrans). If more than one party has responsibility under a given mitigation measure, the tasks of each individual party is identified parenthetically (e.g., "implementation" or "monitoring").

- **Verification:** Provides spaces to be initialed and dated by the individual responsible for verifying compliance with each specific mitigation measure.

Resolution Of Noncompliance Complaints

Any person or agency may file a complaint that states noncompliance with the mitigation measures that were adopted as part of the approval process for the project. The complaint shall be directed to Reclamation, via the TRRP office (P.O. Box 1300, 1313 South Main Street, Weaverville, CA 96093), in written form providing detailed information on the purported violation. Reclamation shall conduct an investigation and determine the validity of the complaint. If noncompliance with a mitigation measure is

verified, Reclamation shall take the necessary action(s) to remedy the violation. The complaint shall receive written confirmation indicating the results of the investigation or the final corrective action that was implemented to response to the specific noncompliance issue.

Table E-1. Summary of Mitigation Monitoring Requirements

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
4.2 Land Use			
Impact 4.2-3: Implementation of the project may affect the availability of a locally important mineral resource recovery site.			
4.2-3a Reclamation shall provide notice of the project to landowners within the Remaining Phase 1 and Phase 2 sites and to individuals with mining claims within the project sites. Notice will be given prior to project implementation and will include a schedule of river access closure.		Reclamation	
4.3 Geology, Fluvial Geomorphology, and Soils			
Impact 4.3-2: Construction activities associated with the project could potentially result in increased erosion and short-term sedimentation of the Trinity River.			
4.3-2a Reclamation will implement the following measures during construction activities: ▪ Areas where ground disturbance would occur will be identified in advance of construction and limited to only those areas that have been approved by Reclamation. ▪ All vehicular construction traffic will be confined to the designated access routes and staging areas. ▪ Disturbance will be limited to the minimum necessary to complete all rehabilitation activities. ▪ All supervisory construction personnel will be informed of environmental concerns, permit conditions, and final project specifications.		Reclamation (implementation) Regional Water Board (SWPPP review and approval) BLM (SWPPP review) NFMS (SWPPP review) CDFG (SWPPP review)	
4.3-2b Reclamation will prepare an erosion and sedimentation control plan (Storm Water Pollution Prevention Plan [SWPPP]). Measures for erosion control will be prioritized based on proximity to the river. Reclamation will provide the SWPPP for review by associated agencies (e.g., BLM, the Regional Water Board, NMFS, and CDFG) upon request. Reclamation's project manager will ensure the preparation and implementation of an erosion and sediment control plan prior to the start of construction. The following measures will be used as a guide to develop this plan: ▪ Restore disturbed areas to pre-construction contours to the fullest extent feasible.			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
▪ Salvage, store, and use the highest quality soil for revegetation. ▪ Discourage noxious weed competition and control noxious weeds. ▪ Clear or remove roots from steep slopes immediately prior to scheduled construction. ▪ 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. ▪ Rip feathered edges (and floodplain surfaces where appropriate) to approximately 18 inches deep. The furrowing of the river's edge will remove plant roots to allow mobilization of the bed, but will also intercept sediment before it reaches the waterway. ▪ Spoil sites will be located such that they do not drain directly into a surface water feature, if possible. If a spoil site would 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 revegetated. If work activities take place during the rainy season, erosion control structures must be in place and operational at the end of each construction day.			
Impact 4.3-3: Implementation of the project would interfere with existing, proposed, or potential development of mineral resources.			
4.3-3a Reclamation will implement the following measures during construction: ▪ Areas where ground disturbance would occur will be identified in advance of construction and limited to only those areas that have been approved by Reclamation. ▪ All vehicular construction traffic will be confined to the designated access routes and staging areas. ▪ Disturbance will be limited to the minimum necessary to complete all rehabilitation activities.		Reclamation (implementation)	

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
▪ All supervisory construction personnel will be informed of environmental concerns, permit conditions, and final project specifications.			
4.3-3b Reclamation will prepare an erosion and sedimentation control plan (SWPPP) as stipulated in Mitigation Measure 4.3-2b.			
4.3-3c Reclamation will coordinate with private land owners and owners of active mining claims to develop site-specific measures that can be implemented to avoid, or lessen project-related impacts to mineral resources associated with the Trinity River and its tributaries.			
4.5 Water Quality			
Impact 4.5-1: Construction of the project could result in short-term temporary increases in turbidity and total suspended solids levels during construction.			
4.5-1a The water quality objective for turbidity levels in the Trinity River, as listed in the Basin Plan for the North Coast Region (North Coast Regional Water Quality Control Board 2007), is summarized below. ▪ Turbidity levels shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof. ▪ Due to the nature of the proposed restoration activities and the clarity of the Trinity River during low flow conditions, the Regional Water Board has determined that an allowable zone of turbidity dilution is appropriate and necessary in order for Trinity River restoration activities to be accomplished in a meaningful, timely, and cost-effective manner that fully protects beneficial uses without resulting in a violation of the water quality objective for turbidity. ▪ Project activities that occur in areas outside of the active river channel will not increase turbidity levels by more than 20 percent above naturally occurring background levels. During in-river construction activities and until the first extended period of post-construction high flow (i.e., flows of at least 6,000 cfs inundate the project areas and floodplain for a minimum of 7 days) a zone of turbidity dilution within which higher percentages would be tolerated will be defined in discharge permits as the full width of the river channel within 500 linear feet downstream of any project activity that			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
increases naturally occurring background levels, provided that all other required controls and appropriate BMPs for sediment and turbidity control are in place and downstream beneficial uses are also fully protected. When naturally occurring background levels are less than or equal to 20 NTUs, turbidity levels immediately downstream of the zone of turbidity dilution shall not exceed 20 NTUs. If naturally occurring background levels are greater than 20 NTUs, turbidity levels immediately downstream of the 500 linear foot zone of dilution shall not be increased by more than 20 percent above the naturally occurring background level.			
4.5-1b To ensure that turbidity levels do not exceed the thresholds described above (4.5-1a) during in-river 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-river 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-river 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 NTU at 500 feet downstream from construction 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.			
4.5-1c Fill gravels used on the streambeds, stream banks, and river crossings 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. Washed gravel will pass Caltrans cleanliness test #227 with a value of 85 or greater.			
4.5-1d Reclamation will prepare and implement a Storm Water Pollution Prevention Plan (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			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
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.			
4.5-1e To minimize the potential for increases in turbidity and suspended sediments entering the Trinity River as a result of access routes (e.g., roads), 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 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, including roadside ditches that might otherwise deliver fine sediment to stream channels. ▪ Decompact or rip floodplain areas so that surfaces are permeable and no surface water runoff occurs.			
Impact 4.5-2: Construction of the project could result in short-term temporary increases in turbidity and total suspended solids levels following construction.			
4.5-2a Turbidity increases associated with project activities will not exceed the water quality objectives for turbidity in the Trinity River basin (North Coast Regional Water Quality Control Board 2007).			
4.5-2b To ensure that turbidity levels do not exceed the threshold following construction, Reclamation will monitor turbidity and total suspended solids during and after representative rainfall events to determine the effect of the project on Trinity River water quality. At a minimum, field turbidity measurements will be collected whenever a visible increase in turbidity is observed. ▪ If increases in turbidity and total suspended solids are observed as a result of erosion from constructed features, field turbidity measurements will be			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
collected 50 feet upstream of a point adjacent to the end of the feature and 500 feet downstream of the feature. ▪ If the grab sample indicates that turbidity levels exceed the established thresholds identified in the Basin Plan, the Regional Water Board will be notified. The need to implement erosion control measures for turbidity that is expected to result from overland river flows (versus surface run-off) will be evaluated with Regional Water Board staff to determine if remediation measures are needed.			
4.5-2c To reduce the potential for the access routes to continually contribute soil materials to the Trinity River following project construction, thereby increasing turbidity and total suspended solids in the river, these routes will be stabilized or decommissioned upon completion of work in those areas consistent with the requirements outlined in Chapter 2 (Design Elements and Construction Criteria). Decommissioning is defined as removing those elements of a road that reroute hillslope drainage and present slope stability hazards.			
Impact 4.5-3: Construction of the project could cause contamination of the Trinity River from hazardous materials spills.			
4.5-3a Reclamation will prepare and implement a spill prevention and containment plan in accordance with applicable federal and state requirements.			
4.5-3b Reclamation will ensure that any construction equipment that would come in contact with the Trinity River be inspected daily for leaks prior to entering the flowing channel. External oil, grease, and mud will be removed from equipment using steam cleaning. Untreated wash and rinse water must be adequately treated prior to discharge if that is the desired disposal option.			
4.5-3c Reclamation will ensure that hazardous materials, including fuels, oils, and solvents, not be stored or transferred within 150 feet of the active Trinity River channel. Areas for fuel storage, refueling, and servicing will be located at least 150 feet from the active river channel or within an adequate secondary fueling containment area. 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.			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
Impact 4.5-5: Construction and maintenance of the project could result in the degradation of Trinity River beneficial uses identified in the Basin Plan.			
Water quality Mitigation Measures 4.5-1a-e, 4.5-2a-c, and 4.5-3a-c provide measures to protect the beneficial uses of the Trinity River.			
4.6 Fishery Resources			
Impact 4.6-1: 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.			
4.6-1a The proposed construction schedule avoids in-channel work during the time period that could affect spawning spring- and fall-run Chinook salmon, coho salmon, and steelhead, or their embryos once in the gravel. As directed by the 2000 Biological Opinion, Reclamation will ensure that all in-channel construction activities are conducted during late-summer, low-flow conditions (e.g., July 15–September 15).		Reclamation (implementation)	
4.6-1b Alluvial material used for coarse sediment additions will be composed of washed, spawning-sized gravels (3/8- to 5-inches diameter) 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. Washed gravel will pass Caltrans cleanliness test #227 with a value of 85 or greater.			
Impact 4.6-2: 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.			
4.6-2a The water quality objective for turbidity levels in the Trinity River, as listed in the Basin Plan for the North Coast Region (North Coast Regional Water Quality Control Board 2007), is summarized below. ▪ Turbidity levels shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof. ▪ Due to the nature of the proposed restoration activities and the clarity of			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
the Trinity River during low flow conditions, the Regional Water Board has determined that an allowable zone of turbidity dilution is appropriate and necessary in order for Trinity River restoration activities to be accomplished in a meaningful, timely, and cost-effective manner that fully protects beneficial uses without resulting in a violation of the water quality objective for turbidity. ▪ Project activities that occur in areas outside of the active river channel will not increase turbidity levels by more than 20 percent above naturally occurring background levels. During in-river construction activities and until the first extended period of post-construction high flow (i.e., flows of at least 6,000 cfs inundate the project areas and floodplain for a minimum of 7 days) a zone of turbidity dilution within which higher percentages would be tolerated will be defined in discharge permits as the full width of the river channel within 500 linear feet downstream of any project activity that increases naturally occurring background levels, provided that all other required controls and appropriate BMPs for sediment and turbidity control are in place and downstream beneficial uses are also fully protected. When naturally occurring background levels are less than or equal to 20 NTUs, turbidity levels immediately downstream of the zone of turbidity dilution shall not exceed 20 NTUs. If naturally occurring background levels are greater than 20 NTUs, turbidity levels immediately downstream of the 500 linear foot zone of dilution shall not be increased by more than 20 percent above the naturally occurring background level.			
4.6-2b To ensure that turbidity levels do not exceed the thresholds described above (4.6-2a) during in-river 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-river 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-river 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 NTU at 500 feet downstream from construction 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			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
BMPs until turbidity levels are at or below 20 NTU.			
4.6-2c Fill gravels used on the streambeds, stream banks, and river crossings 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. Washed gravel will pass Caltrans cleanliness test #227 with a value of 85 or greater.			
4.6-2d Reclamation will prepare and implement a Storm Water Pollution Prevention Plan (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.			
4.6-2e To minimize the potential for increases in turbidity and suspended sediments entering the Trinity River as a result of access routes (e.g., roads), 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 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, including roadside ditches that might otherwise deliver fine sediment to stream channels. ▪ Decompact or rip floodplain areas so that surfaces are permeable and no surface water runoff occurs.			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
Impact 4.6-3: Construction activities associated with the project could potentially result in the accidental spill of hazardous materials that could adversely affect fishes, including the federally and state listed coho salmon.			
4.6-3a Construction specifications will include the following 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: ▪ Equipment and materials will be stored away from wetland and surface water features. ▪ 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. ▪ 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.		Reclamation (implementation)	
Impact 4.6-4: Construction activities associated with the project could result in the mortality of rearing fishes, including the federally and state listed coho salmon.			
4.6-4a To avoid impacts to spawning and incubating salmonids, instream work will only occur between July 15 and September 15.			
4.6-4b To avoid or minimize potential injury and mortality of fish during riverine activities (e.g. removal of grade control structures, channel crossings, addition and grading of coarse sediment), equipment will be operated slowly and deliberately to alert and scare adult and juvenile salmonids away from the work area.			
4.6-4c Reclamation will minimize potential injury and mortality of fish during the use of low-flow channel crossings. This will be accomplished by minimizing vehicle traffic and by operating equipment and vehicles slowly and deliberately to alert and scare adult and juvenile salmonids away from the crossing area, or by having a person wade ahead of equipment to scare fish away from the crossing area.			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
4.6-4d To avoid or minimize potential injury and mortality of fish during excavation and placement of fill materials within the active low-flow channel, equipment will be operated slowly and deliberately to alert and scare adult and juvenile salmonids away from the work area. Reclamation will ensure that before submerging an excavator bucket or laying gravel below the water surface, the excavator bucket will be operated to "tap" the surface of the water, or a person will wade ahead of fill placement equipment to scare fish away from the work area. To avoid impacts to mobile life stages of salmonids that may be present in the water column, the first layers of clean gravel that are being placed into the wetted channel will be added slowly and deliberately to allow fish to move from the work area.			
4.6-4e To avoid impacts to juvenile salmonids during high flow gravel injections, gravel will only be injected in select locations where water velocities are too high, and juvenile salmonids would not be expected to be holding.			
4.6-4f Monitoring of the constructed inundation surfaces for salmon fry stranding will be performed by a qualified fishery biologist immediately after recession of flood flow events designated as a 1.5- year or less frequent event (i.e., $Q \geq$6,000 cfs) for a period of 3 years following construction. These flows, and associated fry stranding surveys, would typically occur between January and May. If substantial stranding is observed, Reclamation will take appropriate measures to return stranded fishes to river habitats and to subsequently modify the constructed surfaces prior to the next managed flow release to reduce the likelihood of future occurrences of fry stranding.		Reclamation (implementation)	
Impact 4.6-5: Implementation of the project would result in the permanent and temporary loss of shaded riverine aquatic habitat (SRA) for anadromous salmonids.			
4.6-5a 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 marked areas on a regular basis throughout the construction phase.		Reclamation (implementation)	

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
4.6-5b Reclamation will continue to implement the Riparian Revegetation and Monitoring Plan during Proposed Project implementation. The plan acknowledges that the ultimate goals of the TRRP include enhancement and maintenance of functional riparian habitat and no net-loss of riparian habitat and jurisdictional wetlands within channel rehabilitation site boundaries and generally throughout the 40-mile reach of the Trinity River below the TRD.			
4.6-5c Reclamation will initiate a 10-year mitigation monitoring program after the first growing season following project implementation. After a period of 3 years, the need for additional riparian habitat and wetland enhancement will be evaluated. At that time, Reclamation, in consultation with the USACE, Regional Water Board, and CDFG, will determine whether there is a need to further enhance or create additional areas of riparian habitat or jurisdictional wetlands within the project boundary so that there will be no net loss of riparian habitat after a 10-year monitoring period. In addition, wetlands will be redelineated 5 years post-project implementation to ensure no net loss of wetland habitat. Riparian habitat reporting 3 years after project implementation and wetland delineation 5 years after implementation will provide Reclamation with needed data in a timely fashion to take additional pro-active measures towards meeting the goals of no net loss of riparian and jurisdictional wetland habitat within Project site boundaries after 10 years.		Reclamation (implementation)	
Impact 4.6-6: Implementation of the project would result in fish passage being temporarily impaired during the in-stream construction phase.			
4.6-6a Low water crossings will only be constructed and used between July 15 and September 15. Fill gravels used on the low-water crossings, streambeds, and stream banks will be composed of washed, spawning-sized gravels from a local Trinity 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. Washed gravel will pass Caltrans cleanliness test #227 with a value of 85 or greater. Abutment and embankment materials used for bridges will be native alluvium obtained from within the boundaries of the Remaining Phase 1 or Phase 2 sites.		Reclamation (implementation)	
4.6-6b Reclamation will construct the low-flow channel crossings to allow adequate depths and velocities for adult and juvenile salmonids to pass safely. Flows associated with storm events are not considered critical because the width and hydrologic conditions associated with low-flow channel crossings in			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
the Trinity River are not considered to limit fish passage at elevated flows and would be comparable to hydrologic conditions in local riffle-and-run features. For Trinity River low-flow channel crossings at base flows, velocities will not exceed 2 feet per second to allow for juvenile fish passage and water depths will not be less than 12 inches in two-thirds of the river channel to provide adequate depth for adult salmon and steelhead passage.			
4.6-6c The number of vehicle and equipment crossings of the Trinity River will be minimized.			
4.6-6d Reclamation will not impede the physical features or hydraulic process of the Trinity River in a fashion that would be inconsistent with the 2000 Biological Opinion, or result in a temporary impairment to fish passage related to a bridge.			
4.7 Vegetation, Wildlife, and Wetlands			
Impact 4.7-1: Construction activities associated with the project could result in the loss of jurisdictional waters, including wetlands.			
4.7-1a Prior to the start of construction activities, Reclamation will retain a qualified biologist to identify potential construction access routes to ensure that these features avoid and/or minimize to the fullest extent impacts to jurisdictional 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 marked areas on a regular basis throughout the construction phase.		Reclamation (implementation)	
4.7-1b Reclamation will continue to implement the Riparian Revegetation and Monitoring Plan during Proposed Project implementation. The plan acknowledges that the ultimate goals of the TRRP include enhancement and maintenance of functional riparian habitat and no net-loss of riparian habitat and jurisdictional wetlands both within channel rehabilitation site boundaries and generally throughout the 40-mile reach of the Trinity River below the TRD.			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
4.7-1c Reclamation will initiate a 10-year mitigation monitoring program after the first growing season following project implementation. After a period of 3 years, the need for additional riparian habitat and wetland enhancement will be evaluated. At that time, Reclamation, in consultation with the USACE, Regional Water Board, and CDFG, will determine whether there is a need to further enhance or create additional areas of riparian habitat or jurisdictional wetlands within the project boundary so that there will be no net loss of wetlands at the end of a 5 year period and no net loss of riparian habitat after a 10-year monitoring period. In addition, wetlands will be re-delineated 5 years post-project implementation to ensure no net loss of wetland habitat. Riparian habitat reporting 3 years after project implementation and wetland delineation 5 years after implementation will provide Reclamation with needed data in a timely fashion to take additional pro-active measures towards meeting the goals of no net loss of riparian and jurisdictional wetland habitat within boundaries established for TRRP rehabilitation sites after 10 years.			
Impact 4.7-3: Construction of the project could result in the loss of individuals of a special-status plant species.			
4.7-3a A qualified botanist will conduct a minimum of two pre-construction surveys to determine if special-status plant species occur within the project site. Surveys shall be conducted during the blooming periods of the plants potentially occurring at the site to determine (1) if the species occur and (2) the quality, location, and extent of any populations. If a special-status plants species is found within 250 feet of any proposed disturbance, Mitigation Measures 4.7-3b and 4.7-3c will be implemented.		Reclamation (implementation)	
4.7-3b Prior to the start of disturbance, exclusionary fencing will be erected around the known occurrences. If necessary, a qualified botanist shall be present to assist with locating these special-status plant populations. The exclusionary fencing will be periodically inspected throughout each period of construction and be repaired as necessary.			
4.7-3c If a population cannot be fully avoided, Reclamation will retain a qualified botanist to (1) determine appropriate salvage and relocation measures and (2) implement appropriate measures in coordination with CDFG staff.			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
Impact 4.7-4: Construction activities associated with the project could result in impacts to the state-listed little willow flycatcher.			
4.7-4a Prior to the start of construction, a qualified biologist will conduct a survey of the project site(s) to determine whether suitable nesting habitat for the little willow flycatcher is present. If suitable habitat is present, 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 4.7-4c and 4.7-4d will be implemented.		Reclamation (implementation)	
4.7-4b 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 4.7-4c and 4.7-4d will be implemented.			
4.7-4c A qualified biologist will conduct a minimum of one pre-construction survey for the little willow flycatcher within the project site(s) and a 250-foot buffer around the site(s). The survey will be conducted no more than 15 days prior to the initiation of construction in any given area. The pre-construction survey will be used to ensure that no nests of this species within or immediately adjacent to the project site(s) would be disturbed during project implementation. If an active nest is found, CDFG will be contacted prior to the start of construction to determine the appropriate mitigation measures.			
4.7-4d 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.			
Impact 4.7-5: Construction activities associated with the project could result in impacts to the foothill yellow-legged frog.			
4.7-5a If any construction in the Trinity River channel will occur prior to August 1 of any construction season, a pre-construction survey for yellow-		Reclamation (implementation)	

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
legged frog larvae and/or eggs will be conducted by a qualified biologist. This survey would need to 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 outside of the construction boundary.			
4,7-5b In the event that a yellow-legged frog is observed within the construction boundary, the contractor will temporarily halt in-stream construction activities until the frog has been moved to a safe location with suitable habitat outside of the construction limits.			
4.7-5c Mitigation measures presented in Section 4.5 (Water Quality) for addressing erosion and sedimentation and accidental spills will be fully implemented to mitigate for potential indirect impacts to dispersal habitat for the yellow-legged frog due to sedimentation and accidental spills.			
4.7-5d The mitigation measure associated with the disturbance to riparian habitat (Mitigation Measures 4.7-1a-c) will be fully implemented.			
Impact 4.7-6: Construction activities associated with the project could result in impacts to the western pond turtle.			
4.7-6a A minimum of one survey for 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 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.		Reclamation (implementation)	
4.7-6b Prior to construction in open water habitat, a qualified biologist will trap and move turtles out of the construction area to nearby suitable habitats.			
4.7-6c During construction, in the event that a pond turtle is observed within the construction limits, the contractor will temporarily halt construction activities until the turtle has been moved to a safe location within suitable habitat outside of the construction limits.			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
4.7-6d Mitigation measures presented in section 4.5 (Water Quality) 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.			
4.7-6e The mitigation measure associated with the disturbance to riparian habitat (Mitigation Measures 4.7-1a-c) will be fully implemented.			
Impact 4.7-7: Construction activities associated with the project could result in impacts to nesting California yellow warblers, yellow-breasted chats, and Vaux's swifts.			
4.7-7a Prior to the start of construction, a qualified biologist will conduct a survey of the project site(s) to determine whether suitable nesting habitat for the species is present. If suitable habitat is present, 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 August. If construction occurs outside the breeding season, no further mitigation is necessary. If construction during the breeding season cannot be completely avoided, Mitigation Measures 4.7-7c and 4.7-7d will be implemented.		Reclamation (implementation)	
4.7-7b 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 August. If construction occurs outside the breeding season, no further mitigation is necessary. If construction during the breeding season cannot be completely avoided, Mitigation Measures 4.7-7c and 4.7-7d will be implemented.			
4.7-7c A qualified biologist will conduct a minimum of one preconstruction survey for these species within the project site(s) 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 project site(s) would 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.			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
4.7-7d 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.			
Impact 4.7-8: Construction activities associated with the project could result in impacts to nesting bald eagles and northern goshawk.			
4.7-8a Prior to the start of construction, a qualified biologist will conduct a survey of the project site(s) to determine whether suitable nesting habitat for the species is present. If suitable habitat is present, 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 would be expected. If it is not possible to schedule construction during this time, Mitigation Measures 4.7-8c and 4.7-8d will be implemented.		Reclamation (implementation)	
4.7-8b 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 would be expected. If it is not possible to schedule construction during this Mitigation Measures 4.7-8c and 4.7-8d will be implemented.			
4.7-8c Pre-construction surveys for nesting 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 close enough (i.e., within 500 feet) to the construction area to be disturbed by these activities, the biologist, in consultation with the CDFG, will determine the			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
extent of a construction-free buffer zone to be established around the nest.			
4.7-8d If vegetation is to be removed by 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.			
Impact 4.7-9: Construction activities associated with the project could result in impacts to special-status bats and the ring-tailed cat.			
4.7-9a A pre-construction survey for roosting bats and ring-tailed cats will be conducted prior to the start of construction activities. The survey will be conducted by a qualified biologist. No activities that would result in disturbance to active roosts of special-status bats or dens of ring-tailed cats will proceed prior to completion of the surveys. If no active roosts or dens are found, no further action is needed. Because bats are known to abandon young when disturbed, if a maternity roost is located, a qualified bat biologist will determine the extent of a construction-free zone to be implemented around the roost. If a bat maternity roost or hibernaculum is present, or a ring-tailed cat den is present, Mitigation Measures 4.7-9b and/or 4.7-9c will be implemented. CDFG will also be notified of any active bat nurseries within the disturbance zones.		Reclamation (implementation)	
4.7-9b If an active maternity roost or hibernaculum is found, the project will be redesigned to avoid the loss of the tree or structure occupied by the roost, if feasible. If the project cannot be redesigned to avoid removal of the structure, demolition of that structure will commence before bat maternity colonies form (i.e., prior to March 1) or after young are volant (flying) (i.e., after July 31). The disturbance-free buffer zones described above will be observed during the bat maternity roost season (March 1–July 31). If a non-breeding bat hibernaculum is found in a tree or structure to be razed, the individuals will be safely evicted, under the direction of a qualified bat biologist (as determined by a Memorandum of Understanding with CDFG), by opening the roosting area to allow air to flow through the cavity. Demolition will then follow no sooner than the following day (i.e., there will be no less than one night between initial disturbance for air flow and the demolition). This action will allow bats to leave during dark hours, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight. Trees with roosts that need to			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
be removed will first be disturbed at dusk, just prior to removal that same evening, to allow bats to escape during the darker hours.			
4.7-9c If an active ring-tailed cat nest is found, the project will be redesigned to avoid the loss of the tree occupied by the nest if feasible. If the project cannot be redesigned to avoid removal of the occupied tree, demolition of that tree will commence outside of the breeding season (February 1 to August 30). If a non-breeding den is found in a tree scheduled to be removed, the individuals will be safely evicted under the direction of a qualified biologist. Trees with dens that need to be removed will first be disturbed at dusk, just prior to removal that same evening, to allow ring-tailed cats to escape during the darker hours.			
Impact 4.7-11: Construction activities associated with the project could result in impacts to BLM and USFS sensitive species.			
Mitigation Measures 4.7-4a-c will reduce impacts to the little willow flycatcher to a less-than-significant level. Mitigation Measures 4.7-5a-d will reduce the impacts to the foothill yellow-legged frog to a less-than-significant level. Mitigation Measures 4.7-6a-d will reduce the impacts to the western pond turtle to a less-than-significant level. Mitigation measures 4.7-8a-c will reduce the impacts to the northern goshawk to a less-than-significant level, and Mitigation Measures 4.7-9a-b will reduce the impacts to special-status bat species to a less-than-significant level.		Reclamation (implementation)	
Impact 4.7-13: Implementation of the project could result in the spread of non-native and invasive plant species.			
4.7-13a When using imported erosion control materials (as opposed to rock and dirt berms), use only certified weed-free materials, mulch, and seed.		Reclamation (implementation)	
4.7-13b Preclude the use of rice straw in riparian areas.			
4.7-13c Limit any import or export of fill to materials to those that are known to be weed free.			
4.7-13d 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.			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
4.7-13e 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.			
4.7-13f 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.			
4.8 Recreation			
Impact 4.8-1: Construction associated with the project could disrupt recreation activities such as boating, fishing, and swimming in the Trinity River.			
4.8-1a Reclamation shall provide precautionary signage to warn recreational users of the potential safety hazards associated with project construction activities. Signs and/or buoys shall be placed within and directly adjacent to the project boundaries along the Trinity River in accordance with the requirements specified in Title 14, Article 6 of the California Code of Regulations. Notification signs shall be posted at public river access areas within the project area managed by BLM, STNF, and DFG (e.g., Bucktail River Access, Steel Bridge Campground, Douglas City Campground, Indian Creek River Access, Junction City Campground). Additionally, public notification of proposed project construction activities and associated safety hazards shall be circulated in the local *Trinity Journal* newspaper prior to the onset of project construction.		Reclamation (implementation)	
4.8-1b Reclamation will repair and/or replace any facilities associated with Remaining Phase 1 or Phase 2 sites that are impacted by project activities. This measure would include installation of interpretive signage consistent with the requirements of the STNF and BLM. Preconstruction meetings between Reclamation and landowners/land managers will identify the amount of			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
vegetative screening to be retained at each recreation site within the project area.			
Impact 4.8-2: Construction of the project could result in an increased safety risk to recreational users or resource damage to recreational lands within the project boundaries.			
Implementation of Mitigation Measures 4.8-1a-b, which provide precautionary signage and/or buoys adjacent to project boundaries and public notice at river access sites, would make this impact less than significant.		Reclamation (implementation)	
Impact 4.8-3: Construction activities associated with the project could lower the Trinity River's aesthetic values for recreationists by increasing turbidity levels in the Trinity River.			
4.8-3a The water quality objective for turbidity levels in the Trinity River, as listed in the Basin Plan for the North Coast Region (North Coast Regional Water Quality Control Board 2007), is summarized below. ▪ Turbidity levels shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof. ▪ Due to the nature of the proposed restoration activities and the clarity of the Trinity River during low flow conditions, the Regional Water Board has determined that an allowable zone of turbidity dilution is appropriate and necessary in order for Trinity River restoration activities to be accomplished in a meaningful, timely, and cost-effective manner that fully protects beneficial uses without resulting in a violation of the water quality objective for turbidity. ▪ Project activities that occur in areas outside of the active river channel will not increase turbidity levels by more than 20 percent above naturally occurring background levels. During in-river construction activities and until the first extended period of post-construction high flow (i.e., flows of at least 6,000 cfs inundate the project areas and floodplain for a minimum of 7 days) a zone of turbidity dilution within which higher percentages would be tolerated will be defined in discharge permits as the full width of the river channel within 500 linear feet downstream of any project activity that increases naturally occurring background levels, provided that all other required controls and appropriate BMPs for sediment and turbidity control are in place and downstream beneficial uses are also fully protected.			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
When naturally occurring background levels are less than or equal to 20 NTUs, turbidity levels immediately downstream of the zone of turbidity dilution shall not exceed 20 NTUs. If naturally occurring background levels are greater than 20 NTUs, turbidity levels immediately downstream of the 500 linear foot zone of dilution shall not be increased by more than 20 percent above the naturally occurring background level.			
4.8-3b To ensure that turbidity levels do not exceed the thresholds described above (4.8-3a) during in-river 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-river 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-river 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 NTU at 500 feet downstream from construction 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.			
4.8-3c Fill gravels used on the streambeds, stream banks, and river crossings 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. Washed gravel will pass Caltrans cleanliness test #227 with a value of 85 or greater.			
4.8-3d Reclamation will prepare and implement a Storm Water Pollution Prevention Plan (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 BMPs and sediment and erosion control devices will be inspected daily during the construction period to ensure that the devices are properly functioning.			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
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 met during stockpiling of materials.			
4.8-3e To minimize the potential for increases in turbidity and suspended sediments entering the Trinity River as a result of access routes (e.g., roads), Reclamation or its contractor 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 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, including roadside ditches that might otherwise deliver fine sediment to stream channels. ▪ Decompact or rip floodplain areas so that surfaces are permeable and no surface water runoff occurs.			
4.10 Cultural Resources			
Impact 4.10-2: Implementation of the proposed project could potentially result in disturbance of undiscovered prehistoric or historic resources.			
4.10-2a Prior to initiation of construction or ground-disturbing activities, all construction workers shall be alerted to the possibility of discovering cultural resources. This includes prehistoric and/or historic resources. Personnel shall be instructed that upon discovery of buried cultural resources, work within 50 feet of the find shall be halted and Reclamation's designated archaeologist shall be consulted. Once the find has been identified, Reclamation shall 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 Programmatic Agreement (PA) and in compliance with the National Historic Preservation Act (NHPA).		Reclamation (implementation)	
4.10-2b If human remains are encountered during construction on non-federal lands, work in that area must be halted and the Trinity County			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
Coroner's Office shall be immediately contacted. If the remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) shall be notified within 24 hours of determination, as required by Public Resources Code, Section 5097. The NAHC shall notify designated Most Likely Descendants, who will provide recommendations for the treatment of the remains within 24 hours. The NAHC will mediate any disputes regarding treatment of remains. 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 U.S.C. 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 shall be made available. Work may continue on other parts of the project while mitigation for historical or unique archaeological resources takes place.			
4.11 Air Quality			
Impact 4.11-1: Construction activities associated with the project could result in an increase in fugitive dust and associated particulate matter (PM_{10} and $PM_{2.5}$) levels.			
4.11-1a 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 be conducted in phases 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.		Reclamation (implementation)	

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
▪ All paved access roads, parking areas, and staging areas will be swept (with water sweepers), as required by Reclamation. ▪ Paved roads will be swept (with water sweepers) if visible soil material is carried onto adjacent private and public roads, as required by Reclamation. ▪ All ground-disturbing activities with the potential to generate dust will be suspended when winds exceed 20 miles per hour, as directed by the North Coast Unified Air Quality Management District (NCUAQMD). ▪ 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.			
Impact 4.11-2: Construction activities associated with the project could result in an increase in construction vehicle exhaust emissions.			
4.11-2a Reclamation will comply with NCUAQMD Rule 104 (3.0) Particulate Matter. This compliance could occur through the use of portable internal combustion engines registered and certified under the state portable equipment regulation (Health & Safety Code 41750 through 41755).		Reclamation (implementation)	
Impact 4.11-3: Construction activities associated with the project and removal of vegetation could result in vegetative materials that managers will decide to burn.			
4.11-3a 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.		Reclamation (implementation)	
4.11-3b 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 via 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			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
be covered and the plastic anchored to preserve a dry ignition point. Dry fuel conditions would minimize smoke emissions. ▪ Slash piles will not be constructed on logs, stumps, on 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.			
4.11-3c Reclamation will notify the public each day that burning is to occur. Signs or personnel will notify residents and traffic on nearby access routes.			
Impact 4.11-5: Construction activities would generate short-term and localized fugitive dust, gas and diesel emissions, and smoke that could affect adjacent residences and schools.			
4.11-5a Construction activity occurring within 300 feet of the Lewiston or Douglas City elementary schools will be limited to the period when school is not in session.		Reclamation (implementation)	
4.11-5b Construction activity occurring within 300 feet of residences will be limited to Monday through Saturday, from the hours of 9 a.m. to 5 p.m.			
4.11-5c Reclamation will notify residences within 300 feet of Phase 2 and Remaining Phase 1 project activity and the Lewiston, Douglas City, and Junction City elementary schools of construction activity located near the schools prior to site construction activities.			
4.11-5d Reclamation will ensure that a notice is posted at/adjacent to the rehabilitation sites, which contains a phone number for the public to contact for concerns related to air quality.			
4.12 Aesthetics			
Impact 4.12-1: Implementation of the project could result in the degradation and/or obstruction of a scenic view from key observation areas.			
Mitigation Measures 4.7-1a-c (Vegetation, Wildlife, and Wetlands), which generally describes the Riparian Revegetation and Monitoring Plan that is required, will be implemented where applicable. The plan acknowledges that the ultimate goals of the TRRP include enhancement and maintenance of		Reclamation (implementation)	

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
functional riparian habitat and no net-loss of riparian habitat and jurisdictional wetlands both within channel rehabilitation site boundaries and generally throughout the 40-mile reach of the Trinity River below the TRD. Visual impacts related to water quality (i.e., the potential for increased turbidity to adversely affect the aesthetic quality of the river) will be mitigated through implementation of mitigation measures 4.8-3a-f.			
4.14 Noise			
Impact 4.14-1: Construction activities associated with the project would result in noise impacts to nearby sensitive receptors.			
4.14-1a Construction activities near residential areas would be scheduled between 7:00 AM and 7:00 PM, 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 for variances in construction activity hours, as needed.		Reclamation (implementation)	
4.14-1b Reclamation will require that all construction equipment be equipped with manufacturer's specified noise muffling devices.			
4.14-1c 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 (i.e., behind existing barriers, storage piles, unused equipment).			
4.15 Public Services and Utilities/Energy			
Impact 4.15-3: Implementation of the project could result in disruption to emergency services or disruption to school bus routes or student travel routes during construction activities.			
4.15-3a 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.		Reclamation (implementation)	
4.15-3b Reclamation will provide 72-hour notice to the local emergency providers and affected users prior to the start of temporary closures.			

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
4.15-3c 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.			
4.16 Transportation/Traffic Circulation			
Impact 4.16-2: Construction activities would generate short-term increases in vehicle trips.			
4.16-2a 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.			
Impact 4.16-3: Implementation of the project would obstruct access to adjacent land uses.			
4.16-3a Reclamation will maintain access throughout the construction period for all private residences adjacent to the project boundary and access roads adjacent to the Trinity River.			
4.16-3b During the construction phase of the project, Reclamation will limit the amount of daily construction equipment traffic by staging construction equipment and vehicles within the project boundary throughout the work period.		Reclamation (implementation)	
Impact 4.16-4: Construction activities would increase wear-and-tear on local roadways.			
4.16-4a Reclamation will perform a pre-construction survey of local federal, state, and private 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 would be entered into prior to construction that would detail the pre-construction conditions and post-construction requirements for potential roadway rehabilitation.		Reclamation (implementation)	

Mitigation Measure	Timing/Implementation	Responsible Parties (task)	Verification (date and initials)
Impact 4.16-5: Construction activities could pose a safety hazard to motorists, bicyclists, pedestrians, or equestrians.			
4.16-5a Reclamation will prepare and implement a traffic control plan that would 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.		Reclamation (implementation)	

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Design Elements

Project design elements are specific design features proposed by the project applicant and incorporated into the project to prevent the occurrence of, or reduce the significance of potential environmental effects. Because project design elements have been incorporated into the project, they do not constitute mitigation measures as defined by CEQA. However, project design elements are identified to ensure that they are included in the MMRP to be developed and implemented as part of the proposed Project. The design elements discussed below are common to the Remaining Phase 1 project sites.

Hydraulics

The Project would occur in areas that FEMA has designated as Special Hazard Zones AE and X, as described in section 4.4 of the Draft MEIR – EA/DEIR. In the Zone AE areas, Reclamation has established a design criterion stating that not only would the County's floodplain ordinance be followed, but implementation of any action alternative would not increase the flood risk for the community. This criterion resulted in a stipulation that coarse sediment and excavated material would be strategically placed to ensure that 100-year flood elevations would not increase over current conditions. As described in Chapter 2 of the Draft MEIR – EA/DEIR, the site boundaries generally conform to the river corridor, bounded by prominent geographic features such as roads and fences.

The design of the activity areas was based on an understanding of the relationships between the flow regime and the hydrologic/hydraulic characteristics of the action alternatives. A fundamental constraint was to *do nothing to increase the flood risk in the general vicinity, and to not raise the water surface elevation above the current FEMA estimated 100-year base flood elevation.* Evaluation of the action alternatives requires comparing estimated seasonal base flows and estimated return-period flows. U.S. Army Corps of Engineer's Hydraulic Engineering Center River Analysis System (HEC-RAS) hydraulic model will be used by the design team during final design activities to predict changes in flood elevations at various points along the project reach. Table 2-4 lists the components of the flow regime, the seasonal or other periodic return intervals, and the flow rates that would be used during final design to ensure that the action alternatives meet the flood constraints described above.

Table 2-4. Estimated Mainstem Trinity River Flow Conditions Used for Alternative Designs

Flow Description	Flow Event	Flow Rate (cfs)
Summer base flow[a] (July 22 to October 15 of each year)	Q_s	450
1.5-year return interval design flow	$Q_{1.5}$	6,000
Estimated FEMA 100-year flow below Rush Creek	Q_{100}	19,300
Estimated FEMA 100-year flow below Grass Valley Creek	Q_{100}	23,600

[a]Base flow defined as cfs from TRD release and accretion flow
Q=return interval

A HEC-RAS model for the Trinity River from Lewiston Dam to the North Fork Trinity River was developed by DWR and provided to the TRRP as part of the administrative record. This model was calibrated to match measured water-surface elevations (WSEs) in the Trinity River within and adjacent to the site boundaries for the design flow. Since WSEs have not been measured (validated) for the 100-year flow, the predicted WSEs are based on the output of the model using carefully selected Manning's "n" values that reflect the overbank conditions at each site. The model incorporates empirical data from surveyed cross-sections, including bathymetric and overbank/floodplain topography in the general vicinity of the project sites. To obtain WSEs for design flows, the model was calibrated using surveyed WSEs and known flows (from gage data). The model was determined to be accurate for the level of evaluation and design required.

There are several significant flow conditions that are important to the design of the action alternatives. Two of the most important flow conditions are summertime low flows of about 450 cfs, which is the release from Lewiston Dam, and the 1.5-year-event (ordinary high water) flow of 6,000 cfs, as measured below Rush Creek. The design team regards the design flows portrayed in Table 2-4 as the "best available information" per FEMA requirements. The FEMA Q100 "near Douglas City" (38,500 cfs) was established in the 1976 USACE report (U.S. Army Corps of Engineers 1976) used by FEMA to develop the current flood insurance rate maps (FIRMs) for the Trinity River. The 6,000 cfs 1.5-year event is based on the ROD flow release. This flow information provides the basis for the designs incorporated into the action alternatives.

The HEC-RAS hydraulic model was developed and calibrated for the existing conditions to calculate the WSE at various flow releases. The calibration was based on water-surface profiles surveyed at low flow and water profiles and points surveyed at different flows, ranging from 4,500 cfs to 10,000 cfs releases from Lewiston Dam. After the model was properly calibrated, various WSEs were determined for the activity areas and used to develop the design topography. The illustrations at the end of this chapter

portray the design topography concepts. The final designs will ensure that constructed surfaces are self-draining in order to minimize potential fish stranding.

Roadway Approaches

The Remaining Phase 1 sites are accessible by vehicles from roads, parking areas, and private driveways. Primary roadways for each of the Remaining Phase 1 sites are described in Chapter 2 of the Draft MEIR – EA/DEIR. Public roads that access these sites are managed by the Bureau of Land Management (BLM), Caltrans, or Trinity County. In addition to Trinity County, the BLM, DWR, and CDFG maintain river access points within the boundaries of these sites.

As an alternative to disposing of excavated materials onsite, materials may be hauled to commercially approved off-site locations. This option would reduce the impact of spoiling excavated materials in upland habitats. Hauling a portion of excavated materials generated under the Project could require substantial truck traffic to off-site locations. The traffic would be staged over the project duration, with up to 36 trucks per day hauling materials offsite, generally between August 1 and October 15. Depending on funding and timing of implementation, these trucks would be used for approximately 5 seasons of construction work. Traffic control measures would be applied in accordance with BLM, Trinity County, and Caltrans requirements.

Recreation Facilities

As appropriate, recreation facilities (e.g., parking areas, access trails, picnic areas) affected by project activities would be returned to the same level of service as those offered prior to project implementation. Reclamation, in consultation with the BLM, Department of Water Resources (DWR), and California Department of Fish and Game (CDFG), could enhance one or more of these facilities consistent with project objectives. Examples of enhancement could be updated signage, surfacing of trails or parking areas with permeable materials, improvements to fishing access locations or establishment of interpretive features intended to increase public awareness of the ongoing efforts to restore the Trinity River.

Drainage

As appropriate, culverts or other drainage structures would be constructed at temporary stream crossings or cross-drainage channels to allow for unimpeded surface drainage.

Rights-of-Way/Easements

Prior to construction, formal realty agreements would be made between Reclamation; land managers for BLM, DWR, and CDFG; and private landowners whose property would be affected. These agreements would clarify the terms and conditions under which Reclamation would work on private property. In addition, these agreements would compensate landowners, based on fair market value of identified construction easements, and would hold property owners harmless during construction activities.

Utilities

There are a number of utility features located within and/or adjacent to the site boundaries. Water intakes, power and telephone poles, and water supply lines parallel or cross the Trinity River in a number of locations. These utilities are considered in the project design, particularly in the area surrounding the Upper Rush Creek and Steel Bridge sites to ensure that service would not be disrupted. Additional information on utilities is provided in sections 4.15 and 7.15 of the Draft MEIR – EA/DEIR.

Construction Criteria and Methods

Project construction criteria and methods are specific features proposed by the project applicant and incorporated into the project to prevent the occurrence of, or reduce the significance of potential environmental effects. Because project construction criteria and methods have been incorporated into the project, they do not constitute mitigation measures as defined by CEQA. However, project construction criteria and methods are identified to ensure that they are included in the MMRP to be developed and implemented as part of the proposed Project. The design elements discussed below are common to the Remaining Phase 1 project sites.

Construction Process Overview

The following provides a general overview of the construction process for the Remaining Phase 1 Project sites. A list of equipment that may be used is provided in section 4.14, Noise of the Draft MEIR – EA/DEIR.

- Vegetation removal would occur as necessary and in compliance with all regulatory requirements. An expected August 1 start date for clearing and grubbing of vegetation would allow completion of nesting by avian species. Alternatively, vegetation may be removed

prior to the start of the nesting season, which is early March for this area.

- Where available, existing roads (activity M) would be used to access the activity areas. New access roads (activity N) and haul routes would be constructed when necessary and restored to a stable condition in accordance with landowner requirements at the completion of the project.

- Excavation would begin on the floodplain to bring it down to grade.

- When specified, finer grained materials (e.g., sand) excavated from riverine activity areas may be stockpiled for use at upland or other riverine activity areas.

- Any riverine treatment areas (e.g., constructed inundation surfaces) that have been compacted from construction activities would be ripped to a depth of approximately 18 inches. The furrows developed by this ripping will ensure that most storm water runoff is retained and filtered on-site so that there is little or no construction-related turbidity. This action would effectively control the release of storm water runoff and turbidity from the site and eliminate the need for use of post-construction sediment-control measures (e.g., silt fences, berms).

- The timing for work adjacent to the river may be affected by river flows. If for some reason the flow is low when construction starts, but it is anticipated that flows will increase before the floodplain can be excavated, excavation would occur at the lower elevations (adjacent to river) first and at the higher floodplain elevations last.

- In-channel activities, including removal of grade control features and introduction of coarse sediment, would generally take place during low flows (July 15 to September 15 as allowed by the coho salmon in-river work window in NMFS' 2000 Trinity River biological opinion) to create immediate point bars and allow mobilization of in-channel materials at high flows. High-flow coarse sediment augmentation would occur during high flows at various rehabilitation sites described previously. Coarse sediment would be introduced at these high flow sites by pushing gravel into the river with heavy equipment or by using a conveyor system to carry the gravel to mid-channel locations (see Figure 2.3j at the end of the chapter). Long-term annual coarse sediment introduction will also replenish material transported downstream from activity areas within the Lewiston-Dark Gulch sites, using either a conveyor or shoreline placement method.

- Alcoves and side channels would be constructed from the existing grade down slope. Measures will be taken (e.g., sediment plug, sandbags) to isolate the work area from flowing water. If necessary, pumps will be used to dewater the excavation to inhibit any sediment from entering the river. Typically, reconnecting these features to the river relies on high-flow events. If necessary, the TRRP will remove materials used to isolate these side channels after they have been constructed.

- Final grading would occur as necessary for all activity areas.

- Demobilization of construction equipment and site clean-up would be accomplished consistent with Reclamation requirements.

- Revegetation would take place during wet conditions (fall/winter) and would generally occur in riparian areas to maximize use by fish and wildlife species. Projects will be designed and implemented to achieve no net loss in riparian vegetation (within the project site boundaries) from planting and natural revegetation consistent with the Draft Riparian Revegetation Plan.

In-River Construction

Where necessary, heavy equipment would be used to grub tree and shrub roots from the edge of the river. Vegetation would often be maintained along the river's active channel to maintain the currently available low-water fish habitat. During root removal, equipment chassis would generally not enter the low-water river channel.

In-river excavation would generally begin at the far edge of the activity area and work back toward the riverbank so that heavy equipment is on dry land or in shallow water.

In-river materials or coffer dams may be used to temporarily redirect flow around work areas and to create platforms from which to work. In addition to providing the means for volitional fish passage (upstream and downstream), at least one navigable (by raft/boat) passage through the activity area would remain open at all times.

Traffic Control/Detour

Short-term traffic control is expected and would be in conformance with the following requirements established by the appropriate jurisdictional authority for mobilization and demobilization of heavy equipment or wide-load vehicles:

- Reclamation will coordinate with jurisdictional agencies to identify specific requirements that shall be included for use of existing roadways and haul routes. Requirements may include seasonal or other limitations or restrictions, payment of excess size and weight fees, and posting of bonds conditioned upon repair of damage.

- Temporary recreation access to BLM, DWR, CDFG, and private recreation facilities within the boundaries of the Remaining Phase 1 sites will be provided in coordination with agencies and landowners. Once construction activities are complete, Reclamation, in consultation with these agencies and landowners, would ensure that these temporary access facilities are rehabilitated consistent with any land use agreements. Temporary access facilities may be closed to the public after the project is completed to prevent damage to private property and public resources.

- Temporary construction access may be required; access routes shall be of a width and load-bearing capacity to provide unimpeded traffic for construction purposes.

Staging Areas

Staging areas and storage facilities for the Proposed Project and Alternative 1 are shown on Figures 2-1a through 2-1f and 2-2a through 2-2f, respectively, and listed in Tables 2-3 and 2-6. These areas would be used throughout the duration of the project activities. Some short-term staging and equipment storage and parking would be needed in the activity areas as the project is implemented.

Air Pollution and Dust Control

Efforts will be made to minimize air pollution and reduce greenhouse gas emissions related to construction operations. Reclamation specifications require that the contractor comply with all applicable air pollution control rules, regulations, ordinances, and statutes. In addition, project contractors will be given educational material about fuel efficiency and the benefits of using vehicles powered by alternative energy sources to enhance awareness of global warming issues. Contractors will also be required to provide recycling bins for on-site waste materials.

Contract documents will also specify that the contractor will be responsible for limiting dust by watering construction site areas used by trucks and vehicles. If water is taken from the river, pump intakes will be in

conformance with criteria established by NMFS and CDFG to prevent impacts to aquatic organisms. Make-up water pumped from the river would pass through a screen at the inlet with maximum ¼-inch openings and a maximum intake velocity of 0.8 fps.

Fire Protection and Prevention

Due to the high fire hazard and history of equipment-caused fires in Trinity County, construction contractors will be required to follow applicable regulations of Public Resource Code 4428-4442 during dry periods to minimize the potential for the initiation and spread of fires from the work site.

Water Pollution Prevention

Reclamation shall implement water pollution control measures that conform to applicable and appropriate permits. Reclamation will require the contractor to use extreme care to prevent construction dirt, debris, storm water run-off, and miscellaneous byproducts from entering the stream. Some key water pollution control measures that shall be implemented by Reclamation are listed below:

- Every reasonable precaution will be exercised and BMPs will be implemented to protect the Trinity River from being polluted by fuels, oils, petroleum byproducts, and other harmful materials and shall conduct and schedule operations to avoid or minimize muddying and silting of the river. Care shall be exercised to preserve roadside vegetation beyond the limits of construction.

- Construction equipment will be cleaned of dirt and grease prior to any in-channel activities. All construction equipment will be inspected daily and maintained to ensure that fuel or lubricants do not contaminate the Trinity River. Spill containment kits will be onsite at all times and, where feasible, berms or other containment methods will be kept in place around the work areas when performing in-channel work.

- Water pollution control work is intended to provide prevention, control, and abatement of water pollution in the Trinity River, and shall consist of constructing those facilities that may be shown on the plans, specified herein or in the special provisions, or directed by the Contracting Officer.

- Furrowing of riparian areas that have been compacted during construction activity is expected to minimize or stop delivery of storm water runoff to the river. As necessary, Reclamation shall provide temporary water pollution control measures, including, but not limited to, dikes, basins, ditches, and straw and seed application, that may become necessary as a result of the contractor's operations.

- Before starting any work on the project, Reclamation shall develop an agency-approved Storm Water Pollution Prevention Plan (SWPPP) to effectively control water pollution during construction of the project. The SWPPP shall show the schedule for the erosion control work included in the contract and for all water pollution control measures Reclamation proposes to take in connection with construction of the project to minimize the effects of the operations on adjacent streams and other bodies of water. Reclamation shall not perform any clearing and grubbing or earthwork on the project until the SWPPP has been accepted by responsible agencies.

- Oily or greasy substances originating from Reclamation's operations shall not be allowed to enter, or be placed where they will later enter, a live stream, soil, or groundwater.

Tentative Schedule

Construction associated with either of the action alternatives cannot begin until the environmental process is completed. In addition, the following must have been completed: the final design, plans, contract specifications, and cost estimates; award of contract(s) for work; hazardous materials site assessments; acquisition of rights-of-way; acquisition of permits; and design approvals from local, state, and federal agencies.

The total construction time for the project (completion of Remaining Phase 1 sites) is anticipated to be 3 to 5 years, with approximately 140 days of construction annually between July 15, 2009, and December 31, 2013. However, the schedule depends on funding and the availability of coarse sediment for in-river placement. Initial in-channel gravel additions would be completed during the summer work season (July 15 to September 15). Prior to, or in conjunction with high spring flows (May), coarse sediment augmentation would occur at the sites illustrated on Figure 1-2.

To minimize impacts to breeding bird habitat, vegetation removal activities would also occur in the early spring before nesting. Surface disturbance activities may be limited during the late spring (May and June), depending on the flow release schedule established for the particular water year. Excavation and other grading activities would typically occur between July 15 and December 1 and prior to the onset of the wet season, as site

conditions permit. Processing of coarse sediment where stockpiles are large (e.g., SM C-7 and C-13 areas) may extend beyond typical work windows, and processing is expected to continue until the quantity of gravel is depleted (>5 years). Any revegetation (planting/seeding) would take place in the wet season (fall/winter) following construction. It is expected that annual spring additions of coarse sediment will continue indefinitely during peak annual releases from Lewiston Dam.

Phase 2 Sites

As described in the Draft MEIR – EA/DEIR, Phase 2 of the Project is conceptual. While the specific timing, location, and extent of these activities have not been fully defined, the nature of these activities is similar to those included in the Remaining Phase 1 sites and previous projects implemented by the Trinity River Restoration Program. The timing and extent of work activities at selected Phase 2 sites would be similar to the schedule described for Remaining Phase 1 sites.

Site-specific information (e.g., biological, physical, and social information) would influence the planning and design efforts at Phase 2 sites. In general, the design elements and construction criteria and methods applied in the planning, design, and implementation of Phase 2 sites will be similar to those described for the Remaining Phase 1 sites in the preceding section of this document.

APPENDIX F

Soils — Remaining Phase 1 and Phase 2 Sites

Appendix F
Soils — Remaining Phase 1 and Phase 2 Sites

SOILS TYPE REPRESENTATIVE OF REMAINING PHASE 1 AND PHASE 2 SITES

MAP UNIT	DESCRIPTION	ACRES	% OF TOTAL AREA
117	BROWNSCREEK-DOUGCITY COMPLEX, 50 TO 75 PERCENT SLOPES	170.324	12.0%
111	BROCKGULCH-DEDRICK-BROWNBEAR COMPLEX, 50 TO 75 PERCENT SLOPES	153.636	10.8%
102	ATTER-DUMPS, DREDGE TAILINGS-XEROFLUVENTS COMPLEX, 2 TO 9 PERCENT SLOPES	142.777	10.0%
217	XEROFLUVENTS-RIVERWASH COMPLEX, 0 TO 5 PERCENT SLOPES	112.698	7.9%
213	XERALFS-XERORTHENTS COMPLEX, 5 TO 50 PERCENT SLOPES	99.529	7.0%
114	BROWNSCREEK GRAVELLY LOAM, 50 TO 75 PERCENT SLOPES	95.688	6.7%
129	CREFORK CLAY LOAM, 15 TO 30 PERCENT SLOPES	43.451	3.0%
171	MARPA-HOOSIMBIM-BAMTUSH COMPLEX, 50 TO 75 PERCENT SLOPES	43.205	3.0%
112	BROWNBEAR-BAMTUSH COMPLEX, 30 TO 50 PERCENT SLOPES	39.572	2.8%
173	MARPA VARIANT-GOULDING-HOLKAT VARIANT COMPLEX, 30 TO 50 PERCENT SLOPES	36.091	2.5%
166	JAFA GRAVELLY LOAM, 2 TO 9 PERCENT SLOPES	34.501	2.4%
186	PARDALOE-GOULDING COMPLEX, 50 TO 75 PERCENT SLOPES	34.02	2.4%
182	MUSSERHILL-WEAVERVILLE COMPLEX, 30 TO 50 PERCENT SLOPES	31.486	2.2%
131	CREFORK-MUSSERHILL COMPLEX, 30 TO 50 PERCENT SLOPES	30.205	2.1%
101	ATTER EXTREMELY GRAVELLY LOAMY SAND, 9 TO 15 PERCENT SLOPES	28.387	2.0%
123	CARRCREEK GRAVELLY LOAM, 0 TO 2 PERCENT SLOPES	28.269	2.0%
218	XERORTHENTS-ROCK OUTCROP COMPLEX, 2 TO 15 PERCENT SLOPES	20.776	1.5%
104	BAMTUSH-BROWNBEAR COMPLEX, 50 TO 75 PERCENT SLOPES	19.378	1.4%
158	HOOSIMBIM-ETSEL COMPLEX, 30 TO 50 PERCENT SLOPES	18.93	1.3%

SOILS TYPE REPRESENTATIVE OF REMAINING PHASE 1 AND PHASE 2 SITES

MAP UNIT	DESCRIPTION	ACRES	% OF TOTAL AREA
152	HAYSUM GRAVELLY LOAM, 5 TO 9 PERCENT SLOPES	15.002	1.1%
146	GOULDING-VITZTHUM-VANVOR COMPLEX, 50 TO 75 PERCENT SLOPES	13.283	0.9%
198	TALLOWBOX-MINERSVILLE COMPLEX, 30 TO 50 PERCENT SLOPES	13.224	0.9%
134	DEMOGUL GRAVELLY LOAM, 50 TO 75 PERCENT SLOPES	12.813	0.9%
147	HAPLOXEROLLS, WARM, 0 TO 2 PERCENT SLOPES	12.609	0.9%
161	HOTAW LOAM, 30 TO 50 PERCENT SLOPES	12.117	0.9%
157	HOOSIMBIM-BAMTUSH-MARPA COMPLEX, 30 TO 50 PERCENT SLOPES	10.869	0.8%
118	CARGENT-DEMOGUL ASSOCIATION, 50 TO 75 PERCENT SLOPES	10.608	0.7%
199	TALLOWBOX-MINERSVILLE COMPLEX, 50 TO 75 PERCENT SLOPES	10.287	0.7%
162	INDLETON-CARIS-HOOSIMBIM COMPLEX, 50 TO 75 PERCENT SLOPES	9.803	0.7%
150	HAYSUM GRAVELLY LOAM, 0 TO 2 PERCENT SLOPES	7.89	0.6%
209	WEAVERVILLE LOAM, 30 TO 50 PERCENT SLOPES	7.654	0.5%
164	JAFA LOAM, 5 TO 15 PERCENT SLOPES	7.486	0.5%
128	CREFORK LOAM, 9 TO 15 PERCENT SLOPES	6.661	0.5%
170	MARPA-HOOSIMBIM COMPLEX, 30 TO 50 PERCENT SLOPES	6.486	0.5%
192	SHEETIRON VARIANT-DEDRICK COMPLEX, 50 TO 75 PERCENT SLOPES	6.363	0.4%
179	MUSSERHILL GRAVELLY LOAM, 15 TO 30 PERCENT SLOPES	6.106	0.4%
156	HOOSIMBIM GRAVELLY LOAM, 30 TO 50 PERCENT SLOPES	5.768	0.4%
207	VITZTHUM-CARGENT COMPLEX, 50 TO 75 PERCENT SLOPES	5.674	0.4%
172	MARPA-VITZTHUM COMPLEX, 50 TO 75 PERCENT SLOPES	5.178	0.4%
142	ETSEL VERY GRAVELLY LOAM, 30 TO 50 PERCENT SLOPES	4.828	0.3%
149	HAYSUM LOAM, 5 TO 9 PERCENT SLOPES	4.731	0.3%
181	MUSSERHILL-WEAVERVILLE COMPLEX, 15 TO 30 PERCENT SLOPES	4.471	0.3%
188	ROCK OUTCROP	4.425	0.3%
133	DEDRICK-ROCK OUTCROP COMPLEX, 50 TO 75 PERCENT SLOPES	4.385	0.3%

SOILS TYPE REPRESENTATIVE OF REMAINING PHASE 1 AND PHASE 2 SITES

MAP UNIT	DESCRIPTION	ACRES	% OF TOTAL AREA
127	CREFORK LOAM, 2 TO 9 PERCENT SLOPES	4.172	0.3%
176	MILLSHOLM-AZULE COMPLEX, 15 TO 30 PERCENT SLOPES	3.99	0.3%
105	BAMTUSH-BROWNBEAR-WEAVERVILLE COMPLEX, 30 TO 75 PERCENT SLOPES	3.339	0.2%
116	BROWNSCREEK-DOUGCITY COMPLEX, 30 TO 50 PERCENT SLOPES	3.276	0.2%
163	JAFA LOAM, 0 TO 5 PERCENT SLOPES	3.264	0.2%
113	BROWNSCREEK GRAVELLY LOAM, 30 TO 50 PERCENT SLOPES	2.931	0.2%
208	WEAVERVILLE LOAM, 9 TO 30 PERCENT SLOPES	2.435	0.2%
216	XERERTS-HAYSUM COMPLEX, 2 TO 5 PERCENT SLOPES	2.24	0.2%
215	XERERTS, 2 TO 15 PERCENT SLOPES	1.647	0.1%
151	HAYSUM GRAVELLY LOAM, 2 TO 5 PERCENT SLOPES	1.588	0.1%
138	DUBAKELLA COBBLY CLAY LOAM, 15 TO 30 PERCENT SLOPES	1.552	0.1%
132	DEDRICK GRAVELLY LOAM, 50 TO 75 PERCENT SLOPES	1.447	0.1%
121	CARIS EXTREMELY GRAVELLY SANDY LOAM, 75 TO 90 PERCENT SLOPES	0.774	0.1%
180	MUSSERHILL GRAVELLY LOAM, 30 TO 50 PERCENT SLOPES	0.706	0.0%
154	HOLKAT-HOOSIMBIM COMPLEX, 50 TO 75 PERCENT SLOPES	0.065	0.0%
201	URBAN LAND-XERALFS COMPLEX, 5 TO 30 PERCENT SLOPES	0.065	0.0%
120	CARIS EXTREMELY GRAVELLY SANDY LOAM, 50 TO 75 PERCENT SLOPES	0.007	0.0%
	Total	1,425.142	100%

APPENDIX G

Special Status Fish Species Life History and Habitat Needs for Anadromous Salmonid Fish in the Trinity River Basin

Appendix G
Special Status Fish Species — Life History and Habitat Needs for Anadromous Salmonid Fish in the Trinity River Basin

Table G-1
Life History and Habitat Needs for Anadromous Salmonid Fish in the Trinity River Basin

Species	Migration	Spawning	Rearing	Habitat Requirements
Spring-run Chinook	Spring – Summer	Early Fall	Winter, Spring, Summer	Adults oversummer in deep, cool river pools. Spawns and rears in mainstem river and tributaries. Requires cool, swift water; clean, loose gravel for spawning; and shallow, slow-moving waters adjacent to higher water velocities for rearing and feeding.
Fall-run Chinook	Fall	Fall	Spring	Spawns and rears in mainstem river and tributaries. Requires cool, swift water; clean, loose gravel for spawning; and shallow, slow-moving waters adjacent to higher water velocities for rearing and feeding.
Winter-run Steelhead	Fall – Winter	February – April	Year-round	Spawns and rears in mainstem river and its tributaries. Requires cool, swift water; clean, loose gravel for spawning; runs and suitable pools in which to rear and over-summer; and clean cobble for refuge from high velocities. Juveniles overwinter for 1–2 or more years.
Summer-run Steelhead	Spring – Summer	February – April	Year-round	Adults ascend river and hold over in deep pools/runs through fall months. Spawns and rears in mainstem river and its tributaries. Requires cool, swift water; clean, loose gravel for spawning; suitable pools and riffles in which to rear and over-summer; and clean cobble for refuge from high velocities. Juveniles overwinter for 1–2 or more years.
Coho	October – December	November – December	Year-round	Spawns and rears in mainstem river and tributaries. Requires cool, swift water; clean, loose gravel for spawning; and suitable pools/runs in which to rear and over-summer. Juveniles prefer backwater/ slackwater areas and pool margins; juveniles overwinter for 1 year.

Source: Leidy and Leidy 1984, Hassler 1987, U.S. Fish and Wildlife Service et al. 2000, Moyle 2002

Table G-2
Life History and Habitat Needs for Non-Salmonid Native Anadromous Fish in the Trinity River Basin

Species	Migration	Spawning	Rearing	Habitat Requirements
Pacific Lamprey	April – July	Spring – Early Summer	Year-round	Spawns and rears in the mainstem and tributaries. Requires cool streams with clean, gravelly bottom for spawning. Developing larvae burrow into silty river-bottom, where they remain for 4–5 years before metamorphosing and emigrating to the ocean.
Green Sturgeon White Sturgeon	February – July	March – July	Year-round	Adults spawn in large, mainstem river channels with cool water. Juveniles inhabit estuarine environments for 4–6 years before emigrating to the open ocean.
Eulachon	March – April	March – April	--	Adults run up into the lower reaches of coastal streams to spawn. Adhesive eggs stick to small gravel/sand/detrital bottom until hatched; larvae are quickly transported downstream to ocean.

Source: U.S. Fish and Wildlife Service et al. 2000, Moyle 2002

Table G-3
Special-Status Fish Species Considered for Analysis

Common Name (Scientific Name)	Status FED/ST	General Habitat	Comments
Green sturgeon *(Acipenser medirostris)*	SSC/SC	Known to spawn in Sacramento, Feather, and Klamath rivers, and juveniles may occur in estuaries. Occurs in San Francisco, San Pablo, and Suisun bays and in the Delta. Prefers to spawn in large cobble; eggs fertilized in relatively high water.	The species may be found in the lower Trinity River, but is not known to inhabit the upper Trinity River. **Project boundaries are outside the known range of the species.**
Pacific lamprey *(Lampetra tridentata)*	NW/--	Spawn in freshwater rivers and streams with juveniles found in slow-moving current, silty bottom habitats; metamorphosed juveniles migrate through estuaries to the ocean.	Observed to spawn in tributaries of the upper river (Deibel 1988); Ammoecetes abundant during spring near the project reach. **The species may occur at the Remaining Phase 1 and Phase 2 sites.**

Table G-3
Special-Status Fish Species Considered for Analysis

Common Name (Scientific Name)	Status FED/ST	General Habitat	Comments
Southern Oregon/ Northern California Coasts ESU coho salmon *(Oncorhynchus kisutch)* Designated critical habitat	T/T	Juveniles prefer deep (≥1 m) pools with dense overhead cover and clear water. Found over a range of substrates from silt to bedrock (Moyle et al. 1995). Trinity River is designated critical habitat and essential fish habitat for the species.	Suitable spawning, rearing, and/or migration corridor habitat exists at a number of the Remaining Phase 1 and Phase 2 sites. **The Remaining Phase 1 and Phase 2 sites are within designated critical habitat for SONCC coho salmon. The species is known to occur at the Remaining Phase 1 and Phase 2 sites.**
Klamath Mts. Province ESU steelhead *(Oncorhynchus mykiss irideus)* (summer/fall- and winter-run races)	NW/SSC	Freshwater rivers and streams (Trinity and Klamath Rivers and their tributaries). Steelhead require cool, swift, shallow water; clean, loose gravel for spawning; and suitable large pools in which to spend the summers (CNDDB, 2002).	Summer-run race is a state species of special concern. Suitable spawning, rearing, and/or migration corridor habitat exists at or near a number of the Remaining Phase 1 and Phase 2 sites. **The species is known to occur at the Remaining Phase 1 and Phase 2 sites**
Upper Klamath-Trinity Rivers ESU Chinook salmon *(Oncorhynchus tshawytscha)* (spring- and fall-run races)	NW/SSC	Freshwater rivers and streams. (Trinity and Klamath Rivers and their tributaries). Chinook salmon require cool streams with deep pools and riffles and gravel or cobble substrate. Trinity River is designated essential fish habitat for the species.	Spring-run race is a state species of special concern. Suitable over-summering, spawning, rearing, and migration corridor habitat exists at or near a number of the Remaining Phase 1 and Phase 2 sites. **The species is known to occur at the Remaining Phase 1 and Phase 2 sites.**

Notes:
Federal (FED) and State (ST) Status Codes:
E = Endangered; T = Threatened; C = Candidate Species; NW = Not Warranted for Listing; SC = Species of Concern; SSC = Species of Special Concern

References

Leidy, R. A., and G. R. Leidy. 1984. *Life stage periodicities of anadromous salmonids in the Klamath River basin, Northwestern California.*

Hassler, T. J. 1987. Species profiles: Life histories and environmental requirements of coastal fishes and invertebrates (Pacific Southwest) – coho salmon. U.S. Fish and Wildlife Service Biological Report 82(11.70).

Moyle, P. B. 2002. *Inland fishes of California*. Berkeley, California: University of California Press.

U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation, Hoopa Valley Tribe, and Trinity County. 2000. Trinity River mainstem fishery restoration final environmental impact statement/environmental impact report. State Clearinghouse No. 1994123009. October 2000.

APPENDIX H

Mitigation Measures Specific to Coho Salmon

Appendix H
Mitigation Measures
Specific to Coho Salmon

Introduction

This document summarizes the mitigation measures for potential impacts to coho salmon (*Oncorhynchus kisutch*) resulting from the activities proposed at the Remaining Phase 1 and Phase 2 sites. The purpose of providing this summary as a stand-alone document is to make clear to the reader the mitigation responsibilities as regards coho salmon of the Bureau of Reclamation (Reclamation), and the Regional Water Board, North Coast Region (Regional Water Board) in implementing the project. The mitigation measures listed herein are required by law or regulation and will be adopted by the Regional Water Board as part of the overall project approval.

Mitigation Measures

1a The proposed construction schedule avoids in-channel work during the period in which it could affect spawning spring- and fall-run Chinook salmon, coho salmon, and steelhead or their embryos once in the gravel. As directed by the 2000 Biological Opinion (National Marine Fisheries Service 2000), Reclamation will ensure that all in-channel construction activities are conducted during late-summer, low-flow conditions (e.g., July 15–September 15).

1b Alluvial material used for coarse sediment additions will be composed of washed, spawning-sized gravels (3/8- to 5-inches diameter) 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. Washed gravel will pass Caltrans cleanliness test #227 with a value of 85 or greater.

2a The water quality objective for turbidity levels in the Trinity River, as listed in the Basin Plan for the North Coast Region (North Coast Regional Water Quality Control Board 2007), is summarized below.

- Turbidity levels shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof.

- Due to the nature of the proposed restoration activities and the clarity of the Trinity River during low flow conditions, the Regional Water Board has determined that an allowable zone of turbidity dilution is appropriate and necessary in order for Trinity River restoration activities to be accomplished in a meaningful, timely, and cost-effective manner that fully protects beneficial uses without resulting in a violation of the water quality objective for turbidity.

- Project activities that occur in areas outside of the active river channel will not increase turbidity levels by more than 20 percent above naturally occurring background levels. During in-river construction activities and until the first extended period of post-construction high flow (i.e., flows of at least 6,000 cfs inundate the project areas and floodplain for a minimum of 7 days) a zone of turbidity dilution within which higher percentages would be tolerated will be defined in discharge permits as the full width of the river channel within 500 linear feet downstream of any project activity that increases naturally occurring background levels, provided that all other required controls and appropriate BMPs for sediment and turbidity control are in place and downstream beneficial uses are also fully protected. When naturally occurring background levels are less than or equal to 20 NTUs, turbidity levels immediately downstream of the zone of turbidity dilution shall not exceed 20 NTUs. If naturally occurring background levels are greater than 20 NTUs, turbidity levels immediately downstream of the 500 linear foot zone of dilution shall not be increased by more than 20 percent above the naturally occurring background level.

2b To ensure that turbidity levels do not exceed the thresholds described above (4.6-2a) during in-river 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-river 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-river 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 NTU at 500 feet downstream from construction 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.

2c Fill gravels used on the streambeds, stream banks, and river crossings 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. Washed gravel will pass Caltrans cleanliness test #227 with a value of 85 or greater.

2d Reclamation will prepare and implement a Storm Water Pollution Prevention Plan (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.

2e To minimize the potential for increases in turbidity and suspended sediments entering the Trinity River as a result of access routes (e.g., roads), 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 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, including roadside ditches, that might otherwise deliver fine sediment to stream channels.

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

3a Construction specifications will include the following 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:

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

- 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.

- 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.

4a To avoid impacts to spawning and incubating salmonids, instream work will only occur between July 15 and September 15.

4b To avoid or minimize potential injury and mortality of fish during riverine activities (e.g. removal of grade control structures, channel crossings, and addition and grading of coarse sediment), equipment will be operated slowly and deliberately to alert and scare adult and juvenile salmonids away from the work area.

4c Reclamation will minimize potential injury and mortality of fish during the use of low-flow channel crossings. This will be accomplished by minimizing vehicle traffic and by operating equipment and vehicles slowly and deliberately to alert and scare adult and juvenile salmonids away from the crossing area, or by having a person wade ahead of equipment to scare fish away from the crossing area.

4d To avoid or minimize potential injury and mortality of fish during excavation and placement of fill materials in the active low-flow channel, equipment will be operated slowly and deliberately to alert and scare adult and juvenile salmonids away from the work area. Reclamation will ensure that before submerging an excavator bucket or laying gravel below the water surface, the excavator bucket will be operated to "tap" the surface of the water, or a person will wade ahead of fill placement equipment to scare fish away from the work area. To avoid impacts to mobile life

stages of salmonids that may be present in the water column, the first layers of clean gravel that are being placed into the wetted channel will be added slowly and deliberately to allow fish to move from the work area.

4e To avoid impacts to juvenile salmonids during high flow gravel injections, gravel will only be injected in select locations where water velocities are too high and juvenile salmonids would not be expected to be holding.

4f Monitoring of the constructed inundation surfaces for salmon fry stranding will be performed by a qualified fishery biologist immediately after recession of flood flow events designated as a 1.5- year or less frequent event (i.e., $Q \geq$6,000 cfs) for a period of 3 years following construction. These flows, and associated fry stranding surveys, would typically occur between January and May. If substantial stranding is observed, Reclamation will take appropriate measures to return stranded fishes to river habitats and to subsequently modify the constructed surfaces prior to the next managed flow release to reduce the likelihood of future occurrences of fry stranding.

5a 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.

5b Reclamation will continue to implement the Riparian Revegetation and Monitoring Plan during Proposed Project implementation. The plan acknowledges that the ultimate goals of the TRRP include enhancement and maintenance of functional riparian habitat and no net-loss of riparian habitat and jurisdictional wetlands within channel rehabilitation site boundaries and generally throughout the 40-mile reach of the Trinity River below the TRD.

5c Reclamation will initiate a 10-year mitigation monitoring program after the first growing season following project implementation. After a period of 3 years, the need for additional riparian habitat and wetland enhancement will be evaluated. At that time, Reclamation, in consultation with the USACE, Regional Water Board, and CDFG, will determine whether there is a need to further enhance or create additional areas of riparian habitat or jurisdictional wetlands within the project boundary so that there will be no net loss of riparian habitat after a 10-year monitoring period. In addition, wetlands will be redelineated 5 years post-project

implementation to ensure no net loss of wetland habitat. Riparian habitat reporting 3 years after project implementation and wetland delineation 5 years after implementation will provide Reclamation with needed data in a timely fashion to take additional pro-active measures towards meeting the goals of no net loss of riparian and jurisdictional wetland habitat within Project site boundaries after 10 years.

6a Low water crossings will only be constructed and used between July 15 and September 15. Fill gravels used on the low-water crossings, streambeds, and stream banks will be composed of washed, spawning-sized gravels from a local Trinity 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. Washed gravel will pass Caltrans cleanliness test #227 with a value of 85 or greater. Abutment and embankment materials used for bridges will be native alluvium obtained from within the boundaries of the Remaining Phase 1 or Phase 2 sites.

6b Reclamation will construct the low-flow channel crossings to allow adequate depths and velocities for adult and juvenile salmonids to pass safely. Flows associated with storm events are not considered critical because the width and hydrologic conditions associated with low-flow channel crossings in the Trinity River are not considered to limit fish passage at elevated flows and would be comparable to hydrologic conditions in local riffle-and-run features. For Trinity River low-flow channel crossings at base flows, velocities will not exceed 2 feet per second to allow for juvenile fish passage and water depths will not be less than 12 inches in two-thirds of the river channel to provide adequate depth for adult salmon and steelhead passage.

6c The number of vehicle and equipment crossings of the Trinity River will be minimized.

6d Reclamation will not impede the physical features or hydraulic process of the Trinity River in a fashion that would be inconsistent with the 2000 Biological Opinion (National Marine Fisheries Service 2000), or result in a temporary impairment to fish passage related to a bridge.

Additional Measures

In addition to the mitigation measures detailed above and in the MEIR, Reclamation shall implement the following measures:

- Reclamation will implement all practical measures to minimize sedimentation/turbidity in the mainstem arising from the proposed mechanical disturbances.

- Reclamation will coordinate with the National Marine Fisheries Service (NMFS) and other resource agency partners to develop construction techniques which might further reduce turbidity impacts.

- Following completion of the ROD addressing the proposed project, Reclamation shall immediately implement the components of the proposed flow schedule (as described in the Trinity River Mainstem Fisheries Restoration (TRMFR) Draft Environmental Impact Statement (DEIS), page 2-19, Table 2-5) equal or less than 6,000 cfs, and implement the entire flow schedule as soon as possible.

- As necessary infrastructure modifications are made, Reclamation shall incrementally implement higher Trinity River flows (consistent with the proposed flow regime).

- Reclamation shall provide two reports per year detailing flows released into the Trinity River below Lewiston Dam; reports will be provided to NMFS by August 31 and March 31 annually.

- Reclamation shall meet with NMFS annually in March to coordinate during the advanced development and scheduling of habitat rehabilitation projects, including mainstem rehabilitation projects, sediment augmentation program, and dredging of sediment collection pools.

- Reclamation shall provide for review of individual mainstem channel rehabilitation projects via the technical team ore equivalent group, and provide a written recommendation to NMFS whether the projects are similar to those described in the TRMFR DEIS and should be covered by the Incidental Take Statement (ITS); if the technical team determines that these projects and their impacts to aquatic habitat are substantially different than described in the TRMFR DEIS and USFWS and Reclamation (2000), the technical team will recommend to NMFS that additional Federal Endangered Species Act (ESA) Section 7 consultation is appropriate.

- Reclamation shall initiate emergency consultation procedures during implementation of any flood control or “safety of dam” releases, pursuant to 50 CFR §402.05.

- Reclamation shall be prepared to make use of auxiliary bypass outlets on Trinity Dam as needed, and pursuant to re-initiation of ESA Section 7 consultation regarding Sacramento River Winter-run Chinook salmon, to protect water quality standards; associated actions may include modification of the export schedule of Trinity Basin diversions to the Sacramento River.

- Reclamation shall make every effort to ensure that the entire Mainstem Trinity River Restoration Program is funded and implemented.

References

North Coast Regional Water Quality Control Board. 2001. Water quality control plan for the north coast region (Basin Plan), as Amended 28 June 2001.

APPENDIX I

California Natural Diversity Database and California Native Plant Society

Appendix I
California Natural Diversity Database and California Native Plant Society

QUAD NAME	SCI NAME	COM NAME	FED STATUS	CAL STATUS	CDFG	CNPS LIST
Dedrick	Rana boylii	foothill yellow-legged frog	None	None	SC	
Dedrick	Oncorhynchus tshawytscha spring-run	spring-run chinook salmon	Threatened	Threatened		
Dedrick	Oncorhynchus mykiss irideus	summer-run steelhead trout	None	None	SC	
Dedrick	Martes americana	American (=pine) marten	None	None		
Dedrick	Martes pennanti (pacifica) DPS	Pacific fisher	Candidate	None	SC	
Dedrick	Actinemys marmorata marmorata	northwestern pond turtle	None	None	SC	
Dedrick	Ancotrema voyanum	hooded lancetooth	None	None		
Dedrick	Helminthoglypta talmadgei	Trinity shoulderband	None	None		
Dedrick	Atractylocarpus flagellaceus	flagella-like atractylocarpus	None	None		2.2
Dedrick	Lewisia cotyledon var. heckneri	Heckner's lewisia	None	None		1B.2
Dedrick	Lewisia cotyledon var. heckneri	Heckner's lewisia	None	None		1B.2
Weaverville	Rana boylii	foothill yellow-legged frog	None	None	SC	
Weaverville	Aquila chrysaetos	golden eagle	None	None		
Weaverville	Oncorhynchus tshawytscha spring-run	spring-run chinook salmon	Threatened	Threatened		
Weaverville	Lepus americanus klamathensis	Oregon snowshoe hare	None	None	SC	
Weaverville	Martes pennanti (pacifica) DPS	Pacific fisher	Candidate	None	SC	
Weaverville	Actinemys marmorata marmorata	northwestern pond turtle	None	None	SC	
Weaverville	Juncus dudleyi	Dudley's rush	None	None		2.3

QUAD NAME	SCI NAME	COM NAME	FED STATUS	CAL STATUS	CDFG	CNPS LIST
Lewiston	Rana boylii	foothill yellow-legged frog	None	None	SC	
Lewiston	Haliaeetus leucocephalus	bald eagle	Delisted	Endangered		
Lewiston	Oncorhynchus tshawytscha spring-run	spring-run chinook salmon	Threatened	Threatened		
Lewiston	Antrozous pallidus	pallid bat	None	None	SC	
Lewiston	Martes pennanti (pacifica) DPS	Pacific fisher	Candidate	None	SC	
Lewiston	Actinemys marmorata marmorata	northwestern pond turtle	None	None	SC	
Lewiston	Eriogonum ursinum var. erubescens	blushing wild buckwheat	None	None		1B.3
Lewiston	Carex hystericina	porcupine sedge	None	None		2.1
Lewiston	Carex vulpinoidea	brown fox sedge	None	None		2.2

CNPS Inventory of Rare and Endangered Plants

Status: Plant Press Manager window with 6 items - Fri, Sep. 12, 2008 07:34 c
ECOLOGICAL REPORT

SCIENTIFIC	FAMILY	LIFE FORM	BLOOMING	COMMUNITIES	ELEVATION	CNPS
Atractylocarpus flagellaceus	Dicranaceae	moss		•Cismontane woodland (CmWld)	100 - 500 meters	List 2.2
Carex hystericina	Cyperaceae	perennial rhizomatous herb	Jun	•Marshes and swamps (MshSw)(streambanks)	610 - 915 meters	List 2.1
Carex vulpinoidea	Cyperaceae	perennial herb	May-Jun	•Marshes and swamps (MshSw)(freshwater) •Riparian woodland (RpWld)	30 - 1200 meters	List 2.2
Eriogonum ursinum var. erubescens	Polygonaceae	perennial herb	Jun-Sep	•Chaparral (Chprl)montane •Lower montane coniferous forest (LCFrs)/rocky, scree, talus	1434 - 1900 meters	List 1B.3
Juncus dudleyi	Juncaceae	perennial herb	Jul-Aug	•Lower montane coniferous forest (LCFrs)(mesic)	455 - 2000 meters	List 2.3
Lewisia cotyledon var. heckneri	Portulacaceae	perennial herb	May-Jul	•Lower montane coniferous forest (LCFrs)(rocky)	225 - 2100 meters	List 1B.2

APPENDIX J

U.S. Fish and Wildlife Service List

Appendix J
U.S. Fish and Wildlife Service List

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Listed/Proposed Threatened and Endangered Species for Trinity County (Candidates Included)

September 11, 2008

Document number: 219709013-174441

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KEY:
(PE) Proposed Endangered Proposed in the Federal Register as being in danger of extinction
(PT) Proposed Threatened Proposed as likely to become endangered within the foreseeable future
(E) Endangered Listed in the Federal Register as being in danger of extinction
(T) Threatened Listed as likely to become endangered within the foreseeable future
(C) Candidate Candidate which may become a proposed species Habitat Y = Designated, P = Proposed, N = None Designated
* Denotes a species Listed by the National Marine Fisheries Service

Type		Scientific Name	Common Name	Category	Critical Habitat
Plants					
		Arabis macdonaldiana	McDonald's rock-cress	E	N
Fish					
		Hypomesus transpacificus	delta smelt	T	Y
	*	*Oncorhynchus kisutch*	S. OR/N. CA coho salmon	T	Y
	*	*Oncorhynchus mykiss*	Northern California steelhead	T	Y
	*	*Oncorhynchus mykiss*	Central Valley steelhead	T	Y
	*	*Oncorhynchus tshawytscha*	winter-run chinook salmon	E	Y
	*	*Oncorhynchus tshawytscha*	CA coastal chinook salmon	T	Y
	*	*Oncorhynchus tshawytscha*	Central Valley fall/late-fall chinook salmon	C	N
	*	*Oncorhynchus tshawytscha*	Central Valley spring-run chinook salmon	T	Y
Amphibians					
		Rana aurora draytonii	California red-legged frog	T	Y
Birds					
		Brachyramphus marmoratus	marbled murrelet	T	Y
		Coccyzus americanus	Western yellow-billed cuckoo	C	N
		Strix occidentalis caurina	northern spotted owl	T	Y
Mammals					
		Martes pennanti	fisher, West Coast DPS	C	N

APPENDIX K

Observed Plant Species Remaining Phase 1 Sites

Appendix K
Observed Plant Species
Remaining Phase 1 Sites

Table K-1. TRRP Sawmill and Upper Rush Creek

Observer(s): Paul Kirk, Colby Boggs

Comments: Surveyed 5/24/07, 6/19/07, and 6/20/07

Scientific Name	Common Name	Family
Achillea millefolium	yarrow	Asteraceae
Achnatherum occidentale	western needlegrass	Poaceae
Aira caryophyllea	silver European hairgrass	Poaceae
Allium amplectens	paper onion	Liliaceae
Alnus rhombifolia	white alder	Betulaceae
Amelanchier alnifolia	Saskatoon service-berry	Rosaceae
Amsinckia menziesii var. intermedia	common fiddleneck	Boraginaceae
Arbutus menziesii	pacific madrone	Ericaceae
Arctostaphylos patula	greenleaf manzanita	Ericaceae
Artemisia douglasiana	mugwort	Asteraceae
Asclepias fascicularis	narrow-leaf milkweed	Asclepiadaceae
Asclepias speciosa	showy milkweed	Asclepiadaceae
Avena barbata	slender wild-oat	Poaceae
Barbarea orthoceras	winter cress	Brassicaceae
Brassica nigra	black mustard	Brassicaceae
Brickellia californica	California brickellbush	Asteraceae
Briza minor	small quaking grass	Poaceae
Brodiaea elegans	harvest brodiaea	Liliaceae
Bromus carinatus	California brome	Poaceae
Bromus diandrus	ripgut brome	Poaceae
Bromus hordeaceus	soft brome	Poaceae
Bromus madritensis	foxtail chess	Poaceae
Bromus tectorum	cheat grass	Poaceae
Calocedrus decurrens	incense cedar	Cupressaceae
Carex barbarae	valley sedge	Cyperaceae
Carex densa	dense sedge	Cyperaceae
Carex nebrascensis	Nebraska sedge	Cyperaceae
Carex nudata	torrent sedge	Cyperaceae
Ceanothus cuneatus	buck brush	Rhamnaceae
Centaurea solstitialis	yellow star-thistle	Asteraceae
Centaurium muehlenbergii	Muhlenberg's centaury	Gentianaceae
Cercis occidentalis	western redbud	Fabaceae
Cercocarpus betuloides	alder-leaf mountain mahogany	Rosaceae
Chamomilla suaveolens	pineapple weed	Asteraceae
Clarkia purpurea	purple clarkia	Onagraceae
Claytonia perfoliata	miner's lettuce	Portulacaceae
Clematis ligusticifolia	virgin's bower	Ranunculaceae
Conium maculatum	poison hemlock	Apiaceae
Cornus glabrata	brown dogwood	Cornaceae
Cornus sericea	American dogwood	Cornaceae
Dichelostemma capitatum	blue dicks	Liliaceae
Dichelostemma volubile	twining ookow	Liliaceae
Eleocharis acicularis	needle spikerush	Cyperaceae
Elymus glaucus	blue wildrye	Poaceae
Elymus multisetus	big squirreltail	Poaceae

Table K-1. TRRP Sawmill and Upper Rush Creek

Observer(s): Paul Kirk, Colby Boggs

Comments: Surveyed 5/24/07, 6/19/07, and 6/20/07

Scientific Name	Common Name	Family
Elytrigia intermedia ssp. intermedia	intermediate wheatgrass	Poaceae
Equisetum arvense	field horsetail	Equisetaceae
Equisetum laevigatum	smooth scouring rush	Equisetaceae
Eriodictyon californicum	yerba santa	Hydrophyllaceae
Eriogonum nudum	naked eriogonum	Polygonaceae
Eriophyllum lanatum	woolly sunflower	Asteraceae
Erodium cicutarium	red-stemmed filaree	Geraniaceae
Eschscholzia californica	California poppy	Papaveraceae
Festuca idahoensis	Idaho fescue	Poaceae
Fraxinus latifolia	Oregon ash	Oleaceae
Galium aparine	goose grass	Rubiaceae
Gayophytum diffusum	diffuse gayophytum	Onagraceae
Grindelia camporum	great valley gumweed	Asteraceae
Heliotropium curassavicum	heliotrope	Boraginaceae
Hieracium albiflorum	white-flowered hawkweed	Asteraceae
Holcus lanatus	common velvet grass	Poaceae
Hordeum marinum ssp. gussoneanum	Mediterranean barley	Poaceae
Hypericum perforatum	Klamathweed	Hypericaceae
Iris hartwegii	Hartweg's iris	Iridaceae
Juncus effusus	common bog rush	Juncaceae
Leontodon taraxacoides	hawkbit	Asteraceae
Lepidium campestre	English pepper-grass	Brassicaceae
Leymus triticoides	creeping wildrye	Poaceae
Linaria genistifolia ssp. dalmatica	dalmatian toad-flax	Scrophulariaceae
Lolium multiflorum	Italian ryegrass	Poaceae
Lolium perenne	perennial ryegrass	Poaceae
Lomatium sp.	lomatium	Apiaceae
Lotus corniculatus	birdfoot trefoil	Fabaceae
Lotus humistratus	short-podded lotus	Fabaceae
Lotus micranthus	small-flowered lotus	Fabaceae
Lupinus albifrons	silver bush lupine	Fabaceae
Lupinus bicolor	miniature lupine	Fabaceae
Luzula parviflora	small-flowered wood rush	Juncaceae
Micropus californicus	slender cottonweed	Asteraceae
Mimulus guttatus	seep monkey flower	Scrophulariaceae
Monardella odoratissima	mountain-monardella	Lamiaceae
Nasella pulchra	purple needlegrass	Poaceae
Navarretia intertexta	interwoven navarretia	Polemoniaceae
Navarretia sp.	navarretia	Polemoniaceae
Panicum acuminatum	witchgrass	Poaceae
Panicum capillare	witchgrass	Poaceae
Petrorhagia dubia	grass pink	Caryophyllaceae
Pinus ponderosa	ponderosa pine	Pinaceae
Pinus sabiniana	gray pine	Pinaceae
Plantago lanceolata	English plantain	Plantaginaceae
Poa annua	annual blue grass	Poaceae
Poa bulbosa	bulbous bluegrass	Poaceae
Poa pratensis	Kentucky blue grass	Poaceae
Polypogon sp.	polypogon	Poaceae
Populus balsamifera ssp. trichocarpa	black cottonwood	Salicaceae
Pseudotsuga menziesii var. menziesii	Douglas-fir	Pinaceae
Quercus chrysolepis	canyon live oak	Fagaceae
Quercus kelloggii	black oak	Fagaceae
Quercus wislizenii	interior live oak	Fagaceae

Table K-1. TRRP Sawmill and Upper Rush Creek

Observer(s): Paul Kirk, Colby Boggs

Comments: Surveyed 5/24/07, 6/19/07, and 6/20/07

Scientific Name	**Common Name**	**Family**
Ranunculus occidentalis	western buttercup	Ranunculaceae
Rhamnus alnifolia	alder-leaved coffeeberry	Rhamnaceae
Rhus trilobata	skunkbrush	Anacardiaceae
Ribes divaricatum	spreading gooseberry	Grossulariaceae
Rosa californica	California rose	Rosaceae
Rubus discolor	Himalayan blackberry	Rosaceae
Rubus ursinus	California blackberry	Rosaceae
Rumex acetosella	common sheep sorrel	Polygonaceae
Rumex crispus	curly dock	Polygonaceae
Sagina apetala	dwarf pearlwort	Caryophyllaceae
Salix exigua	narrow-leaved willow	Salicaceae
Salix gooddingii	Goodding's black willow	Salicaceae
Salix lasiolepis	arroyo willow	Salicaceae
Salix lucida	shining willow	Salicaceae
Sambucus mexicana	blue elderberry	Caprifoliaceae
Sanicula bipinnatifida	purple sanicle/shoe buttons	Apiaceae
Scirpus microcarpus	small-fruited bulrush	Cyperaceae
Scutellaria sp.	skullcap	Lamiaceae
Silene antirrhina	sleepy catchfly	Caryophyllaceae
Spartium junceum	gorse	Fabaceae
Spiraea sp.	spiraea	Rosaceae
Symphoricarpos albus var. laevigatus	snowberry	Caprifoliaceae
Taeniatherum caput-medusae	medussa head	Poaceae
Thysanocarpus radians	spokepod	Brassicaceae
Torilis arvensis	field hedge-parsley	Apiaceae
Toxicodendron diversilobum	poison oak	Anacardiaceae
Tragopogon dubius	goat's beard	Asteraceae
Trifolium campestre	hop clover	Fabaceae
Trifolium dubium	shamrock	Fabaceae
Trifolium hirtum	rose clover	Fabaceae
Triteleia hyacinthina	white brodiaea	Liliaceae
Typha angustifolia	narrow-leaved cattail	Typhaceae
Urtica dioica	stinging nettle	Urticaceae
Verbascum blattaria	moth mullein	Scrophulariaceae
Verbascum thapsus	woolly mullein	Scrophulariaceae
Verbena hastata	blue verbena	Verbenaceae
Vicia villosa	winter vetch	Fabaceae
Vitis californica	California wild grape	Vitaceae
Vulpia microstachys	small fescue	Poaceae
Vulpia myuros	rattail fescue	Poaceae
Wyethia angustifolia	narrowleaf mule ears	Asteraceae

Table K-2. TRRP Lowden Ranch

Observer(s): Colby Boggs, Paul Kirk

Comments: Surveyed on 5/24, 6/18, 6/19, and 8/9/07

Scientific Name	Common Name	Family
Achillea millefolium	yarrow	Asteraceae
Agropyron sp.	wheatgrass	Poaceae
Agrostis stolonifera	creeping bentgrass	Poaceae
Alnus rhombifolia	white alder	Betulaceae
Amsinckia menziesii var. intermedia	common fiddleneck	Boraginaceae
Arbutus menziesii	pacific madrone	Ericaceae
Artemisia douglasiana	mugwort	Asteraceae
Asclepias speciosa	showy milkweed	Asclepiadaceae
Avena barbata	slender wild-oat	Poaceae
Brassica nigra	black mustard	Brassicaceae
Bromus carinatus	California brome	Poaceae
Bromus catharticus	rescue grass	Poaceae
Bromus diandrus	ripgut brome	Poaceae
Bromus hordeaceus	soft brome	Poaceae
Bromus japonicus	Japanese chess	Poaceae
Bromus tectorum	cheat grass	Poaceae
Carex barbarae	valley sedge	Cyperaceae
Carex bolanderi	Bolander's sedge	Cyperaceae
Carex densa	dense sedge	Cyperaceae
Carex fracta	fragile sheath sedge	Cyperaceae
Carex integra	smooth-beaked sedge	Cyperaceae
Carex lanuginosa	wooly sedge	Cyperaceae
Carex nebrascensis	Nebraska sedge	Cyperaceae
Carex sp.	sedge	Cyperaceae
Carex vulpinoidea	fox sedge	Cyperaceae
Ceanothus cuneatus	buck brush	Rhamnaceae
Ceanothus integerrimus	deerbrush	Rhamnaceae
Centaurea solstitialis	yellow star-thistle	Asteraceae
Centaurium muehlenbergii	Muhlenberg's centaury	Gentianaceae
Cercis occidentalis	western redbud	Fabaceae
Cercocarpus betuloides	alder-leaf mountain mahogany	Rosaceae
Cheilanthes sp.	lipfern	Pteridaceae
Cichorium intybus	chicory	Asteraceae
Cirsium vulgare	bull thistle	Asteraceae
Clarkia purpurea	purple clarkia	Onagraceae
Clarkia purpurea ssp.quadrivulnera	purple clarkia	Onagraceae
Claytonia perfoliata	miner's lettuce	Portulacaceae
Clematis ligusticifolia	virgin's bower	Ranunculaceae
Conium maculatum	poison hemlock	Apiaceae
Convolvulus arvensis	bindweed	Convolvulaceae
Convovulus sp.	morning glory	Convolvulaceae
Cornus sericea ssp.sericea	American dogwood	Cornaceae
Cynoglossum sp.	houndstoungue	Boraginaceae
Cynosurus echinatus	hedgehog dogtail	Poaceae
Cyperus sp.	flatsedge	Cyperaceae
Dactylis glomerata	orchard grass	Poaceae
Daucus carota	carrot	Apiaceae
Daucus pusillus	rattlesnake weed	Apiaceae
Deschampsia danthonioides	annual hairgrass	Poaceae
Dianthus armeria ssp.armeria	grass pink	Caryophyllaceae
Eleocharis macrostachya	common spikerush	Cyperaceae
Elymus elymoides	squirreltail	Poaceae
Elymus glaucus	blue wildrye	Poaceae
Elymus multisetus	big squirreltail	Poaceae
Epilobium ciliatum	willowherb	Onagraceae

Table K-2. TRRP Lowden Ranch

Observer(s): Colby Boggs, Paul Kirk

Comments: Surveyed on 5/24, 6/18, 6/19, and 8/9/07

Scientific Name	Common Name	Family
Equisetum arvense	field horsetail	Equisetaceae
Eriogonum nudum	naked eriogonum	Polygonaceae
Erodium botrys	long-beaked stork's bill	Geraniaceae
Erodium cicutarium	red-stemmed filaree	Geraniaceae
Eschscholzia californica	California poppy	Papaveraceae
Festuca californica	California fescue	Poaceae
Festuca pratensis	meadow fescue	Poaceae
Fraxinus latifolia	Oregon ash	Oleaceae
Galium aparine	goose grass	Rubiaceae
Geranium dissectum	cut-leaved geranium	Geraniaceae
Gnaphalium sp.	cudweed	Asteraceae
Gnaphalium stramineum	Chilean cudweed	Asteraceae
Grindelia camporum	great valley gumweed	Asteraceae
Heliotropium curassavicum	heliotrope	Boraginaceae
Holcus lanatus	common velvet grass	Poaceae
Hordeum jubatum	foxtail barley	Poaceae
Hordeum marinum ssp. gussoneanum	Mediterranean barley	Poaceae
Hordeum murinum ssp. leporinum	foxtail barley	Poaceae
Hypericum perforatum	Klamathweed	Hypericaceae
Juglans nigra	eastern black walnut	Juglandaceae
Juncus balticus	Baltic rush	Juncaceae
Juncus bufonius	toad rush	Juncaceae
Juncus effusus	common bog rush	Juncaceae
Juncus patens	common rush	Juncaceae
Lactuca serriola	prickly lettuce	Asteraceae
Leontodon taraxacoides	hawkbit	Asteraceae
Leymus triticoides	creeping wildrye	Poaceae
Linaria genistifolia ssp.dalmatica	dalmatian toad-flax	Scrophulariaceae
Lomatium californicum	California lomatium	Apiaceae
Lomatium dasycarpum	woolly-fruited lomatium	Apiaceae
Lotus corniculatus	birdfoot trefoil	Fabaceae
Lotus purshianus	Spanish lotus	Fabaceae
Lupinus albifrons	silver bush lupine	Fabaceae
Lupinus bicolor	miniature lupine	Fabaceae
Malus sylvestris	domestic apple	Rosaceae
Melica californica	California melic	Poaceae
Mentha pulegium	pennyroyal	Lamiaceae
Mentha spicata var. spicata	spearmint	Lamiaceae
Micropus californicus	slender cottonweed	Asteraceae
Minuartia sp.	sandwort	Caryophyllaceae
Monardella sp.	monardella	Lamiaceae
Navarretia intertexta	interwoven navarretia	Polemoniaceae
Panicum acuminatum	western witch grass	Poaceae
Penstemon deustus	hot-rock beardtongue	Scrophulariaceae
Penstemon sp.	penstemon	Scrophulariaceae
Petrorhagia dubia	grass pink	Caryophyllaceae
Phacelia sp.	phacelia	Hydrophyllaceae
Phalaris paradoxa	paradox canary-grass	Poaceae
Phleum pratense	timothy	Poaceae
Phleum sp.	timothy grass	Poaceae
Pinus ponderosa	ponderosa pine	Pinaceae
Plagiobothrys stipitatus var. micranthus	common vernal pool allocarya	Boraginaceae
Plantago erecta	erect plantain	Plantaginaceae
Plantago lanceolata	English plantain	Plantaginaceae
Poa bulbosa	bulbous bluegrass	Poaceae

Table K-2. TRRP Lowden Ranch

Observer(s): Colby Boggs, Paul Kirk

Comments: Surveyed on 5/24, 6/18, 6/19, and 8/9/07

Scientific Name	Common Name	Family
Poa palustris	fowl blue grass	Poaceae
Poa pratensis	Kentucky blue grass	Poaceae
Poa secunda	one-sided blue grass	Poaceae
Polygonum sp.	knotweed	Polygonaceae
Polypogon maritimus	Mediterranean beard grass	Poaceae
Potentilla glandulosa	sticky cinquefoil	Rosaceae
Psilocarphus oregonus	Oregon woolly marbles	Asteraceae
Quercus garryana var. garryana	Oregon oak	Fagaceae
Quercus kelloggii	black oak	Fagaceae
Ranunculus sp.	buttercup	Ranunculaceae
Rhus trilobata	skunkbrush	Anacardiaceae
Robinia pseudoacacia	black locust	Fabaceae
Rorippa curvisiliqua	curvepod yellow-cress	Brassicaceae
Rorippa nasturtium-aquaticum	water cress	Brassicaceae
Rosa californica	California rose	Rosaceae
Rubus discolor	Himalayan blackberry	Rosaceae
Rubus laciniatus	cut-leaved blackberry	Rosaceae
Rumex acetosella	common sheep sorrel	Polygonaceae
Rumex crispus	curly dock	Polygonaceae
Sagina apetala	dwarf pearlwort	Caryophyllaceae
Salazaria mexicana	Mexican bladder sage	Lamiaceae
Salix exigua	narrow-leaved willow	Salicaceae
Salix lasiolepis	arroyo willow	Salicaceae
Salix lucida	shining willow	Salicaceae
Scirpus americanus	American tule	Cyperaceae
Scirpus microcarpus	small-fruited bulrush	Cyperaceae
Scutellaria siphocampyloides	curve-flowered skullcap	Lamiaceae
Spergularia rubra	ruby sandspurry	Caryophyllaceae
Taeniatherum caput-medusae	medussa head	Poaceae
Thysanocarpus radians	spokepod	Brassicaceae
Tragopogon dubius	goat's beard	Asteraceae
Trifolium dubium	shamrock	Fabaceae
Trifolium hirtum	rose clover	Fabaceae
Typha angustifolia	narrow-leaved cattail	Typhaceae
Verbascum thapsus	woolly mullein	Scrophulariaceae
Verbena hastata	blue verbena	Verbenaceae
Veronica peregrina ssp. xalapensis	purslane speedwell	Scrophulariaceae
Vitis californica	California wild grape	Vitaceae
Vulpia microstachys	small fescue	Poaceae
Vulpia myuros	rattail fescue	Poaceae
Wyethia angustifolia	narrow-leaved mules ears	Asteraceae
Xanthium strumarium	cocklebur	Asteraceae

Table K-3. TRRP Trinity House Gulch
Observer(s): Paul Kirk, Colby Boggs
Comments: Surveyed on 5/24/07

Scientific Name	Common Name	Family
Acer macrophyllum	bigleaf maple	Aceraceae
Achnatherum occidentale	western needlegrass	Poaceae
Aira caryophyllea	silver European hairgrass	Poaceae
Alnus rhombifolia	white alder	Betulaceae
Amsinckia menziesii	Menzie's fiddleneck	Boraginaceae
Arabis glabra	smooth rock-cress	Brassicaceae
Arbutus menziesii	pacific madrone	Ericaceae
Arctostaphylos patula	greenleaf manzanita	Ericaceae
Artemisia douglasiana	mugwort	Asteraceae
Asclepias fascicularis	narrow-leaf milkweed	Asclepiadaceae
Barbarea orthoceras	winter cress	Brassicaceae
Brassica nigra	black mustard	Brassicaceae
Brickellia californica	California brickellbush	Asteraceae
Bromus diandrus	ripgut brome	Poaceae
Bromus hordeaceus	soft brome	Poaceae
Bromus tectorum	cheat grass	Poaceae
Carex barbarae	valley sedge	Cyperaceae
Centaurea solstitialis	yellow star-thistle	Asteraceae
Cerastium glomeratum	sticky mouse-eared chickweed	Caryophyllaceae
Cercis occidentalis	western redbud	Fabaceae
Chrysanthemum vulgare	Common tansy	Asteraceae
Cirsium vulgare	bull thistle	Asteraceae
Clarkia purpurea	purple clarkia	Onagraceae
Claytonia perfoliata	miner's lettuce	Portulacaceae
Clematis ligusticifolia	virgin's bower	Ranunculaceae
Conium maculatum	poison hemlock	Apiaceae
Cornus sericea	American dogwood	Cornaceae
Cryptantha flaccida	flaccid cryptantha	Boraginaceae
Dactylis glomerata	orchard grass	Poaceae
Deschampsia cespitosa	tufted hair-grass	Poaceae
Deschampsia danthonioides	annual hairgrass	Poaceae
Eleocharis acicularis	needle spikerush	Cyperaceae
Elymus glaucus	blue wildrye	Poaceae
Elymus multisetus	big squirreltail	Poaceae
Epilobium brachycarpum	tall annual willowherb	Onagraceae
Epilobium ciliatum	willowherb	Onagraceae
Eriogonum nudum	naked eriogonum	Polygonaceae
Eschscholzia californica	California poppy	Papaveraceae
Fraxinus latifolia	Oregon ash	Oleaceae
Heterotheca oregona	Oregon goldenaster	Asteraceae
Holcus lanatus	common velvet grass	Poaceae
Hypericum perforatum	Klamathweed	Hypericaceae
Juncus patens	common rush	Juncaceae
Lepidium campestre	English pepper-grass	Brassicaceae
Leucanthemum vulgare	ox-eye daisy	Asteraceae
Leymus triticoides	alkali ryegrass	Poaceae
Linaria genistifolia ssp. dalmatica	dalmatian toad-flax	Scrophulariaceae
Lonicera sp.	Honeysuckle	Caprifoliaceae
Lotus purshianus var. purshianus	Spanish clover	Fabaceae
Lupinus albifrons	silver bush lupine	Fabaceae
Melica californica	California melic	Poaceae
Mimulus guttatus	seep monkey flower	Scrophulariaceae
Mimulus moschatus	musk monkeyflower	Scrophulariaceae
Nassella pulchra	purple needlegrass	Poaceae

Table K-3. TRRP Trinity House Gulch
Observer(s): Paul Kirk, Colby Boggs
Comments: Surveyed on 5/24/07

Scientific Name	Common Name	Family
Panicum acuminatum	western panicum	Poaceae
Petrorhagia dubia	grass pink	Caryophyllaceae
Pinus ponderosa	ponderosa pine	Pinaceae
Pinus sabiniana	gray pine	Pinaceae
Plagiobothrys strictus	Calistoga popcorn flower	Boraginaceae
Polypogon sp.	Polypogon	Poaceae
Populus balsamifera ssp. trichocarpa	black cottonwood	Salicaceae
Pseudotsuga menziesii var. menziesii	Douglas-fir	Pinaceae
Pteridium aquilinum var. pubescens	western bracken fern	Dennstaedtiaceae
Quercus chrysolepis	canyon live oak	Fagaceae
Quercus garryana	Oregon oak	Fagaceae
Quercus wislizenii	interior live oak	Fagaceae
Rhamnus purshiana	cascara	Rhamnaceae
Rhus trilobata	skunkbrush	Anacardiaceae
Ribes divaricatum	spreading gooseberry	Grossulariaceae
Rosa californica	California rose	Rosaceae
Rubus discolor	Himalayan blackberry	Rosaceae
Rubus ursinus	California blackberry	Rosaceae
Rumex acetosella	common sheep sorrel	Polygonaceae
Rumex crispus	curly dock	Polygonaceae
Sagina apetala	dwarf pearlwort	Caryophyllaceae
Salix exigua	narrow-leaved willow	Salicaceae
Salix gooddingii	Goodding's black willow	Salicaceae
Salix laevigata	red willow	Salicaceae
Silene californica	Indian pink	Caryophyllaceae
Thysanocarpus curvipes	fringepod	Brassicaceae
Thysanocarpus radians	spokepod	Brassicaceae
Tragopogon dubius	goat's beard	Asteraceae
Trifolium hirtum	rose clover	Fabaceae
Verbascum blattaria	moth mullein	Scrophulariaceae
Verbascum thapsus	woolly mullein	Scrophulariaceae
Verbena lasiostachys	western vervain	Verbenaceae
Veronica peregrina ssp. xalapensis	purslane speedwell	Scrophulariaceae
Vitis californica	California wild grape	Vitaceae
Vulpia microstachys	small fescue	Poaceae
Vulpia myuros	rattail fescue	Poaceae

Table K-4. TRRP Steel Bridge Day Use
Observer(s) Paul Kirk, Colby Boggs
Comments Surveyed on 5/24/07

Scientific Name	Common Name	Family
Achnatherum occidentale	western needlegrass	Poaceae
Achnatherum sp.	needlegrass	Poaceae
Aira caryophyllea	silver European hairgrass	Poaceae
Alnus rhombifolia	white alder	Betulaceae
Amelanchier alnifolia	Saskatoon service-berry	Rosaceae
Arctostaphylos patula	greenleaf manzanita	Ericaceae
Barbarea orthoceras	winter cress	Brassicaceae

Table K-4. TRRP Steel Bridge Day Use
Observer(s) Paul Kirk, Colby Boggs
Comments Surveyed on 5/24/07

Scientific Name	Common Name	Family
Brickellia californica	California brickellbush	Asteraceae
Bromus carinatus	California brome	Poaceae
Bromus carinatus var. carinatus	California brome	Poaceae
Bromus catharticus	rescue grass	Poaceae
Bromus diandrus	ripgut brome	Poaceae
Bromus hordeaceus	soft brome	Poaceae
Bromus tectorum	cheat grass	Poaceae
Calystegia sp.	morning glory	Convolvulaceae
Carex nudata	torrent sedge	Cyperaceae
Centaurea solstitialis	yellow star-thistle	Asteraceae
Cercis occidentalis	western redbud	Fabaceae
Cirsium vulgare	bull thistle	Asteraceae
Clarkia purpurea	purple clarkia	Onagraceae
Dactylis glomerata	orchard grass	Poaceae
Elymus glaucus	blue wildrye	Poaceae
Elymus multisetus	big squirreltail	Poaceae
Equisetum laevigatum	smooth scouring rush	Equisetaceae
Eriogonum nudum	naked eriogonum	Polygonaceae
Festuca pratensis	meadow fescue	Poaceae
Fraxinus latifolia	Oregon ash	Oleaceae
Galium sp.	bedstraw	Rubiaceae
Hordeum marinum ssp. gussoneanum	Mediterranean barley	Poaceae
Hypericum perforatum	Klamathweed	Hypericaceae
Hypochaeris sp.	smooth catsear	Asteraceae
Juncus bufonius	toad rush	Juncaceae
Juncus effusus	common bog rush	Juncaceae
Lactuca serriola	prickly lettuce	Asteraceae
Lathyrus latifolius	everlasting sweet pea	Fabaceae
Leontodon taraxacoides	hawkbit	Asteraceae
Lepidium campestre	English pepper-grass	Brassicaceae
Linaria genistifolia ssp. dalmatica	dalmatian toad-flax	Scrophulariaceae
Lupinus bicolor	miniature lupine	Fabaceae
Melica californica	California melic	Poaceae
Petrorhagia dubia	grass pink	Caryophyllaceae
Pinus ponderosa	ponderosa pine	Pinaceae
Plantago lanceolata	English plantain	Plantaginaceae
Poa bulbosa	bulbous bluegrass	Poaceae
Poa pratensis	Kentucky blue grass	Poaceae
Populus balsamifera ssp. trichocarpa	black cottonwood	Salicaceae
Prunus sp.	feral root stock	Rosaceae
Pseudotsuga menziesii var. menziesii	Douglas-fir	Pinaceae
Psilocarphus brevissimus	short woolly marbles	Asteraceae
Quercus kelloggii	black oak	Fagaceae
Ribes sp.	gooseberry	Grossulariaceae
Rubus discolor	Himalayan blackberry	Rosaceae
Rumex acetosella	common sheep sorrel	Polygonaceae
Sagina apetala	dwarf pearlwort	Caryophyllaceae
Salix exigua	narrow-leaved willow	Salicaceae
Salix laevigata	red willow	Salicaceae
Salix lucida	shining willow	Salicaceae
Senecio vulgaris	old man of spring	Asteraceae
Thysanocarpus radians	spokepod	Brassicaceae
Tragopogon dubius	goat's beard	Asteraceae
Trifolium dubium	shamrock	Fabaceae

Table K-4. TRRP Steel Bridge Day Use
Observer(s) Paul Kirk, Colby Boggs
Comments Surveyed on 5/24/07

Scientific Name	Common Name	Family
Trifolium hirtum	rose clover	Fabaceae
Vitis californica	California wild grape	Vitaceae
Vulpia myuros	rattail fescue	Poaceae

Table K-5. TRRP Reading Creek
Observer(s): Paul Kirk, Colby Boggs
Comments: Surveyed 5/25/07

Scientific Name	Common Name	Family
Acer macrophyllum	bigleaf maple	Aceraceae
Achnatherum sp.	wheatgrass	Poaceae
Aira caryophyllea	silver European hairgrass	Poaceae
Alnus rhombifolia	white alder	Betulaceae
Arbutus menziesii	pacific madrone	Ericaceae
Arctostaphylos viscida	white leaf manzanita	Ericaceae
Artemisia douglasiana	mugwort	Asteraceae
Asclepias speciosa	showy milkweed	Asclepiadaceae
Athysanus pusillus	petty athysanus	Brassicaceae
Avena barbata	slender wild-oat	Poaceae
Baccharis sp.	baccharis	Asteraceae
Brassica nigra	black mustard	Brassicaceae
Brassica rapa	field mustard	Brassicaceae
Bromus carinatus	California brome	Poaceae
Bromus diandrus	ripgut brome	Poaceae
Bromus hordeaceus	soft brome	Poaceae
Bromus tectorum	cheat grass	Poaceae
Camissonia contorta	contorted sun-cup	Onagraceae
Ceanothus integerrimus	deerbrush	Rhamnaceae
Ceanothus lemmonii	Lemmon's ceanothus	Rhamnaceae
Centaurea solstitialis	yellow star-thistle	Asteraceae
Cercis occidentalis	western redbud	Fabaceae
Cercocarpus betuloides	alder-leaf mountain mahogany	Rosaceae
Chrysanthemum sp.	tansy	Asteraceae
Cirsium andersonii	rose thistle	Asteraceae
Cirsium vulgare	bull thistle	Asteraceae
Claytonia perfoliata	miner's lettuce	Portulacaceae
Claytonia rubra	red-stemmed spring beauty	Portulacaceae
Clematis ligusticifolia	virgin's bower	Ranunculaceae
Collomia sp.	collomia	Polemoniaceae
Cornus sericea	American dogwood	Cornaceae
Corylus cornuta var. californica	California hazelnut	Betulaceae
Cryptantha intermedia	common cryptantha	Boraginaceae
Cynodon dactylon	Bermuda grass	Poaceae
Cytisus scoparius	scotch broom	Fabaceae
Dactylis glomerata	orchard grass	Poaceae
Daucus carota	carrot	Apiaceae
Dichelostemma multiflorum	round-toothed ookow	Liliaceae
Dichelostemma sp.	wild hyacinth	Liliaceae
Elymus elymoides	squirreltail	Poaceae

Table K-5. TRRP Reading Creek

Observer(s): Paul Kirk, Colby Boggs

Comments: Surveyed 5/25/07

Scientific Name	Common Name	Family
Elymus glaucus	blue wildrye	Poaceae
Elymus multisetus	big squirreltail	Poaceae
Epilobium angustifolium ssp. angustifolium	fireweed	Onagraceae
Epilobium brachycarpum	tall annual willowherb	Onagraceae
Equisetum laevigatum	smooth scouring rush	Equisetaceae
Eriogonum nudum	naked eriogonum	Polygonaceae
Eriophyllum lanatum	woolly sunflower	Asteraceae
Eriophyllum lanatum var. croceum	sierra woolly-sunflower	Asteraceae
Eschscholzia californica	California poppy	Papaveraceae
Festuca pratensis	meadow fescue	Poaceae
Fraxinus latifolia	Oregon ash	Oleaceae
Heterotheca oregona	Oregon goldenaster	Asteraceae
Hordeum marinum ssp. gussoneanum	Mediterranean barley	Poaceae
Hypericum perforatum	Klamathweed	Hypericaceae
Hypochaeris glabra	smooth cat's-ear	Asteraceae
Juglans californica	California black walnut	Juglandaceae
Lathyrus latifolius	everlasting sweet pea	Fabaceae
Linaria genistifolia ssp. dalmatica	dalmatian toad-flax	Scrophulariaceae
Lomatium californicum	California lomatium	Apiaceae
Lotus humistratus	short-podded lotus	Fabaceae
Lotus purshianus var. purshianus	Spanish clover	Fabaceae
Lupinus albifrons	silver bush lupine	Fabaceae
Lupinus bicolor	miniature lupine	Fabaceae
Madia glomerata	mountain tarweed	Asteraceae
Melilotus officinalis	yellow sweetclover	Fabaceae
Micropus californicus	slender cottonweed	Asteraceae
Nemophila heterophylla	variable-leaved nemophila	Hydrophyllaceae
Osmorhiza chilensis	mountain sweet-cicely	Apiaceae
Panicum capillare	witchgrass	Poaceae
Petrorhagia dubia	grass pink	Caryophyllaceae
Phacelia heterophylla ssp. virgata	virgate phacelia	Hydrophyllaceae
Phalaris sp.	canarygrass	Poaceae
Pinus ponderosa	ponderosa pine	Pinaceae
Pinus sabiniana	gray pine	Pinaceae
Plantago lanceolata	English plantain	Plantaginaceae
Poa bulbosa	bulbous bluegrass	Poaceae
Poa pratensis	Kentucky blue grass	Poaceae
Poa secunda	one-sided blue grass	Poaceae
Polygonum sp.	knotweed	Polygonaceae
Populus balsamifera ssp. trichocarpa	black cottonwood	Salicaceae
Pseudotsuga menziesii var. menziesii	Douglas-fir	Pinaceae
Quercus chrysolepis	canyon live oak	Fagaceae
Quercus garryana	Oregon oak	Fagaceae
Quercus kelloggii	black oak	Fagaceae
Quercus wislizenii	interior live oak	Fagaceae
Rhus trilobata	skunkbrush	Anacardiaceae
Ribes sp.	gooseberry	Grossulariaceae
Robinia pseudoacacia	black locust	Fabaceae
Rosa californica	California rose	Rosaceae
Rubus discolor	Himalayan blackberry	Rosaceae
Rubus ursinus	California blackberry	Rosaceae
Rumex acetosella	common sheep sorrel	Polygonaceae
Salix exigua	narrow-leaved willow	Salicaceae

Table K-5. TRRP Reading Creek

Observer(s): Paul Kirk, Colby Boggs

Comments: Surveyed 5/25/07

Scientific Name	**Common Name**	**Family**
Salix lasiolepis	arroyo willow	Salicaceae
Sanguisorba officinalis	great burnet	Rosaceae
Scirpus microcarpus	small-fruited bulrush	Cyperaceae
Smilax sp.	smilax	Liliaceae
Stellaria media	common chickweed	Caryophyllaceae
Symphoricarpos albus var. laevigatus	snowberry	Caprifoliaceae
Toxicodendron diversilobum	poison oak	Anacardiaceae
Tragopogon dubius	goat's beard	Asteraceae
Trifolium dubium	shamrock	Fabaceae
Trifolium hirtum	rose clover	Fabaceae
Verbascum thapsus	woolly mullein	Scrophulariaceae
Vitis californica	California wild grape	Vitaceae
Vulpia myuros	rattail fescue	Poaceae
Xanthium strumarium	cocklebur	Asteraceae

APPENDIX L

Soils — Remaining Phase 1 Sites

Appendix L
Soils — Remaining Phase 1 Sites

Table L-1 Mapped Soil Units Within the Sawmill Site

Map Unit	Map Unit Name	Slope Occupies
112	Brownbear-Bamtush Complex	30 to 50 percent slopes
146	Goulding-Vitzthum-Vanor Complex	50 to 75 percent slopes
149	Haysum Loam	5 to 9 percent slopes
152	Haysum Gravelly Loam	5 to 9 percent slopes
157	Hoosimbim-Bamtush-Marpa Complex	30 to 50 percent slopes
161	Hotaw Loam	30 to 50 percent slopes
171	Marpa-Hoosimbim-Bamtush Complex	50 to 75 percent slopes
173	Marpa-Goulding-Holkat Complex	30 to 50 percent slopes
179	Musserhill Gravelly Loam	15 to 30 percent slopes
181	Musserhill-Weaverville Complex	15 to 30 percent slopes
186	Pardaloe-Goulding complex	50 to 75 percent slopes
199	Tallowbox-Minersville Complex	50 to 75 percent slopes
203	Neuns family	40 to 60 percent slopes
213	Xeralfs-Xerorthents Complex	5 to 50 percent slopes
217	Xerofluvents-Riverwash Complex	0 to 5 percent slopes

Table L-2 Mapped Soil Units Within the Upper Rush Creek Site

Map Unit	Map Unit Name	Slope Occupies
112	Brownbear-Bamtush Complex	30 to 50 percent slopes
146	Goulding-Vitzthum-Vanor Complex	50 to 75 percent slopes
149	Haysum Loam	5 to 9 percent slopes
152	Haysum Gravelly Loam	5 to 9 percent slopes
157	Hoosimbim-Bamtush-Marpa Complex	30 to 50 percent slopes
161	Hotaw Loam	30 to 50 percent slopes
171	Marpa-Hoosimbim-Bamtush Complex	50 to 75 percent slopes
173	Marpa-Goulding-Holkat complex	30 to 50 percent slopes
179	Musserhill Gravelly Loam	15 to 30 percent slopes
181	Musserhill-Weaverville Complex	15 to 30 percent slopes
186	Pardaloe-Goulding complex	50 to 75 percent slopes
199	Tallowbox-Minersville Complex	50 to 75 percent slopes
203	Neuns family	40 to 60 percent slopes
213	Xeralfs-Xerorthents Complex	5 to 50 percent slopes
217	Xerofluvents-Riverwash Complex	0 to 5 percent slopes

Table L-3 Mapped Soil Units Within the Lowden Ranch Site

Map Unit	Map Unit Name	Slope Occupies
112	Brownbear-Bamtush Complex	30 to 50 percent slopes
114	BROWNSCREEK GRAVELLY LOAM	50 to 75 percent slopes
147	Haploxerolls, Warm	0 to 2 percent slopes
152	Haysum Gravelly Loam	5 to 9 percent slopes
160	Hotaw Loam	15 to 30 percent slopes
162	Indleton-Caris_Hoosimbim Complex	50 to 75 percent slopes
166	Jafa Gravelly Loam	2 to 9 percent slopes
172	Marpa-Vitzthum Complex	50 to 75 percent slopes
173	Marpa Variant-Goulding-Holkat Variant Complex	30 to 50 percent slopes
181	Musserhill-Weaverville Complex	15 to 30 percent slopes
182	Musserhill-Weaverville Complex	30 to 50 percent slopes
198	Tallowbox-Minersville Complex	30 to 50 percent slopes
199	Tallowbox-Minersville Complex	50 to 75 percent slopes
213	Xeralfs-Xerorthents Complex	5 to 50 percent slopes
217	Xerofluvents-Riverwash Complex	0 to 5 percent slopes

Table L-4 Mapped Soil Units Within the Upper Rush Creek Site

Map Unit	Map Unit Name	Slope Occupies
112	Brownbear-Bamtush Complex	30 to 50 percent slopes
114	Browns Creek Gravelly Loam	50 to 75 percent slopes
147	Haploxerolls, Warm	0 to 2 percent slopes
152	Haysum Gravelly Loam	5 to 9 percent slopes
160	Hotaw Loam	15 to 30 percent slopes
162	Indleton-Caris-Hoosimbim Complex	50 to 75 percent slopes
166	Jafa Gravelly Loam	2 to 9 percent slopes
172	Marpa-Vitzthum Complex	50 to 75 percent slopes
173	Marpa Variant-Goulding-Holkat Variant Complex	30 to 50 percent slopes
181	Musserhill-Weaverville Complex	15 to 30 percent slopes
182	Musserhill-Weaverville Complex	30 to 50 percent slopes
198	Tallowbox-Minersville Complex	30 to 50 percent slopes
199	Tallowbox-Minersville Complex	50 to 75 percent slopes
213	Xeralfs-Xerorthents Complex	5 to 50 percent slopes
217	Xerofluvents-Riverwash Complex	0 to 5 percent slopes

Table L-5 Mapped Soil Units Within the Steel Bridge Day Use Site

Map Unit	Map Unit Name	Slope Occupies
117	Brownscreek-Dougcity Complex	50 to 75 percent slopes
217	Xerofluvents-Riverwash Complex	0 to 5 percent slopes

Table L-6 Mapped Soil Units Within the Reading Creek Site

Map Unit	Map Unit Name	Slope Occupies
117	Brownscreek-Dougcity Complex	50 to 75 percent slopes
118	Cargent-Demogul Association	50 to 75 percent slopes
134	Demogul Gravelly Loam	50 to 75 percent slopes
152	Haysum Gravelly Loam	5 to 9 percent slopes
207	Vitzthum-Cargent Complex	50 to 75 percent slopes
213	Xeralfs-Xerorthents Complex	5 to 50 percent slopes
217	Xerofluvents-Riverwash Complex	0 to 5 percent slopes

APPENDIX M

Key Observation Point Photographs

Sawmill Site
VAU SM1, KOP 1, Photo 1a
View from river right, looking southwest toward river.

Sawmill Site
VAU SM1, KOP 2, Photo 1b
View from river right, looking west toward river.

Sawmill Site
VAU SM1, KOP 3, Photo 1c
View from river right, looking south toward river.

Sawmill Site
VAU SM1, KOP 4, Photo 2
View of the Sawmill site looking upstream from Goose Ranch Road.

Sawmill Site
VAU SM1, KOP 5, Photo 3
View of the Sawmill site looking upstream from Goose Ranch Road.

Sawmill Site
VAU SM2, KOP 1, Photo 4a
View looking southwest toward river from the Sawmill site parking area.

Sawmill Site
VAU SM2, KOP 2, Photo 4b
View looking west toward river from the Sawmill site parking area.

Sawmill Site
VAU SM2, KOP 3, Photo 4c
View looking south toward river from the Sawmill site parking area.

Sawmill Site
VAU SM2, KOP 4, Photo 5a
View of oxbow, looking downstream.

Sawmill Site
VAU SM2, KOP 5, Photo 5b
View of oxbow, looking upstream.

Sawmill Site
VAU SM2, KOP 6, Photo 6
View of oxbow from the footbridge.

Sawmill Site
VAU SM2, KOP 7, Photo 7a
View from left bank, looking at island created by oxbow.

Sawmill Site
VAU SM2, KOP 8, Photo 7b
View looking west from left bank of oxbow.

Sawmill Site
VAU SM2, KOP 9, Photo 8a
View upstream from right bank of river, south of the power line crossing.

Sawmill Site
VAU SM2, KOP 10, Photo 8b
View across river from right bank of river, south of the power line crossing.

Sawmill Site
VAU SM2, KOP 11, Photo 8c
View downstream from right bank of river, south of the power line crossing.

Sawmill Site
VAU SM2, KOP 12, Photo 9a
View upstream from right bank of river, north of the power line crossing.

Sawmill Site
VAU SM2, KOP 13, Photo 9b
View downstream from right bank of river, north of the power line crossing.

Sawmill Site
VAU SM2, KOP 14, Photo 10
View of the Sawmill site looking downstream from Goose Ranch Road.

Sawmill Site
VAU SM3, KOP 1, Photo 11
View towards river from Rush Creek Road.

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Upper Rush Creek Site
VAU UR1, KOP 1, Photo 12
View towards river from Rush Creek Road at downstream end of rehabilitation site near Upper Rush Creek site boundary.

Upper Rush Creek Site
VAU UR1, KOP 2, Photo 13
View towards river from residences east of the Trinity River Lodge RV Park.

Upper Rush Creek Site
VAU UR1, KOP 3, Photo 14
View towards river from the Trinity River Lodge RV Park.

Upper Rush Creek Site
VAU UR2, KOP 1, Photo 15a
View upstream from the BLM Rush Creek River Access.

Upper Rush Creek Site
VAU UR2, KOP 2, Photo 15b
View across river from the BLM Rush Creek River Access.

Upper Rush Creek Site
VAU UR2, KOP 3, Photo 15c
View downstream from the BLM Rush Creek River Access.

Upper Rush Creek Site
VAU UR3, KOP 1, Photo 16
View from Rush Creek Road near downstream end of rehabilitation site.

Upper Rush Creek Site
VAU UR3, KOP 2, Photo 17a
View upstream from end of Partridge Lane.

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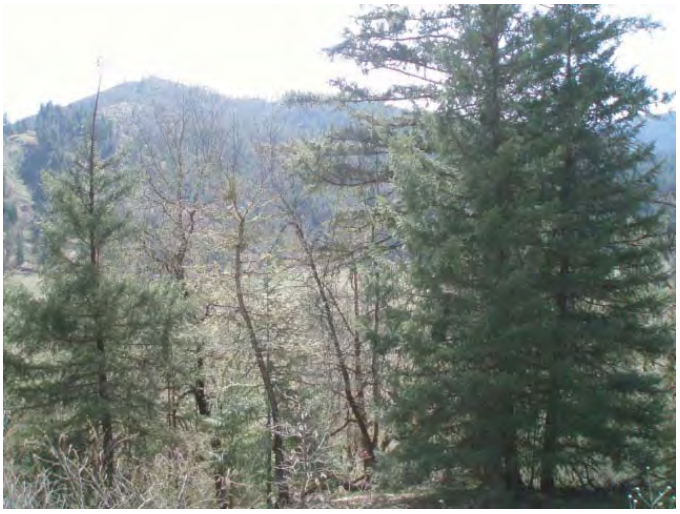
Upper Rush Creek Site
VAU UR3, KOP 3, Photo 17b
View across river from end of Partridge Lane.

Upper Rush Creek Site
VAU UR3, KOP 4, Photo 17c
View downstream from end of Partridge Lane.

Lowden Ranch Site
VAU LR1, KOP 1, Photo 18
View downstream from Bucktail Road near Salmon Drive.



Lowden Ranch Site
VAU LR2, KOP 1, Photo 19
View from Browns Mountain Road at Mountain Springs Road intersection.

Lowden Ranch Site
VAU LR2, KOP 2, Photo 20
View from west side of residence on Browns Mountain Road.

Lowden Ranch Site
VAU LR2, KOP 3, Photo 21
View upstream from Browns Mountain Road at downstream end of rehabilitation site near Trinity House Gulch site boundary.

Lowden Ranch Rehabilitation Site
VAU LR2, KOP 4, Photo 22a
View looking south from Lewiston Road near north end of rehabilitation site.

Lowden Ranch Site
VAU LR2, KOP 5, Photo 22b
View looking west from Lewiston Road near north end of rehabilitation site.

Lowden Ranch Site
VAU LR2, KOP 6, Photo 23a
View looking north from the Lowden Ranch Trailhead.

Lowden Ranch Site
VAU LR2, KOP 7, 23b
View looking west from the Lowden Ranch Trailhead.

Lowden Ranch Site
VAU LR2, KOP 8, Photo 24
View looking north from the Lowden Ranch Trail, west of trailhead parking area.

Lowden Ranch Site
VAU LR2, KOP 9, Photo 25
View looking east from the Lowden Ranch Trail near downstream end of rehabilitation site.

Lowden Ranch Site
VAU LR2, KOP 10, Photo 26
View of the Lowden Ranch Trail near downstream end of rehabilitation site at point where trail parallels left bank of river.

Lowden Ranch Site
VAU LR2, KOP 11, Photo 27a
View looking downstream from the Lowden Ranch Trail river access near downstream end of rehabilitation site.

Lowden Ranch Site
VAU LR2, KOP 12, Photo 27b
View looking upstream from the Lowden Ranch Trail river access near downstream end of rehabilitation site.

Lowden Ranch Site
VAU LR2, KOP 13, Photo 28
View of dredger tailings from the Lowden Ranch Trail near downstream end of rehabilitation site.

Lowden Ranch Site
VAU LR2, KOP 14, Photo 29
View from gate near ponds, west of trailhead parking area.

Trinity House Gulch Site
VAU THG1, KOP 1, Photo 30
View from Browns Mountain Road.

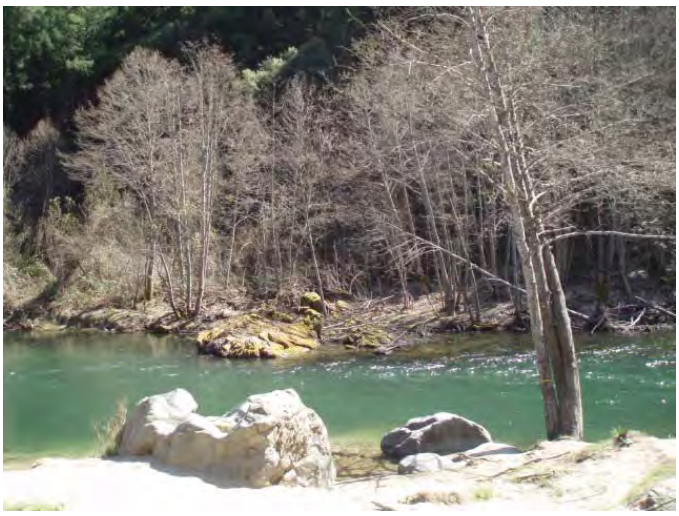
Trinity House Gulch Site
VAU THG1, KOP 2, Photo 31
View from Browns Mountain Road.

Trinity House Gulch Site
VAU THG1, KOP 3, Photo 32
View from Browns Mountain Road.

Trinity House Gulch Site
VAU THG1, KOP 4, Photo 33
View from residence at end of Wellock Road.

Steel Bridge Day Use
VAU SB1, KOP 1, Photo 34a
View from left bank of river, looking upstream at the day use area.

Steel Bridge Day Use
VAU SB1, KOP 2, Photo 34b
View from left bank of river, looking downstream at the day use area.



Steel Bridge Day Use
VAU SB1, KOP 3, Photo 34c
View from left bank of river, looking across river at the day use area.

Steel Bridge Day Use
VAU SB1, KOP 4, Photo 35a
View from left bank of river near upstream end of rehabilitation site, looking upstream.

Steel Bridge Day Use
VAU SB1, KOP 5, Photo 35b
View from left bank of river near upstream end of rehabilitation site, looking downstream.

Steel Bridge Day Use
VAU SB1, KOP 6, Photo 35c
View from left bank of river near upstream end of rehabilitation site, looking south.

Reading Creek
VAU RC1, KOP 1 Photo 36
View of upstream end of rehabilitation site from Frank's Trinity River Mobile Home Park.

Reading Creek
VAU RC3, KOP 1, Photo 37a
View from right bank of river south of the BLM Reading Creek Campground, looking south.

Reading Creek
VAU RC3, KOP2, Photo 37b
View from right bank of river south of the BLM Reading Creek Campground, looking downstream.

Reading Creek
VAU RC3, KOP 3, Photo 37c
View from right bank of river south of the BLM Reading Creek Campground, looking upstream.

Reading Creek
VAU RC3, KOP 4, Photo 38a
View looking upstream at river bend.

Reading Creek
VAU RC3, KOP 5, Photo 38b
View looking across river at river bend.

Reading Creek
VAU RC4, KOP 1, Photo 39a
View looking upstream from BLM river access near downstream end of rehabilitation site.

Reading Creek
VAU RC4, KOP 2, Photo 39b
View looking downstream from BLM river access near downstream end of rehabilitation site.

ATTACHMENT 1

Glossary

Attachment 1
Glossary

Alcove – An elongated depression in the edge of a bar or floodplain surface that remains inundated when river discharge is 300 cubic feet per second. Alcoves are usually located downstream from a hydraulic control, often at the downstream end of a bar or floodplain, directly at the end of a chute. Purpose/Function – Alcoves increase bank length and provide slow water habitat.

Alternate Bar – A bar composed of coarse sediment that extends diagonally from one bank across the channel toward the opposite bank. Gross bar morphology will be specified with a design terrain model. Alternate bars may include one or more point-bar-like components attached to the banks and a partially submerged diagonal component. The diagonal component may or may not extend completely across the channel. Oversized coarse sediment may (infrequently) be incorporated in alternate bar construction. Purpose/Function – Alternate bars may be more effective than point bars for steering flow into side channel or pilot meanders. Alternate bars create a hydraulic control that raises the water surface elevation, and the diagonal orientation of the bar crest produces a lateral component in the flow direction that causes flow to impinge on the bank.

Bank Slashing – Excavating or clearing vegetation in narrow strips (e.g., the width of an excavator bucket) perpendicular to the riverbanks. The excavated or cleared strips are separated by similarly sized narrow strips of vegetated undisturbed bank. Purpose/Function – Bank slashing is intended to increase near-bank habitat complexity and to encourage bank erosion and recruitment of woody debris with minimal mechanical intervention and minimal removal of existing cover.

Bench (Inundation Surface) – An excavated floodplain-like surface adjacent to the stream channel with a specified average elevation lower than the water surface elevation when stream discharge is 6,000 cubic feet per second. The elevation of constructed benches will typically correspond to the water surface elevation when stream discharge is 2,000 to about 4,500 cubic feet per second. Purpose/Function – Benches can potentially provide many of the same functions as floodplains, but differ in that they provide aquatic habitat at intermediate discharges, which occur far more frequently than bankfull. Benches are expected to be more effective than floodplains for encouraging bar deposition in the main channel.

Channel Realignment – The excavation of an entirely new section of channel. Purpose/Function – Channel re-alignment may be needed to significantly increase channel sinuosity or to move the channel to a more favorable position in the valley bottom.

Chute (High-Flow scour channel) – A swale or channel-like feature traversing part or all of a bar or floodplain. Chutes typically exit the main channel a short distance upstream from a hydraulic control and re-enter the main channel downstream from a hydraulic control. They are usually wide and shallow

nearer their upstream ends and become deeper and narrower in the downstream direction. Chute alignment and gross topography will be specified by a design terrain model. Purpose/Function – Chutes concentrate flow over floodplain and bar surfaces, which helps to drain those surfaces and maintain alcove structures at the downstream ends of the surfaces.

Coarse Sediment/Fish Rock – Gravel and small cobble bed material between 3/8 and 5 inches in sieve size and a particle size distribution similar to tailings and coarse alluvial deposits found along the Trinity River. Purpose/Function – Coarse sediment is used for constructing bars, islands, and other fill surfaces. It is also added to the river to replenish the coarse sediment that is transported downstream by high flows.

Coarse Sediment/Oversize – Cobble and small boulder (approximately 5–24 inches). Purpose/Function – Oversized coarse sediment may be used to construct portions of some bars or other fill surfaces that are intended to resist erosion and persist in a roughly as-built condition for an extended period.

Fine Sediment Placement – The spreading of a layer of silt–sand on floodplain and island surfaces. Purpose/Function – Placing fine sediment on floodplain and island surfaces improves soil conditions and enhances re-vegetation success.

Floodplain – A surface adjacent to the stream channel with relief typically less than about 3 feet and an average elevation approximately equal to the water surface elevation when Trinity River discharge is between 6,000 and 7,000 cubic feet per second. Construction is typically via cut, but may include areas of fill as well. Gross surface morphology, which will be specified with a design terrain model, typically includes one or more elongated areas of relatively high elevation oriented sub-parallel to the stream flow direction bounded by low-angle slopes both toward the channel and away from the channel. Floodplain designs may incorporate side channels, chutes, or alcoves. Finished floodplain surfaces should include roughness elements such as wood placement, vegetation clumps, and topographic variability at scales too small to incorporate readily into the design terrain model or drawings. Unless otherwise specified, topographic depression in floodplains must drain to the river. Purpose/Function – Constructed floodplains are ultimately expected to develop riparian vegetation and to accumulate fine sediments. The resulting surfaces have a number of potential functions. New floodplains provide areas that can potentially be planted with riparian vegetation to provide wildlife habitat and meet permitting requirements for replacing riparian vegetation removed during the construction of rehabilitation sites. Vegetated floodplains represent critical habitat for many species of birds and other wildlife. Floodplains are important for producing a variety of inputs to the aquatic flows; they provide fish with shelter from high flow velocities and direct access to food sources. Where terraces are lowered to floodplain elevation, flow conveyance outside the channel is increased, thereby decreasing flow velocities in the main channel. Likewise, increasing flow conveyance in floodplain areas can help protect infrastructure and meet FEMA requirements by lowering flood stages. Where floodplains are constructed by filling lower areas, flow velocities in the main channel may be increased, thereby increasing sediment transport capacity and/or the potential for bank erosion.

Grade Control Removal – Removal of boulders or gabion structures from within the wetted channel. Purpose/Function – Grade controls may be removed to change design hydraulic conditions. Removal will

spread elevation drops over longer reaches, which will facilitate coarse sediment transport, and may eliminate hazards.

Island – A floodplain-like surface within the main channel. Islands may be constructed by filling lower areas with bed material or by excavating a new channel around existing surfaces. Purpose/Function – Islands increase the total bank length in a reach, thereby increasing the availability of bank-related habitats. Because they are high in elevation and, if vegetated, are hydraulically rough, they maintain the main channel conveyance needed to prevent filling of the adjacent channels.

Key Wood Jam – A structure composed of one or many pieces of large wood anchored in the main channel to encourage bed material deposition and bar or island formation. Purpose/Function – Key wood jams may be used to encourage bed material deposition in order to initiate bar or island formation, or to deflect bedload transport away from side channel entrances.

Pilot Meander – A curved section of channel excavated along one bank of the existing channel to an elevation at or below the baseflow water surface elevation. Pilot meander designs will often be associated with constructed bars that encourage flow into the excavated area. Purpose/Function – Pilot meanders will almost invariably be constructed in conjunction with bar construction on the opposite bank. The intent is to force the main flow to occupy the excavated area and produce a new meander in the channel planform.

Point Bar – A bar along one stream bank that was constructed by placing coarse sediment in the channel. Gross bar morphology will be specified with a design terrain model, but will often be characterized by an arc-like planform shape and surface topography ranging from relatively flat to a form similar to that of a floodplain. Point bars will often incorporate chutes. Typically, elevations for constructed point bars correspond to the water surface elevation when Trinity River discharge is less than 6,000 cubic feet per second. Finished point bars may include roughness elements such as wood placements, vegetation clumps, and small-scale topographic variability. Oversized coarse sediment may (infrequently) be incorporated in point bar construction. Purpose/Function – Point bars construction is a simple method for augmenting the supply of gravel in the channel. In these cases, constructed point bars are expected to move with high flows, after which they may or may not be re-constructed. Point bar configurations may also be used to narrow the channel in order to increase the potential for erosion on the opposite bank or to force flow into a newly excavated pilot meander. In these instances, point bars are expected to persist as fixed bars for relatively long periods.

Off-channel Pond – A pond near the low-flow channel with no surface water connection to the main channel at baseflow, but which connects to the main channel during high flow events. These ponds should contain abundant cover and be relatively deep (3 feet or more) under baseflow conditions. Purpose/Function – Off-channel ponds are thought to provide superior over-summering habitat for coho juveniles because they provide shelter from large predatory fish and create areas of increased productivity and water temperature, which support a faster juvenile growth rate

Recontouring – Selective excavation and/or vegetation clearing to enhance drainage on floodplains and other surfaces that become inundated during high flows. Purpose/Function – Recontouring improves the drainage of floodplains and other surfaces, thereby reducing the risk of stranding fish during times of falling river stage.

Ripping – Using ripper bars to loosen the existing ground surface in rills that are parallel to the river flow. Purpose/Function – Ripping encourages erosion by loosening compacted or embedded surfaces, prepares surfaces for seeding, and prevents surface water runoff.

Scalping – The removal of a thin layer of compacted material (approximately 1 foot or less) from the existing ground surface. Purpose/Function – Scalping may be needed where a surface layer of coarse materials exists. Removing the surface layer may expose finer material that can be entrained by flows and provide a better growth medium for vegetation.

Side Channel (Low-Flow) – A relatively narrow channel (bottom width 10–30 feet) traversing floodplains or other areas adjacent to the main channel and excavated to a depth that permits flow-through when river discharge is 300 cubic feet per second. Side channels typically exit the main channel a short distance upstream from a natural or constructed hydraulic control and re-enter the main channel downstream from a hydraulic control. Side channel details may include pool-riffle topography, wood and/or boulder placements, vegetation clumps, and small-scale bank irregularities. Alignment and gross topography will be specified by a design terrain model. Purpose/Function – Low-flow side channels increase bank length and bank-related habitat in a reach, and generally provide lower velocity flows and abundant cover suitable for fry rearing. To be effective salmonid habitat, it is necessary that flow through the side channel be maintained.

Slough – A relatively long channel-like feature traversing a bar or floodplain and that remains inundated through most of its length but does not maintain continuous surface flow at baseflow. It can be described morphologically as a partially filled side-channel or an especially long alcove. Slow flow rates may be maintained in sloughs at baseflow by hyporheic flow. Purpose/Function – Sloughs increase bank length and provide slow water habitat.

Terrace – A relatively flat surface within the riverine corridor with an elevation higher than the water surface elevation when stream discharge is 7,000 cubic feet per second. Purpose/Function – Terrace surfaces may be constructed to accommodate spoiling material or to provide areas for stockpiling materials, processing gravel, or staging equipment.

Vegetation Removal – Clearing all or selected vegetation within an area that is not being excavated. Purpose/Function – Clearing vegetation may be needed to increase flow conveyance in areas where high river stages threaten structures.

Wetland Expansion – Excavation that expands or improves existing wetland areas. Purpose/Function – Creation or augmentation of wetland habitat directly supports amphibians and turtles, as well as other wildlife species, which have been negatively impacted by relatively high and cold summer releases from

Lewiston Dam. Created wetland areas will also support riparian vegetation recruitment. Site-specific conditions will determine the duration of inundation and the design selected for construction.