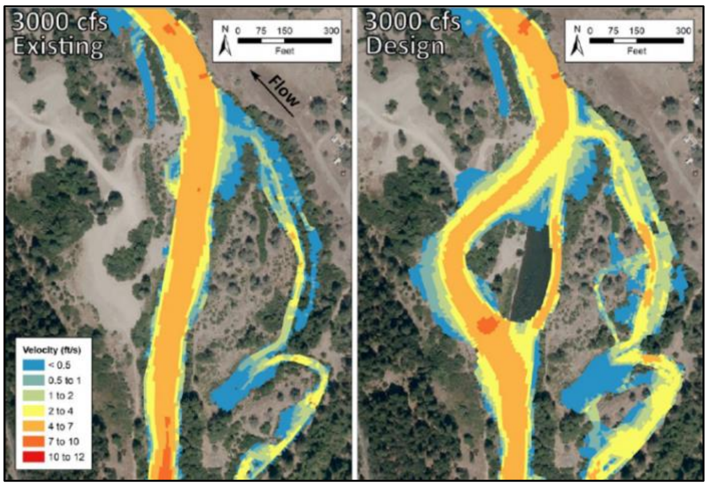
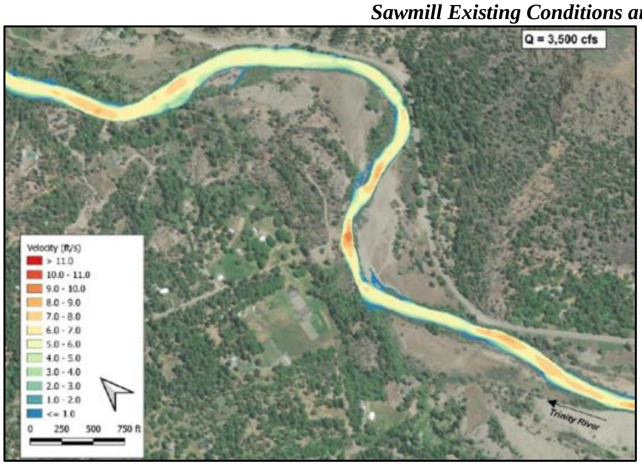
Draft Environmental Assessment / Initial Study

Trinity River Channel Rehabilitation Sites: Upper Conner Creek Site (River Mile 77.1 to 78.5) and Sawmill Gravel Processing Site (River Mile 108.9 to 109.75)
DOI-BLM-CA-N060-2024-0008-EA and CGB-EA-2024-004
State Clearinghouse #TBD
April 2024

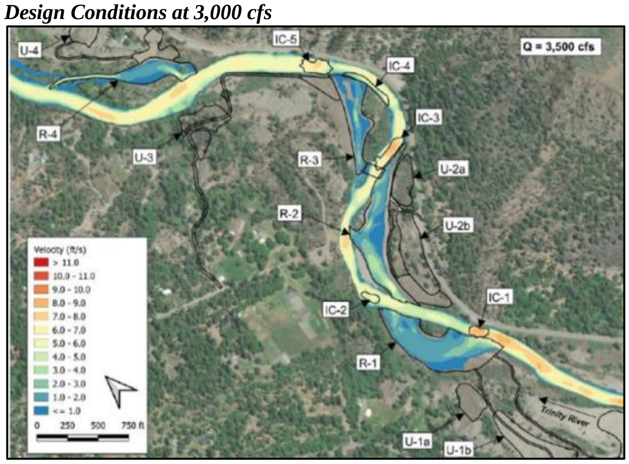
Project Proponent and Lead Agency
Trinity River Restoration Program Office
U. S. Department of the Interior, Bureau of Reclamation



Sawmill Existing Conditions and Design Conditions at 3,000 cfs



Upper Conner Creek Existing Conditions at 3,500 cfs



Upper Conner Creek Design Conditions at 3,500 cfs

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Trinity River Channel Rehabilitation Sites: Upper Conner Creek Site (River Mile 77.1 to 78.5) and Sawmill Gravel Processing Site (River Mile 108.9 to 109.75)
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Mission Statement

The U.S. Department of the Interior (DOI) protects and manages the Nation’s natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated Island Communities.

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

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ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
A	access routes and temporary crossings (e.g., A-1)
ACS	Aquatic Conservation Strategy
APE	area of potential effect
Basin Plan	Water Quality Control Plan for the North Coast Region
BFE	base flood elevation
BLM	U.S. Bureau of Land Management
BMP	best management practice
C	contractor use areas (e.g., C-1)
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CO_2	carbon dioxide
CRHR	California Register of Historical Resources
CWHR	California Wildlife Habitat Relationships
cy	cubic yard
DOI	U.S. Department of the Interior
DWR	California Department of Water Resources
EA	Environmental Assessment
EA/IS	Environmental Assessment/Initial Study

EC	environmental commitment (e.g., EC-AA-1)
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESL	environmental study limit or project site
ESU	evolutionarily significant unit
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FLPMA	Federal Land Policy and Management Act
Forest Service	U.S. Forest Service
FUP	Free Use Permit
GHG	greenhouse gas
HVT	Hoopa Valley Tribe
IC	in-channel construction feature
IS	Initial Study
LAM	large amplitude meander
MDB&M	Mount Diablo Base and Meridian
MMRP	Mitigation Monitoring and Reporting Program
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
Northwest Forest Plan	Shasta - Trinity National Forests Land and Resource Management Plan
NRHP	National Register of Historic Places
NTU	nephelometric turbidity unit
ORV	outstandingly remarkable value
PM	particulate matter
PM_{10}	particulate matter less than 10 microns in aerodynamic diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in aerodynamic diameter
PRC	California Public Resources Code
R	Riverine (area inundated at approximately 2-year recurrence interval)
Reclamation	Bureau of Reclamation
Regional Water Board	North Coast Regional Water Quality Control Board
RM	River Mile
RMP	Resource Management Plan
ROD	Record of Decision
ROW	right-of-way
SHPO	State Historic Preservation Officer
SLJ	structured log jams
SMARA	Surface Mining and Reclamation Act
SONCC	Southern Oregon/Northern California Coast
SR	State Route
TMC	Trinity Management Council
TMDL	total maximum daily load
TRD	Trinity River Division
TRRP	Trinity River Restoration Program
U	upland
UCC	Upper Conner Creek
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
VRM	visual resource management
WP	wood placement

WSR	Wild and Scenic River
WSRA	Wild and Scenic Rivers Act
WUA	weighted useable area

1. Introduction and Background

This Environmental Assessment/Initial Study (EA/IS) for the proposed Trinity River Channel Rehabilitation Projects: Upper Conner Creek (UCC) site (River Mile [RM] 77.1 to 78.5) and Sawmill Gravel Processing (Sawmill) site (RM 108.9 to 109.75) was prepared by the United States Department of the Interior (DOI), Bureau of Reclamation (Reclamation) and DOI Bureau of Land Management (BLM) to meet the requirements of the National Environmental Policy Act (NEPA) and by the North Coast Regional Water Quality Control Board (Regional Water Board) to meet the requirements of the California Environmental Quality Act (CEQA). Reclamation is the lead agency under NEPA, and BLM is a cooperating agency under NEPA for actions specific to BLM-administered lands. The Regional Water Board is the lead agency under CEQA. The federal agencies worked with the Regional Water Board to analyze the potential impacts of the proposed activities under NEPA (40 Code of Federal Regulations [CFR] 1501 et seq.) and CEQA (California Public Resources Code [PRC] 21000 et seq.). Appendix A includes a glossary of terms used throughout this EA/IS, and Appendix B contains all figures that are referenced throughout the document.

Appendix C (CEQA Environmental Checklist Form) in this EA/IS was prepared to identify the resource topics that were addressed in the *Channel Rehabilitation and Sediment Management Activities for Remaining Phase 1 and Phase 2 Sites, Part 1: Final Master Environmental Impact Report and Part 2: Environmental Assessment/Final Environmental Impact Report*, referred to hereafter as the Master EIR.[1] Appendix C is also intended to satisfy CEQA requirements. Appendix D outlines the Mitigation Monitoring and Reporting Program (MMRP) adopted by the Regional Water Board as part of the Master EIR and includes measures for the protection of natural and cultural resources under CEQA.

This EA/IS incorporates by reference and is tiered from two previous joint NEPA/CEQA documents: the *Trinity River Mainstem Fishery Restoration Final Environmental Impact Statement/Report* and Record of Decision (ROD), referred to hereafter as the Trinity River FEIS/EIR and ROD (USFWS 2000), and the 2009 Master EIR.[2]

The proposed UCC and Sawmill rehabilitation sites (referred to collectively as the project sites or project environmental study limits [ESLs][3], and individually as the UCC project site or UCC ESL and Sawmill Gravel Processing site or Sawmill ESL in this EA/IS) was identified and discussed at a programmatic level in the Master EIR as Phase 2 sites. The purpose of this document (referred to as the project EA/IS) is to provide a site-specific analysis of the proposed rehabilitation activities at the project sites.

The BLM would issue a right-of-way (ROW) to Reclamation pursuant to Title V of the Federal Land Policy and Management Act (43 United States Code [USC] 1761 et seq.) to authorize rehabilitation activities and access on BLM-administered lands, as described in this document. The BLM would also issue a Free Use Permit (FUP) pursuant to 43 CFR 3604 that would authorize Reclamation to use mineral materials from BLM-administered project lands for restoration activities at the project rehabilitation site. The FUP would authorize Reclamation to process, use, and/or remove approximately 141,850 cubic yards (cy) of mineral materials at the UCC site and 95,345 cy at the Sawmill Gravel Processing Site, from BLM-administered lands at the project sites as described in this document for river rehabilitation. In addition, BLM would authorize site-specific use of vegetation and trees from its managed lands for revegetation purposes, enhance habitat complexity (wood placement), provide safe working conditions, and facilitate access. Reclamation would apply for appropriate permits to remove trees from BLM-administered lands, which would include, but may not be limited to, a FUP pursuant to 43 CFR 5510. Commercially viable trees removed from the site may require a fee permit pursuant to 43 CFR 5400. All environmental commitments (ECs) outlined in 6. Appendix E,

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[1] The Master EIR (DOI-BLM-CA-NO60-2009-0085-EA, Regional Water Board and Reclamation 2009) is available on the TRRP website at <http://www.trrp.net/library/document/?id=476>.

[2] Copies of the Master EIR and the Trinity River FEIS/EIR and ROD are available on the TRRP website at <http://www.trrp.net/program-structure/foundational-documents/>.

[3] The Environmental Study Limit, or ESL, is the anticipated maximum geographic limit of project activities (the site boundary). The ESL includes a buffer applied for the purposes of resource identification and associated impact analyses and is the area where pre-project resource surveys are concentrated.

project design features, mitigation measures (Appendix D, and best management practices (BMPs) developed for this EA/IS would be considered for incorporation into the BLM authorization.

1.1 Location of Rehabilitation Site

Located in the Klamath Mountains of northern California, the Trinity River is a partially confined, semi-alluvial river, and is the largest tributary to the Klamath River. The Trinity River is 180 miles (mi) long with a total watershed area of approximately 2,960 square mi (mi^2). The project sites where Reclamation proposes to conduct mechanical channel rehabilitation activities is illustrated in Figure 1.

Throughout this document, the terms “river left” and “river right” are used to refer to the banks of the Trinity River when looking downstream. For this project, the left bank is generally the west and south side of the river, and the right bank is the east and north side.

1.1.1 Upper Conner Creek Site Location

The Upper Connor Creek (UCC) project site is approximately 35 mi downstream of the Lewiston Dam, between the previously constructed Hocker Flat (RM 78.4) and Conner Creek (RM 77.2) restoration sites. The UCC project ESL spans 1.4 mi and encompasses approximately 105.9 acre (ac) including 40.8 ac of BLM-administered land and 65.1 ac of private land. It is located approximately 1.5 mi west of Junction City, CA below the Canyon Creek confluence within the North Fork Reach (RM 79.3 to RM 72.2) of the mainstem Trinity River. Access to the UCC ESL is via State Route (SR) 299 on river right; and Dutch Creek Rd, Red Hill Rd, Senger Rd, and Quail Rd on river left, pending permission from adjacent landowners.

The legal description of the UCC ESL is Township 33 North, Range 11 West, Section 1, and Township 34 North, Range 11 West, Section 35 and 36, Mount Diablo Baseline and Meridian (MDB&M; Figure 1). The river elevation at the site is approximately 1,900 feet (ft) above mean sea level (msl). Equipment would access river left activity areas from across the river using temporary crossings.

1.1.2 Sawmill Gravel Processing Site Location

The Sawmill Gravel Processing site is located approximately 2.5 mi downstream from Lewiston Dam at RM 108.9 to 109.75. The Sawmill ESL encompasses about 103.4 ac, including 67.2 ac of BLM managed-lands, 10.7 ac of State of California managed-lands, 3.5 ac of Reclamation land, and 22.0 ac of private land. It is located approximately 2.5 mi southwest of Lewiston, CA on the mainstem Trinity River. Access to the project site is via Goose Ranch Rd on river left and Lewiston Cemetery Rd on river right.

The legal description of the Sawmill ESL is Township 33 North, Range 8 West, Sections 18 and 19, MDB&M (Figure 1). The river elevation at the site is approximately 1,800 ft above msl.

1.2 Trinity River Restoration Program Background

The objective of the Trinity River Restoration Program (TRRP) is to restore historic river processes to the Trinity River through the implementation of the 2000 Trinity River FEIS/EIR and ROD. TRRP’s intent is to restore an ecologically functioning river through rehabilitation activities at multiple locations so that naturally spawning anadromous fish populations may increase to levels that existed prior to the construction of Lewiston and Trinity Dams. The TRRP’s target reach for restoration is the approximately 40-mile length of the river downstream of Lewiston Dam to the confluence of the North Fork Trinity River. In general, the TRRP’s approach to channel rehabilitation is to reconnect the river with its floodplain. The TRRP’s objectives and background are explained in detail on the TRRP website at <http://www.trrp.net/restoration/channel-rehab/rehabilitation-concepts/#page-part>.

The Master EIR includes a chronology of the management actions relevant to the Trinity River Basin between 1938 and 2008 (Section 1.4.4, pages 1-8). Additional details concerning the legislative and management history can be found in the Trinity River FEIS/EIR and ROD and the EA/Final EIRs for TRRP projects constructed between 2005 and

2008.[4] The Master EIR (Section 1.4.5, pages 1-10 through 1-15) provides a summary of the restoration activities undertaken since the signing of the Trinity River FIES/EIR and ROD and brief discussions of other watershed restoration programs and activities occurring within the basin. These documents are on file at the TRRP office in Weaverville, California and the Weaverville public library and are also available on the TRRP website <http://www.trrp.net>.

1.3 Purpose and Need

The TRRP is tasked with increasing habitat and river function for all life stages of naturally produced anadromous fish native to the Trinity River in the magnitude necessary to reach congressionally mandated population levels. The TRRP's strategy is to increase habitat diversity, quality, and quantity for juvenile native fish rearing while also ensuring that habitat complexity and quantity increase as the alluvial processes of the Trinity River are enhanced or restored. The magnitude of the disturbance to the Trinity River from historical gold mining cannot be overstated. Hydraulic mining on the hillslopes resulted in large amounts of mining debris that buried the historical valley bottom. Subsequent dredging coupled with fluvial incision from historic water management at the Lewiston and Trinity dams has left a narrow, canal-like channel with a restricted floodplain area.

The purpose of the rehabilitation is to engineer functioning hydrological and ecological conditions to perpetually maintain fish and wildlife resources (including threatened and endangered species) and the river ecosystem. The proposed rehabilitation activities at the project sites are needed to support the TRRP's goals of restoring fish populations to pre-dam levels and restoring dependent fisheries, including those held in trust by the federal government for the Hoopa Valley and Yurok tribes.

The purpose of the project is to advance one of the primary TRRP objectives, which is to mechanically reshape and scale the current channel form to interact with the flow regime so that physical processes would be reestablished to create and maintain fish habitat. The proposed design consists primarily of lowering the floodplains, creating new river channels, and excavating high-elevation riverbank areas to create a more frequently inundated floodplain.

1.4 Purpose of This Document

Both NEPA (42 USC 4321 et seq.) and CEQA (California PRC 21000 et seq.) require that governmental agencies disclose information about proposed activities that may affect the environment; evaluate the potential environmental impacts of their proposed actions before making formal commitments to implement them and involve the public in the environmental review process. This document, a site-specific EA/IS for the Proposed Action at the project sites, has been prepared to comply with NEPA and CEQA. This EA/IS evaluates the environmental impacts of Alterative 1 (Proposed Action), recommends project design features and mitigation measures to minimize impacts, and is designed to facilitate implementation of the project under all applicable laws.

For Reclamation, this document is tiered to the previous analysis in the Trinity River FEIS/EIR and ROD. The BLM did not participate in the preparation of the Trinity River FEIS/EIR and ROD; the analysis in that document is, therefore, incorporated into this EA/IS to cover BLM participation in the Proposed Action. The NEPA analysis in this EA/IS incorporates by reference the analyses in the 2009 Master EIR/EA/EIR (RWQCB and Reclamation 2009).

In 1994, the USFWS as the NEPA lead agency and Trinity County as the CEQA lead agency began the public process for developing an EIS/EIR for the Trinity River Mainstem Fishery Restoration Program. The FEIS portion of the FEIS/EIR, published in October 2000, functions as a project-level NEPA document supporting policy decisions associated with managing Trinity River flows and as a programmatic NEPA document providing "first-tier" review of other potential actions, including the Proposed Action[5]. However, because the Trinity County Board of Supervisors—the CEQA lead agency for the FEIS/EIR—did not certify the EIR portion of the Trinity River FEIS/EIR and ROD, the EIR portion was not available to the TRRP and its partner agencies as a CEQA document adequate for tiering. Between

[4] Hocker Flat (Reclamation and DWR 2004), the Canyon Creek Suite (Reclamation and the Regional Water Board 2006), Indian Creek (Reclamation and Trinity County Resource Conservation District (TCRCD) 2007), and Lewiston-Dark Gulch (Reclamation and TCRCD 2008).

[5] The Proposed Action is Alternative 1, as described in Chapter 2 of this EA/IS.

2004 and 2008, four joint EA/EIRs were completed to analyze TRRP channel rehabilitation projects. Based on the similarity of these projects and their environmental impacts and agreement that future TRRP projects would have similar impacts, a separate programmatic document, the 2009 Master EIR, was developed with the Regional Water Board as the CEQA lead agency. The EA portion of the 2009 Master EIR-EA/EIR tiers from the Trinity River FEIS/EIR (USFWS 2000). The ROD dated December 19, 2000, for the FEIS/EIR directed DOI agencies to implement the Flow Evaluation Alternative, which was identified as the Preferred Alternative in the FEIS/EIR.

A Master EIR forms the basis for analyzing the effects of subsequent projects (CEQA Guidelines 15175 et seq.). The2009 Master EIR meets the elements required for a Program EIR pursuant to California Code of Regulations (CCR), Title 14, Division 6, Chapter 3, Section 15168. Therefore, the Master EIR provides programmatic CEQA-level review from which the UCC / Sawmill Gravel Processing—a subsequent site-specific project—is tiered. The Regional Water Board functioned as the lead agency for the Master EIR (California State Clearinghouse #2008032110) and for the IS portions of subsequent site-specific EA/ISs. The Master EIR provides a discussion of the existing conditions, environmental impacts, and mitigation measures required to comply with CEQA (California PRC 21000 et seq.). In addition to addressing direct and indirect impacts associated with proposed projects and alternatives, the Master EIR addresses cumulative and growth-inducing impacts that could be associated with activities at the remaining Phase 1 and Phase 2 sites. The Regional Water Board certified the Master EIR on August 25, 2009.

Because the Master EIR provides a programmatic-level review from which site-specific projects may tiered, the analysis of the Proposed Action required under CEQA is ranked from that document. In addition, the EIS portion of the Trinity River FEIS/EIR functions as a project-level NEPA document used by the Secretary of Interior to support the development of the ROD, which established provisions for managing Trinity River flows. The Trinity River FES/EIR and ROD is a programmatic NEPA document that provides “first-tier” review of other potential actions, including the Proposed Action.

Under 14 CCR 15177, after a Master EIR has been prepared and certified, subsequent projects that the lead agency determines as being within the scope of the Master EIR will be subject to only limited CEQA environmental review[6]. CCR, Title 14, Division 6, Chapter 3, Section 15177, subd. (b)(2) states that the preparation of a new environmental document and new written findings will not be required if, based on a review of the IS prepared for the subsequent project, the lead agency determines, on the basis of written findings, that no additional significant environmental effects will result from the proposal, no new additional mitigation measures or alternatives are required, and the project is within the scope of the Master EIR. Whether a subsequent project is within the scope of the Master EIR is a question to be determined by the lead agency based on a review of the IS to determine whether there are additional significant effects or new additional mitigation measures, or alternatives required for the subsequent project that are not already discussed in the Master EIR.

This EA/IS provides site-specific details for the analysis of the environmental impacts of the channel rehabilitation projects and has been prepared to comply with NEPA (42 USC 4321 et seq.) and CEQA (California PRC 21000 et seq.). This EA/IS focuses on the potential effects of activities specific to the UCC and Sawmill rehabilitation projects and serves as a joint NEPA/CEQA document developed to support agency decision-making and satisfy both NEPA and CEQA requirements for public involvement and disclosure. This EA/IS contains a site-specific project description and other information required to apply for enrollment under General Water Quality Certification R1-2020-0025 (RWQCB 2020) or subsequent reissued certification for Trinity River channel rehabilitation activities. The Regional Water Board will consider this information in making its determination and decision regarding water quality certification.

1.5 Other Regulatory Requirements

In addition to CEQA and NEPA, the proposed rehabilitation activities at the project sites are subject to a variety of federal, state, and local statutes, regulations, policies, and other authorities, such as the Clean Water Act, Endangered Species Act (ESA), California Endangered Species Act (CESA), California Fish and Game Code, National Historic

[6] Federal agencies do not have the ability to conduct a limited NEPA review; the Master EIR was not a NEPA document.

Preservation Act[7] (NHPA), Wild and Scenic Rivers Act (WSRA), and BLM's 1993 Redding Resource Management Plan (RMP) and ROD (BLM 1993).

The primary responsible and trustee agencies for the UCC and Sawmill projects are the U.S. Army Corps of Engineers (USACE), USFWS, National Marine Fisheries Service (NMFS), California Department of Fish and Wildlife (CDFW), Regional Water Board, and Trinity County. Chapter 3, Regulatory Framework, of the Master EIR includes descriptions of the actions required of these agencies and the applicable environmental statutes and identifies permits required for the TRRP's work on the Trinity River, as well as the MMRPs for mitigation of effects under CEQA (Appendix D and ECs for minimization of effects under NEPA (Appendix E.

To comply with Section 7 of the Endangered Species Act (ESA), TRRP staff submitted a Biological Assessment (BA) to NMFS in December 2019 concerning project effects on the federally and state-listed (threatened) SONCC ESU of coho salmon. The TRRP office completed formal consultation with NMFS on the effects of TRRP sediment management and channel rehabilitation and monitoring, as well as the potential effect of floodplain restoration work throughout the Trinity River watershed rather than only on the mainstem Trinity River. The NMFS' August 2020 Trinity River Restoration Program Biological Opinion (referred to as the 2020 BiOp) describes the implementation strategies and conservation measures that will be employed during proposed TRRP construction at the UCC and Sawmill ESLs. The U.S. Fish and Wildlife Service (USFWS) issues a partial occurrence opinion for species it manages that have potential to occur in the Trinity River watershed.

The BLM's Redding Field Office manages federal lands in the Trinity River Basin in accordance with its 1993 Redding RMP and ROD (BLM 1993). The RMP discusses the general condition of natural and cultural resources in the plan area and prescribes appropriate land use management for BLM-administered lands. However, the RMP was amended by the 1995 Northwest Forest Plan (Forest Service 1995) to include new land allocations (e.g., Riparian Reserves) and established requirements for compliance with the Aquatic Conservation Strategy (ACS) and other standards and guidelines to protect habitat for the northern spotted owl (*Strix occidentalis caurina*). A key component of the RMP amendment was the establishment of Riparian Reserves along rivers and streams to protect aquatic resources. The project ESLs on BLM-administered lands are considered Riparian Reserves and subject to the ACS; private lands are not included in this land allocation. The Trinity River from Lewiston Dam to Weitchpec is federally designated as a Wild and Scenic River (WSR) for its fisheries and recreational values. BLM is the federal river manager from Lewiston Dam to the North Fork Trinity River. The ACS analysis for the project is provided in Appendix F and a WSR determination for the project is included in Appendix G.

The Trinity Management Area section of the RMP discusses the general condition of natural resources in the plan area and prescribes appropriate land use management for lands within the plan's jurisdiction, including BLM-administered public lands in the project ESLs. Section 4.2.2 of the Master EIR provides additional information about the RMP. As part of its decision-making process, BLM must evaluate the consistency of the Proposed Action with the RMP, as amended.

The State SMARA and county regulations provide guidance for the removal of waste mining materials from private lands. SMARA applies to all parties, including federal agencies, which are involved with surface mining operations that disturb an area greater than 1 acre (ac). This includes, but is not limited to, prospecting and exploratory activities, dredging and quarrying, streambed skimming, borrow pitting, and the stockpiling of mined materials.[8] Under SMARA Section 2796.5, a party is exempt from financial obligations to the State of California for abandoned mine site remediation or reclamation that improves human and environmental health conditions.

Trinity County Department of Transportation (TCDOT) encroachment permit would be required for all activities related to the placement of encroachments within, under, or over the County's right-of-way to ensure that projects within the right-of-way are done according to requirements and that County property will not be damaged or that proper repairs would be made. The Proposed Action would fall under special events and traffic control. The Program maintains an encroachment permit with the TCDOT, and any new access roads or improvements to existing roads

[7] Section 3.1.1 of the Master EIR provides a comprehensive discussion of Reclamation's approach to compliance with the National Historic Preservation Act, specifically with respect to Section 106 consultation requirements. Appendix D of the Master EIR is the Programmatic Agreement Among Reclamation, USFWS, BLM, Hoopa Valley Tribe, California SHPO and the Advisory Council on Historic Preservation Regarding Implementation of the Trinity River Mainstem Fishery Restoration and Section 106 Consultation.

[8] The full SMARA regulatory text is found at https://www.conservation.ca.gov/dmr/lawsandregulations.

would be subject to the terms and conditions of the encroachment permit and the biological assessment and amendments.

The California Department of Transportation (Caltrans) would require an encroachment permit for all work within the State ROW of SR 299. The complete permit application package would include a positive work zone protection form (CEM-1302). If project-related traffic could affect the visibility, traffic patterns, or the flow of traffic on SR 299 in a negative manner, an encroachment permit would be required and obtained. The plans for the Proposed Action would conform to the Caltrans minimum requirement and clearly identify State ROW, highway centerline, roads to be improved or constructed within the State ROW and proposed staging and stock-piling areas within the State ROW. Additionally, Caltrans may require a storm water plan and a site-specific traffic control plan.

1.6 Tribal and State Historic Properties Office Consultation

Federal agencies are required to consider the effects of their actions to historic properties (i.e., cultural resources that rise to a certain level of significance) in compliance with Title 54 USC Section 306108, commonly referred to as Section 106 of the NHPA. The Section 106 process is often used to satisfy the requirements for assessment of significant impacts to cultural resources under NEPA. The Section 106 process includes identification, consultations, and, if needed, mitigation measures for effects determined adverse and unavoidable.

A cultural resource is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. Cultural resources that meet criteria for listing on the California Register of Historical Resources (CRHR; defined at 14 CCR Section 15064.5[a]) are called “historical resources.” Cultural resources that meet the criteria for listing on the National Register of Historic Places (NRHP; defined at 36 CFR Section 60.4) are called “historic properties.” While the CRHR and NRHP significance criteria are similar, the NRHP is given precedence in this analysis because cultural resources eligible for the NRHP are also eligible for inclusion in the CRHR, but the reverse is not necessarily true (California PRC Section 5024.1[c]). Therefore, employing the federal standards will fulfill both federal and state requirements for cultural resources.

Additional state regulations regarding tribal consultation include Assembly Bill 52 (AB 52), which was signed by the Governor of California in September 2014. The bill requires that California state lead agencies consult with California Native American tribes traditionally and culturally affiliated with the geographic area of a project when the tribe requests to be informed of such projects and requests the consultation to ensure that impacts to tribal cultural resources are minimized. AB 52 requirements apply to projects with a Notice of Preparation or a Notice of Negative Declaration or Mitigated Negative Declaration filed on or after July 1, 2015. Although the Master EIR predates and therefore does not incorporate the consultation requirements of AB 52, it is applicable to projects completed after July 1, 2015. The MMRPs (Appendix D) adopted by the Regional Water Board, as part of the Master EIR, includes measures for the protection of tribal cultural resources, including tribal consultation and coordination; site evaluations; and avoidance, minimization, and other specific mitigation, as necessary at the site scale.

1.7 Scoping and Public Involvement to Date

Since the signing of the 2000 Trinity River FEIS/EIR and ROD and efforts to begin its implementation, TRRP and other agencies have held numerous public meetings and open houses to obtain public input and provide the public with information on the overall TRRP rehabilitation activities. As part of ongoing TRRP outreach activities, TRRP staff members have met with local groups (e.g., fishing guides and mining groups) and individual landowners from the Junction City area to obtain stakeholder input and advice and to address general concerns not specific to the UCC and Sawmill rehabilitation activities. Notice of all public meetings and other pertinent project information are announced in local newspapers and posted on the TRRP’s website (www.trrp.net). Included below is a summary of the scoping and public involvement for the project sites to date.

1.7.1 Public Scoping

Public scoping for the UCC and Sawmill projects was initiated on December 4, 2023, and ended on December 17, 2023. At the onset of the public scoping period, notices informing the public of the intent to begin the environmental review process were posted on the TRRP and Reclamation websites and at the TRRP Weaverville office. Hardcopy scoping notices were also mailed and emailed to local landowners and interest groups. TRRP hosted an additional "open house" meeting for the public to learn more about the UCC project and provide input, at the Junction City Elementary School on March 15, 2023.

During public scoping for this project, four comments were received from the public. The local Nor-Rel-Muk Wintu tribal chair noted that the project sites are historically used by the ancestors of their native people. The scoping notice, newspaper advertisement, comments, and section of the EA that addresses comments are included in Appendix H.

1.8 Public Review of the Draft EA/IS

Reclamation and BLM are providing a reasonable time for public review of this Draft EA/IS, starting when the agencies posted the document to their official websites on May 2, 2024. The Draft EA/IS will be circulated to local, state, and federal agencies and to interested organizations and individuals during a 30-day review period that will end on May 31, 2024.

The formal CEQA 30-day public review period begins when the document is received by the California State Clearinghouse on May 2, 2024.

Copies of the Draft and Final EA/IS are available for review on the following websites:

- TRRP website at https://www.trrp.net/ucc-sawmill/
- BLM's National NEPA Register at https://eplanning.blm.gov/eplanning-ui/project/2031484/510.

2. Description of Alternatives

This chapter describes Alternative 1 (Proposed Action) and Alternative 2 (No Action) for the UCC and Sawmill channel rehabilitation projects.

2.1 Alternative 1 – Proposed Action

The Proposed Action alternative consists of a number of rehabilitation activities described and analyzed in Section 2.3.2 of the Master EIR (RWQCB and USBR 2009). The UCC and Sawmill sites are distinct locations where similar proposed channel rehabilitation activities would occur. The proposed rehabilitation activities are described below and in greater detail in Appendix I (UCC project details) and Appendix J (Sawmill project details).

The intended project outcome is the immediate and notable improvement of salmonid habitat for all life stages through creation of large areas with suitable flow depth, velocity, and cover. The UCC and Sawmill rehabilitation actions would restore a dynamic floodplain and habitat and, on a smaller scale, facilitate the dynamic fluvial geomorphic processes that existed before Lewiston and Trinity dams were completed. Project design objectives include physical, biological, and riparian outcomes.

Physical (Geomorphic/Flow)

- Promote dynamic fluvial river processes by removal of tailings piles from riverine valley bottom and recontouring of the river channel. Outcomes would include increased scour and deposition, lateral migration, sinuosity, and extent and frequency of floodplain inundation.
- Preserve alluvial potential of reach by removing and avoiding elements that restrict dynamic river processes, such as ballast material using cobble and boulders greater than 6 inches and large wood pilings.
- Promote fine sediment deposition on floodplain and low bench surfaces.
- Utilize mainstem, tributary and valley wall water sources and perched groundwater to reduce excavation and promote functional floodplains capable of natural riparian recruitment. This would benefit natural and constructed off-channel habitats.
- Reduce wood storage deficit by using dynamic wood structures.
- Reconnect and reinvigorate abandoned floodplains.
- Preserve bed complexity resulting from bedrock connections.

Biological

- Increase and sustain fry rearing habitat area across a range of flows during January 1 – April 30.
- Create seasonal surface water connection to off-channel habitats. Outcomes would include increased lateral and longitudinal connectivity of fry and juvenile rearing habitat (January 1 – April 30) and pre-smolt/smolt habitat (April 1–June 30).
- Increase rearing habitat capacity across the range of frequent discharges during the period when juvenile salmon are present in the river (600–1,000 cubic feet per second [cfs])
- Increase area of vegetated surfaces experiencing continuous inundation duration of ≥ 14 days during normal and wetter years for fry/juvenile rearing (January 1–April 30th).
- Increase area of vegetated surfaces experiencing continuous inundation duration of ≥ 14 days during Normal and wetter years for pre-smolt and smolt rearing (April 1st – May 31st).
- Enhance existing native amphibian habitat (facilitate local warming in channel margin habitats to improve existing populations and breeding use).
- Ensure that habitat availability continuously increases as discharge increases above baseflow.
- Increase recruitment and production of spawning gravel within the aquatic ecosystem.

Riparian

- Preserve the matrix of existing multi-story riparian vegetation and cottonwoods within the floodplains.
- Increase surfaces providing greater than 21 days of moist soils within 0.85 ft of the ground surface during seed dispersal (April 1–June 30) in normal and wetter years surfaces for natural riparian regeneration, especially near local cottonwood seed sources. Surfaces meeting the flow duration criteria would inundate at flows ranging from approximately 2,200 cfs to 3,500 cfs.
- Revegetate constructed floodplains and benches with native woody riparian species, conifers, and understory species.
- Increase riparian vegetation biomass and abundance in the tree, shrub, and herb layers along design features.
- Increase the number of trees, especially cottonwood, which could supply logs over 24 inches in diameter to the river.
- Increase native species richness and abundance.

2.1.1 General Project Design

This section describes the general methods and approaches common to the proposed activities at both the UCC and Sawmill rehabilitation sites. Sections 2.1.2 (UCC) and 2.1.3 (Sawmill) provide project activity details specific to each site.

2.1.1.1 Project Elements and Activity Areas

With the exception of recontouring and vegetation removal, each activity type (Table 2-1) and activity area has been assigned a unique alphabetic and numeric identification label that corresponds to the type and location of activity areas illustrated in Figure 2 (UCC) and Figure 3 (Sawmill) and described in Table 2-2 (UCC) and Table 2-3 (Sawmill). These labels are used throughout this document and in the Master EIR.

Table 2-1. Activity area labels and descriptions used throughout the EA/IS to describe the proposed action at the UCC and Sawmill sites

Label	Activity Area	Description
R	Riparian/Riverine[9]	Riparian/Riverine activities occur in floodplains and side channel areas at elevations above the active river channel's bed and bank at low flow (450 cfs) and below the ordinary high water mark (OHWM) flow level (6,000 cfs). Activities that would occur in R areas include lowering of floodplains by removing mine tailings that restrict inundation and increase river channelization. The intent of R area activities is to increase the extent and duration of inundated area at lower flow levels, expand river sinuosity, and improve habitat during the period when juvenile salmon are present in the Trinity River.
IC	In-channel	In-channel activities occur in wetted areas within the active low-flow river channel (below 450 cfs). Constructed features in the IC areas include riffles, medial bars, and other features that are intended to improve and expand available habitat at low flow levels. Wood placement (WP), structured logjams (SLJ), and wood racking (WR) features may be located in IC areas.
U	Upland	Excavated materials (e.g., fill) that would not be used for instream construction would be placed in upland areas as fill on mine tailings, legacy bars, and terraces that were historically subjected to a variety of placer mining activities. Where possible, upland areas are located on existing mining tailings or outside the 100-year flood zone. Within these activity areas, the depth of fill would range from about 1 ft near the edge to as much as 35 ft, depending on the activity area's size and location. Fill materials would be spread in uniform layers that would blend in with the natural terrain and provide stable slopes for revegetation.
C	Contractor Use Areas (Temporary and limited)	Temporary and limited Contractor Use areas would be used for stockpiling and sorting materials, staging equipment, contractor parking, coarse sediment processing equipment, and similar activities. U areas could also serve as transportation corridors for moving equipment and materials from one activity area to another. Water would be applied to these areas for dust abatement. The C areas would be reviewed by TRRP and the construction contractor before channel rehabilitation activities begin, to minimize disturbance to sensitive zones and have the smallest necessary disturbance footprint within designated C areas. C areas would be restored to pre-project conditions or better when construction is completed.
A	Access	Access areas would provide routes for construction equipment and C areas. and be used primarily by heavy equipment and other vehicles. The site-specific design and use of these routes would consider factors like topography, soils, existing vegetation, and the need for future vehicle access, e.g., for revegetation maintenance. Whenever possible, existing roads would be used for access, although some widening could be necessary.
X	Temporary crossing	Temporary crossings are areas where in-channel river crossings would occur during construction. To retain boat passage and to provide suitable conditions for adult and juvenile salmonid upstream and downstream passage (Bell 1990), all temporary crossings will be constructed to maintain adequate water depths (≥ 1 foot deep) and water velocities (≤ 2 ft per second) over as much of the length of the crossing as possible. A clean, oversized rock (D=5-12 inch) mixture with a high-ratio of cobble-to-gravel will be used to create all in-channel crossing surfaces. Larger particle size will prevent attraction of spawning salmon to the crossing area.All X areas would be designed and constructed to meet the requirements for heavy equipment such as trucks and excavators. The construction of X areas would likely require some vegetation removal on either side of the crossing within an approved activity area adjacent to the crossing. Upon completion of work X areas will be dismantled and materials contoured to the original or restoration-design river bottom during in-water work period (July 15-October 15). All excavated material (e.g., from lowering floodplains) would be placed on the same side of the river from which it was taken.

[9] The 90% Design Report (McBain Associates 2023) identifies “R” areas as Riparian; this EA/IS follows the nomenclature used in the Master EIR, in which “R” areas are denoted as Riverine. For the purposes of this project, Riverine and Riparian are synonymous when referencing design features.

Label	Activity Area	Description
W	Wetland	Wetland areas may be created, enhanced, or restored features that support wetland vegetation and are inundated or saturated to the ground surface for at least 21days in a water year.
WP	Wood placement	Wood placement features consist of individual pieces of wood, including whole trees, logs, rootwads, willow cuttings and slash, placed within the channel or floodplain. May be placed in small or large piles to address wood material deficit
SLJ	Structured logjam	SLJ are key engineered features in TRRP projects that are constructed of large wood, slash, earth, and rock (as ballast) and that are anchored into the channel or floodplain substrate by pilings.
WR	Wood racking feature	A large wood installation consisting primarily of vertical logs intended to rack wood delivered from upstream during high-flow events.

2.1.1.2 Rehabilitation Activities

A combination of rehabilitation activities would take place at each location and within the activity areas, concurrently and in sequence. Rehabilitation activities include excavation, recontouring, vegetation removal, wood placement and wood structures, and revegetation activities. The construction or excavation of alluvial features (e.g., side channels, wetlands) would increase channel complexity through promotion of channel migration, increased sinuosity, reduced fine sediment storage, increased coarse sediment transport, and restoration of depositional features (e.g., riffles, bars, and islands) available for spawning and rearing habitat.

2.1.1.2.1 Recontouring and Vegetation Removal

To varying degrees, vegetation would be cleared and removed at all activity areas that would be subject to rehabilitation activities except for in-river crossings, where no vegetation exists. Where re-contouring is part of the Proposed Action (e.g., floodplain lowering), the entire area would be subject to vegetation removal, but where possible, riparian vegetation (e.g., willows) would be salvaged and stored in the ESLs for use in subsequent revegetation efforts. Grading would be required to construct or enhance topographic features that could develop into functional riparian habitat. In addition to the activity areas that would be cleared prior to grading, site-specific removal of trees (e.g., conifers and hardwoods) would be required to enhance the safety of the work site, reduce fuel loading, and improve local conditions for individual tree growth and wildlife. The trees that are removed would be used to construct large wood habitat structures. As shown in Figure 2 and Figure 3 upland and contractor use areas include discrete locations where removal of vegetation is anticipated based on coordination with and authorization by BLM and landowners.

Native vegetation removed from activity areas, including contractor use areas, would be used for constructed surfaces and features such as in-river wood placement and wood habitat structures. Large wood may be chipped or masticated for use as organic material to increase nutrients and enhance water holding for revegetation areas. Activities would be accomplished using a variety of methods, including hand tools and heavy equipment (e.g., excavators, bulldozers, dump trucks, and scrapers). Where feasible, existing native riparian vegetation would be maintained to facilitate future recruitment.

As appropriate, large wood and accompanying slash removed as part of vegetation clearing activities would be retained and used to construct SLJ, WR, and WP areas during riverine and in-channel activities and to provide additional hydraulic and habitat complexity and temporary erosion control measures.

2.1.1.2.2 Revegetation

To varying degrees, impacts on vegetation are anticipated at each activity area at the UCC and the Sawmill sites. Project activities are designed to ensure that native riparian vegetation is minimally affected by implementation of the Proposed Action and replaced at a 1:1 ratio to meet the CDFW standard of no net loss of riparian area habitat within the Trinity River corridor. Revegetation would provide aquatic refugia at high flows, improve terrestrial habitat for birds and other wildlife, provide future wood recruitment, and provide future input of terrestrial nutrients to the river. Revegetation efforts would emphasize actions to create conditions that promote natural revegetation with the creation of wet (riparian) conditions. This would include burying or ripping wood into the soil in Upland (U) activity areas to enhance moisture retention.

The TRRP's objective for revegetation at the UCC and Sawmill project sites is to promote the establishment and growth of a more diverse assemblage of riparian shrubs and deciduous hardwoods than presently exists with varying ages so that the size, frequency, and distribution of native vegetation would increase in the future. By meeting this objective, the functions and values of native riparian and upland vegetation are expected to increase over time. In addition, revegetation would emphasize the expansion of large conifers and hardwoods that could be naturally recruited as woody material into the mainstem.

Detailed descriptions of proposed revegetation activities are in Appendix I (UCC project details) and Appendix J (Sawmill project details). The revegetation plan at both rehabilitation sites would include several planting zones with different combinations of herbaceous, shrub, and tree species planted at various densities. Revegetation of riverine and upland areas would rely on a combination of salvaged plants from onsite, purchased seed and container plants, and natural recruitment of native species, consistent with TRRP's Riparian Revegetation and Monitoring Plan (RRMP) (TRRP 2022).[10] Wood placement could be used in any activity area to enhance site conditions to benefit the revegetation effort. All C and U areas would be seeded and mulched with native grass seed; a cover crop of non-persistent recleaned wheat (*Triticum aestivum*) would be planted on private land within the R activity areas in conjunction with wetland plants and willows where appropriate.[11]

The TRRP anticipates that upland planting areas would be irrigated for up to 5 years after planting. Water for any irrigation would be pumped from the Trinity River, consistent with existing riparian water rights from the river on public lands. Equipment would be used to water plants as needed, stored on-site for use during dry periods, or brought in as water demands require. Any irrigation measures would be temporary to improve the establishment and survival of vegetation. The decision to implement irrigation measures would be based on site-specific monitoring information (e.g., soil moisture, plant stress) concerning planting areas during or after initial revegetation efforts. Post-project monitoring could indicate the need for additional irrigation and other measures to ensure successful revegetation. These measures could include (but are not limited to) weeding, in-planting, and replanting as conditions require. At the outset of tailings removal, efforts would be made to remove invasive vegetation. Piles of removed weeds would be managed to stop seed spread.

2.1.1.2.3 Detailed Master EIR Activities Described to Provide Additional Clarity Beyond That in Table 2-1 of the Master EIR

Impacts associated with the use of organic (e.g., large wood, slash) and inorganic (e.g., boulders) materials were covered in the Master EIR under Sediment Management activities along with other activities that would facilitate channel construction and maintenance (e.g., excavation and placement of alluvial material in in-channel and riverine areas). Large wood could be used as a sediment management activity, including SLJs, WP, and WR. Descriptions of the methods for recontouring and vegetation removal, revegetation, and temporary channel crossings area are described below.

2.1.1.2.4 Wood Features – Structured Log Jams, Wood Placement, and Wood Racking Features

Woody material is a natural component of healthy rivers. It provides important habitat for aquatic species by providing cover during high flows and from predators. The low-velocity areas collect suitable spawning materials, and woody organic materials are a food source for aquatic insects. Woody material can also help create and maintain beneficial habitat features such as pools, islands, and gravel bars.

SLJs are key engineered features in TRRP projects that are constructed of trees, slash, earth, and rock (as ballast). WP is less permanent and may consist of individual pieces, small accumulations, and large habitat structures. Both would be installed to mimic natural wood features that formed under historic conditions. Project features incorporating large wood pieces were designed to create habitat and prevent the recapture of the existing mainstem, while simultaneously allowing the design channel morphology to evolve naturally over time. A combination of SLJ and WP features would be used to strengthen highly erosive points in select activity areas until vegetation becomes established. In addition to erosion control, these features would be integrated into the design of R and IC activity areas to provide habitat cover and structure and would slow high-flow velocities to improve aquatic habitat over a range of flows.

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[10]TRRP would ensure that plant materials and BLM lands would meet the standards of the appropriate land management agency.

11 Per BLM policy, recleaned wheat would not be planted on lands managed by BLM.

Wood feature activities would potentially occur in any of the IC or R features. This activity could include large wood placement of individual pieces, small accumulations, and large habitat structures. The creation of SLJ, WR, and WP structures would develop topographical complexity and increase bank length to provide additional salmonid rearing habitat over a wide range of flows. The use of these structures would also improve spawning, holding, and rearing habitat for anadromous salmonids. Species of trees for large wood features would include Douglas fir and Ponderosa pine for SLJs while whole tree placement logs include additional on-site salvaged species including, but not limited to white alder, cottonwood, grey pine, and Pacific willow.

All large wood features would be designed so that local velocities would be safe for navigation during relatively low river flows (less than approximately 2,000 cfs). Natural wood material would be placed in a manner to reduce the chances of hazardous contact with swimmers and boaters at flows less than about 2,000 cfs.

These smaller wood installations are typically designed in the field during construction. Wood would be installed in selected locations throughout the site to provide immediate habitat for juvenile fish and other organisms. Individual installations of this “habitat wood” typically consists of one to a few pieces, often with slash, keyed into stream banks or floodplain areas.

2.1.1.2.5 Excavation and Placement of Alluvial Material in In-channel and Riverine Areas

Implementation of the Proposed Action would require placement of alluvial materials at activity areas throughout the UCC and Sawmill sites. The size of alluvial materials necessary to construct the in-channel and floodplain features varies, depending on the activity areas' function and location.

Three basic classes of rock materials would be used. Gravel and cobble would be used to construct the submerged portions (IC areas) when river turbidity is a potential problem during material placement. Pit run would be used as above-water fill in situations when turbidity is not a concern. Fines would be added to pit run or gravel/cobble as needed to make the grain-size distribution of the fill finer to be placed in areas where greater resistance to erosion is required. Several different materials mixtures would be used to meet the requirements for turbidity control.

All fill materials would be processed from materials excavated from within the project ESLs. Unprocessed material or “pit-run” dirt and gravel from on-site excavation could be used to construct features and for habitat enhancement, using methods that would be continuously monitored for compliance with turbidity standards when equipment is working in or near the river.

2.1.1.3 Construction Methods

In general, earthmoving equipment that could be used includes off-road articulated dump trucks, wheel loaders, tracked excavators, dozers, push-pull scrapers, water tenders, and graders. In addition, equipment capable of driving piles (e.g., large logs) with a hydraulic ram could be used to anchor or stabilize wood structures in various activity areas. For materials such as large wood that would be hauled from off-site, trucks capable of hauling up to 20 cy at a time would legally obtain the materials from forested lands throughout the Trinity River watershed. Large boulders, cobbles, and gravel would be obtained by processing alluvial material in the ESLs within contractor use areas. The processing of alluvial material needed for in-river work and fill and subsequent in-river construction are priorities to achieve project goals and reduce environmental impacts. If needed, processing of rock and sediment materials would take place on-site in contractor use areas.

During construction of in-channel activity areas, earthen berms would be left as necessary near the upstream and downstream ends of constructed features to ensure that water quality standards are met. These berms would be removed at the end of construction if the water within these contained areas is of appropriate quality for discharge to the river or they could be left in place for removal by subsequent high flows. Alternatively, water in the constructed features could be pumped to uplands or slowly metered into the mainstem post-construction. These techniques would ultimately reduce the amount of turbid water that would reach the Trinity River and would ensure that water quality permit requirements are met (e.g., no more than 20 nephelometric turbidity units (NTUs) at 500 ft downstream of construction).

2.1.1.4 Proposed Project Schedules

The proposed activities at the UCC and Sawmill sites may start after the permitting process has been completed, and all required authorizations have been obtained. Preconstruction activities, such as vegetation removal for access and materials (wood and gravel) staging, could occur in the interim between completing the NEPA and CEQA process and the rehabilitation activities if requisite permits and access agreements associated with these activities are in place.

In general, in-river construction (in IC areas); see is proposed to take place between July 15 and October 15. After September 15, additional BMPs would be in place to minimize impacts to adult coho and Chinook salmon. Excavation, processing of excavated material, and placement of excess material upland areas would occur primarily during the in-river construction window. Floodplain and upslope construction (e.g., excavation and movement of materials to upslope areas and revegetation) would take place concurrently, but also could occur throughout the year so long as water quality impacts were immeasurable. TRRP would minimize the impact of construction and trucking on local residents, roads, and neighborhoods. Trucking speeds would be kept below 30 mi per hour or appropriate for the specific roads being used, and construction schedules would generally be timed to occur between 9 a.m. and 5 p.m., Monday through Friday; but on occasion, project activities may begin as early as 7 a.m. and end at 7 p.m.

Revegetation activities would occur primarily in the wet months. Large-scale revegetation efforts would not occur until the fall after construction. After site construction, maintenance activities including efforts to maintain or enhance vegetation or riverine habitat diversity (e.g., channel topography) may be conducted as needed in authorized public land use areas in accordance with the general MMRPs (Appendix D) and ECs (Appendix E). Construction activities for site maintenance would be conducted as needed post-project during the period covered by the BLM ROW. Affected landowners would be notified in advance when maintenance activities are scheduled to occur. The BLM ROW application is in progress as of March 2024, for vegetation clearing and construction to begin as early as May 2024.

Construction for both projects would be sequenced as funding and environmental constraints allow and may span several years at each site. At the UCC project, upslope areas could be excavated to remove tailings (mining waste) as early as winter/spring 2024. IC and R work would be initiated as early as summer 2024 and may continue into 2026. At Sawmill, IC and R work would most likely occur over one summer–fall period, although the construction schedule is also dependent on funding. Based only upon current TRRP funding levels, project work at Sawmill could begin as early as 2026 but may begin as late as 2030, depending on Program funding and priorities.

2.1.2 UCC Rehabilitation Site

The UCC ESL encompasses a section of the river with poor salmonid rearing, spawning, and adult holding habitat, including a pronounced dip in rearing habitat capacity at flows between 450 cfs and 1,800 cfs. The TRRP identified the UCC site as having high potential for improvement in juvenile salmonid rearing habitat. By mechanically reshaping the current channel form, physical processes (riffles, bars, and backwaters) that would create and maintain fish habitat would be reestablished. The proposed UCC activities rely on improving floodplain connectivity and adding coarse sediment and large wood features to improve aquatic habitat. Two previous restoration efforts have occurred at UCC, yet monitoring efforts have shown that the previously lowered surfaces were not inundating on a frequent enough basis to provide substantial increases in juvenile winter rearing habitat under average river conditions. The proposed UCC activities are described in more detail in Appendix I and McBain Associates (2023) are summarized briefly below in Table 2-2. Figure 2 shows the locations of the UCC activity areas.

The UCC project design incorporates elements of the “stage-eight” restoration concept described by Cluer and Thorne (2014) consisting of an inset floodplain within a broader valley.,, The stage-eight restoration approach focuses on increasing floodplain connectivity to contemporary flows, adding large wood features, and creating abundant habitat features. The aim is to create a valley reach with abundant roughness elements that promote multi-channel river reach morphology that spreads baseflows over the valley. This approach is well-suited to low-slope areas where valley and floodplain connectivity can be restored to promote longitudinal and lateral sediment deposition.

The in-channel UCC activities would consist of a riffle (IC-1), a medial bar (IC-2), a riffle enhancement (IC-3), a lateral bar (IC-4), and a riffle/medial bar complex (IC-5) within the mainstem channel. Fill for in-channel construction would require 4,920 cy of gravel, cobble, pit run, and fines (Table 2-2). The in-channel UCC activities would provide a diversity of water depths and velocities across a wider range of flows. The UCC proposed project design features are described in detail below and summarized in Table 2-2. Figure 2 shows the locations of the UCC activity areas.

Four lowered floodplains (R-1, R-2, R-3, and R-4) totaling 15.8 ac would be excavated to be inundated and to function at flows ranging from about 500 cfs to more than 3,500 cfs. This would provide high-quality juvenile rearing habitat at greater range of flows during the months when juvenile salmon are in the river. Construction of these floodplains would require a total excavation volume of 141,580 cubic yards (cy) of mine tailings (Table 2-2). Multiple wood structures at SLJ-1 and SLJ-2 and wood racking features (WR-1 through WR-8) would split the overbank flow into two separate channels, creating hydraulic variability and local scour and deposition. Interactions between SLJs and WR placements and overbank flows would increase topographic and ecological diversity on the floodplain and, if fully developed, could create vegetated islands between two channel anabranches. Due to their low elevation and large width, the R-1, R-2, R-3, and R-4 floodplains are expected to be depositional in some areas and experience scour in others. The lower elevation of floodplain would encourage rapid colonization of riparian vegetation. This would increase both trophic production and rearing habitat quality in the area.

Six sites, totaling 10.8 ac, have been designated as upland areas. The upland areas would receive up to 136,930 cy of spoiled material (Table 2-2). Large wood placement (WP-1 through WP-6) would occur throughout the riverine zone as habitat structures. Structure log jams (SLJ-1) would be constructed immediately adjacent to IC-1 on the left bank, while SLJ-2 would be constructed downstream of IC-5 along the right bank in R-4. These would increase topographic and hydraulic diversity and promote roughness and vegetation establishment. A combination of whole trees harvested from the U-3 area and rootwad logs from both on-site and off-site would be used. The SLJ-1 and SLJ-2 would be constructed at the R-1 and R-4 side channel entrances to direct flow, prevent recapture of the existing mainstem channel, provide salmonid cover and velocity refugia, temporarily protect constructed surfaces, and increase large wood supply to the Trinity River over the long term. Large wood and racking features would be placed throughout the riverine areas (R-1 through R-4) for habitat and additional cover. A WR feature would be constructed at IC-1, within and adjacent to R-1 along the current shoreline. Wood and slash would also be heavily used on the floodplain to provide roughness and high-quality cover for fish, as well as for mulch to support revegetation. Whole tree placements would be included in habitat wood placement regions on lowered surfaces. In total, 793 logs would be incorporated into habitat structures, in addition to 40 whole tree placements and 1,700 cy of slash.

Up to five activity areas would be available as contractor use areas. Construction activities in contractor use areas may include grading, processing earth and tailing materials, clearing vegetation, and staging construction equipment. Disturbance would be minimized to the extent possible. The contractor use areas would be reviewed by the TRRP and construction contractor before activities begin. At that time and as construction begins, decisions would be made to minimize disturbance to sensitive zones and limit work to needed zones within designated contractor use areas.

An optional vault toilet is proposed as part of C-2 in association with river access infrastructure. The vault toilet would consist of an buried concrete vault that holds waste and an above-ground roofed shelter structure that houses the toilet and provides privacy. The vault capacity would be 500 to 1,500 gallons, and would be impermeable to the ground and water table. The shelter structure footprint of would be approximately 20 ft^2, and approximately 15 ft high with a venting pipe that extends at least 3 ft above the structure roof. The floor of the shelter structure would be constructed of concrete and would be sloped toward the door to prevent water from seeping under the riser and into the vault. An adequate open and unvegetated radius (approximately 20 ft^2) around the vault toilet structure and underground vault would promote airflow and venting. The manhole for pumping the vault would be located away from the dripline of the structure roof to prevent water from entering the vault, and would be covered with the rim of the opening raised a few inches from the ground to prevent water and precipitation from entering. The underground vault would be without input or output pipes, so no water flows through it and it would not be prone to flooding or inundation. The BLM would maintain the vault toilet.

A-1 through A-76 have been identified as access routes. A-3 is associated with an existing route open to the public accessed from SR 299 at the Junction City Campground. A-4 is an existing road that originates on private property and crosses onto BLM land. This route would need to be widened, and an additional access ramp would be constructed to connect the upper terrace to the river. The Jim Smith Mine would provide access via Red Hill Road (A-1 and A-2). A-5 would lead to the C-5 contractor use area from SR 299. A-6 starts at C-4 and connects to A-7, which provides access to U-4. SR 299, Dutch Creek Road, Red Hill Road, Senger Road, and Quail Road would be used to access the site. Landowner permission is needed to access Quail Road. Following completion of the Project, A-3b would be developed into the public access route along the eastern slope of U-2b. Access routes throughout the site support equipment access and construction within the UCC ESL. The total length of access routes to be used during project construction is 1.65 mi. A river crossing located at X-1 within IC-3, would be constructed and would meet the description and specifications outlined in Table 2-1.

Table 2-2. Overview of Activity Areas at UCC Rehabilitation Site

Activity Area[a]	Map Symbol Color	Design Feature to Be Constructed	Activity Area[b, f] (acre)	Excavation cy[c]	Fill cy[c]
IC-1		In-channel – Riffle	0.2	--	740
IC-2		In-channel – Medial bar	0.2	--	610
IC-3		In-channel – Riffle enhancement	0.5	--	1,360
IC-4		In-channel – Lateral bar	0.4	--	810
IC-5		In-channel – Riffle/medial bar complex	0.5	--	1,400
IC Subtotal			**1.8**	**--**	**4,920**
R-1		Riverine – Lowered floodplain[d]	5.8	63,000	--
R-2		Riverine – Lowered floodplain[d]	4.9	47,300	--
R-3		Riverine – Lowered floodplain[d]	2.7	18,550	--
R-4		Riverine – Lowered floodplain[d]	2.4	13,000	--
R and X Subtotal			**15.8**	**141,850**	**--**
WP-1 through WP-6		Wood placement – habitat wood area [e, f]	N/A	--	--
SLJ-1		Structured log jam[g] (45 ft, 29 logs, 5 with rootwads; up to 136 willow cuttings and 225 cu of slash) [f]	N/A	--	--
SLJ-2		Structured log jam[g] (35 ft, 22 logs, 4 with rootwads; up to 176 willow cuttings and 225 cu of slash) [f]	N/A	--	--
WR-1 through WR-8		Wood racking[f, g]	N/A	--	--
Wood Features Subtotal[h]			**N/A**	**--**	**--**
U-1a		Upland area	1.1	--	21,050
U-1b		Upland area	3.6	--	41,210
U-2a		Upland area	1.2	--	15,920
U2b		Upland area	2.5	--	29,410
U-3		Upland spoils area	1.4	--	16,340
U-4		Upland spoils area	1.0	--	13,000
U Subtotal =			**10.9**	**--**	**136,930**
A-1		Existing access (2,713 ft)	0.9	--	--
A-2		Temporary access[d, g] (1,264 ft)	0.4	--	--
A-2[a]		Existing access (483 ft)	1.2	--	--
A-3		Existing access (960 ft)	0.4	--	--

Activity Area[a]	Map Symbol Color	Design Feature to Be Constructed	Activity Area[b, f] (acre)	Excavation cy[c]	Fill cy[c]
A-4		Existing access (2,786 ft)	1.3	--	--
A-5		Existing access[d, g] (123 ft)	0.1	--	--
A-6		Existing access[d, g] (186 ft)	0.1	--	--
A-7		Temporary access[d, g] (836 ft)	0.3	--	--
X-1		Channel crossing[j]	0.1	--	--
X-2		Channel crossling[j]	0.1	--	--
X-3		Channel crossing[j]	0.1	--	--
A and X Subtotal =			**5.0**	**--**	**--**
C-1		Contractor use area	3.1	--	--
C-2		Contractor use area and river access infrastructure, including an optional vault toilet	1.7	--	--
C-3		Contractor use area	0.7	--	--
C-4		Contractor use area	0.6	--	--
C-5		Contractor use area	1.1	--	--
C Subtotal[d] =			**6.6**		
Total =			**40.1**	**141,850**	**141,850**

[a] IC = in-channel work area; R = riverine work area; X = temporary river crossing; U = upland fill area (fill); C = construction staging/contractor use areas; A = access routes; WP = wood placement; SLJ = structured log jam; WR = wood racking feature.

[b] Area calculated from GIS data.

[c] Provided by TRRP; cy = cubic yard.

[d] Revegetation after construction.

[e] Material used to construct WP features would include a total of 40 whole trees with diameters greater than 12 ft and with rootwads; 720 logs that are approximately 35 ft long with diameters between 12 and 24 ft with rootwads; 4,000 cy of slash and up to 5,760 willow cuttings.

[f] WP, SLJ and WR areas overlap and are part of the IC disturbance footprint acreage.

[g] Material used to construct WR features would include a total of thirty-two 12- to 16-ft-long logs with approximately 18-in diameters without rootwads. Approximately four logs per WR feature would be used.

[h] Access routes would also be used to transport woody materials (logs and/or slash) to activity areas on river left and right.

[j] Channel crossings would be temporary disturbances.

2.1.3 Sawmill Rehabilitation Site

The environmental conditions and highly modified nature of aquatic, riparian, and upland habitat within the Sawmill ESL presents a unique opportunity to reshape the channel geometry in this reach of the Trinity River, increase floodplain connectivity, reintroduce large wood, and increase the overall complexity and functionality of the habitat for fish and wildlife species. The proposed project would allow for improvements in juvenile salmonid habitat by introducing large areas with suitable flow depth, velocity, and cover. Riparian ecosystem health and floodplain connectivity are addressed throughout the project site. The design is intended to stimulate geomorphic processes that will drive the evolution of a structurally diverse floodplain landscape that offers a wide range of habitats and hydraulic conditions. Figure 3 shows where the activity areas are proposed, and Table 2-3 summarizes the acreage and the quantities of excavation and fill.

Table 2-3. Overview of Activity areas at Sawmill Rehabilitation Site

Activity Area[a]	Map Symbol Color	Design Feature to Be Constructed	Activity/ Treatment Area[b] (acre)	Excavation cy[c]	Fill cy[c]
IC-1		In-channel – channel fill	0.7	--	7,760
IC-1x		In-channel – channel fill	1.2	--	Undetermined
IC-2		In-channel – excavated side channel	0.8	6,080	--
IC-3		In-channel – riffle	<0.1	--	80
IC-4		In-channel – plug	0.1	--	360
IC-5		In-channel – mainstem channel meander	1.7	30,480	--
IC-6		In-channel – channel fill	1.0	--	4,000
IC-7		In-channel – island complex	1.0	--	20,060
IC Subtotal			**6.5**	**36,560**	**32,260**
R-1		Riverine – Floodplain bench on side channel[d]	0.2	855	--
R-2		Riverine – Raised depression[d]	0.1	--	1,010
R-3		Riverine – Raised depression[d]	0.1	--	240
R-4		Riverine – Lowered floodplain	0.5	3,835	--
R-5		Riverine – Lowered floodplain	1.9	44,645	--
R-6		Riverine – Lowered floodplain	1.0	8,240	--
R-7		Riverine – Chute plug	0.3	--	2,250
R Subtotal			**4.0**	**57,575**	**3,500**
WP-1 – WP-5		Wood placement for habitat at IC-2/R-1, IC-4, IC-5/R-6, IC-6, IC-7[e]	N/A	--	--
WP-6 and WP-7		Wood placement for floodplain roughness at R-5 and R-5[e]	N/A	--	--
SLJ-1		Structured log jam at IC-1 (30 – 40 horizontal logs and/or trees)[f]	N/A	--	--

Activity Area[a]	Map Symbol Color	Design Feature to Be Constructed	Activity/ Treatment Area[b] (acre)	Excavation cy[c]	Fill cy[c]
SLJ-2-		Structured log jam at R-7 (15 – 20 horizontal logs and/or trees)[f]	N/A	--	--
WR features		Wood racking feature at IC-7 (10 – 15 logs)	N/A	--	--
Wood Features Subtotal			**N/A**	**--**	**--**
U-1		Upland – spoils area[d]	0.6	--	6,635
U-2		Upland – spoils area[d]	2.5	--	53,265
U-3		Upland – spoils and processing [d]	1.8	--	16,440
U Subtotal			**4.9**	**--**	**76,340**
A-1		Existing access (573 ft)	0.3	--	--
A-2		Existing access (1,550 ft)	0.7	--	--
A-3		Existing access (458 ft)	0.2	--	--
A-4		Temporary access (1,241 ft)	0.6	--	--
A-5		Temporary access[d, g] (373 ft)	0.2	--	--
A-6		Temporary access[d, g] (137 ft)	0.1	--	--
A-7		Temporary access[d, g] (175 ft)	0.1	--	--
A-8		Temporary access[d, g] (147 ft)	0.1	--	--
A-9		Temporary access[d, g] (102 ft)	<0.1	--	--
X-1		Temporary crossing (261 ft)[j]	0.1	--	--
A and X Subtotal			**2.1**	**--**	**--**
C-1		Contractor use area[d]	0.6	--	--
C-2		Contractor use area[d]	1.7	--	--
C-3		Contractor use area[d]	1.5	--	--
C Subtotal[d]			**2.8**	**--**	**--**
Total			**20.3**	**94,135**	**112,100**

[a] IC = in-channel work area; R = riverine work area; U = upland fill area (fill); C = construction staging/contractor use areas; A = access routes; SLJ = structured log jam.
[b] Area calculated from GIS data.
[c] Provided by TRRP; cy = cubic yard.
[d] Revegetation after construction.
[e] Material used to construct WP features would include a total of 195 whole trees and/or logs over 20-ft long with diameters greater than 12-in; and slash and willow cuttings.
[f] WP, WR and SLJ areas overlap and are part of the IC disturbance footprint acreage.
[g] Access routes would also be used to transport woody materials (logs and/or slash) to activity areas on river left and right.
[j] Channel crossings would be temporary disturbances.

Prior to any TRRP activities, the Sawmill site was occupied by tailings piles left over from the period of industrial gold mining when connected-bucket dredges operated along the Trinity River from Trinity Center to the North Fork Trinity River (Bailey 2008). In 2009, a previous TRRP rehabilitation project was conducted within the Sawmill ESL, with restoration features both upstream and downstream of the current gravel harvesting/processing area. Since 2009, the Sawmill Site has continuously been used as a source area and processing site for sediment used in TRRP's sediment augmentation and channel reconstruction activities within the restoration reach of the Trinity River. The removal of the tailing piles and the resulting disturbance necessitated rehabilitation of the Sawmill Gravel Processing site. Since 2009, the Sawmill site has been a source of sediment for other TRRP rehabilitation projects and sediment augmentation, and source material is still processed at the site. TRRP is proposing several rehabilitation activities, including realigning a portion of the channel, repairing a side channel breach, and realigning the side channel, and creating more riparian habitat.

The IC would consist of eight proposed areas to improve the channel complexity. IC-1 and IC-1x would consist of filling 1.9-ac of the Cemetery side channel composed of alluvial fill with strategically placed wood, large cobble and small boulders that would prevent flow from flowing into the mainstem through an existing breach (Table 2-3). The plug in the existing breach would last for many years and would contain all flow in the side channel during low flow periods but would begin to overtop as flows exceeds 8,500 cfs.

IC-2 is a new 0.8-ac channel alignment for the Cemetery/Sawmill side channel complex, about 100 ft to the east, which would contain surface flow during the winter baseflow period at about one-third of the discharge. This would increase the availability of rearing habitat for juvenile salmonids. A 0.2-ac floodplain bench (R-1) would be adjacent to the IC-2 side channel (IC-2) to reroute flow from the Cemetery/Sawmill side channel complex (Figure 3). Together, IC-1, IC-2 and R-1 would re-establish perennial flow into the Sawmill side channel. Riparian vegetation that establishes on R-1 would support the increased rearing habitat for juvenile salmonids in the new proposed side channel.

IC-3 would be a 0.04-ac constructed riffle within the Cemetery side channel immediately downstream of the mouth of the IC-2 side channel realignment. The riffle would encourage flow into the new alignment and reduce flow conveyance in the existing side channel downstream from that point. IC-4 would plug a short 110-ft (0.1 ac) section of the Sawmill side channel, which would be raised to the level of the adjacent floodplain elevation to promote inundation of the surrounding overbank area to increase salmonid rearing habitat. IC-5 would be a 1.9-ac excavated channel meander that would reroute a short reach of the mainstem to convey nearly all streamflow at all discharge levels and increase hydraulic and geomorphic complexity compared to the existing straight, entrenched channel. Large eddy regions would offer low velocity rearing habitats and to increase the scouring forces against the bedrock on river right near Burner Hole. R-6 is adjacent to the proposed mainstem channel meander on river right and would consist of excavating 1.0 ac of existing terrace to create a portion of an island complex. R-6 would form the right bank of the proposed channel meander (IC-5) and would provide shallow water areas along its wetted edge. This area would be fully inundated at 8,500 cfs and would support a large eddy region that offers refuge from high velocities over the full range of discharges, including up to 11,500 cfs.

Coarse sediment would be placed in a 1.0-ac area (IC-6) of the mainstem to raise the bed elevation to direct flow into the new channel meander (IC-5) as well as into a portion of the existing mainstem channel along the bank on river right. The fill added to IC-6 would mitigate the bed incision that has occurred since the removal of artificial grade control in 2009. Maintenance of IC-6 would rely on replacement of coarse bed material from upstream. Failure to adequately supply mobile coarse sediment downstream of Lewiston Dam could eventually deplete the input fluxes needed to prevent incision. On the upstream edge of IC-6, large wood consisting primarily of vertical posts intended to rack wood delivered from upstream during high flow events would be installed. IC-7 (1 ac) would continue the fill material of IC-6 downstream. R-6 is adjacent to IC-7 and together they form an island complex along the new channel meander (IC-5). The island complex would also provide shallow water areas along its wetted edge over a wide range of flows from base flow to more than 8,500 cfs when the island complex would be fully inundated. Additionally, the island complex would support a large eddy region that would offer refuge from high velocities over the full range of discharges.

R-2 and R-3 are existing depressions within the floodplain that are proposed to be filled to eliminate bullfrog habitat. R-3 would continue to be inundated and would provide aquatic habitat at a discharge of about 3,500 cfs. R-4 and R-5 are existing terraces composed of legacy mine tailings, which would be lowered to create expanded floodplain and habitat. R-4 (0.5 ac) would be inundated at 1,000 cfs to 3,000 cfs, while R-5 (1.9 ac) would be inundated at 600 cfs to 1,000 cfs. Riparian vegetation is expected to develop at both features and provide quality habitat over a wide range of moderate to high discharge volumes. This would improve juvenile rearing habitat quality and contribute to greater trophic production over time. Riparian vegetation colonization would be accompanied by fine sediment deposition, but rates of vertical accretion would likely remain low because of limited supply of fine sediments upstream of Rush Creek. R-7 is a proposed chute plug that would consist of wood and coarse sediment at the head of an existing chute channel that traverses the existing bar opposite the Burner Hole. The plug would reduce flood conveyance over the backside of the bar so that floods would be more effective for maintaining the baseflow depth and volume of Burner Hole in the future. The 0.3-ac plug would prevent flood waters from entering the chute for discharges less than 6,000 cfs.

A large-wood structure consisting primarily of vertical posts located at the upstream end of the R-6/IC-7 island is proposed. Smaller clusters (three to five pieces) of large wood would likely to be utilized as structural elements in other locations where resistance to erosion is important, such as in the IC-1 containment structure and the R-5 chute plug.

U-1, which would cover 0.6 ac and could accommodate about 6,650 yd^3 of material, would receive all spoils generated on river right. U-2 would cover about 2.5 ac and could accommodate more than 53,000 yd^3 of material. Because a portion of U-2 would be used for sediment supply, the elevation would be lowered through the years. U-3 is an additional upland spoils and processing area. Like U-1 and U-2, U-3 would receive excess excavated materials, but in U-3 the spoiled material would be graded to create a flat surface covering 1.8 ac that could serve as a materials processing yard after construction is complete. Depending on the elevation of this working surface, about 16,500 yd^3 of materials could be stored in the U-3 area. Sediments stored in U-2 or harvested directly from U-3 could be sieved and stockpiled in U-3 or loaded onto trucks for rehabilitation purposes elsewhere along the Trinity River.

Three areas (C-1, C-2, and C-3) would be available as contractor use areas. These areas respectively occupy 0.6, 1.7, and 0.5 ac. River left access would be from an existing spur (A-1) off Goose Ranch Road. River right access would be from Rush Creek Road and Lewiston Cemetery Road, which would provide access to existing roads (A-2 and A-3). Whenever possible, existing roads would be used for access, although some widening may be necessary. The total length of existing roads that would be used and possibly widened or improved is 0.3 mile. Several temporary access routes (A-4, A-5, A-6, A-7, A-8, A-9, and a portion of A-2) are proposed. The total length of temporary access routes to be used during construction would be 0.6 mile. Following completion of the Project, temporary access routes would be restored to either pre-project condition or be incorporated into the new feature. One temporary crossing (X-1) that would provide access from river right across the existing channel to the southern end of the proposed channel meander is proposed. The temporary crossing would be 0.1 mile.

2.1.4 Environmental Commitments and Mitigation and Monitoring Reporting Requirements

There is a clear distinction between NEPA and CEQA with respect to mitigation measures. The ECs (Appendix E) have been incorporated into Proposed Action to ensure that there are no significant impacts as defined under NEPA. This approach is consistent with guidance issued by the Council on Environmental Quality (CEQ) for federal agencies in implementing, monitoring, and evaluating ECs identified in EAs completed for compliance with NEPA.

Reclamation has committed to implementing the mitigation measures under CEQA that are identified in the Master EIR. In most cases, the ECs are equivalent to the CEQA MMRPs described in Appendix D. No new CEQA mitigation measures beyond those adopted in the Master EIR were identified as necessary to address potential effects to the resources addressed in this chapter.

Throughout this document, these ECs are identified with a unique label (e.g., EC-CU-1). An alphanumeric coding system that corresponds to the CEQA mitigation measures found in Appendix C of the Master EIR/Programmatic EA is used to identify each CEQA mitigation measure incorporated into the Proposed Action as an EC pursuant to NEPA. Where a NEPA EC corresponds to a referenced CEQA mitigation measure as described in the MMRP (Appendix A of the Master EIR), it is cross-referenced (e.g., EC-CU-1 [4.10-2a]).

2.2 Alternative 2 – No Action

Alternative 2 (No Action) represents ongoing activities and operations of the TRRP and other entities involved in restoring the Trinity River except for the Proposed Action. Under the No Action Alternative, no rehabilitation activities would be implemented at the UCC or Sawmill sites. Other activities already being implemented in compliance with the 2000 Trinity River FIES/EIR and ROD would continue to be implemented. These include:

- Implementation of the annual flow release schedule based on recommendations of the Trinity Management Council (TMC) to Reclamation
- Implementation of annual high-flow coarse sediment (gravel) augmentation at designated long-term sites along the Trinity River mainstem, based on recommendations of the TMC to Reclamation
- Implementation of watershed restoration and rehabilitation projects at other locations in the Trinity River Basin, including those funded by the TRRP, members of the TMC, BLM, and the Trinity County Resource Conservation District.

3. Affected Environment and Environmental Consequences

3.1 Introduction to the Analysis

This chapter describes the affected environment at the UCC and Sawmill rehabilitation sites and analyzes the potential direct and indirect environmental effects associated with implementing the Proposed Action, and Alternative 2, the No-Action Alternative. Direct impacts or effects are those that are caused by an action and occur at the same time and place as the action. Most direct effects would occur at the activity areas within the ESLs where excavation would occur, vegetation would be removed and replanted, material would be processed or stockpiled, or access roads would be constructed. Indirect effects are those that are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable. The primary indirect effects would occur outside or downstream of the project sites. The analysis for each resource area includes discussions of the existing environmental setting, potential environmental impacts, and MMRPs and ECs.

Table 3-1 identifies the resource topics considered in this document as well as those eliminated from further consideration. Appendix C contains the CEQA environmental checklist form based on the Master EIR/Programmatic EA that was used to screen and identify resource topics and issues to carry forward for further evaluation. Resource topics eliminated from further consideration due to the resource not being present or the issue not being a concern at the rehabilitation sites are also listed in this table.

Table 3-1. Resource Topics Considered or Eliminated from Further Consideration in this EA/IS

Resource Topic	Analyzed in EA/IS?	Comments
Visual Resources/ Aesthetics	Yes	Temporary and long-term changes to visual resources or aesthetics are addressed. Scenic resources associated with scenic highways are not present. Light and glare were addressed in the Master EIR, and no issues were identified.
Agricultural Resources	No	Agricultural lands (e.g., timber production lands) and uses are not present.
Air Quality	Yes	Temporary construction-related emissions and dust are addressed. No long-term air quality impacts, including greenhouse gas contributions, are expected.
Cultural Resources	Yes	Impacts on tribal cultural resources, archaeological resources, and Historic Properties are addressed. The alluvial nature of the geology of the project ESLs is not conducive to the occurrence of paleontological resources.
Environmental Justice	No	The Proposed Action would not disproportionately affect low-income or minority populations because these populations do not exist in the project ESL.
Fishery Resources	Yes	Impacts on aquatic habitat and special-status fish are addressed. Proposed project elements would affect anadromous fish habitat and populations. Vehicular river crossings would create water quality issues, affect fish habitat, and increase the potential for a spill of hazardous materials into the river.[*] Proposed action elements could affect habitat for native mussels.
Forestry Resources	Yes	Forestry resources are addressed. This topic is covered in the Vegetation, Wildlife, and Wetlands section.
Geology and Geologic Hazards	No	Unique geological resources are not present. Geologic hazards were addressed in the Master EIR, and no issues were identified.

Resource Topic	Analyzed in EA/IS?	Comments
Geomorphology and Soils	Yes	Soil disturbance, erosion potential, changes to the geomorphology of the river, and disposal of excavated materials are addressed in the Geomorphology and Soils section.
Greenhouse Gases	Yes	Greenhouse gas emissions are addressed in the Air Quality section.
Hazardous Materials	No	Hazardous materials were addressed in the Master EIR, and no issues associated with hazardous materials sites were identified. Use of hazardous materials during construction activities is addressed in the Soils, Fishery Resources, Wildlife, and Water Quality sections.
Hydrology and Flooding	Yes	Changes to the hydrology of the river and floodplain effects are addressed in the Hydrology and Flooding section.
Indian Trust Assets	Yes	Impacts on Indian Trust Assets associated with uses of the river and its resources (e.g., fisheries) are incorporated by reference from section 7.17 of the Master EIR.
Indian Sacred Sites	No	No Indian Sacred Sites have been identified in or near the project ESL. Cultural resource environmental commitments cover potential discoveries.
Land Use	Yes	Consistency with federal agency resource management plans is addressed. Consistency with the Trinity County General Plan is also addressed.
Mineral Resources	Yes	Impacts on recreational mining and from use of mineral resources are addressed. These topics are addressed in the Recreation and the Geomorphology and Soils sections.
Noise	Yes	Increased noise during construction activities is addressed in the Noise section.
Population and Housing	No	No populations or housing would be affected; activity areas were configured to avoid recreational residences.
Public Health and Safety	No	Hazards to the public were addressed in the Master EIR, and no issues were identified. Indirect public health or safety concerns are addressed in the Air Quality, Noise, Recreation, and Transportation and Traffic sections.
Public Services	No	Public services were addressed in the Master EIR, and no issues associated with the increased demand for or disruption of public services were identified. Access-related issues are addressed in the Transportation and Traffic sections.
Recreation	Yes	Potential disruptions to recreational uses are addressed in the Recreation section.
Socioeconomics	No	Socioeconomics were addressed in the Master EIR in the Population and Housing section, and no issues were identified.
Transportation and Traffic	Yes	Increased traffic and access-related issues are addressed in the Transportation and Traffic section.
Tribal Cultural Resources	Yes	Tribal cultural resources are addressed in the Cultural Resources section.
Utilities and Energy	No	Utilities and energy were addressed in the Master EIR, and no issues were identified, and this topic is not analyzed in this EA/IS.
Vegetation, Wildlife, and Wetlands	Yes	Vegetation removal, disturbance to wildlife, and modifications of wetlands are addressed in the Vegetation, Wildlife, and Wetlands section. Proposed project elements could alter amphibian and reptile habitat and impact resident species. Restoration activities have the potential to introduce noxious weeds into the area.
Water Quality	Yes	Temporary and long-term water quality impacts are addressed in the Water Quality section.
Wild and Scenic Rivers	Yes	The recreation and aesthetic values of the Trinity River are addressed in the Wild and Scenic River section. Proposed project elements could impact Wild and Scenic River characteristics and recreational activities. The project ultimately enhances Wild and Scenic River characteristics.

3.2 Land Use

3.2.1 Methods

This section provides information on land ownership and management, management plans, and existing land uses for UCC and the Sawmill sites. Land ownership was obtained from Trinity County and information on the 100-year floodplain was obtained from the Trinity County Floodplain Insurance Study (Federal Emergency Management Agency 2016). The Trinity County General Plan (Trinity County California 1988) was reviewed to review land use on private lands. The Northwest Forest Plan (Forest Service 1995) and the BLM's Redding RMP are applicable to all BLM-administered lands in the project sites and were reviewed for pertinent information.

3.2.2 Affected Environment

The Federal Emergency Management Agency (FEMA) 100-year flood zone spans the entire valley bottom along the Trinity River. No houses are in the 100-year flood zone at either the UCC or Sawmill site. Both ESLs are primarily located on BLM lands (see Section 1.1 and Figure 2 and Figure 3). In addition to BLM-managed lands, the UCC ESL encompasses private land, while the Sawmill ESL includes private land and State of California-administered public land.

BLM-administered lands are used primarily for recreational activities associated with the Trinity River. Boats and rafts provide access to BLM-administered lands along both sides of the river through the project ESLs. Historic use of the land included mining, and dredge tailings are present along the river corridor.

There are 21 private parcels adjacent to the UCC ESL boundary and 7 private parcels adjacent to the Sawmill ESL. Most are classified as residential use, but there are no residences located within the UCC ESL boundaries. Two of the private parcels adjacent to the UCC ESL are designated by Trinity County as Agricultural Forest (a.k.a. timber production) with a 20-acre minimum lot size, and those portions of the parcels in the 100-year floodplain of the Trinity River have an overlay designation of Scenic Conservation. Both the UCC and Sawmill ESLs have one adjacent parcel designated as Open Space by Trinity County. Land uses on private lands are guided by the Trinity County General Plan and Junction City Community Plan. The ACS and other elements of the Northwest Forest Plan are applicable to all BLM-administered lands in the project ESL.

3.2.3 Environmental Consequences

3.2.3.1 Alternative 1 – Proposed Action

New and existing access routes would provide entry into both private and public parcels for project activities, as described in Section 2.1.2 (UCC) and Section 2.1.3 (Sawmill; Figure 2 and Figure 3).The proposed rehabilitation activities would not change the uses of lands in the project ESLs nor require changes to land use allocations or zoning designations. Project activities on private land would not result in the removal or damage to buildings or infrastructure and would result in a restored dynamic river landscape that would enhance visual quality and recreation opportunities for landowners within and adjacent to the ESLs (see Section 3.3 *Recreation,* and Section 3.4 *Visual Resources and Aesthetics*). The new river access infrastructure at UCC would provide improved long-term access to the Trinity River from BLM lands on the river right but would not affect the overall recreational uses of the area and river.

Temporary disruptions to recreationists using the river and adjacent land near the project ESLs could occur during the rehabilitation activities (i.e., 3 to 6 months for up to three years for construction and up to 5 years for periodic revegetation efforts), but no long-term impacts are anticipated and use of the land in the project ESLs would be the same as under current conditions. Recreation-related impacts are discussed in Section 3.3: *Recreation,* and access-related impacts are discussed in Section 3.6, Transportation and Circulation. The restored floodplain and habitats and new river access infrastructure would enhance the area for recreationists and would maintain open space and scenic views near the private residences.

Based on the nature of the rehabilitation activities, the Proposed Action would be consistent with current uses and zoning of the project ESLs, as defined by BLM and Trinity County. BLM's Redding RMP describes various objectives for resource conditions applicable to federal lands in the project ESLs, and the rehabilitation activities would help BLM achieve these objectives for the Trinity River. The Redding RMP Resource Condition Objectives addressed by this project are (1) protect and enhance existing recreation values and provide opportunities for water-based recreation, (2) maintain the existing scenic quality of the immediate river zone, (3) improve anadromous fisheries habitat within the 100-year floodplain to a good condition, (4) improve the riparian habitat to Class I or Class II condition, and (5) maintain and increase, if feasible, forage for deer. The Proposed Action would also help BLM ensure compliance with the RMP by helping to meet Riparian Reserve Standards and Guidelines. Additional details concerning the consistency of the TRRP activities with BLM's Redding RMP are presented in Appendix F (Aquatic Conservation Strategy Consistence Evaluation), Appendix K (*Compliance with Standards and Guidelines for Surveying and Managing Species*), and Appendix G (*Wild and Scenic River Analysis and Determination*).

The Proposed Action was developed to be consistent with the BLM RMP and the Trinity County General Plan. Therefore, CEQA-specific impacts considered under this resource topic would be less than significant (CCR, Title 14, Division 6, Chapter 3, Section 15382).

3.2.3.2 Alternative 2 – No Action Alternative

Under the No Action Alternative, land uses in the project ESLs are expected to remain similar to existing uses. Therefore, there would be no impacts to land use as defined in the CCR, Title 14, Division 6, Chapter 3, Section 15382.

3.3 Recreation

3.3.1 Methods

Existing recreational facilities and activities were obtained from TRRP and BLM records and local knowledge of the Trinity River. Effects on recreation resources were determined qualitatively by determining the extent that recreational facilities and activities would be impacted by proposed activities.

3.3.2 Affected Environment

The primary use of BLM-administered lands in the project ESLs is associated with various types of recreational activities. Private lands in proximity to the project ESLs are used seasonally for various recreational purposes (e.g., fishing, river access).

The Trinity River provides year-round recreational opportunities, including boating, kayaking, canoeing, rafting, inner tubing, fishing, swimming, camping, gold panning, wildlife viewing, picnicking, hiking, and sightseeing. Fishing for Chinook salmon, steelhead, rainbow, and brown trout is a major recreational activity on the Trinity River throughout the year. Fishing intensity varies between years but is prevalent between August and April.

The BLM, in agreement with the Forest Service, issues up to 100 permits for commercial fishing guides along the upper reach of the Trinity River. The Forest Service issues 13 rafting permits for the river downstream at Pigeon Point. Except for an unauthorized boat launch adjacent to BLM-managed land at UCC, which is heavily used by anglers, visitor use in the project ESLs is generally light throughout the year, with an occasional bank anglers or drift boat or raft transiting the area. The Sawmill processing site is mostly BLM-managed land that currently does not have recreational activities, and there is no designated access to the river.

There are no campgrounds or other formal recreational sites in the project ESLs, however the UCC ESL is adjacent to the Junction City Campground on SR 299. Public access to BLM-administered lands in the ESLs is present on both sides of the river at Sawmill and on river right from SR 299 at UCC. An unauthorized boat launch is adjacent to BLM-managed land within the UCC ESL.

The Sawmill ESL includes an informal trail that is not maintained by any official entity. The trail is used by recreationists to access the river from the fishing access parking lot on River Right. A small footbridge on BLM land that was constructed in the 1980s, is currently located near the Sawmill IC-4 activity area (Figure 4). The bridge was likely constructed to support fish hatchery activities that took place at the Sawmill site during 1988, and is not formal recreation infrastructure (personal communication with Derek Rupert, Reclamation Fisheries Biologist). This bridge and trail are not maintained by BLM nor any other official entity.

3.3.3 Environmental Consequences

3.3.3.1 Alternative 1 – Proposed Action

The Proposed Action would require construction in the active river channel, the floodplain, and adjacent upland areas, as described in Chapter 2. Construction activities could result in temporary disruptions to access at UCC from SR 299 on river right, and to access at Sawmill on both sides of the river. River access and recreational opportunities would continue to be available at other locations along the river up- and downstream from both ESLs. Because disruptions to recreational activities in the project ESLs would be temporary, this impact would be less than significant. The new river access point infrastructure and proposed vault toilet at UCC would result in a long-term improvement to river access on river right.

The informal trail at Sawmill would likely remain in place after rehabilitation activities, but would remain an unmaintained access point. The small, unmaintained footbridge near IC-4 would be dismantled. IC-4 would be a wood and gravel plug, and would be inundated at all flows in order to increase the habitat area. The channel that the bridge currently spans would be wadable at river volumes up to 800 cfs, and would be about 3 ft deep at 1,000 cfs (see the Sawmill design details in Appendix J).

Temporary increased turbidity and suspended solids levels would adversely affect water quality (see Section 3.11 refer to the discussion in Section 4.8, Recreation, of the Master EIR) and could adversely affect aesthetic resources. Flows that typically contribute to good fishing tend to be clear, although a small amount of turbidity may reduce fish wariness; increases in turbidity may therefore affect the recreational experience of anglers and the aesthetic values held by other recreationists. Five specific ECs developed to reduce water quality impacts have been incorporated into this alternative to reduce the impacts of increased turbidity levels that could be visible to recreational users (see Appendix E [EC-WQ-1 through EC-WQ-5]).

Construction activities associated with this alternative could pose a temporary physical hazard to recreational users of the river and cause short-term resource damage to lands used for recreational activities in and adjacent to the project ESLs. Potential physical hazards to recreationists include the presence of temporary river crossings at both UCC and Sawmill, operation of construction equipment and vehicles in and around the project sites, changes in the river's subsurface movement as a result of the in-channel addition or removal of gravel, the addition of wood structures into the channel, and an increased potential for a hazardous materials spill (e.g., diesel and hydraulic fluid) from construction equipment and vehicles operating in and adjacent to the river. The potential for hazardous material spills and unstable riverbanks and/or uplands resulting from excavation, material addition, road creation, and vegetation removal could also result in a hazard to recreational users. It is possible that IC activity areas may undergo a period of temporary shallowing in which boat passage may become difficult. Such a situation would be unlikely to persist for more than a few years under normal flow conditions, but in the event of a prolonged drought, boat passage could remain an issue until larger floods return.

Reclamation would prepare and post precautionary signage and public notifications warning of in-river construction to reduce the hazards to recreational users that would be associated with in-river construction activities (see Appendix E [EC-RE-1; 4.8-1a]). This approach has worked well for previous TRRP projects and has been particularly effective in reducing impacts on in-water recreational activities such as boating and fishing.[12]

After construction is completed, the activity areas would be evaluated by Reclamation in conjunction with land managers and owners to identify specific prescriptions required to minimize any further potential safety risks to recreational users and to ensure the avoidance of any further project effects to resources occurring on recreational lands in the project boundaries.

With the inclusion of CEQA mitigation measures described in this section, impacts under CEQA considered under this resource topic would be less than significant (see Appendix E [EC-WQ-1: 4.5-1a-1e; EC-WQ-2: 4.5-2a – 2c; EC-WQ-3: 4.5-3a-3c; EC-WQ-4; 4.5-1e; and EC-RE-1: 4.8-1a]; CCR, Title 14, Division 6, Chapter 3, Section 15382).

[12] Section 3.14 (Wild and Scenic Rivers Analysis) and Appendix G provide additional information on potential impacts on fishing and other water-based recreation.

3.3.3.2 Alternative 2 – No Action

Under Alternative 2, recreational resources and uses in the project ESLs are expected to remain similar to existing conditions. Therefore, there would be no impacts to recreational resources or disruption of uses as defined in the CCR, Title 14, Division 6, Chapter 3, Section 15382.

3.4 Visual Resources and Aesthetics

3.4.1 Methods

The visual resources within the UCC and Sawmill ESLs were described qualitatively, and assessment of impacts were determined based on the degree to which a change would occur. Visual resources and aesthetics were analyzed in Section 4.12 of the 2009 Master EIR, and use the significant criteria outlined in Appendix G of the 2009 Master EIR. Effects to visual resources were qualitatively assessed based on the BLM's Visual Resources Management (VRM) criteria and using the significance criteria outlined in the 2009 Master EIR (Section 4.12.2).

The significance criteria outlined in the 2009 Master EIR (Section 4.12) includes: adverse effects to scenic views and vistas; damage to scenic resources including vegetation, rock outcrops, and historic buildings, degradation to the visual character of the area; introduction of new physical feature out of character with the existing land use; alternation of a site so that it is disharmonious and dominates the surroundings; introduction of new glare or nighttime lighting so that views are inhibited; inconsistency with local land use plans; or inconsistency with federal or state laws and policies governing visual resources.

BLM is responsible for managing its lands for multiple uses while ensuring that the scenic values and open space characteristics of these lands are considered before authorizing actions. BLM accomplishes these responsibilities through its VRM system. The VRM criteria classifies land based on visual appeal, public concern for scenic quality, and visibility from travel routes or observation points. VRM classes are used to identify the degree of acceptable visual change in a landscape based on its physical and sociological characteristics. Classes I and II are the most valued, Class III represents a moderate value, and Class IV is of the least value. The project ESLs are within a VRM Class II area.

BLM Manual 8431, Visual Resource Contrast Rating, provides the following management objectives for VRM Class II (BLM 1986):

> *Class II Objective: The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.*

3.4.2 Affected Environment

The Trinity River is considered an important aesthetic and visual resource for residents of Trinity County and visitors to the area, and an integral component of the communities and residential areas throughout the county. Residents and visitors recreate on and adjacent to the river. It also is a central component of the landscape that is incorporated into the county's rural residential lifestyle. This section describes the scenic values and visual resources that are known to occur in the UCC and Sawmill Gravel Processing ESLs.

Due to the lack of sensitive receptors, remote setting, and limited public access, key observation points were not developed for this project. Drivers on SR 299 have periodic views of the UCC site, which would be intermittently screened by vegetation along the road. Similarly at the Sawmill site, drivers on Goose Ranch Road would have glimpses of the Sawmill site, also screened by existing vegetation. Recreationists, landowners, and nearby residents may visit the sites at various times of the year. Existing tailings piles occur at the Sawmill site, which boaters on the river likely see. Processing at Sawmill occurs periodically and is visible from the river as well. Due to the deposited tailings and extensive riparian vegetation, views from the river are limited when on or adjacent to the river.

Because of the rural nature of the river corridor, the primary sources of artificial light within or adjacent to the project ESLs are limited to nearby residences and vehicle headlights on roads to the ESLs. In addition, g may occur during daylight hours, as the sun is reflected off vehicles and equipment occasionally operating or parked within activity areas on a temporary basis or from water or light-colored alluvium associated with floodplain and terrace features.

3.4.3 Environmental Consequences

3.4.3.1 Alternative 1 – Proposed Action

The project activities would affect private property, State of California lands, and BLM-managed lands, which include BLM VRM Class II areas (BLM 1986). The potential impacts of the Proposed Action would include changes from the removal of vegetation, removal of mine tailings, lowering of floodplains, construction of inundated surfaces and in-channel features, construction of or improvement to access routes, creation and use of staging and gravel processing areas, wood structures placement, and use of upland areas for construction spoils. Heavy equipment, which might be seen from boaters on the river, would be used for construction and placement of wood features. Views of equipment would create a temporary effect on visual resources.

At UCC, the construction of a new river access infrastructure and an optional vault toilet would have a permanent affect to visual resources in the immediate vicinity. The vault toilet would be placed so that it is hidden from view when on or near the river and from SR299. The river access infrastructure and vault toilet would be similar to structures that occur in other reaches of the Trinity River and are not expected to decrease the recreational experience in a meaningful way.

Once completed, these rehabilitation activities are intended to restore the form and function of an alluvial river, thereby enhancing the overall aesthetic values and visual resources associated with the Trinity River and the surrounding landscape. The adverse impacts are expected to be temporary from construction of the project features described in Chapter 2. The long-term (i.e., greater than 5 years) outcome would improve the visual diversity of the corridor, and the short-term (i.e., 1–5 years in duration) impacts would diminish over time as vegetation is reestablished and the river's restored function and form result in improved habitat and aesthetics.

The activities associated with this alternative are intended to be functional (e.g., to enhance fisheries and restore river meanders) and complement the aesthetic values and visual resources associated with the rehabilitation sites. Overall, the Proposed Action incorporates the UCC and Sawmill ESLs' diversity of landscapes and vegetation types to define the location, character, and magnitude of the rehabilitation activities at the sites. For example, materials excavated from historic tailings piles would be removed from the floodplain, and the floodplain returned to a more natural-looking riverine landscape. Retention of existing vegetation at key locations would lessen the degree of visual impact. Furthermore, to conform with agency visual resource guidance, side-channel plugs, SLJ, WP, and WR features would emphasize the appearance of naturally occurring sediment deposition and wood features along wild rivers and would blend in with the scenic character of the river. From the river itself, most of the adjacent activity areas—the IC, R, SLJ, WP, and WR areas—would be at least partially visible to boaters. Because of their historic character, the tailings piles present within the floodplain are considered a visual asset by some and would still be apparent in the U areas and areas in with the floodplain where activities do not occur.

The activities described in Chapter 2 provide a framework for reestablishing the physical processes necessary to enhance the alluvial attributes and complexity of the river channel and floodplain over time, particularly those attributes that are flow-dependent. Over time, this alternative would produce gradual, ever-improving changes to the aesthetic quality of the Trinity River while maintaining the character of the surrounding land uses.

As discussed in Section 3.3 *Recreation* and Section 3.11 *Water Quality*, increased turbidity and suspended solids levels would adversely affect water quality and could adversely affect aesthetic resources. Five specific ECs developed to reduce water quality impacts have been incorporated into this alternative to reduce the impacts of increased turbidity levels that could be visible to recreational users (see Appendix E, EC-WQ-1 through EC-WQ-5).

Under the Proposed Action, sensitive receptors, which could be exposed to changes in the visual character of the Trinity River and the adjacent corridor due to construction and revegetation activities, would be limited in terms of the number of viewers and the limited timeframe of activities. Because of the nature of the project, the rehabilitation activities would not result in degradation or obstruction of a scenic view. While some increase in the level of artificial light or glare would occur during the construction activities, this impact would be limited in both time and intensity.

The BLM VRM class II would be maintained because the existing character of the landscape would be retained and the level of changes to the landscape would be low. Many impacts on the visual resources would be infrequent and not observed by many visitors along the river. Because effects on visual resources would be intermittent and/or temporary, there would be less than significant impacts under CEQA on visual resources, as defined in the CCR, Title 14, Division 6, Chapter 3, Section 15382.

3.4.3.2 Alternative 2 – No Action Alternative

Under the No Action Alternative, there would be no degradation or obstruction of a scenic view because of construction because the project would not be implemented. The level of artificial light or glare would be similar to the existing condition. Therefore, there would be no impacts on aesthetic resources as defined in the CCR, Title 14, Division 6, Chapter 3, Section 15382.

3.5 Cultural Resources

3.5.1 Methods

The Cultural Resources analysis included a review of the files at the Northeast Center of the California Historical Resources Information System, Trinity County Historical Society, Jackson Museum, and the files of the BLM Redding Field Office applicable to the area of potential effect (APE) delineated by Reclamation and BLM. Previous archaeological and historical literature pertinent to the general location was given special attention. Other local individuals representing tribes collaborated in the investigation. The current list of contacts from the Native American Heritage Commission was consulted, and contacts with responsible parties were made. This draft EA/IS will be provided to all contacts for comments. Public scoping notices were sent to interested parties, and the comments received are included in Appendix H.

Cultural resources include prehistoric, historic, archaeological, and tribal properties. The 1966 NHPA is the primary federal legislation addressing the federal government's responsibility related to cultural resources. Title 54 U.S.C Section 306108, commonly known as Section 106 of NHPA, requires the federal government to take into consideration the effects of an undertaking on any historic property, such as cultural resources listed on or eligible for inclusion in the National Register of Historic Places. The BLM, consistent with its authorities and responsibilities under the Federal Land Policy and Management Act of 1976 (FLPMA), is charged with managing public lands located in California and Nevada in a manner that will "protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values," and "that will provide for outdoor recreation and human occupancy and use."

Authorities for managing cultural resources and programs of historic preservation exist under NEPA (Pub. L. 91-190), FLPMA (Pub. L. 91-579), Archaeological Resources Protection Act (ARPA, 16 USC 470), Native American Graves Protection and Repatriation Act (NAGPRA, 25 USC 3001), Historic Sites Act of 1935 (Pub. L. 73-292), Antiquities Act of 1906 (16 USC 431-433), American Indian Religious Freedom Act (AIRFA, Pub. L. 95-341), Executive Order 13007 ("Sacred Sites," 61 FR 105), and NHPA (Pub. L. 89-665).

Federal law requires that the Proposed Action complies with Section 106. Pursuant to 36 CFR Section 800.2(a)(2), if more than one federal agency participates in an undertaking, the agencies may designate a lead federal agency to act on their behalf to fulfill their collective responsibilities under Section 106. For the Proposed Action, BLM has designated Reclamation as the lead federal agency for the Section 106 process.

As stated in Section 1.6, the Governor of California approved AB 52 in September 2014. AB 52 requirements apply to projects with a Notice of Preparation, a Notice of Negative Declaration, or a Mitigated Negative Declaration filed on or after July 1, 2015. Therefore, the requirements of AB 52 did not apply to the preparation and adoption of the 2009 Master EIR prepared for the TRRP. However, implementation of the Section 106 process ensures that tribal cultural resources were considered and incorporated into the Master EIR, which is incorporated by reference into this EA/IS. Moreover, the MMRP (Appendix D) includes measures consistent with the protection of tribal cultural resources, including tribal consultation, resource evaluations, avoidance, minimization, and other specific mitigation as necessary at the site scale.

3.5.2 Affected Environment

Archaeological studies along the Trinity River corridor have suggested human occupation reaching back to more than 7,000 years before the present (Fitzgerald and Hildebrandt 2002; Sundahl and Berrien 1986). This reach of the Trinity River is the traditional homeland of the Wintu, who are now organized as the Nor-Rel-Muk Wintu Nation and include Wintu representatives at the Redding Rancheria. The prehistory of the Trinity River area has been analyzed in conjunction with various BLM, Caltrans, and Reclamation projects conducted throughout the watershed, largely as the result of archaeological field work accomplished in preparation for reservoir construction in the river valleys, TRRP restoration projects, highway projects, and BLM projects. Additional information on the cultural resources, Native American communities, and mining history of the Trinity River watershed is provided in Section 4.10.1 of the 2009 Master EIR and on the TRRP website in reports written by AECOM (2013) and Bailey (2008).

3.5.3 Environmental Consequences

3.5.3.1 Alternative 1 – Proposed Action

Pursuant to 36 CFR Section 800, Reclamation, as the lead federal agency for Section 106 of the NHPA, Reclamation will complete the identification and evaluation process through consultation with federally recognized tribes and interested parties; and evaluate resources for their eligibility for the NRHP, assess adverse effects, and make a determination regarding effects on cultural resources. The Section 106 process would be completed prior to the signing of the decision document for the project.

Under Alternative 1, the Section 106 process would be followed. Pursuant to 36 CFR Section 800, documented resources within the APE will be evaluated for eligibility for the NRHP through the consultation process. For any resources found eligible for listing on the NRHP, an assessment of effects would be made and, if necessary, adverse effects resolved. A Section 106 consultation package for the Proposed Action will be prepared for the State Historic Preservation Officer (SHPO) for consideration of the lead agency's recommendation; and consultation letters will be prepared and sent to federally recognized tribes and interested parties.

3.5.3.2 Alternative 2 – No Action Alternative

Under Alternative 2, the condition of cultural resources would remain similar to existing conditions. There would be no undertaking as defined in 36 CFR Section 800.16(y) and, therefore, no potential effects on historic properties. Furthermore, there would be no impacts on cultural resources as defined in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.6 Transportation and Circulation

3.6.1 Methods

The traffic and circulation affected environment and environmental consequences is based on review and analysis of publicly available data from Caltrans and Trinity County. The Trinity County Transportation Plan (Trinity County Transportation Commision 2022) and the Lewiston Community Plan (Trintiy County 1986) were reviewed and used to inform the analysis.

The ownerships or maintenance jurisdictions of roads that would be used for accessing sites, including roads used for hauling sediment, wood, and heavy equipment, were obtained from the Trinity County GIS Portal (Trintiy County 2023). Average daily traffic counts for SR 299 between Weaverville and Junction City, and Douglas City and Lewiston Road (Rd) were obtained from Caltrans (2020). Traffic counts for most Trinity County roads were obtained from the county. For roads where traffic counts were unavailable, traffic volume was estimated by tallying the number of residential structures within the communities accessed by roads that would be used for rehabilitation activities at the project ESLs. The results were then multiplied by a reasonable number of assumed trips per day per residence. This multiplier is derived from the character of the road (e.g., the number of residences on each road, if the road is only residential or mixed commercial and residential, if the road provides access to recreation areas, and if the road dead ends or provides connection between other roads). The estimated number of trucks needed for hauling equipment to and from sites were used to determine the impacts on local traffic and circulation.

3.6.2 Affected Environment

The transportation infrastructure in the vicinity of the UCC and Sawmill ESLs is typical of a rural environment, with low traffic and sparse development (U. S. Census Bureau 2023). SR 299 is the main highway in the region and is a designated truck route between the Sacramento Valley and the coastal communities of northern California. SR 299 provides access to the county roads that provide access to the ESLs. Access for the UCC and Sawmill ESLs is on county and residential roads, off SR 299 and Lewiston Rd Roads. Access routes for UCC ESL include SR 299, Dutch Creek Rd, Senger Rd, Quail Rd, and Red Hill Rd. Access roads for the Sawmill ESL include Goose Ranch Rd, Lewiston School House Rd, Lewiston Rd, Lewiston Cemetery Rd, Rush Creek Rd, and Trinity Dam Boulevard. Junction City Elementary School is located on Red Hill Rd, near the entrance to UCC at A-1.

SR 299 is a designated truck route built to withstand occasional use by heavy equipment and has a moderate volume of existing traffic. County roads are typically 20 to 24 ft wide, including shoulders. However, not all county roads meet this description, and some may have edges and shoulders that are damaged and not sufficient to allow for trucks to pass in opposite directions. The roads used to access and deliver materials to the UCC and Sawmill ESLs are generally curvy, with some tight turns and stretches where traffic speeds are reduced to ensure public safety. Table 3-2 lists the roads that would be utilized by the project, along with the road ownership/maintenance jurisdiction, road type, and average traffic counts.

Table 3-2. Project-utilized roads for the UCC and Sawmill rehabilitation projects

Site and Transportation Description	Project-Utilized Roads	Road Ownership/ Type	Average Traffic Count (vehicles per day)
UCC ESL			
Description • Wood would be hauled to the site • Heavy machinery would be hauled to/from and used on-site	SR 299	Caltrans / paved	3,050[a]
	Dutch Creek Rd.	TCDOT / paved	413[b]
Considerations • Bridge at Dutch Creek Rd. • Junction City Elementary School located on Red Hill Rd.Winding roads and sharp turns along SR 299 and Red Hill Rd.	Red Hill Rd.	TCDOT / paved	415[b]
Sawmill ESL			
Description • Wood would be hauled to the site • Heavy machinery would be hauled to/from and used on-site	Lewiston Rd.	TCDOT / paved	4,650[a]
	Goose Ranch Rd.	TCDOT / paved	973[c]
Considerations • Narrow bridge crossing at Lewiston Rd. • Winding roads and sharp turns along Lewiston Rd., Rush Creek Rd. and Goose Ranch Rd.	Rush Creek Rd.	TCDOT / paved	204[b, d]

[a] Traffic counts are from Caltrans 2020.

[b] Traffic counts are from TCDOT 2021.

[c] Traffic counts are derived using the assumptions described in Section 3.6.1.

[d] Traffic counts for Rush Creek are for the entire length of the road but only a short distance between Lewiston Rd and the UCC ESL would be used for the project.

3.6.3 Environmental Consequences

3.6.3.1 Alternative 1 – Proposed Action

Under the Proposed Action, construction equipment and vehicles would temporarily increase traffic on Dutch Creek and Red Hill Rds. during construction at UCC, and on Lewiston Rd and Goose Ranch Rd at Sawmill. During the rehabilitation construction period, heavy equipment (e.g., large trucks, excavators, and backhoes) would be mobilized to the project ESLs prior to the rehabilitation activities and be removed upon completion of these activities to minimize the number of daily trips, in accordance with the environmental commitments outlined in Appendix E (EC-TC-2 [4.16-2a, 4.16-5a]).

During construction, 20 to 30 workers and their vehicles would access the project ESLs daily and could use access from both river left and river right. Construction activities at the project ESLs would take place between 7:00 a.m. and 7:00 p.m., Monday through Saturday. The proposed project may vary in duration and intensity during the construction periods (see Section 2.1.1.4). Delays at school bus stops and to commuters are not expected from project traffic.

To reduce impacts to highways and county roads, trucks carrying heavy equipment and materials would operate within the California legal weight limits. The temporary use of SR 299 and county roads (see Table 3-2) to access the project ESLs during rehabilitation activities would not significantly impact existing levels of service or average traffic volumes. No road closures would be required. Traffic control measures would be implemented to alert travelers to the rehabilitation activities and minimize conflicts during the activities in accordance with environmental commitments listed in Appendix E (EC-TC-1 and EC-TC-4 [4.16-2a, 4.16-5a]). Access to adjacent private properties would be maintained throughout the construction period in accordance with environmental commitment EC-TC-2; however, access to the project ESLs would be restricted and would not be available to the public during construction.

In accordance with EC-TC-3 [4.16-4a], Reclamation would survey road conditions before the rehabilitation activities and assess the degree of post-construction restoration that may be needed. If damage from project activities results, repairs would be completed after rehabilitation activities are completed. Access routes across private land may require some degree of grading and/or resurfacing to restore them to pre-disturbance conditions. Reclamation would coordinate with landowners to ensure these routes are in acceptable condition after the rehabilitation activities. Temporary access routes across public lands would also be restored to preconstruction conditions.

Post-construction activities (i.e., revegetation, maintenance, and monitoring) would require intermittent access by TRRP staff and consultants for 3 to 5 years and occasional access for construction equipment, given that implementation of adaptive management measures is required to ensure the success of the rehabilitation activities. This traffic would be minimal and would not affect local traffic volumes or roadway conditions.

With the inclusion of ECs outlined in Appendix E (EC-TC-2 [4.16-2a, 4.16-5a] and EC-TC-3 [4.16- 4a]) and MMRP in Appendix D, impacts under CEQA on traffic and transportation would be less than significant (CCR, Title 14, Division 6, Chapter 3, Section 15382).

3.6.3.2 Alternative 2 – No Action Alternative

Under Alternative 2, traffic conditions and traffic circulation would remain similar to existing conditions. Therefore, there would be no impacts to traffic conditions as defined in the CCR, Title 14, Division 6, Chapter 3, Section 15382.

3.7 Air Quality

3.7.1 Methods

Ambient air quality data are available from the Weaverville air monitoring station, which is located approximately 6 mi east of the UCC ESL and 6 mi west-northwest from the Sawmill ESL. Air quality data from this station may not be a precise representation of ambient air quality at the UCC and Sawmill ESLs, but it does provide a good indication of air quality in the vicinity. Effects on air quality were determined qualitatively by assessing the existing contributions to air quality and the amount of fugitive dust and other particles expected from the alternatives. The Road Construction Emissions Model Version 9.0.0 was used to estimate greenhouse gases (GHG) emissions for combustible fuel using assumptions of how many and what types of vehicles and machinery would be used to complete construction of access routes (if applicable) and project activities (CAPCOA 2023). The calculation is based on an assumption that rehabilitation activities at UCC would occur over approximately 15 months with 24 workdays per month. Sawmill is assumed to be constructed over 6 months with 24 days per month and would be completed within one year (see Section 2.1.1.4).

3.7.2 Affected Environment

Trinity County has a climate characterized by hot, dry summers and cold, moderately wet winters (NRCS 1998). Most precipitation in the county results from major storms originating in the Pacific Ocean; however, short thunderstorms resulting from localized climatic conditions occur in the summer months. Precipitation at the UCC and Sawmill ESLs is predominantly from rainfall, with occasional snow in the winter (NCUAQMD 1995). Trinity County has an average summer high temperature of 93.9 degrees Fahrenheit (°F) and winter low of 27.3°F. Trinity County's low population densities, limited industrial and agricultural operations, and minimal traffic congestion contribute to good air quality.

Locally, air quality and contributions of greenhouse gases (GHGs) to the atmosphere along the Trinity River corridor are influenced by topographic features, microclimate, and pollutants such as road dust and smoke from wildfires in the summer and wood stoves and fireplaces during cold weather (i.e., particulate matter [PM] 10 microns or less [PM_{10}] and particulate matter 2.5 microns or less [$PM_{2.5}$]). Occasional high levels of PM in Trinity County generally coincide with regional wildland fire events during the dry summer months and with localized woodstove use and brush-burning activities during periods of cool, wet weather.

Sensitive receptors consist of human populations, particularly children, seniors, and individuals with health risks, located where there is a reasonable expectation of human exposure to pollutants. The UCC ESL is located near Junction City Elementary School. Neither ESL the UCC nor Sawmill ESL is near a hospital, senior housing, or other facilities where concentrations of sensitive receptors may be located. There are, however, a number of residential properties adjacent to both ESLs (see Section 3.2

Many of the Trinity County residents use wood as a source of heat and utilize burn piles to reduce fuels and wildfire risk on private parcels. Operation of heavy equipment on private parcels within and adjacent to the project ESLs occurs periodically. Both the burning of wood and other vegetation and the operation of heavy equipment periodically contribute to localized increases in pollutants such as PM and GHGs. Reoccurring wildfires throughout the Trinity River watershed periodically result in smoke and ash that drastically increase the PM levels within and adjacent to the project ESL.

3.7.3 Environmental Consequences

3.7.3.1 Alternative 1 – Proposed Action

Rehabilitation activities associated with the Proposed Action would require excavation, grading, disposal of earthen materials, and the use of vehicles and heavy equipment on unpaved roads and access routes, all of which would generate fugitive dust in the project ESL. Fugitive dust and diesel vehicle exhaust emissions would also result from activities associated with vegetation removal and would result in PM in the immediate vicinity of construction activities within the ESLs. Airborne PM is not a single pollutant, but rather a complex mixture of particles that vary widely in size, shape, and chemical composition. Particles with a diameter of 10 microns or less (PM10) are particles small enough to pass through the throat and nose and enter the lungs. PM that may result from rehabilitation activities may include smoke, vehicle exhaust, and dust, including wind-blown dust from disturbed natural lands. Fine particulate matter is defined as particles that are 2.5 microns or less in diameter (PM2.5) and comprise a portion of PM10 (CARB 2024). Project activities would occur during the dry summer and early fall months, when background PM levels may be elevated by wood stove use, brush burning, or wildland fires.

At the UCC and Sawmill ESLs, estimated PM10 fugitive dust is expected to be about 20.6 lbs. per day, of which PM2.5 comprises 4.2 lbs. The total volume of PM10 fugitive dust that is expected to be produced from construction is 3.6 tons at UCC and 1.5 tons at Sawmill. These volumes are below the national and state thresholds for impacts human health, based on 24-hour and annual exposure (CARB 2024).on Because exposure to PM would be localized around construction activities, and with ECs in place to protect worker health and limit exposure, there is not expected to be an adverse effect on the public or on workers from construction activities. There are few residential properties within or adjacent to the project ESLs that would be exposed to temporary changes in air quality, but it is unlikely that construction activities would cause airborne PM to occur in the vicinity of residences or sensitive receptors. Dust control measures would be used to reduce project-related impacts (see EC-AQ-1 [Section 4.11-1] and EC-AQ-2 [Section 4.11-1]). Once rehabilitation activities have been completed, project impacts on air quality from fugitive dust and vehicle emissions would cease. Additionally, project activities are expected to result in opportunities to increase the amount of native riparian and upland vegetation on exposed dirt surfaces.

To determine the impact of this e Proposed Action, a "carbon footprint" was developed based on the project's potential generation of GHGs (primarily carbon dioxide [CO_2]) Based on these calculations, GHG emissions associated with the use of heavy equipment would be measurable over the course of the project. At UCC, it is estimated that a total of 193.9 tons of CO_2 would be released during the project construction. At Sawmill, the estimate is 79.1 tons of CO_2.[13] GHG emissions and any effects on global climate change would not be cumulatively significant, considering the amount of GHG emissions generated by this alternative in the context of current local air quality conditions. As a result, Alternative 1 represents a much smaller action than that analyzed in the Trinity River Master EIR.

Due to the high fire hazard and history of equipment-caused fires in Trinity County, construction contractors would be required to follow the BLM's applicable regulations as well as California PRC 4428–4442 during dry periods to minimize the potential for the initiation and spread of fire from the work site. Compliance with these federal and state requirements would reduce the potential for emissions due to wildland fire.

This alternative would include vegetation removal and temporary disturbance of soils. The vegetative material not used during the construction of SLJ and WP activity areas would be chipped and incorporated into the floodplain or placed in upland areas to enhance growing conditions and reduce the potential for erosion. Some slash may be burned in the winter, which would add a small amount of emissions near the burn pile. All areas not subject to inundation would be revegetated with native riparian and upland plant and tree species.

With the inclusion of CEQA MMRP in Appendix D and the ECs outlined in Appendix E (EC-AQ-1 [4.11-a-1a, 4.11-2a] and EC-AQ-4), impacts under CEQA on air quality would be less than significant (CCR, Title 14, Division 6, Chapter 3, Section 15382).

3.7.3.2 Alternative 2 – No Action Alternative

Under Alternative 2, air quality conditions would remain similar to the existing conditions. Therefore, there would be no impact on air quality as defined in the CCR, Title 14, Division 6, Chapter 3, Section 15382.

3.8 Noise

3.8.1 Methods

Sensitive receptors are specific geographic points, such as schools, hospitals, residences, or recreational facilities, where people could be exposed to unacceptable levels of noise. Noise-sensitive receptors identified in or near the project ESLs include private residences and recreation users of the river corridor. Noise sources and sensitive receptors were identified to qualitatively describe the affected environment and to assess effects.

In 2002, a community noise survey was conducted for Trinity County (Brown-Buntin Associates 2003) as part of the update for the County General Plan – Noise Element. The nearest survey points to the project ESLs were four sites: two about 1 mile east of UCC in Junction City (Junction City School and Winton Pass Road [Lot 25)] and two about 0.5 mile away from Sawmill in Lewiston (2nd Avenue and Lewiston Road.)

3.8.2 Affected Environment

Noise-sensitive land uses identified in the project ESLs include private residences and recreation use of the river corridor. Noise levels in the UCC and Sawmill project vicinity are governed primarily by road noise along Red Hill Rd and SR 299 (located on river left and river right of UCC ESL) and Rush Creek Road and Goose Ranch Road (located on river left and river right of Sawmill ESL) from local residential traffic, occasional commercial traffic (e.g., logging trucks), and other miscellaneous sources (i.e., chain saws, lawn mowers, overhead aircraft, barking dogs, children at play). There are 21 private parcels adjacent to the UCC ESL boundary and 7 private parcels adjacent to the Sawmill

[13] The Road Construction Emissions Model Version 9.0.0 was used to calculate GHG emissions for combustible fuel (CalEEMod 2023).

ESL. Most are classified as residential use, but no residences are located within the project ESLs boundaries. In addition, recreational use of the river corridor by boaters (i.e., anglers and rafters) occurs throughout the year. Recreational users may be close to one or more activity areas during the construction period as they float through this reach, but the duration of their exposure to construction noise would depend on the type of recreational activity. For instance, a boat floating through the project ESLs may take as long as an hour to get through the project reach, while a fisher person may spend multiple hours in or near the project reach.

The community noise survey results indicate that noise levels at these four noise-sensitive areas range from 44 to 60 dB Len d,[14]. which are typical of small communities and rural areas. Maximum noise levels observed during the noise survey were generally caused by local automobile traffic and heavy trucks (Brown-Buntin Associates 2003). Occasional aircraft overflights and construction activities were other sources of maximum noise levels. Background noise levels in the absence of these maximum noise-generating causes are largely attributable to distant traffic, wind, birds, and insects.

3.8.3 Environmental Consequences

3.8.3.1 Alternative 1 – Proposed Action

Under the Proposed Action, noise from construction activities and transportation of equipment would temporarily dominate the noise environment in and adjacent to activity areas for varying periods. Construction activities would generate maximum noise levels ranging from 65 to 84 dB Ldn at 50 ft, although intervening terrain and vegetation could reduce these levels. Construction noise would be temporary and is expected to occur primarily between July and September; however, work may take place beyond this timeframe.

Adjacent landowners would be notified by letter prior to project construction. The environmental commitments outlined in Appendix E (EC-NO-1 [4.14- 1a] and 2 [4.14-1b]) would ensure that temporary noise impacts would be minimized by noise-muffling devices, so sensitive receptors would not be negatively affected for extended periods. Construction activities would be scheduled between 7:00 a.m. and 7:00 p.m., Monday through Saturday, while most heavy equipment operations within the project ESLs would occur between 8 a.m. and 5 p.m., Monday through Friday. Construction activities would be prohibited on Sundays unless a variance is granted by both Trinity County and BLM managers.

Residences located near the site would be subjected to varying degrees of construction noise associated primarily with construction traffic entering and exiting the project ESLs during the authorized work periods. It is not anticipated that ground vibration created by project activities would be detectable, nor would the activities result in structural damage at any sensitive receptor location. Recreational users in the general vicinity of the site could encounter increased ambient noise levels during construction activities. While such an increase could be significant, noise impact would be temporary and localized and would be minimized with the implementation of environmental commitments EC-NO-1 and 2 (Appendix E4.14-1, 4.14-1b).

If activities are proposed prior to the end of the nesting season or if migratory birds are using habitat in the project ESLs for nesting and rearing young, preconstruction surveys would be performed to identify activity areas where noise-related impacts would be deferred until after the nesting season or until a qualified biologist determines the young have left their nest. The increase in noise effects on wildlife (e.g., raptors, song birds, bat roosts, and ring-tailed cat dens) could be significant. These impacts would, however, be temporary and localized and would be minimized with the implementation of environmental commitments EC-VW-6 and 7 (Appendix E: 4.14-1a, 4.14-1b).

With the inclusion of CEQA MMRPs in Appendix D and ECs outlined in Appendix E (EC-NO-1 [4.14-1a], EC-NO-2 [4.14-1b], EC-VW-6 [4.14-1a], and EC-VW-7 [4.14-1b]) and described in this section, impacts under CEQA related to noise would be less than significant (CCR, Title 14, Division 6, Chapter 3, Section 15382).

[14] dB Ldn = The average equivalent sound level during a 24-hour day, obtained after the addition of 10 A-weighted decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.

3.8.3.2 Alternative 2 – No Action Alternative

Under Alternative 2, noise impacts on sensitive receptors would remain similar to existing conditions. Therefore, there would be no noise-related impacts as defined in the CCR, Title 14, Division 6, Chapter 3, Section 15382.

3.9 Geomorphology and Soils

3.9.1 Methods

For the UCC site, geomorphic conditions were assessed using a combination of information gathering by McBain Associates and HVT staff from site visits, aerial imagery review, and data collected on channel topography, pebble counts of bars and riffles, and cross section topography at 8 of 12 historical cross sections. Data collected were used for numerical analyses and hydraulic modeling (McBain Associates 2023).

For the Sawmill site, Yurok Tribe Fisheries et al. (2023) used existing topographic data (collected by various methods over the years) and recent modeling to describe existing conditions and to assess potential effects.

Soils within the ESLs were obtained from the Web Soil Survey created by the Natural Resources Conservation Service (NRCS 2024). Soil map units are described in the Soil Survey of the Trinity County, California, Weaverville Area, and Soil Survey of the Shasta-Trinity National Forest Area, Parts of Humboldt, Siskiyou, Shasta, Tehama, and Trinity Counties, California (NRCS 2018).

3.9.2 Affected Environment

Flows in the Trinity River downstream from Trinity and Lewiston dams have been regulated since Trinity Dam was closed in 1960. Diversion of up to 90% of the Trinity River to the Sacramento River basin in the 1960s and 1970s led to substantial geomorphic changes in many locations along the Trinity River, with the predominant responses being channel narrowing and vegetative encroachment along the channel margins (USFWS and HVT 1999). Major influences on the river channel are flow regulation from Lewiston Dam and a wide array of historical large-scale mining sites. Historical mining impacts, large floods, flow regulation, and continued delta building have created the contemporary site geomorphology found today.

Millions of cy of mining debris were discharged from hydraulic mining at the LaGrange Mine on Oregon Mountain as well as other upstream hydraulic mines over a 60-year period ending in the 1930s. Massive aggradation occurred from hydraulic mining, which was followed by large-scale dredge mining of the alluvial valley floor that continued into the 1950s. The channel and associated alluvial features of the Trinity River were dredged extensively. Placer gold mining of alluvial gravel left tailings throughout the restoration sites. These deposits continue to influence the form and function of the Trinity River, which has low sinuosity and curvature driven largely by valley confinement by mountains.

Other than mining activities authorized under the Surface Mining and Reclamation Act (SMARA,) information on private mining activities in Trinity County is limited. According to BLM and Trinity County records, there are no approved mining activities operating under the provisions of the 1872 mining law or a county SMARA permit within or near the project ESLs. There is one active sand and gravel mine, the Eagle Rock mine, operating under a county SMARA permit several miles from the UCC ESL. This mine is currently operating at the site of the historic La Grange Hydraulic Gold Mine upstream of Junction City.

Mineral resources in the project ESLs consist primarily of gravel and cobble, which are considered suitable for use in river rehabilitation activities. Seven soil map units (i.e., types) occur in the UCC ESL and four soil map units occur in the Sawmill ESL. All soils in the project ESLs are considered well-drained and some excessively well-drained. Hydric soils, which can support wetland areas, have the potential to occur in some soil types found within the project ESLs, particularly alongside channels, terraces, and stream banks and where inundation is likely. An overview of each soil type is presented in Table 3-3.

Table 3-3. Soil Map Units in the UCC / Sawmill ESLs

Map Unit Name Taxonomy	Map Unit Reference Code	Percent of ESL	Drainage Class	Depth to Restrictive Layer	Hydric Soils
UCC					
Atter Extremely Gravelly Loamy Sand, 9 to 15 percent slopes	101	5	Somewhat excessively drained	None	No
Atter-Dumps, Dredge Tailings – Xerofluvents complex, 2 to 9 percent slopes Typic Xerorthents	102	32	Well-drained, somewhat excessively drained	More than 80 inches	No, except stream terraces, alluvial fans, and channels
Brockgulch-Dedrick-Brownbear complex, 50 to 75 percent slopes	111	2	Somewhat excessively drained	10 to 20 inches	No
Jafa Gravelly Loam, 2 to 9 percent slopes	166	<1	Well-drained	More than 80 inches	No
Xeralfs-Xerorthents complex, 5 to 50 percent slopes Xeralfs, xerorthents	213	8	Well-drained	5 to 40 inches	No, except stream terraces
Pardaloe-Goulding complex, 50 to 75 percent slopes Xerofluents	186	<1	Somewhat excessively drained	10 to 20 inches	No, except on stream terraces
Xerofluvents-Riverwash complex, 0 to 5 percent slopes Xerofluvents	217	40	Excessively drained	More than 80 inches	Yes
Water	220	12	N/A	N/A	N/A
Sawmill					
Atter-Dumps, Dredge Tailings – Xerofluvents complex, 2 to 9 percent slopes Typic Xerorthents	102	51	Well-drained, somewhat excessively drained	More than 80 inches	No, except stream terraces, alluvial fans, and channels
Marpa-Hoosimbim-Bamthush complex, 50-75 percent slopes Xerofluvents	171	12	Well-drained	More than 80 inches	No except drainageways
Xeralfs-Xerorthents complex, 5 to 50 percent slopes Xeralfs, xerorthents	213	7	Well-drained	5 to 40 inches	No, except stream terraces
Xerofluvents-Riverwash complex, 0 to 5 percent slopes Xerofluvents	217	16	Excessively drained	More than 80 inches	Yes
Water	220	14	N/A	N/A	N/A

3.9.3 Environmental Consequences

3.9.3.1 Alternative 1 – Proposed Action

Under the Proposed Action, rehabilitation activities would take place in the active channel or on the existing floodplains and terrace features adjacent to the river. The excavation of materials from alluvial and upland areas would expose these disturbed areas to erosion from wind and water to varying degrees, modifying their form and function. General ground disturbance from equipment access and use, vegetation removal, stockpiling of materials, and other related activities would also disturb soils within the activity areas where material is excavated and processed on-site, increasing the potential for erosion due to decreased soil cohesion and armoring. Sediment exposed to flowing water has an increased potential to mobilize and be transported downstream. This can have other indirect effects, such as short-term increases in channel and surface erosion, higher turbidity levels (at different distances), and changes in the type, amount, and character of deposition.

Soil compaction from heavy equipment used for construction can increase runoff and subsequently increase the potential for erosion in disturbed areas. Disturbance areas would be minimized by utilizing contractor use areas clearly marked (e.g., fencing, flagging) to designate the work limits in accordance with EC-GS-1[4.3-2a; Appendix E). Erosion control measures would be implemented during project activities to protect exposed soils and minimize erosion, in accordance with EC-GS-2 [4.3-2b]. Effects on water quality of the Trinity River are discussed in Section 3.11: *Water Quality*.

At UCC, fill materials would be composed of gravel, cobble, pit-run, and less than 15% fines. All fill materials would be processed from materials excavated from within the UCC ESL. Construction of R-1through R-4 would require removal of approximately 141,850 cy of tailings and floodplain material. About 4,920 cy of the excavated material would be used as fill in construction of the IC-1 through IC-5; about 136,930 cy of excavated material would be placed in the upland areas (U-1a through U-4) (Table 2-2).

At Sawmill, all or most of the materials would be processed onsite. Within the Sawmill ESL, construction of R-1 through R-4 would require removal of approximately 57,575 cy of tailings and floodplain material, and excavation of the IC areas would add another 36,560 cy for a total of 94,135 cy. About 76,340 cy of excavated material would be placed in the upland areas.

Surface and subsurface geology and soil conditions in the activity areas were evaluated as part of the design process, and the types of alluvial material (e.g., cobble, gravel, fines) available for the rehabilitation activities were characterized to determine how much material could be reused onsite. Fill placement areas are initially exposed to water erosion from the river, particularly during high flow and flood events. However, the newly created features are expected to stabilize after grading efforts are completed, initial erosional events occur, and vegetation is reestablished in disturbed areas.

Sediment would be transported downstream to be deposited on downstream alluvial features as part of the natural riverine process. The overall effects on river geomorphology would benefit aquatic resources and result in more natural alluvial processes, including an increase in the size, amount, and complexity of alluvial features that support diverse aquatic habitat, as discussed in Section 3.12 Fishery Resources.

Some of the cobble, gravel, and other mineral materials associated with alluvial and dredge tailings deposits in the project ESLs would be used onsite to enhance the in-channel and riverine activity areas as part of the rehabilitation activities. The processing and reuse of alluvial material excavated from in-channel and floodplain activity areas would minimize the need to obtain these materials from adjacent tailings deposits and other off-site sources.

The excavation and movement of approximately 141,850 cy of material (e.g., floodplain and mine tailings) within the UCC ESL and 94,135 cy of material within the Sawmill ESL may result in disturbance of sluice soils with mercury content. The proposed actions are consistent with mercury mitigation that would reduce the potential for methylation by moving mercury laden materials to dry upland areas where anoxic conditions are unlikely. Dredge tailings, including sluice sands, would be removed from the river valley bottom and spoiled in well-drained upland locations where conditions for methylation do not exist. Where sluice soils are encountered in excavation, they would be targeted for upland placement. In addition, small quantities of organic-rich fine sediments that currently exist in several low areas among the tailing would also be removed.

Implementation of environmental commitments specific to erosion would minimize the potential for soil erosion and adverse effects on the river and its floodplain during the rehabilitation activities. These activities are intended to modify the geomorphology of the river in the project ESLs and benefit aquatic resources and fluvial processes.

With the inclusion of CEQA mitigation measures EC-GS-1[4.3-2a] and EC-GS-2 [4.3-2b] (described in this section,) impacts under CEQA related to geomorphology and soils considered under this resource topic would be less than significant (CCR, Title 14, Division 6, Chapter 3, Section 15382).

3.9.3.2 Alternative 2 – No Action Alternative

Under Alternative 2, impacts to geomorphic processes and soils resources would remain similar to existing conditions. Therefore, there would be no impacts to these processes or resources as defined in the CCR, Title 14, Division 6, Chapter 3, Section 15382.

3.10 Hydrology and Flooding

3.10.1 Methods

The effects analysis of the restoration activities on hydrology and flooding incorporates a review of regulatory documents and scientific literature, including the 2000 Trinity River FEIS/EIR and ROD, the 2009 Master EIR, FEMA's National Flood Insurance Program (NFIP), Trinity County's zoning ordinance and Trinity County's Flood Insurance Study (FEMA 2014). The analysis relies on the project design features, floodplain mapping, and previous studies for TRRP activities to determine if restoration activities would alter the floodplain or result in significant flooding.

3.10.2 Affected Environment

The TRD regulates flow in the 40-mile reach of the river downstream of Lewiston Dam in accordance with the 2000 Trinity River FIES/EIR and ROD for the Trinity River Mainstem Fishery Restoration EIS. Since 2005, the flow schedule has been adjusted annually based on water year type and ranges from 369,000 af in critically dry years to 815,000 af in extremely wet years. The minimum baseflow is approximately 300 cfs. Median flows experienced in various water year types range from 4,800 cfs in dry years to 16,850 cfs in extremely wet years, as measured at the Junction City stream gage (Hoopa Valley Tribe Design Group 2019). The Sawmill site 100-year flood is defined as 11,000 cfs, and the UCC site 100-year flood is defined as71,910 cfs (FEMA 2016).

Streamflow in the project ESLs exhibit seasonal patterns that reflect a combination of flow releases from Lewiston Dam and natural tributary accretion. During the late summer and fall, Lewiston Dam releases to the Trinity River range from 300 cfs to 450 cfs; contributions from tributaries upstream of the Sawmill ESL are minor. There are several upstream tributaries that contribute flow to through the UCC ESL Reclamation has periodically increased releases in late summer–early fall for short periods of time to respond to water quality concerns downstream in the Klamath River. Between November and May, flow releases from Lewiston Dam are augmented by increased tributary flows and surface runoff. The tributaries can also cause large floods during intense winter storms, leading to high peak flows in the project ESLs. In May, peak flows originating from dam releases are typically followed by receding flows in the summer.

The Trinity River Flood Insurance Study was updated for Trinity County in 2016 using a hydraulic analysis conducted by the California Department of Water Resources (DWR), Northern Region Office. This analysis consisted of creating and calibrating the Trinity River Flood Insurance Study hydraulic model, performing the floodway analysis, and mapping the 100- and 500-year floodplains. The Flood Insurance Study modeled the reach of the Trinity River from just downstream of the North Fork Trinity River to Trinity Dam Boulevard (RM 72.43 to 110.96). It also included development of approximate hydraulic models for seven tributaries to the Trinity River to aid in improving flood zone A mapping. This analysis used the best available topographic and flow data, provided in part by the TRRP.

The river's floodway was determined from a floodplain encroachment analysis performed by DWR for the TRRP using methods consistent with the FEMA requirements. The floodway is defined as the channel of a river or watercourse and the adjacent lands that must be reserved to discharge the base flood[15] without cumulatively increasing the water-surface elevation more than 1 ft.

With the exception of some portions of staging and upland activity areas, most of the project ESLs are within the 100-year floodplain, as defined in the 2016 Flood Insurance Study, and is subject to Section 29.4 of Trinity County's zoning ordinance (Flood Hazard Zoning District or Flood Hazard Overlay Zone). This section of the County's ordinance

[15] Flood having a 1 percent chance of being equaled or exceeded in any given year, also referred to as the 100-year flood.

requires a permit for development in the floodplain; provisions of this section require that "encroachments shall not result in any increase in [the base] flood elevation during the occurrence of the base flood discharge." Based on Trinity County Data, a CLOMR[16] that will precisely delineate the floodplain and identify structures within it will be completed prior to project implementation.

3.10.3 Environmental Consequences

3.10.3.1 Alternative 1 – Proposed Action

Under The Proposed Action, the elevation and extent of the Trinity River floodplain would be modified through the activities described in Chapter 2. This alternative was developed to ensure that none of the activities within the limits of the 100-year floodplain would conflict with the provisions of Section 29.4 of Trinity County's zoning ordinance.

No structures or facilities are in activity areas below the FEMA base flood elevation (BFE). A key element in the selection of activity areas and subsequent engineering designs for activities in these areas was to ensure that encroachments into the floodway would not result in any increase in the BFE near structures during the occurrence of the base flood discharge within the project ESLs. The hydraulic analysis conducted by the Yurok Tribe used the FEMA-approved model developed for the 2016 FIS. This analysis indicates that removing all the excavated material from the riverine rehabilitation areas and placing it as coarse sediment within the channel or above the BFE in upland activity areas would not result in an increase in the FEMA BFE near structures on private property (Yurok Tribe 2020). This alternative would not include activities intended to increase the BFE in the project ESLs. Activities intended to modify the bed and banks of the Trinity River could have ancillary impacts to the bed and banks downstream.

These alternatives were developed to be self-perpetuating and to dynamically evolve in response to changes in the flow and sediment regime. In Sawmill, the construction of fill materials to maintain flow in the IC-1 channel instead of allowing the current breach to flow back to the mainstem channel could potentially create an alternative breach area during a large flood event. However, the design of the IC-1x area would allow for a greater inundation area in IC-1 during large floods. In combination with wood placement and alluvial fill, flow in the side channel would begin to overtop and pass flow back to the mainstem channel as discharge exceeds 8,500 cfs. UCC would incorporate a meandering complex with varying topography, along with large wood placements, to create physical perturbations and complexity on the floodplain, resulting in varied hydraulics environment that includes eddies, multiple flow pathways, and low velocity refugia. Previously lowered surfaces were not inundating on a frequent enough basis to provide substantial increases in juvenile winter rearing habitat under average river conditions.

Deposition and overflow of Trinity River flows into the upper riverine reaches are expected to create areas where groundwater would move closer to floodplain surfaces and would support rapid riparian growth. Final low elevation surfaces that incorporate woody material, willow clumps, and existing vegetation would increase hydraulic roughness and be more frequently inundated than under current conditions.

While the fundamental objective of the activities associated with this alternative is to increase the extent and frequency of floodplain inundation – so that rearing habitat for salmonids is continuously available above baseflows, isolated instances of bank erosion could result in the loss of riverbank, sedimentation, and loss of riparian vegetation. The ECs outlined Appendix E are an integral component of this alternative. The design of this alternative was developed to ensure that no people or structures would be exposed to a risk of injury, death, or loss involving flooding and/or erosional processes.

The overall design of this alternative was developed to ensure that the hydrologic function and potential for flooding meet the project objectives, and no mitigation is required. Impacts under CEQA related to hydrology and flooding considered under this resource topic would be less than significant (CCR, Title 14, Division 6, Chapter 3, Section 15382).

[16] A CLOMR, or Conditional letter of Map Revision, is a letter from FEMA that comments on proposed changes to the Flood Insurance Rate Map.

3.10.3.2 Alternative 2 – No Action Alternative

Under Alternative 2, impacts to hydrology and flooding would remain similar to existing conditions. Therefore, there would be no impacts on hydrology or flood occurrence as defined in the CCR, Title 14, Division 6, Chapter 3, Section 15382.

3.11 Water Quality

3.11.1 Methods

The analysis for the effects of restoration activities on water quality incorporates review of regulatory documents and scientific literature, including the 2009 Master EIR and the Water Quality Control Plan for the North Coast Region (also known as the Basin Plan); and relies on the TRRP's General Water Quality Certification requirements and the ECs for NEPA (Appendix E) and MMRP for CEQA (Appendix D). The effects analysis addresses the potential for restoration activities to exceed water quality thresholds for an extent and duration that would result in impacts to aquatic resources; and the ability for ECs and mitigation measures to reduce or eliminate impacts so that significance is avoided.

3.11.2 Affected Environment

The release of water from Lewiston Dam influences water quality in the Trinity River, primarily in the 40-mile reach downstream of the dam. These influences are particularly important with respect to turbidity, suspended sediments, and temperature.

The activities described in Chapter 2 of this EA/IS are subject to compliance with the Water Quality Control Plan for the North Coast Region (Basin Plan; RWQCB 2011). The beneficial uses for the Trinity River defined in the Basin Plan are listed in Table 4.5-1 of the Master EIR. In addition to municipal and domestic water supply, the beneficial uses affected by the water quality of the Trinity River are primarily those associated with supporting high-quality habitat for fish. Recreation (contact and non-contact) is another important beneficial use potentially affected by various water quality parameters (e.g., sediment and temperature). The Basin Plan identifies both numeric and narrative water quality objectives for the Trinity River. Table 4.5-2 in the Master EIR summarizes the water quality objectives for each of the categories that have been established by the Regional Water Board to protect designated beneficial uses. Section 4.5-1 of the Master EIR also provides a comprehensive discussion of water quality parameters that influence water quality in the 40-mile reach of the Trinity River below Lewiston Dam.

In 1992, the Environmental Protection Agency (EPA) added the Trinity River to its list of impaired rivers under the provisions of Section 303(d) of the Clean Water Act in response to a determination by the State of California that the water quality standards for the river were not being met due to excessive sediment. In 2001, the EPA established a Total Maximum Daily Load (TMDL) (EPA 2001) for sediment in the river. The Regional Water Board has continued to identify the Trinity River as impaired in subsequent listing cycles. The primary adverse impacts associated with excessive sediment in the Trinity River pertain to degradation of habitat for anadromous salmonids. The restriction of streamflow downstream of the TRD has greatly contributed to the impairment of the Trinity River below Lewiston Dam (EPA 2001). The Trinity River is typically clear, with natural background turbidity levels in the range of 0 to 1 NTU during low-flow conditions (300 to 450 cfs).

Water temperature is one of the most important variables affecting salmonids and other aquatic organisms (Carter 2005). It influences feeding rates and growth, metabolism, development, timing of migration, spawning and rearing, and the availability of food. Since the construction of the TRD, discharge from Lewiston Dam has played an important role in regulating water temperatures in the Trinity River downstream. Depending on the water year type and time of year, this effect diminishes to varying degrees with distance from Lewiston Dam.

A key objective of the TRRP's flow management is to improve the thermal regimes for all anadromous salmonid life stages that use the Trinity River. The TRRP has been using flow management practices to meet specific temperature management targets, and temperature monitoring data have been collected as part of the Adaptive Environmental Assessment and Management process since 2002. The UCC ESL is located between two water temperature monitoring sites, Douglas City and Trinity River above North Fork Trinity while Sawmill ESL is located upstream from Douglas City.

Water temperatures in the Trinity River through the project ESLs are primarily influenced by flows, topography, and aspect. Reservoir releases from Trinity Dam have flipped the natural temperature regime, making the river warmer in the winter and colder in the summer than would have occurred without the dam. The current temperature regime lacks seasonal variability exhibited by undammed streams in the region. Dissolved oxygen varies greatly from point to point but was generally found to be good in the ESL. Mercury concentrations are well below the threshold for detrimental impacts set by the State of California and by the EPA.

3.11.3 Environmental Consequences

3.11.3.1 Alternative 1 – Proposed Action

In the following discussion, the environmental consequences of Proposed Action on water quality and the associated beneficial uses of the Trinity River focus on three water quality parameters: turbidity, sediment, and temperature.

3.11.3.1.1 Turbidity

On June 8, 2020, the Regional Water Board issued a General Water Quality Certification (Order R1-2020-0025) (RWQCB 2020); to the TRRP under the auspices of Reclamation. This order implements portions of the Trinity River TMDL and provides an allowable zone of turbidity dilution (protective of sensitive aquatic life), within which turbidity levels shall not exceed 20 NTUs or 20 percent above naturally occurring background levels, whichever is greater. During in-river construction activities, the TRRP would monitor turbidity levels within 50 ft upstream of project activities (to serve as the natural background level) and 500 ft downstream of the in-river construction activities (point of compliance) that could increase turbidity. If naturally occurring background levels are greater than 20 NTUs, turbidity levels at the point of compliance shall not exceed 20 percent above the naturally occurring background level.

Due to the extremely low background turbidity during low-flow conditions, reducing turbidity levels to within 20 percent above background is generally not feasible, even with the environmental commitments listed Appendix E. Turbidity levels immediately downstream of the most carefully planned and implemented in-channel restoration activities would likely be increased by more than 20 percent above background levels, and plumes extending downstream of restoration activities may be visible. However, short-term increases in turbidity levels that occur during permitted restoration activities are generally not considered to be biologically detrimental to aquatic organisms because their duration is short and fish are able to move away from the activity area, and the long-term overall conditions would meet the turbidity requirements. Monitoring turbidity increases during implementation of previous TRRP projects has shown that periods of increased turbidity are brief (generally less than 24 hours) and that beneficial uses continue to be protected. In addition, the quantity of fine sediment introduced to the river during activities at low flows is typically small and is restricted with respect to timing and location; furthermore, not all activity areas experience disturbance at the same time. Two temporary access routes for UCC and four temporary access routes for Sawmill (segments A-5, A-6 for UCC and A-4, A-5, A-6, A-7, A-8, A-9, and a portion of A-2 for Sawmill) would provide access for in-channel and riverine work areas.

Over the years, the TRRP has increasingly conducted in-channel work to create immediate aquatic habitat and to create conditions where river flows develop and maintain functioning river attributes (e.g., backwaters and alternating point bars). Through time, various effective turbidity control measures for construction have developed. These include:

- Structural containment – Use structures such as earth barriers, K-rail containment dams, bladder dams, and silt curtains to isolate turbid water from the active channel. These structures typically remain in place until the riverine features are fully excavated and graded.
- Processing – Gravel and cobbles excavated from alluvial deposits (e.g., floodplain, dredge tailings) are processed and in some cases washed to help maintain low turbidity levels associated with placement of gravel and cobbles in or adjacent to the channel.
- Pace of construction – Controlling the pace of in-channel excavation and placement of alluvial material ensures that sediment input into the water column is consistent with permit requirements. This method requires direct field observations and real-time turbidity data obtained by onsite construction monitoring personnel.

- Flushing – Within structurally contained areas, turbid water is flushed by allowing flow into the work area and regulating the outflow as a function of measured turbidity levels. Small weirs are used to adjust inflow and outflow rates to ensure that permit requirements are met.
- Channel bottom cleaning – This method entails removal of silt- and clay-sized sediment from the channel bottom, typically by pumping or hand excavation. This method requires effluent to be pumped to containment ponds in upland areas and subsequently incorporated into site rehabilitation efforts.

During in-channel construction activities, increases in turbidity levels could occur because of the excavation of alluvial material. Connection of isolated and newly constructed side channels (e.g., during the first flush of flowing water) would result in short-term increases in turbidity levels as material is removed from and/or redistributed downstream. Fine sediments may be suspended in the river for several hours following construction activities; however, the project would be compliant with the conditions of the Program's General Water Quality Certification and is not expected to have a negative impact on beneficial uses. Furthermore, earthen berms would be left as necessary near the upstream and downstream ends of constructed features to ensure that water quality standards are met. These berms would be removed at the end of construction if the water within these contained areas is of appropriate quality for discharge to the river or they could be left in place for removal by subsequent high flows. Alternatively, water in the constructed features could be pumped to uplands or slowly metered into the mainstem post-construction. These techniques would ultimately reduce the amount of turbid water that would reach the Trinity River and would ensure that water quality permit requirements are met (e.g., no more than 20 NTUs at 500 ft downstream of construction).

TRRP monitoring data also indicate that turbidity levels downstream of the rehabilitation sites may be increased by overland flow during the initial high-flow events that occur following completion of construction activities. During springtime high-flow releases from Lewiston Dam (e.g., clear water released from the dam during channel maintenance flows), turbidity levels at monitoring locations 500 ft or more downstream of recently completed channel rehabilitation sites may be more than 20 percent greater than background levels. However, when the high flows are caused by natural stormwater runoff in the Trinity River Basin and the river is already carrying a substantial sediment load (e.g., turbidity greater than 40 NTUs), background levels are generally not increased by more than 20 percent at monitoring locations down stream of recently completed rehabilitation activities.

The incorporation of the environmental commitments listed Appendix E (EC-WQ-1 [4.5-1a, b], EC-WQ-2 [4.5-1c], EC-WQ-3 [4.5-1d], EC-WQ-4 [4.5-1e, 4.5-2a-2c] and EC-WQ-5 [4.5-3a -3c]) in conjunction with the MMRP described in Appendix D (e.g., in-river construction, water pollution prevention, and construction schedules) are intended to limit turbidity in the Trinity River. Additionally, the river's edge and in-channel construction activities would be staged to minimize potential turbidity effects.

3.11.3.1.2 Suspended Sediment

The effects of this alternative on water quality associated with in-channel activities would change the location and nature of sediment in and adjacent to the low-flow channel. During natural high-flow events, the relative addition of fine sediment from recently completed channel rehabilitation projects is minimal compared to the sediment load already being transported by the river. Furthermore, in the Trinity River watershed where wildfire has occurred over the last several years (e.g., the Oregon Fire in 2014, Helena Fire in 2017, Carr Fire in 2018), it is expected that water quality in the restoration reach would be strongly influenced by run-off from burned areas during storm events. In these run-off events, the contribution of fine sediment associated with TRRP projects is expected to be minimal compared to the loading from burned watersheds.

The extent of downstream sedimentation would be a function of the size and mobility of the substrate. For example, fine-grained sediments such as silts and clays can be carried several thousand feet downstream of the construction zone, while larger-sized sediments such as coarse sands and gravel tend to drop out of the water column within several feet of the construction zone. Collectively, the activities included in this alternative could result in short-term increases in turbidity and suspended solids concentrations in the water column that could potentially violate the Basin Plan objectives for turbidity
in the Trinity River.

The activities described in Chapter 2. for this alternative would temporarily increase total suspended solids in the Trinity River. The incorporation of the environmental commitments listed Appendix E (EC-WQ-1 [4.5-1a, b], EC-WQ-2 [4.5-1c], EC-WQ-3 [4.5-1d], EC-WQ-4 [4.5-1e, 4.5-2a-2c] and EC-WQ-5 [4.5-3a -3c]) in conjunction with the

MMRP described in Appendix D (e.g., in-river construction, water pollution prevention, and construction schedules) are intended to limit suspended sediments in the Trinity River.

3.11.3.1.3 Temperature

This alternative is intended to reconnect the existing floodplains with the channel, which would result in shallow depths and slow velocities across a wider range of stream flows than those currently being provided. Other activities incorporated into this alternative would increase the complexity of the channel to increase habitat for all life stages of salmonids. This alternative would include clearing and grading a number of activity areas, some of which contain riparian vegetation. The existing riparian vegetation has little influence on water temperature through both reaches, but it does provide shaded riparian area habitat for aquatic organisms at isolated locations along the channel margin. Revegetation efforts associated with these activities would increase functional riparian vegetation, which in turn would increase shade and improve habitat for juvenile salmonids along the margins of these features under a wide range of flow conditions, including those that may occur during late-summer releases when air temperatures are high.

With the inclusion of CEQA mitigation measures EC-WQ-1 [4.5-1a, b], EC-WQ-2 [4.5-1c], EC-WQ-3 [4.5-1d], EC-WQ-4 [4.5-1e, 4.5-2a-2c] and EC-WQ-5 [4.5-3a-3c], impacts under CEQA related to water quality considered under this resource topic would be less than significant (CCR, Title 14, Division 6, Chapter 3, Section 15382).

As described in Chapter 2, design measures would be incorporated into the construction contract to minimize the potential for hazardous materials (e.g., hydraulic fluid) from leaking or otherwise being discharged into the river at crossings or other locations where equipment is working in the water. These commitments and measures would be adequate to protect the beneficial uses of the Trinity River.

3.11.3.2 Alternative 2 – No Action Alternative

Under Alternative 2, impacts to water quality and associated beneficial uses would remain similar to existing conditions. Therefore, there would be no impacts on water quality as defined in the CCR, Title 14, Division 6, Chapter 3, Section 15382.

3.12 Fishery Resources

3.12.1 Methods

This section describes the fishery resources and aquatic habitats that are known to occur in the project ESLs and evaluates the impacts of the alternatives on these resources. The analysis of effects on fishery resources is based on detailed design reports prepared for the project sites by the design teams, including project-specific modelling; information from a focused literature review; informal consultation with resource agencies; and observations made during site visits. Additional information on fishery resources is discussed in Section 4.6 and Appendix G of the Master EIR. The Magnuson-Stevens Fishery Conservation and Management Act and Essential Fish Habitat are also described in Section 4.6 of the Master EIR.

3.12.2 Affected Environment

The native anadromous species of interest in the mainstem Trinity River and its tributaries are Chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*Oncorhynchus kisutch*), steelhead (*Oncorhynchus mykiss irideus*), and Pacific lamprey (*Entosphenus tridentatus*). There are two spawning races of Chinook salmon, spring- and fall-run, and two spawning races of steelhead, winter- and summer-run. The life histories and freshwater habitat requirements of these and other species and their distinct spawning populations are described in Appendix G of the 2009 Master EIR.

Resident native fish species found in the Trinity River Basin include game fish such as rainbow trout (*Oncorhynchus mykiss*) and non-game fish such as speckled dace (*Rhinichthys osculus*), Klamath smallscale sucker (*Catostomus rimiculus*), Pacific lamprey, Klamath River lamprey (*Lampetra similis*), three-spined stickleback (*Gasterosteus aculeatus*), coast range sculpin (*Cottus aleuticus*), and marbled sculpin (*Cottus klamathensis*). The abundance of resident native species and the factors affecting their abundance within the basin are not well understood; however, all these species evolved and existed in the Trinity River prior to the TRD and are presumably adapted to those conditions.

Non-native fish species found in the Trinity River include American shad (*Alosa sapidissima*), brown bullhead (*Ameiurus nebulosus*), green sunfish (*Lepomis cyanellus*), brown trout (*Salmo trutta*), and brook trout (*Salvelinus fontinalis*) (USFWS, unpublished data). American shad occur in the lowermost portions of the Trinity River below Burnt Ranch Falls. Currently, brown trout are limited to the upper portions of the river below Lewiston Dam, although some brown trout exhibit anadromous characteristics.

Special status fish species with the potential to occur in the project ESLs include:

- Southern Oregon/Northern California Coast (SONCC) coho salmon Evolutionarily Significant Unit (ESU)(federal and California state ESA-listed as threatened, with designated critical habitat)
- Klamath Mountain Province (KMP) steelhead Distinct Population Segment (DPS)(USFS sensitive species)
- Upper Klamath-Trinity rivers (UKTR) spring-run Chinook salmon ESU (federal candidate species; and California state ESA-listed as endangered)
- Pacific lamprey (USFWS species of special concern)

3.12.3 Environmental Consequences

3.12.3.1 Alternative 1 – Proposed Action

A primary objective of Proposed Action is to increase spawning and rearing habitat for anadromous salmonids in a manner that benefits coho salmon and other special-status fish species.

In support of the TRRP, Reclamation previously developed a hydraulic model that has been used by the design teams to characterize existing and potential habitat within the project ESLs for anadromous salmonid fry and presmolt life stages. For previous EA/IS analyses, weighted usable area (WUA) was the metric used to characterize habitat under existing conditions based on three attributes: depth, velocity, and cover. For the Oregon Gulch project that was recently implemented, the TRRP's Fish Work Group recently recommended that juvenile salmonid physical habitat be estimated using a fish capacity equation, which would be used in all TRRP work going forward. The same metric was applied to the UCC / Sawmill project by the Trinity River Design Team, so that the best available science and methods are used in the design of project features.

The fish capacity equation is relatively new. It uses a robust dataset designed to feed critical fish density inputs for estimating fish production on a systemic scale in a Stream Salmonid Simulator model developed specifically for the Trinity River (Perry et al. 2018). The fish capacity metric estimates the upper bounds of individual fry or presmolt abundance that could be present in a specified area over relatively short periods of time ranging from hours to an entire day (Som et al. 2017). The capacity metric that resulted from the custom-designed data collection and extensive model-fitting process weights the effects of depth, velocity, and distance to cover differently than traditional WUA metrics.

Fry and juvenile rearing habitat capacity was estimated for the project sites using outputs from the project design hydraulic model results (Yurok Tribe 2020). Estimating rearing habitat through fish capacity relies on depth, velocity, and distance to cover outputs. The capacity metric also accounts for variation in local fish abundances beyond these three physical variables.

At the Sawmill ESL, the Proposed Action would significantly increase salmonid rearing habitat over existing conditions, particularly at the lowest, most frequent discharges. The design would increase fry capacity summed over the range of frequent winter flows (300 to 1,000 cfs) by 91% over existing conditions and presmolt capacity summed over that range of discharge would be increased by 85%. Maximum increases in fry and presmolt capacity would be realized at the most common winter baseflows between 300 to 450 cfs, for which the sum over those flows is increased by 132% and 125%, respectively. Table 3-4 outlines the estimated fish capacity for Sawmill.

Estimates of fry and presmolt capacity would be increased as much as 60% for fry. When examining flow-specific estimates of fry and presmolt capacity at the UCC Rehabilitation Site capacity would be greater for all modeled flows under the 90% design compared to existing conditions, and generally increased linearly as flows increase. The curve depicting percent change in fry capacity from existing conditions to 90% design conditions showed a bimodal peak, with the greatest increase in percent change occurring between 950 cfs and 3,500 cfs. The secondary peak around 2,700 cfs, was a result of Area R-3 becoming hydraulically connected to the river. The percent change in capacity curve for presmolt peaked around 1,000 cfs, similar to fry, and plateaued between 1,500 cfs and 3,000 cfs. The 90% design would double the capacity compared to existing conditions until flows increase beyond 3,500 cfs.

Table 3-4. Estimated Fish Capacity for the Sawmill Rehabilitation Site at Existing and 60 Percent Design Conditions

Chinook salmon life stage	Condition	Capacity[1]							
		300 cfs	450 cfs	600 cfs	1,000 cfs	2,000 cfs	3,000 cfs	4,000 cfs	6,000 cfs
Fry	Existing	1.68	1.60	2.54	2.53	3.40	4.25	5.05	5.85
	Design	3.88	3.74	4.14	4.15	4.90	5.47	6.03	6.98
Presmolt	Existing	0.39	0.38	0.57	0.60	0.83	1.06	1.27	1.56
	Design	0.88	0.86	0.91	0.96	1.20	1.42	1.64	2.02

[1] Millions of individual fish at specified flows.

Differences in the way the capacity metric relates the physical variables to habitat quality lead to different patterns in the traditionally considered flow-to-habitat graphs that were commonly displayed for WUA calculations on the Trinity River. It is important to note that the actual pattern of changes in capacity as a function of discharge would be driven by the physical characteristics of the river section, but one of the most notable differences in the patterns generated by the capacity metric is the absence of a marked decrease in habitat quality at intermediate discharges (commonly referred to as the “habitat dip”). Reasons for this different flow-to-habitat pattern include the very robust data set used to generate the model, the fact that the capacity model accounts for imperfect detection, and the variation in fish abundance beyond the variables of depth, velocity, and biotic and abiotic cover.

Activities related to implementation of alternative A 1 include the following environmental commitments, as outlined in Appendix E, to reduce impacts to fishery resources: EC-FR-1 [4.6-1a, 1b], EC-FR-2 [4.6-4a-4e], EC-FR-3 [4.6-4f], EC-FR-4 [4.6-5b], and EC-FR-5 [4.6a-6d]. This alternative would result in the localized loss of vegetation and general disturbance to the bed and banks of the Trinity River. Removal of vegetation and soil could accelerate erosion processes in the project ESLs and increase the potential for sediment delivery to the Trinity River. As discussed in Section 3.12, Water Quality, alternative A 1 would result in some project-related effects on erosional processes and changes in the sediment regime within the project ESLs and, to a limited extent, downstream. The excavation of alluvial materials within the channel and associated floodplain of the Trinity River would result in changes to the amount and character of sediment that may be mobilized post-construction.

Exposed soils in the upland and staging areas are susceptible to mobilization from rainfall during early-season runoff events. In-river excavation is planned as part of The Proposed Action, and it is expected that excavation and operation of heavy equipment in the active channel would re-suspend silt and sand, resulting in localized and temporary increases in suspended streambed sediments and turbidity. Any juvenile salmon rearing in the area could be temporarily displaced, or their social behavior could be temporarily disrupted by turbidity created during in-channel construction.

Erosion and deposition of fine sediments associated with implementation of this alternative are expected to be localized and temporary. Some fine-textured sediment may settle near or on spawning habitat located downstream of riverine activity areas, but this sediment is not expected to impair redd excavation or spawning. Excavation, grading, and the addition of coarse sediment to the channel would occur only during low-flow conditions between July 15 and September 15, which is prior to the spawning period. With additional BMPs in place, in-channel work beyond September 15 may be permitted by NMFS. In-river work, including the construction of temporary crossings, may temporarily displace adult salmonids using holding habitat within the project ESLs to other holding habitats either upstream or downstream of the project reach due to transient turbidity and short-duration sediment plumes. Juvenile salmonids using this reach during low-flow conditions could also be temporarily displaced, or their social behavior could be temporarily disrupted due to increases in turbidity or suspended sediment. Behavioral disruption, even temporarily, could result in some increased vulnerability of salmonids to competitive interactions or predation. Table 3-5 outlines fish capacity at UCC.

Table 3-5. Estimated Fish Capacity for the UCC Rehabilitation Site at Existing and 90 Percent Design Conditions

Chinook Salmon life stage	Condition	Capacity[1]												
		450 cfs	770 cfs	950 cfs	1,000 cfs	1,300 cfs	1,500 cfs	2,000 cfs	2,500 cfs	3,000 cfs	3,500 cfs	6,000 cfs	8,300 cfs	11,000 cfs
Fry	Existing	3.97	3.59	3.49	3.43	3.42	3.42	3.65	3.99	4.51	5.25	9.62	12.64	15.19
	Design	6.54	7.33	7.37	7.23	6.91	6.82	7.62	8.31	9.31	10.61	15.39	18.75	21.51
Presmolt	Existing	1.15	1.15	1.16	1.15	1.19	1.21	1.32	1.48	1.69	1.96	3.46	4.53	5.47
	Design	1.85	2.02	2.06	2.04	2.03	2.03	2.23	2.47	2.81	3.19	5.28	6.95	8.46

[1] Millions of individual fish at specified flows.

TRRP has completed formal consultation with NMFS on the effects of TRRP sediment management and channel rehabilitation and monitoring, as well as the potential effect of floodplain restoration work throughout the Trinity River watershed. The August 2020 Trinity River Restoration Program BiOp (NMFS 2020) describes the implementation strategies and conservation measures that would be employed during the proposed construction at the project site.

Adult Pacific lampreys migrate upstream from spring through early summer to spawn. Larval; l lampreys inhabit the river year-round. Siltation of nests that may be built in suitable habitats (i.e., low-slope riffles) could occur. Filter feeding by larval lampreys could be disrupted by an increase in suspended sediments caused by construction-related erosion, although this impact would be very localized and temporary. Some lampreys may inadvertently be displaced during construction. This effect would be minimal due to the large populations known to occur at other upstream and downstream Trinity River locations.

The environmental commitments incorporated into Alternative 1 would be implemented during the construction activities described in Chapter 2 and Appendices D and E. In addition to the typical practice of refueling construction equipment in contractor use activity areas, this alternative includes activities that would result in mechanized equipment (e.g., trucks, excavators) crossing and/or operating in the active channel for short periods. As a result, minor fuel and oil spills could occur, and there would be a risk of larger releases. Without rapid containment and clean up, toxic substances could be released into the water bodies in the ESLs, depending on the location of the spill. Oils, fuels, and other contaminants could have short-term effects on the various life stages of salmonids and other anadromous fish that are using habitat near construction activities; however. H, this effect is not anticipated to have negative long-term effects on individual organisms or populations.

Coho salmon and other special-status aquatic species occur in the Trinity River, and suitable salmonid rearing habitat in the project ESLs is used year-round. Adult coho and other salmonids migrate through the project ESLs and use suitable spawning habitat throughout the 40-mile reach of the Trinity River below Lewiston Dam. Direct injury to, or mortality of, coho salmon and other salmonids could occur during in-river construction and construction of the low-flow channel crossings. These in-water work activities would be conducted only during late-summer low-flow conditions (July 15 to October 15), when the fewest number of juvenile salmonids are known to occur in the project reach, thus minimizing the potential for direct mortality to rearing coho and other salmonids.

NMFS expects that all displaced juvenile fish, including coho salmon, would find suitable habitat in river reaches upstream or downstream of the project reach since juvenile rearing habitat in the mainstem Trinity River is likely under-saturated during summer and fall months (NMFS 2006). The construction period previously identified would avoid the spawning period for coho salmon; therefore, direct impacts to adult coho salmon or their eggs and alevins (yolk-sac fry) would not occur.

A small, temporary, but uncertain level of stranding of coho salmon fry could occur on the newly constructed inundation surfaces during rapidly receding flood-flow periods in the winter and early spring, when fry are emerging. Although stranding of fry under such receding flood conditions occurs naturally, the constructed features could increase the potential for stranding. As fluvial channel migration occurs through these surfaces, the potential for fry stranding is expected to equilibrate to that of a natural stranding risk.

Increased habitat for extremely young fish can be critical for their survival, and the Proposed Action includes design elements to protect adult spawning and holding habitat. These beneficial effects would also apply, to varying degrees, to other aquatic organisms that use habitat in the project ESLs.

With the inclusion of CEQA mitigation measures EC-FR-1 (4.6-1a, 1b],) EC-FR-2 (4.6-4a-4e],) EC-FR-3 (4.6-4f],) EC-FR-4 (4.6-5b],) and EC-FR-5 (4.6a-6d) described in this section, adverse impacts under CEQA related to fisheries would be less than significant (CCR, Title 14, Division 6, Chapter 3, Section 15382).

3.12.3.2 Alternative 2 – No Action Alternative

Under the No Action Alternative, there would be no effects on spawning and rearing habitat or fish capacity for fry and presmolt salmonids other than those associated with current ongoing actions because the projects would not be constructed. As described in Chapter 1, the TRRP and other entities have been implementing channel rehabilitation projects since 2005. These projects continue to affect the Trinity River with regards to flows, sediment, channel morphology, riparian vegetation, and the associated influence on habitat for aquatic organisms. There would be no improvement to anadromous fish habitat because of this alternative.

Under this alternative, rehabilitation activities would not be constructed. Consequently, there would be no risk of accidental spills of hazardous material, construction-related mortality of rearing salmonids would not occur, and there would be no loss of spawning, rearing, or holding habitat. Impacts on fishery resources would remain similar to the existing conditions. Therefore, there would be no impacts on fishery resources as defined in CCR, Title 14, Division 6, Chapter 3, Section 15382.

3.13 Vegetation, Wildlife, and Wetlands

3.13.1 Methods

Vegetation communities (habitat types) were obtained from the California Wildlife Habitat Relationships (CWHR) System (California Department Fish and Wildlife (CDFW) 2024). In this EA/IS, the terms "vegetation communities" and "habitat types" are used interchangeably. CWHR habitat polygons are shapefiles of vegetation cover created by the HVT and McBain and Associates for the Trinity River corridor. The data is produced every 5 years, with aerial imagery and systematic riparian vegetation mapping (HVT and McBain Associates 2016; 2020). The data were originally delineated manually, but more recently developed using data algorithms, however field-based accuracy assessment continues.[17] The data within the ESLs were further refined by Ironwood staff in the field during habitat assessments in June 2023 and wetland delineations and vegetation surveys in May 2023.

Wetlands within the project ESLs were initially assessed using the National Wetlands Inventory (NWI) (USFWS 2023b). NWI represents the extent, approximate location and type of wetlands and deepwater habitats as defined by Cowardin (1979). Wetland delineations following USACE guidelines (Environmental Laboratory 1987; USACE 2010) were completed at both the Sawmill and UCC ESLs in Spring of 2023 by Ironwood botanists and wetland specialists, and a wetland delineation report will be prepared and submitted to the USACE for compliance with CWA Section 404 ahead of project permitting. Wetlands delineated in the ESLs were classified according to the Cowardin classification system.

The areal extent of the impact on habitat types was estimated by overlaying a project map (including riverine, upland, contractor use areas and access routes) on a current vegetation map (HVT and McBain Associates 2016; 2020). The habitat types and impact areas were intersected in GIS to produce acreages of impacts for each habitat type. Wildlife species associated with specific habitat types were obtained from the 2009 Master EIR. Each site was assessed for potentially sensitive wildlife species habitat during the site visits in Spring of 2023. UCC was delineated and surveyed on June 1, 2023, and Sawmill was delineated on May 21, 2023.

A list of special-status plant and wildlife species was compiled by performing searches of the California Natural Diversity Database (CNDDB) and California Native Plant Society (CNPS) Electronic Inventory database and reviewing BLM's special status species list for the Redding Field Office (Appendix L). A list of federal special status species (endangered, threatened, or candidate status) potentially occurring along the Trinity River was obtained from the USFWS Information for Planning and Consultation (IPaC) website (USFWS 2023a). Surveys for sensitive plant species and wildlife were completed concurrently with wetland delineations in 2023.

3.13.2 Affected Environment

The project ESLs support a diversity of plant communities and wildlife habitats typical of the Trinity River corridor, including a number of non-native and invasive plant species associated with historic mining and a managed flow regime. Wildlife habitats described in this section are based on the CWHR system. These wildlife habitats are summarized in and illustrated in Table 3-6 and Figure 5Figure 6.

Vegetation and Special Status Plants

The dominant habitat types in the project ESLs include montane and valley foothill riparian, barren, annual grassland, riverine, and ponderosa pine (see Table 3-6 and Figure 5Figure 6). These habitat types make up approximately 82

[17] The CWHR data are available from TRRP's data port (trrp.net/dataport) or from TRRP's data steward, or by contacting John Bair with McBain and Associates directly.

percent of the habitats present in the project ESLs. The other types include Klamath mixed conifer, Douglas-fir, lacustrine, perennial grassland, freshwater emergent wetland, mixed chaparral, montane hardwood, blue oak-foothill pin, montane hardwood-conifer, and urban habitats. Barren, lacustrine, riverine, and urban habitats are unvegetated. Non-native species, including Himalayan blackberry and yellow star thistle, frequently occupy open, disturbed areas, often associated with alluvial terraces and dredge tailings.

The 40-mile reach of the Trinity River downstream of Lewiston Dam may support several special-status plant species, including species listed under ESA and CESA; BLM Sensitive Species; and species considered rare, threatened, or endangered in California based on the Rare Plant Ranks (see Table 4.7-1 in the Master EIR for a complete list of species and their status). Botanical surveys were conducted at the Project ESLs in 2023 by Ironwood Consulting, and no special-status plant species (including plants listed on the BLM Sensitive Species list) were identified.

Table 3-6. Plant Communities with associated plant and wildlife species in the UCC / Sawmill ESLs

Habitat Type[1]	Common Plant Species	Common Wildlife Species[2]	UCC ESL Estimated Acres	Sawmill ESL Estimated Acres	Total Estimated Acres
Annual Grassland	Yellow starthistle (*Centaurea solstitialis*), creeping bentgrass (*Agrostis stolonifera*), redstem filaree (*Erodium cicutarium*), Himalayan blackberry (*Rubus armeniacus*), Maltese starthistle (*C. melitensis*), other non-native species	Mourning dove (*Zenaida macroura*), savannah sparrow (*Passerculus sandwichensis*), white-crowned sparrow, (*Zonotrichia leucophrys*), California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), California kangaroo rat (*Dipodomys californicus*), deer mouse (*Peromyscus maniculatus*), gopher snake (*Pituophis melanoleucus*), American kestrel (*Falco sparverius*), red-tailed hawk (*Buteo jamaicensis*), coyote (*Canis latrans*), western fence lizard (*Sceloporus occidentalis*), western skink (*Eumeces skiltonianus*), western rattlesnake (*Crotalus viridis*), and yellow-bellied racer (*Coluber constrictor*)	15.1	16.8	31.9
Barren	California brickellbush (*Brickellia californica*), dog fennel (*Anthemis arvensis*), sweet clover (*Melelotus* sp.), Oregon goldenaster (*Heterotheca oregona*), Parry's rabbit brush (*Chrysothamnus parryii*), tailings piles and open/no vegetation	Killdeer (Charadrius vociferus)	29.1	3.8	32.9
Blue Oak-Foothill Pine	Foothill pine (*Pinus sabiniana*), canyon live oak (*Quercus chrysolepis*)	Northern flicker (*Colaptes auratus*), Steller's jay (*Cyanocitta stelleri*), acorn woodpecker (*Melanerpes formicivorus*), band-tailed pigeon (*Patagioenas fasciata*), western gray squirrel (*Sciurus griseus*), and black-tailed deer (*Odocoileus hemionus columbianus*)	2.1	5.4	7.5
Douglas-fir	Douglas-fir, canyon live oak, Oregon grape (*Mahonia aquifolium*), dwarf rose (*Rosa gymnocarpa*), poison oak (*Toxicodendron pubescens*)	Acorn woodpecker, violet-green swallow (*Tachycineta thalassina*), northern flicker, great horned owl (*Bubo virginianus*), raccoon (*Procyon lotor*), pallid bat (*Antrozous pallidus*), California quail, black-tailed deer, western gray squirrel, western rattlesnake, and sharp-tailed snake (*Contia tenuis*)	0.0	0.1	0.1
Freshwater Emergent Wetland	Cattail (Typha angustifolia, T. domingensis, T. latifolia), rushes (Juncus effusus, Juncus sp.), nut sedge (Cyperus sp.), reed canarygrass (Phalaris arundinacea), sedge (Carex spp.)	Western toad (*Anaxyrus boreas*), Sierra chorus frog (*Pseudacris sierra*), non-native bullfrog (*Rana catesbeiana*), green heron (*Butorides striatus*), mallard (*Anas platyrhynchos*), as well as roosting and nesting habitat for the red-winged blackbird (*Agelaius phoeniceus*)	0.1	1.4	1.4
Mixed Chaparral	Wedgeleaf ceanothus (*Ceanothus cuneatus*), whiteleaf manzanita (*Arctostaphylos* sp.), coyote brush (*Baccharis pilularis*)	California quail (*Callipepla californica*), wrentit (*Chameae fasciata*), Bewick's wren (*Thryomanes bewickii*), black-tailed jackrabbit (*Lepus californicus*), gray fox, coyote, deer mouse, western fence lizard, and southern alligator lizard (*Elgaria multicarinata*).	1.2	0.6	1.8

Habitat Type[1]	**Common Plant Species**	**Common Wildlife Species**[2]	**UCC ESL Estimated Acres**	**Sawmill ESL Estimated Acres**	**Total Estimated Acres**
Montane Hardwood	Madrone (*Arbutus menziesii*), Oregon white oak (*Quercus garryana*), California black oak (*Q. kelloggii*), canyon live oak	Northern flicker, Northern pygmy owl (*Glaucidium gnoma*), olive-sided flycatcher (*Contopus borealis*), ruby-crowned kinglet (*Regulus calendula*), black salamander (*Aneides flavipunctatus*), rough-skinned newt (*Taricha granulosa*), Allen's chipmunk (*Tamias* senex), black bear (*Ursus americanus*), and bushy tailed woodrat (*Neotoma cinerea*)	0.5	1.5	2.0
Montane Hardwood-Conifer	Big-leaf maple (*Acer macrophyllum*), mountain maple (*A. spicatum*), white oak (*Q. garryana*), ponderosa pine	Acorn woodpecker, violet-green swallow (*Tachycineta thalassina*), northern flicker, great horned owl (*Bubo virginianus*), raccoon, pallid bat, red-tailed hawk, and Steller's jay	0.0	8.2	8.2
Montane and Valley Foothill Riparian (includes riparian wetland)	Fragrant sumac (*Rhus trilobata*), big-leaf maple (*Acer macrophyllum*), black cottonwood (*Populus balsamifera*), black walnut (*Juglans hindsii*), blue elderberry (*Sambucus nigra*), California grape (*Vitis californica*), virginsbower (*Clematis* sp.), Indian rhubarb (*Darmera peltata*), mugwort (*Artemisia douglasiana*), narrowleaf willow (*Salix exigua*), dusky willow (*S. melanopsis*), Oregon ash (*Fraxinus latifolia*), red willow (*S. laevigata),* rose (*Rosa* sp.), shining willow (*S. lucida*), straggly gooseberry (*Ribes divaricatum*)	Western toad, Sierra chorus frog, western fence lizard, western skink, southern alligator lizard, tree swallow (*Tachycineta bicolor*), bushtit (*Psaltriparus minimus*), white-breasted nuthatch (*Sitta carolinensis*), Nuttall's woodpecker (*Picoides pubescens*), downy woodpeckers (*P. nuttallii*), deer mouse, raccoon, and Virginia opossum (*Didelphis virginiana*)	28.7	29.7	58.4
Perennial Grassland	Blue wildrye (*Elymus glaucus*), other native grasses	Black-tailed deer, California ground squirrel, Botta's pocket gopher, deer mice, black-tailed jackrabbit, bobcat (*Lynx rufus*), coyote, red-tailed hawk, great-horned owl, western fence lizard, western skink, and gopher snake	0.0	0.6	0.6
Ponderosa Pine	Ponderosa pine (*Pinus ponderosa*)	Mountain quail, western gray squirrel, black-tailed deer, Allen's chipmunk, sooty grouse (*Dendragapus fuliginosus*) sharp-shinned hawk, red-tailed hawk, Virginia opossum, and western spotted skunk (*Spilogale gracilis*)	6.6	16.7	23.3
Riverine	Open water (Trinity River and tributaries)	Sierra chorus frog, western toad, non-native bullfrog, western pond turtle, mallard, great blue heron (*Ardea herodias*), osprey, belted kingfisher (*Ceryle alcyon*), river otter (*Lontra canadensis*), and beaver (*Castor canadensis*)	13.3	11.6	24.9
Urban[3]	Human disturbances and roads	Deer mouse, house mouse, Virginia opossum, western spotted skunk, coyote, and great-horned owl	4.9	6.9	11.8

[1] CWHR System (Bair et al. 2021

[2] Common wildlife associations are identified from the 2009 Master EIR

[3] Urban includes portions of the access routes, riprap, irrigated pasture, disturbed areas, and slash piles.

Waters and Wetlands

The Trinity River is a perennial stream. and the primary drainage feature in the project ESLs It is considered a water of the United States and a navigable water that is under the jurisdiction of the USACE. There are no tributaries that enter the Trinity River within either of the project ESLs. However, the Sawmill ESL does include a side channel that flows on the east side of the primary channel for approximately 1,500 linear feet through the ESL.

At the UCC ESL, 28.4 ac would be considered potential Waters of the U.S, and a total of 7.9 ac of riparian wetland were identified (Table **3-7**). Approximately At the Sawmill ESL, 31.0 ac lie within the OHWM, and a total of 15.0 ac of riparian wetland and 0.9 acre of freshwater emergent wetland were identified. Wetlands are located along the mainstem and side channels of the Trinity River. Dominant wetland species observed at both sites include woody riparian and herbaceous species, such as willows (*Salix* spp.), rushes (*Juncus* spp.), sedges (*Carex* spp.), and Himalayan blackberry (*Rubus armeniacus)*. When the river is flowing at OHWM, about 6,580 linear feet of perennial stream occurs at UCC, and 7,150 linear feet of perennial stream occurs at Sawmill.

Table 3-7 and Figure 7 andFigure 8 summarize the wetlands and non-wetland waters of the United States that occur within the project boundary.

Table 3-7. Summary of waters of the United States in the UCC and Sawmill ESLs

Waters of the United States (Cowardin Types)[1]	Total Acreage	Total Linear Feet[2]
UCC ESL		
Riparian Wetland (PFO, PSS)	7.9	N/A
Low-flow Channel Riverine at 450 cfs (R3UB)	13.0	6,580
Non-wetland Waters (unvegetated channel area at 450 to 6,000 cfs)	7.6	6,580
Total Waters of the U.S. at UCC	**28.5**	**6,580**
Sawmill ESL		
Riparian Wetland (PFO, PSS)	15.0	N/A
Freshwater Emergent Wetland (PEM)	0.9	N/A
Low-flow Channel Riverine at 450 cfs (R3UB)	11.6	3,265
Non-wetland Waters (unvegetated channel area at 450 to 6,000 cfs)	3.5	7,150
Total Waters of the U.S. at Sawmill	**31.0**	**7,150**

[1] PFO = palustrine forested wetland; PSS = palustrine scrub-shrub wetland; PEM = palustrine emergent wetland; R3UB = riverine upper perennial unconsolidated bottom; R3US = riverine upper perennial unconsolidated shore, L2UB1 = Cobble-Gravel, Unconsolidated Bottom, Littoral, Lacustrine.

[2] Waterbody linear is measured as the length of the waterbody at its longest extent.

Wildlife

During field surveys, no wildlife species listed under the ESA or CESA as threatened, endangered, or candidates for listing as threatened or endangered were observed in the project ESLs. The highly disturbed complex of dredge tailings with isolated riparian and upland vegetation does not provide habitat for the northern spotted owl. There is habitat and the potential for occurrence for the northwestern pond turtle within the project ESLs and environmental commitments are set in place to avoid and mitigate impacts.

The riparian vegetation along the Trinity River, in association with adjacent and nearby chaparral and woodland habitats, provides connected habitat and travel corridors for various common wildlife species in an area that has been fragmented by rural residential development and road building. Common wildlife species include mule deer *(Odocoileus hemionus),* North American river otter *(Lontra canadensis),* American beaver *(Castor canadensis),* cliff swallow *(Hirundo pyrrhonota),* American dipper (*Cinclus mexicanus*), and raccoon *(Procyon lotor).*

Special-status wildlife species that may use habitats in the project ESLs include:

- Gray wolf (*Canis lupus*) – a federally endangered species.
- North American wolverine (*Gulo gulo luscus*) – a federally threatened species.

- Pacific Fisher North Coast/Southern Oregon (NCSO) Distinct Population Segment (DPS) *(Pekania pennanti)*[18] – a California species of special concern, USFS sensitive species, and a BLM sensitive species. The USFWS declined to list the NCSO DPS of the Pacific Fisher in its May 2020 final rule (USFWS 2020).
- Ring-tailed cat *(Bassariscus astutus)* – a California fully protected species.
- Bald eagle *(Haliaeetus leucocephalus)* – an endangered species under the California ESA, a BLM Sensitive species, USFS sensitive, and a California fully protected species.
- Foothill yellow-legged frog *(Rana boylii)* – a BLM sensitive species and USFS sensitive species. The California Fish and Game Commission recently found that listing of the Northwest/North Coast clade of *Rana Boylii* was not warranted in its March 2020 determination.
- Western pond turtle *(Emys marmorata)* – a California species of special concern, a BLM sensitive species, USFS sensitive species, and proposed as a federally threatened species as of October 2023.
- California mountain kingsnake (*Lampropeitis zonata)* – a BLM sensitive species.
- Several bird species that are BLM sensitive species or California species of special concern, including golden eagle (*Aquila chrysaetos*), northern goshawk (*Accipiter gentilis*), and bald eagle (*Haliaetus leucocephalus*).
- Seven bats species that are BLM sensitive species or California species of special concern, including fringed myotis (*Myotis thysanodes*), long-eared myotis (*Myotis evotis*), pallid bat (*Antrozous pallidus*), spotted bat (*Euderma maculatum*), Townsend's big-eared bat (*Corynorhinus townsendii*), western mastiff-bat (*Eumops perotis californicus*), and Yuma myotis (*Myotis yumanensis*).
- The terrestrial snails hooded lancetooth (*Ancotrema voyanum*) and Trinity shoulderband (*Helminthoglypta talmadgei*) – both BLM sensitive species.
- The freshwater western pearlshell mussel (*Margaritifera falcata*) – a BLM sensitive species. Surveys conducted by BLM in August and September 2020 show that no mussels were encountered in the Sawmill site or anywhere upstream from Rush Creek. The UCC project ESL is in an area of low-, medium-, and high-density mussel occupancy (downstream from Junction City) (BLM 2020).;
- Franklin's bumble bee (*Bombus franklini*) – federally listed as endangered and is a candidate state endangered species.

Most of the sensitive species are riparian species and may be found using trees in the montane and valley foothill riparian habitats or wetlands in the project ESLs. Appendix L provides two tables that list the BLM sensitive species considered in this EA/IS, as required under the National Forest Management Act and the BLM Redding RMP. A number of other BLM sensitive species are not likely to occur within or adjacent to the project ESLs. Additional details on these federal and state special-status species can be found in Section 4.7, Table 4.7-1, and Appendix C of the Master EIR.

3.13.3 Environmental Consequences

3.13.3.1 Alternative 1 – Proposed Action

Vegetation and Special Status Plants

Under Alternative 1, the proposed rehabilitation activities are intended to enhance the wetland, riverine, and upland (i.e., dredge tailings) habitats in the project ESLs to improve the quality of spawning habitat for anadromous fish species and other riparian-dependent species. At the Sawmill site, 3.7 ac of non-riparian areas (e.g., terrace deposits or aquatic depressions) would be converted to floodplain and native riparian habitat. At the UCC site, about 15.8 ac would be converted from non-riparian terraces to floodplain and native riparian habitat. Riparian vegetation is expected to be established within 3 to 5 years post-project.

Although adverse effects on vegetation would be avoided or minimized by using previously disturbed sites to stockpile material and existing roads to access the sites, the direct effects on vegetation would occur from construction of new

[18] The California Fish and Game Commission Notice of Findings dated April 20, 2016, notes that the Southern Sierra Nevada Evolutionary Significant Unit (defined as south of the Merced River) is recognized as threatened, while listing of the Northern California ESU was not warranted.

access roads and contractor use areas. Removal of native plant species would be avoided to the greatest possible extent, and disturbance would be targeted toward areas dominated by invasive species, where appropriate.

The greatest effect from the Proposed Action would be on barren habitat; areas are already disturbed and unvegetated. About 17.76 ac of barren habitat at UCC and less than an acre at Sawmill would be affected, with most effects occurring at Riverine and Upland areas (Table 3-8.). Annual grassland, mostly non-native, would experience direct effects on about 8.36 ac at UCC and 5.18 ac at Sawmill. Restoration of grasslands would be easier and require less time than restoration of woody habitat types. Urban habitat is considered disturbed or unvegetated, low-quality habitat. At UCC, about 3.08 ac of urban habitat would be directly affected, with most impacts at Contractor Use areas. At Sawmill, about 4.17 ac of urban habitat would be directly affected. Furthermore, a 3.12 ac of montane and valley foothill riparian habitat would be directly affected at UCC, and 2.98 ac of these habitats would be directly affected at Sawmill. However, the impact areas would be adjusted in the field to minimize the loss of riparian vegetation, and revegetation would be completed. AT where feasible UCC, about 1.11 ac of Montane and Valley Foothill Riparian is classified as riparian wetland and would be directly affected . At Sawmill, about 1.41 ac of Montane and Valley Foothill Riparian, classified as riparian wetland, would be directly affected.

At UCC, less than 1 ac of blue oak-foothill pine, lacustrine, and mixed chaparral habitat types would be directly affected (Table 3-8.). At Sawmill, less than an acre of barren, blue oak-foothill pine, Douglas fir, freshwater emergent wetland, mixed chaparral, montane hardwood, montane hardwood-conifer, perennial grassland, and ponderosa pine habitat types would be directly affected.

There are several activity areas in the project ESLs where impacts to mature montane hardwood, ponderosa pine, and montane riparian habitat would occur on lands managed by BLM. The BLM reviewed these areas and documented that the Proposed Action (including vegetation removal) would meet the criteria under Exemption C of the Pechman Exemptions Order (October 11, 2006; see also Appendix K of this EA/IS). In addition, the BLM concluded that the activity areas would be the focus of a riparian and stream improvement project, in which riparian work would include obtaining material for placing in-stream and riparian planting. Road or trail decommissioning and stream improvement work would include the placement of large wood, channel and floodplain reconstruction, and the removal of channel diversions.

At some activity areas, populations of invasive plants would be removed by manual and mechanical methods to expand floodplain habitat for salmonids and other aquatic organisms. The Proposed Action is intended to reduce the existing populations of noxious weeds and invasive plant species through grading, clearing, and revegetation activities as well as periodic flooding of newly constructed floodplains. During the rehabilitation activities, control measures for invasive plants and organisms (e.g., Himalayan blackberry and yellow star thistle) include the use of weed-free erosion control materials and washing equipment. These measures would be implemented in accordance with environmental commitment EC-VW-9 [4.3-2b and 13d]; Appendix E) to prevent the spread of noxious weeds in the project ESLs. However, even with these control measures and active design decisions to reduce existing populations, invasive species cover is likely to increase in areas disturbed by project activities. Prevention, early detection, and rapid response are necessary and are the most cost-effective methods of invasive plant control post-construction. Long-term monitoring of the rehabilitation sites and adaptive measures in accordance with EC-FR-4 (4.7-1b) would monitor the recovery of upland, wetland, and riparian areas including the prevalence of invasive species, consistent with TRRP's 2022 Riparian Revegetation and Monitoring Plan (TRRP 2022). This increase in invasive species cover is expected to reduce over time as native riparian vegetation becomes more robust.

It should also be recognized that the control of invasive plant species at the sites post-project is limited by the prohibition of herbicide use within the UCC/Sawmill ESLs. Certain invasive plants species (e.g., Himalayan blackberry, yellow starthistle, tree-of-heaven, etc.) can be controlled manually to some extent by actions such as hand hoeing, pulling, grubbing/digging up, mowing/cutting, prescribed burns, and prescribed grazing. Mechanical methods can be used but are recognized to be less precise and therefore less effective. Without the ability to use herbicides strategically the vegetative recovery of the riparian areas at the sites will be slower and the management activities will be more labor intensive, expensive, and less effective.

Areas disturbed by construction would be restored with native seed and plantings to the extent possible following implementation of project activities. Three ECs have been integrated into this alternative to minimize adverse effects on vegetation (see Appendix E [EC-VW-1, EC-VW-2, EC-VW-9, and EC-FR-4]). Special-status plants have not been found in the project ESLs and therefore, would not be affected by the rehabilitation activities. Impacts to BLM sensitive plant species with habitat present in the project ESLs would be avoided by implementing EC-VW-2, which requires two preconstruction surveys and flagging and exclusion fencing around individuals and populations. If impacts cannot be fully avoided, salvage and relocation of individual plants to a suitable habitat location nearby would occur.

Revegetation at the UCC and Sawmill rehabilitation sites would include preparing planting areas and planting a mixture of wetland, riparian, and upland plant species. Primary revegetation prescriptions include:

- Willow clumps and cottonwood poles – rooted willows would be salvaged from areas subjected to construction activities.
- Willow and cottonwood clusters – primary revegetation from both salvaged and nursery stock would be planted on the new floodplain surfaces.
- Cottonwood-dominant upland plantings – would contain a combination of long cottonwood poles, bareroot/container plantings, and acorn plantings.
- Upland plantings – bare root/container plantings and acorn plantings of plants suited to hot, dry conditions.
- Seeding – would consist of seeding with a mix of native herbaceous forb and grass species suited to hot, dry conditions.

Plant species expected to be incorporated into the revegetation plan include California fescue (*Festuca californica*), California grape (*Vitis californica*), fragrant sumac (*Rhus aromatica*), hardstem bulrush *(Schoenoplectus acutus*), small-fruited bulrush (*Scirpus microcarpus*), western service berry (*Amelanchier alnifolia*), blue elderberry (*Sambuscus nigra spp. caerulea*), Oregon ash (*Fraxinus latifolia*), western clematis (*Clematis ligusticifolia),* tufted hair grass (*Deschampsia cespitosa*), Douglas' spiraea (*Spirea douglasii*), sedge (*Carex spp*.), rush (*Juncus* spp.), ponderosa and grey pine (*Pinus* spp.), Douglas-fir (*Pseudotsuga menziesii*), mugwort (*Artemesia douglasii*), whiteleaf manzanita (*Arctostaphylos viscida),* cottonwood (*Populus* spp.*),* oak (*Quercus* spp.), and willow (*Salix* spp.*).* Arroyo willow (*Salix lasiolepis*), red willow (*S. laevigata*), and shiny willow (*S. lasiandra*) clumps that are salvaged from excavated areas would primarily be placed in or near wood structures. Cottonwood and willow poles would be planted in select areas as appropriate to increase species diversity. Conifers, manzanita, and oaks would be planted in the upland areas where the soil can be amended with organic material, and planting microsites would be prioritized by the amount of afternoon shade provided by the surrounding topography and vegetation. The organic material amendment would consist of wood of various types (chipped, pieces, or logs) buried or ripped into surfaces and/or placed on top (e.g., mulch).

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Table 3-8. Effects on habitat types within the UCC and Sawmill activity areas

Habitat Type	In-channel Area (ac)	Riverine Area (ac)	Existing Access Routes (ac)	Temporary Access Routes (ac)	Contractor Use Area (ac)	Upland Areas (ac)	Channel Crossing (ac)	Total (ac)
UCC								
Annual Grassland	--	2.1	0.4	0.3	2.0	3.7	--	**8.4**
Barren	<0.1	11.4	0.8	0.3	1.2	4.0	1.1	**17.8**
Blue Oak-Foothill Pine	--	<0.1	<0.1	0.1	0.2	0.1	--	**0.4**
Lacustrine	--	--	--	--	<0.1	--	--	<0.1
Freshwater Emergent Wetland	--	--	--	--	--	--	--	**--**
Mixed Chaparral	--	--	0.1	--	0.3	0.2	--	**0.6**
Montane Hardwood	--	--	--	--	<0.1	--	--	<0.1
Montane and Valley Foothill Riparian	<0.1	1.3	1.4	0.1	0.1	0.2	<0.1	**3.1**
Montane and Valley Foothill Riparian (Riparian Wetland)	0.1	0.78	0.1	<0.1	--		<0.1	**1.1**
Ponderosa Pine	<0.1	0.01	0.5	<0.1	0.4	1.5	--	**2.4**
Riverine	1.7	<0.1	<0.1	--	--	--	0.1	**1.8**
Urban	--	0.24	0.37	--	2.46	<0.1	--	**3.1**
Sawmill								
Annual Grassland	0.2	1.1	0.1	0.3	2.3	1.1	<0.1	**5.2**
Barren	0.2	0.1	0.1	0.1	--	--	--	**0.5**
Blue Oak-Foothill Pine	--	<0.1	<0.1		<0.1	<0.1	--	**0.1**
Douglas-fir	--	<0.1	--	--	--	--	--	**<0.1**
Freshwater Emergent Wetland	0.1	0.1	--	<0.1	--	--	--	**0.2**
Mixed Chaparral	--	--	--	--	<0.1		--	**0.1**
Montane Hardwood	<0.1	<0.1	<0.1	<0.1	<0.1	0.10	--	**0.2**
Montane Hardwood-Conifer	--	--	<0.1	--	--	0.6	--	**0.7**
Montane and Valley Foothill Riparian	1.9	1.2	<0.1	0.2	0.2	1.9	<0.1	**4.4**
Perennial Grassland	0.1	--	<0.1		--	0.1	--	**0.3**
Ponderosa Pine	0.1	0.2	0.1	<0.1	--	0.1	--	**0.6**
Riverine	2.8	<0.1	--	0.2	--	--	<0.1	**3.0**
Urban	0.8	0.6	0.6	--	0.3	1.9	--	**4.2**

[1] CWHR System (CDFW 2014; Bair et al. 2021) refined by Ironwood 2023 field surveys.

Waters and Wetlands

Construction activities associated with this alternative would result in potential temporary and permanent impacts to Waters of the United States, which include the Trinity River and the wetlands within the project ESLs. Direct project impacts (i.e., those associated with work in the proposed activity areas) within the UCC ESL would be about 1.1 ac of riparian wetland, including invasive habitat, about 1.7 ac of perennial stream. At Sawmill, about 0.3 ac of emergent wetland (PEM, PSS, PFO, and invasive), about 2.2 ac of riparian wetland, including invasive habitat, and 3.0 ac of perennial stream would be directly affected by project activities. Table 3-9, Figure 9Figure 10 show the impacts to waters of the United States, including wetlands. In addition to the potential waters of the United States, the Regional Waterboard would regulate 5.2 ac of impact on riparian habitat at UCC and 4.5 ac of impact on riparian habitat at Sawmill (Table 3-10).

Table 3-9. Summary of impacts to potential wetlands and other Waters of the United States in the UCC and Sawmill ESLs

Waters of the United States (Cowardin Class [a])	UCC Total Activity Area Impact (Acres)	Sawmill Total Activity Area Impact (Acres)
Riparian Wetland (PFO, PSS)	1.1	2.5
Freshwater Emergent Wetland (PEM)	--	0.1
Low flow Channel Riverine at 450 cfs (R3UB)	1.7	3.0
Non-wetland waters (unvegetated channel area at 450 to 6,000 cfs)	1.3	0.6
Total	4.1	6.2

[a] The Cowardin classification system, devised for the USFWS, classifies wetlands and other deep water habitats (Cowardin et al. 1979).

PFO = palustrine forested wetland; PSS = palustrine scrub-shrub wetland; PEM = palustrine emergent wetland; R3UB = riverine upper perennial unconsolidated bottom; R3US = riverine upper perennial unconsolidated shore; L2UB1 = lacustrine littoral unconsolidated bottom – cobble/gravel water body.

Table 3-10. Summary of impacts to Riparian Habitat in the UCC and Sawmill ESLs

Riparian Habitat	UCC Total Activity Area Impact (Acres)	Sawmill Total Activity Area Impact (Acres)
Valley Foothill and Montane Riparian	5.2	4.2
Emergent Wetland	--	0.2
Total	**5.2**	**4.4**

After construction activities are completed, R areas, IC areas that would be filled, U activity areas, as well as some A (temporary access) and C activity areas would be revegetated. Both planting and natural recruitment of native species are planned for the revegetation of the R and U areas under the Proposed Action. These revegetation efforts would follow TRRP's 2022 Riparian Mitigation and Monitoring Plan and would incorporate the requirements of BLM and other cooperating, responsible, and trustee agencies and landowners.

At the UCC ESL, the draft revegetation plan entails 15.8 ac of planting; 36.3 ac that of seeding; and 20.6 ac of area that would be mulched. Plantings include approximately 4.0 ac of channel margin plantings, 403 willow clusters, 493 cottonwood clusters, 3.7 ac of upland plantings, 1.0 ac of slope plantings, 0.4 ac of willow clumps, and 0.2 ac of willow trenches. Revegetation efforts at the Sawmill ESL would be similar and would be designed to reestablish a wider riparian corridor at the site utilizing resilient native species such as cottonwoods, willows, sedges, rushes, etc. that provide structural diversity within the riparian vegetative community. The revegetation design would include seeding, installing nursery container stock, live hardwood poles, bareroot trees, and herbaceous plugs; applying mulch and tree protection; and irrigation and post-planting maintenance as necessary to ensure plant survival. At both sites, the amount of inundated floodplain would increase which would support the recruitment of additional emergent and riparian wetlands. The creation of lowered floodplains and river channel meanders would also increase the amount of area below the OHWM and the length and area of river channel.

Environmental commitments have been developed to ensure the project would not affect individuals or populations of BLM sensitive species and that Alternative 1 is not likely to result in a trend toward federal listing or the loss of viability of the species.

Wildlife

Grey wolf, North American wolverine, and Pacific fisher may use the habitats adjacent to the Trinity River for foraging but are not expected to breed or den within the project ESLs. Transitory individuals of these species would likely avoid areas where construction is proposed, and project impacts would not jeopardize the continued existence of these species.

Vegetation removal would occur outside the nesting season for birds (after August 1), and the breeding season for ring-tailed cats, and before bats establish maternity colonies (i.e., in early February). If this is not practicable, preconstruction surveys would be conducted to identify active bird nest sites, bat roost sites, or ring-tailed cat dens in or adjacent to the project ESLs. No-disturbance buffers would be established around the active sites or dens until they are no longer occupied, in accordance with environmental commitments EC-VW-6 [4.7-7 a-d], EC-VW-7 [4.7-8a-d], and EC-VW-8 [4.7-9a-c]. With these environmental commitments, no take of ESA-listed bird species or ring-tailed cat would occur, direct impacts on other special-status avian and wildlife species would be minimized or completely avoided, and there would be no indirect effects.

Both foothill yellow-legged frog and western pond turtle are known to use the Trinity River and adjacent habitats. The frog may use pools and slow-moving areas of the river with adequate substrate for egg laying, and disturbance to these areas during in-water activities could dislodge egg masses or injure frogs. Turtles may nest in upland areas adjacent to the river or be found in the water, and disturbance in these areas could damage nests or injure turtles. Preconstruction surveys for breeding and nesting activity of these species would be conducted in accordance with EC-VW-4 [4.7-5a-d] and EC-VW-5 [4.7-6a-e], and foothill yellow-legged frog egg masses or western pond turtle nests that could be disturbed by the rehabilitation activities would be relocated to nearby suitable habitat outside the activity areas.

Precautionary measures would also be taken during the rehabilitation activities if a frog or turtle were encountered in an activity area. In these instances, the individual(s) would be relocated outside the activity areas in accordance with EC-VW-4 and EC-VW-5. With these environmental commitments, no take of the foothill yellow-legged frog would occur consistent with CESA, direct impacts on the western pond turtle would be minimized or completely avoided, and there would be no indirect effects.[19]

Native freshwater mussel populations are known to occur along the Trinity River corridor and low-, medium-, and high-density beds are present within the UCC ESL. High-density beds would be avoided, but there may be a small effect on a medium-density bed from the new river access. Mussel beds observed within the boundaries of in-channel activity areas would be flagged for avoidance, and, to the extent feasible, individuals would be relocated to nearby appropriate habitat that would not be disturbed (see EC-VW-10). Some mussels may inadvertently be physically displaced during construction. This effect would be minimal due to the large populations known to occur at other upstream and downstream Trinity River locations.

There is no habitat for protected terrestrial snails along the Trinity River within the project ESLs. These species prefer moist forest or limestone habitats that do not exist in the area, and they do not occupy areas that periodically inundate during high flows.

Specific habitat requirements are not well known for Franklin’s bumble bee, and there have only been a few observations since 2000. This bumble bee is endemic to five counties in North America, including Trinity County. There are no known extant populations of Franklin’s bumble bee, so impacts on this species within the project ESLs are highly unlikely.

Temporary disturbance associated with alternative 1 could discourage wildlife use of the habitats in and near the project ESLs. Most wildlife species, such as deer, beaver, and most birds, would be able to use nearby habitats to avoid disturbance and return once the rehabilitation activities are complete and riparian and upland revegetation reestablishes over a 3- to 5-year period. Once the rehabilitation activities are complete, the habitats in the project ESLs would include more riparian and wetland habitat alongside channels off the mainstem Trinity River, providing additional riverine habitat and benefiting aquatic- and riparian-dependent species. Revegetation of disturbed activity areas would return them to their current or better conditions and would ensure re-establishment of native plants while reducing the

[19] The activities are expected to improve habitat for common and special-status reptiles and amphibians by increasing functional alluvial habitat and converting dredge tailings to more productive upland habitat.

extent of non-native and invasive plants. If invasive plants recolonize the restored areas, Reclamation would implement targeted control methods to remove plants and reestablish native plants in accordance with EC-VW-9 [4.7-13a-g]. Long-term monitoring of the rehabilitation sites and adaptive measures to further enhance or create additional riparian or wetland habitat in accordance with EC-FR-4 [4.7-1b] would ensure that no net loss of riparian or wetland habitat occurs, consistent with TRRP's 2022 Riparian Revegetation and Monitoring Plan (TRRP 2022). The rehabilitation activities would benefit wildlife, particularly wetland and riparian species, by enhancing the Trinity River corridor for nesting, breeding, roosting, foraging, and other activities. The corridor would continue to function as a movement corridor for many wildlife species, and the enhanced floodplain and riparian conditions could attract more wildlife to the project ESLs.

With the inclusion of CEQA mitigation measures EC-VW-9 [4.3-2b], EC-VW-1 [4.7-1a], EC-VW-6 [4.7-7 a-d], EC-VW-7 [4.7-8a-d], EC-VW-8 [4.7-9a-c], EC-VW-4 [4.7-5a-d], EC-VW-5 [4.7-6a-e], EC-VW-9 [4.7-13a-g], and EC-FR-4 [4.7-1b] described in this section, impacts under CEQA related to vegetation, wildlife, and wetlands considered under this resource topic would be less than significant (CCR, Title 14, Division 6, Chapter 3, Section 15382).

3.13.3.2 Alternative 2 – No Action Alternative

Under Alternative 2, no temporary or permanent disturbance to the habitats, plants, wildlife, wetlands, or other waters would occur in the project ESLs. Habitat conditions in the project ESLs would remain similar to current conditions, and the riparian corridor would be subjected to current Trinity River influences without the enhancements to the riparian and wetland habitats. The invasive yellow star thistle and other invasive plants would continue to dominate annual grasslands in the project ESLs. Special-status wildlife species would continue to use habitats in the project ESLs that are suitable for them.

Under Alternative 2, vegetation, wildlife, and wetland resources would persist similar to existing conditions. Therefore, there would be no impacts on these resources under CEQA as defined in the CCR, Title 14, Division 6, Chapter 3, Section 15382.

3.14 Wild and Scenic Rivers

3.14.1 Methods

The Trinity River and its tributaries were designated as Wild and Scenic to preserve the river's free-flowing condition, water quality, and Outstandingly Remarkable Value (ORV). The ORV that was identified on the date of designation was the anadromous and resident fisheries (Federal Register [FR]Vol. 46, No. 14, January 23, 1981). Under an interagency agreement between the National Park Service, BLM, and Forest Service, BLM would have the responsibility for conducting WSRA Section 7 determinations for the mainstem Trinity River from Lewiston Dam to the confluence with the North Fork Trinity River. Appendix G provides a comprehensive analysis of and determination for this alternative consistent with the requirements of Section 7 of the WSRA.

3.14.2 Affected Environment

The Trinity River was designated as a federal "wild and scenic river" (WSR) in 1981 by the Secretary of the Interior under the 1968 Federal Wild and Scenic Rivers Act (WSRA). In addition to the mainstem Trinity River from the confluence with the Klamath River to 100 yards below Lewiston Dam, three other sections of the river were also designated: the North Fork from the Trinity River confluence to the southern boundary of the Trinity Alps Wilderness Area, the South Fork from the Trinity River confluence to the SR 36 bridge crossing, and the New River from the Trinity River confluence to the Trinity Alps Wilderness Area. The mainstem Trinity River from 100 yards below Lewiston Dam downstream to Cedar Flat is classified as a "recreational" wild and scenic river. In 1998, BLM delineated the wild and scenic river corridor.

Sections of the Trinity River in the project ESLs were designated as Scenic in 1981 under the federal and state Wild and Scenic Rivers Acts (WSRA; Public Law 90-542 1968). This designation serves to preserve the river's free-flowing condition, water quality (e.g., extremely low turbidity levels under low-flow conditions), and ORVs. The section of the Trinity River subject to the Proposed Action was found to have ORVs due to its anadromous fishery (Federal Register Vol. 46, No. 14, January 23, 1981).

3.14.3 Environmental Consequences

3.14.3.1 Alternative 1 – Proposed Action

Implementation of the Proposed Action would have a temporary effect on the scenic and recreational components of the Trinity River's wild and scenic river values. However, the rehabilitation activities would ultimately enhance the overall form and function of the Trinity River, thereby enhancing the ORVs for which it was designated a federal WSR.

Implementation of Alternative1 would increase the potential for temporary increases in turbidity levels during and, to a lesser degree, after construction. Flows that typically contribute to good fishing tend to be clear; increases in turbidity may therefore affect the recreational experience of anglers and the aesthetic values held by other recreationists. Increased turbidity and suspended solids levels would adversely affect water quality (Section 4.8: Recreation, of the Trinity River Master EIR) and could adversely affect aesthetic resources. As described in Appendix E, four specific environmental commitments developed to reduce water quality impacts have been integrated into this alternative to reduce the impacts of increased turbidity levels that could be visible to recreational users. Temporary effects to boaters and recreationists from reduced flows and water velocity during construction are addressed in the section: *Recreation*. Impacts from temporary roads used to access the project site and for continued vegetation maintenance after the project construction were designed to remain inconspicuous to river users.

Under Section 7 of the federal WSRA, direct and adverse effects to the values for which the Trinity River was recognized as a WSR are prohibited. Based on the analysis and determination presented in Appendix G, this alternative would enhance the fishery ORV as well as maintain the water quality and enhance the free-flowing conditions for which the Trinity River was designated. Therefore, this alternative would be consistent with the provisions of the federal WSRA.

With the inclusion of CEQA mitigation measures EC-WQ-1 [4.5-1a-1e], EC-WQ-2 [4.5-2a–2c], EC-WQ-3 [4.5-3a-3c], EC-WQ-4 [4.5-1e], and EC-RE-1 [4.8-1a], the impacts under CEQA considered under this resource topic would be less than significant (CCR, Title 14, Division 6, Chapter 3, Section 15382).

3.14.3.2 Alternative 2 – No Action Alternative

Under Alternative 2, there would be no degradation or obstruction of a scenic view because of construction because the project would not be implemented, nor would there be an impact on the scenic quality of the WSR. Therefore, there would be no impacts as defined in the CCR, Title 14, Division 6, Chapter 3, Section 15382.

3.15 CEQA Significance

As described in Section 3.1, this EA/IS is an integrated NEPA/CEQA document. Table 3-11 provides a summary of the CEQA mitigations developed for each resource topic discussed in this chapter (see Appendix D and Appendix E for details). It also identifies the level of significance as defined in CCR, Title 14, Division 6, Chapter 3, Section 15382).

Table 3-11. Summary of Resource Topics considered in this EA/IS

Resource Topic	CEQA Mitigation	CEQA Significance
Aesthetics	EC-WQ-1 [4.5-1a-1e], EC-WQ-2 [4.5-2a-2c], EC-WQ-3 [4.5-3a-3c], EC-WQ-4 [4.5-1e], and EC-RE-1 [4.8-1a].	Less than Significant
Air Quality	EC AQ-1 [4.11-a-1a], [4.11-2a]	Less than Significant
Cultural Resources	EC-CU-1 [4.10-2a], and EC-CU-2 [4.10-2a]	Less than Significant

Resource Topic	CEQA Mitigation	CEQA Significance
Fishery Resources	EC FR-1 [4.6-1a,1b], EC FR-2 [4.6-4a-4e], EC FR-3 [4.6-4f], EC FR-4 [4.6-5b], and EC FR-5 [4.6a-6d]	Less than Significant
Geomorphology and Soils	EC-GS-1[4.3-2a] and EC-GS-2 [4.3-2b]	Less than Significant
Hydrology and Flooding	Not Applicable	Less than Significant
Land Use	Not Applicable	Less than Significant
Noise	EC-NO-1 [4.14-1a], and EC NO-2 [4.14-1b]	Less than Significant
Recreation and Wild and Scenic Rivers	EC-WQ-1 [4.5-1a-1e], EC-WQ-2 [4.5-2ª-2c], EC-WQ-3 [4.5-3a-3c], EC-WQ-4 [4.5-1e], and EC-RE-1 [4.8-1a]	Less than Significant
Transportation and Traffic	EC-TC-2 [4.16-2a, 4.16-5a] and EC-TC-3 [4.16-4a]	Less than Significant
Vegetation, Wildlife, and Wetlands	EC-VW-9 [4.3-2b], EC-VW-1[4.7-1a], EC-VW-6 [4.7-7 a-d], EC-VW-7 [4.7-8a-d], EC-VW-8 [4.7-9a-c], EC-VW-4 [4.7-5a-d], EC-VW-5 [4.7-6a-e], EC-VW-9 [4.7-13a-g], and EC-FR-4 [4.7-1b]	Less than Significant
Water Quality	EC WQ-1 [4.5-1a, b], EC WQ-2 [4.5-1c], EC WQ-3 [4.5-1d], EC WQ-4 [4.5-1e,4.5-2a-2c], and EC WQ-5 [4.5-3a-3c]	Less than Significant

4. Cumulative Impacts and other NEPA Considerations

Effective on May 20, 2022, the CEQ issued a final rule (87 FR 23453) that restored NEPA provisions that were in effect for decades before being modified in 2020. One of these provisions was the definitions of "effects." In consideration of these recent updates, cumulative effects have been defined by the CEQ regulations in 40 CFR § 1508.1(g)(3) as "effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over time." The analysis of cumulative effects should look at other actions that have affected or could affect the same resources as the action alternatives (see Appendix M).

There are several past, present, and reasonably foreseeable actions in the Trinity River that affect instream habitat within the analysis area, including climate change effects, past alterations to natural processes and river morphology, and various restoration actions. These are discussed below in more detail and summarized in Appendix M.

4.1 Climate Change

In accordance with NEPA and CEQ Regulations (42 U.S.C. 4321 et seq., 40 CFR Parts 1500-1508, respectively), federal agencies must consider the effect of a proposed action on GHG emissions and climate change. Climate change results from the incremental addition of GHG emissions from millions of individual sources, which collectively have a large impact on a global scale. CEQ recognizes that all climate change impacts are not attributable to any single action but are exacerbated by a series of actions, including factions. Thus, this analysis addresses impacts from climate change with that concept in mind.

The Trinity River basin has been experiencing extreme drought and record high temperatures in recent years due to baseline climate change effects. Warmer temperatures associated with climate change reduce snowpack and alter the seasonality and runoff volumes of the hydrograph, the result of which is larger runoff events occurring earlier in the year due to a shift in precipitation falling as rain rather than snow (OEHHA 2023). The altered hydrograph patterns strain the ability of reservoir water managers to provide cold-water releases for salmonids because of reduced cold-water storage. This is anticipated to stress important regional fisheries and present adverse effects on the recovery of vulnerable fish populations. Simultaneously, human demands for water are increasing at a time when streams are at all-time low-flow levels. Water warms more rapidly in shallow streams that have been depleted from water use demands, reducing and sometimes eliminating suitable cold-water aquatic habitat that is critical for fish survival.

As discussed in Section 3.7, the annual GHG emissions resulting from the Proposed Action are estimated to be a total of 193.9 tons of CO_2, which would be released over the project construction duration at UCC. At Sawmill, the estimate is 79.1 tons of CO_2. This represents a slight increase in GHG emissions over background conditions; however, the Proposed Action would improve instream habitat for fisheries. Increasing instream habitat complexity with rehabilitation activities would create more heterogeneity within the active channel, which would provide salmonids and other aquatic organisms areas with potentially lower temperatures (e.g., under logs, in pools, off-channel areas, etc.). While the Proposed Action may slightly increase GHG emissions, it would improve instream habitat, making it more resilient to the warming effects of climate change.

4.2 Past Alterations to Natural Processes and River Morphology

As previously discussed in Section 1.2 , the establishment of the TRD has turned the Trinity River into a managed system, and the Trinity and Lewiston dams block fish passage and inhibit the delivery of sediment and large wood to downstream reaches. In the TRD, instream water temperatures and flows in downstream reaches are managed through a combination of reservoir storage and dam releases throughout the year that also supports hydropower production. The outcome of managing flows in this way is that channel-forming flood flows are minimized or eliminated, leading to a simplified channel morphology.

In addition, as discussed in Section 3.9 , millions of cubic yards of mining debris were discharged from hydraulic mining over a 60-year period ending in the 1930s. Massive aggradation during this period was dominated by hydraulic mining, followed by large-scale dredge mining of the Trinity River's alluvial valley floor that continued into the 1950s. Placer gold mining of alluvial gravel has left tailings deposits of different types that are apparent throughout the rehabilitation sites. These deposits continue to influence the form and function of the Trinity River, which now has low sinuosity and lies within a confined valley.

The Proposed Action would improve the altered condition of the Trinity River by adding channel sinuosity, creating more side channel habitat, increasing riparian habitat, and adding more in-channel geomorphic features. This would increase the size, amount, and complexity of alluvial features, which in combination with wood features would increase aquatic habitat complexity. In addition, some of the cobble, gravel, and other mineral materials associated with alluvial and dredge tailings deposits would be processed and used for rehabilitation. Reducing these tailings piles would return these areas to a more natural state, which would counteract some of the adverse environmental effects of the historic mining activities.

4.3 Restoration Actions

The restoration actions considered in this cumulative effects analysis include activities authorized under the Trinity River FEIS/EIR and ROD and the 2009 Master EIR, as well as those undertaken by other organizations. These actions are discussed in greater detail below.

4.3.1 Channel Rehabilitation Projects

The 2009 Master EIR includes a chronology of the management actions relevant to the Trinity River Basin between 1938 and 2008 (Section 1.4.4, pages 1 through 8). Additional details concerning the legislative and management history can be found in the Trinity River EIS and the EA/Final EIRs for TRRP projects constructed between 2005 and 2008.[20] The 2009 Master EIR (Section 1.4.5, pages 1-10 through 1-15) also contains a summary of the restoration activities undertaken since the signing of the ROD and brief discussions of other watershed restoration programs and activities occurring within the basin. These documents are on file at the TRRP office in Weaverville, California and the Weaverville public library and are also available on the TRRP website.

Chapter 5 of the Master EIR provides a cumulative impacts section that enumerates foreseeable channel rehabilitation projects based on input from the lead and cooperating agencies. In this assessment, the geographic scope examined cumulative effects on the Trinity River corridor between Lewiston Dam and the confluence of the North Fork Trinity River at Helena, California.

The following projects were considered in this section of river and are still considered timely and relevant:

- Fish Habitat Management projects
- Trinity River Mainstem Fishery Restoration Project
- California Coastal Salmonid Restoration Program
- Five-Counties Salmonid Conservation Program
- Clean Water Act Section 303(d) Total Maximum Daily Load Requirements Program

Since 2009, the TRRP has implemented projects at all the Phase 1 channel rehabilitation sites and at nine of the Phase 2 sites. The Deep Gulch and Sheridan sites were constructed in 2017. The Bucktail site constructed in 2008 was expanded in 2016 to include additional areas. The Dutch Creek project was constructed in 2020. The Chapman Ranch Phase A site was constructed in 2019, and Phase B site was constructed in 2021. The Oregon Gulch project was completed in 2023, and Sky Ranch and Evans Bar are all proposed beyond 2024. These projects would cumulatively improve anadromous fish spawning and rearing habitat throughout the extent of the Trinity River and, taken together with the Proposed Action's potential beneficial effects to the watershed identified in the analysis, would result in increased efficacy of the TRRP restoration efforts toward the ROD's objectives.

4.3.2 Watershed Restoration Projects

Since 2009, there have been several watershed restoration and road sediment reduction projects implemented by various agencies and organizations throughout the Trinity River basin. While some of these were considered in the 2009 Master EIR, the Forest Service, Five Counties Salmonid Conservation Program, Yurok Tribe, Watershed Research and Training Center, and Trinity County Resource Conservation District have been funded for and/or completed additional projects intended to improve watershed conditions, restore aquatic habitat, improve aquatic connectivity, and reduce road-related sediment delivery to streams and rivers. These watershed restoration projects are intended to improve water quantity and quality as well as rearing habitat in the Trinity River Watershed and, taken together with the Proposed Action's potential beneficial impacts on the watershed identified in the analysis, would result in increased efficacy of the TRRP restoration efforts toward the ROD's objectives.

[20] Environmental documentation and project descriptions for each are available https://www.trrp.net/dataport/rad/?what=table-trrpmainstem.

4.3.3 Sediment Augmentation Projects

TRRP currently adds between 500 cy and 2,000 cy of sediment at five permitted locations downstream of Lewiston Dam, although the maximum allowable volume of sediment under the 2020 BiOp at a site in any year is 8,000 cy per water year. Sediment augmentation at the existing and the proposed sites would continue in perpetuity. In addition, TRRP-managed flows have been implemented yearly since 2004. Ongoing monitoring efforts by TRRP partners continue to document improvements in habitat use and restoration of alluvial processes and riparian vegetation (Boyce 2020; Cooper-Hertel et al. 2022). Sediment augmentation projects are intended to improve anadromous fish spawning and rearing habitat in the Trinity River and, taken together with the Proposed Action's potential beneficial impacts to the watershed identified in the analysis, would result in increased efficacy of TRRP restoration efforts toward the ROD's objectives. Although the sediment augmentation successfully improves aquatic habitat, new augmentation beyond the four new sediment and wood augmentation sites (Dark Gulch, Trinity House Gulch, Steel Bridge, and Vitzthum Gulch) proposed to begin in 2024 are not anticipated between the Lewiston Dam and Indian Creek because of a paucity of possible new sites with adequate access within the restoration reach.

Cumulative effects on resources including recreation, vegetation and wetlands, traffic, and visual resources, and aesthetics, may result from the UCC and Sawmill rehabilitation projects when taken together with sediment augmentation activities, especially if activities were conducted at multiple sites in a given year. With the inclusion of ECs (Appendix E) and the MMRP (Appendix D) described in Section 3. of this EA/IS, in addition to the terms and conditions enforced under the 2020 BiOp and the environmental commitments outlined in Appendix C of the Trinity River FEIS/EIR and ROD and the Mitigation Monitoring and Reporting Program requirements outlined in Appendix A of the 2009 Master EIR, the cumulative effects of the Proposed Action taken together with activities at the existing sediment augmentation sites would not result in significant impacts.

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Appendix A - Glossary of Terminologies

Acre-feet (af). The quantity of water required to cover 1 ac to a depth of 1 ft. Equal to 1,233.5 cubic meters (43,560 cubic feet).

Affected environment. Existing biological, physical, social, and economic conditions of an area subject to change, both directly and indirectly, because of a proposed human action.

Aggradation. Vertical accumulation of sediment in the channel from sediment deposition.

Air quality. Measure of the health-related and visual characteristics of the air, often derived from quantitative measurements of the concentrations of specific injurious or contaminating substances.

Alluvial river. A river with its bed and banks composed of mobile sediments (clay, silt, sand, gravel, and cobble).

Anadromous. Fish, such as salmon or steelhead, that hatch in freshwater, migrate to and mature in the ocean, and return to freshwater as adults to spawn.

Aquatic. Living or growing in or on the water.

Bank erosion. The removal of sediment and soil from streambanks by flowing water or bank collapse.

Beneficial use. Those uses of water as defined in the State of California Water Code (Chapter 10 of Part 2 of Division 2), including but not limited to agricultural, domestic, municipal, industrial, power generation, fish and wildlife, recreation, and mining. Such use is beneficial to the extent of being consistent with Congressional directives concerning the project.

Biological Opinion. Document issued under the authority of the Endangered Species Act stating the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service (NMFS) finding as to whether a federal action is likely to jeopardize the continued existence of a threatened or endangered species or result in the destruction or adverse modification of critical habitat.

California Fully Protected Species. Species protected by the State of California as described in subsections 3511, 5515, 4700, 5050, and 12008 of the Fish and Game Code of California.

Candidate species. As defined by the U.S. Fish and Wildlife Service, candidate species are plant or animal species not yet proposed for listing as threatened or endangered under the federal Endangered Species Act, but for which there is sufficient data to warrant listing (formerly designated Category 1 candidate species). As defined by the National Marine Fisheries Service, candidate species are any species being considered for listing as endangered or threatened (including those with insufficient data), but not yet the subject of a proposed rule.

Central Valley Project (CVP). As defined by Section 3403(d) of the Central Valley Project Improvement Act, “all federal reclamation projects located within or diverting water from or to the watershed of the Sacramento and San Joaquin rivers and their tributaries as authorized by the Act of August 26, 1937 (50 Stat. 850) and all Acts amendatory or supplemental thereto, ...”

Channel. Natural or artificial watercourse with a definite bed and banks to confine and conduct continuously or periodically flowing water.

Coarse Sediment/Fish Rock. Gravel and small cobble bed material between 0.375 and 5 inches in diameter. *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 to 24 inches in diameter). *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.

Cooperating agency. A federal agency that 1) has jurisdiction by law or special expertise on environmental quality issues; 2) has been invited by the lead agency to participate as a cooperating agency; or 3) has made a commitment of resources (staff and/or funds) for regular attendance at meetings, participation in workgroups, or in actual preparation of portions of a National Environmental Policy Act (NEPA) document.

Cubic feet per second (cfs). A measure of the volume rate of water movement. As a rate of streamflow, a cubic ft of water passing a reference section in 1 second of time. One cfs equals 0.0283 m3/s (7.48 gallons per minute). One cfs flowing for 24 hours produces approximately 2 af.

Cumulative effect. Impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions (40 CFR Part 1508.7). Cumulative effects can result from individually minor but collectively significant actions taking place over time.

Degradation. A decline or deterioration in state or condition.

Direct effect. Impact that are caused by the action and occur at the same time and place as the action.

Endangered species. Any species designated under the Endangered Species Act (ESA) or California Endangered Species Act (CESA) that is in danger of extinction throughout all, or a significant portion, of its range. Federally endangered species are under the jurisdiction of the Service or NMFS. State endangered species are under the jurisdiction of the California Department of Fish and Game (CDFG).

Environmental consequences. The impacts to the affected environment that are expected from implementation of a given alternative.

Environmental study limit (ESL). The anticipated geographic limit of project activities, with a buffer applied for the purposes of resource identification and associated impact analyses. In addition to in-river rehabilitation/ construction areas, these project areas include upland work areas, contractor use (i.e., staging) areas, unpaved access routes, and locations of pre-construction vegetation removal and other disturbances necessary to facilitate work activities. The buffer is sized as determined appropriate for local conditions, based on data (e.g., wetland habitat and wildlife surveys, information from previously prepared cultural resource inventory reports, etc.) available at the time of its development.

Existing Conditions. Resources that occur within the project site and are typically related to the resources that may be affected by the proposed project and that are being analyzed.

Export. A diversion of water from one hydrologic area to another. Examples include exports from the Trinity River Basin to the Sacramento Basin.

Fill. Any sediment deposited by any agent such as water to fill or partly fill a channel, valley, sink, or other depression. Soil or other material placed as part of a construction activity.

Fish population. The total number of fish alive for a defined life stage and/or area.

Fishery. The industry or occupation of catching fish, and a place where such fish are caught.

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 cfs. Natural floodplains are typically created by deposition on a low-lying surface.

Flow. The volume of water passing a given point per unit of time.

Fishery flow: The total volume of water and its release patterns that are scheduled to benefit fish populations and form habitats they require.

Peak flow: Maximum instantaneous volume of water passing a given point per unit of time.

Fry. The life stage of fish between the egg and fingerling stages. For salmon this typically refers to fish that are less than 50 millimeters long.

General plan. A comprehensive, long-term plan for the physical development of a city, any land outside the city's boundary, or a county.

Geomorphic environment. Refers to physical processes along a river channel.

Gravel. Rocks that are larger in diameter than sand (>2 mm).

Gravel bar. An accumulation of sediment caused by a decrease in sediment transport capacity relative to the supply of sediment that is available for transport.

Habitat. Area where a plant or animal lives.

High-flow period. See Restoration release period.

Hydrograph. A graph showing the discharge or stage in a river through time.

In-channel work period. The period between July 15 and October 15 of each year, during which in-channel habitat restoration activities are authorized under the 2020 BiOp.

Indirect effect. Impacts that are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable.

Instream. Refers to habitat and flows within a river or stream, as opposed to releases to diversion canals and other artificial structures.

Interest group. An agency/entity that has expressed concern or interest, verbally or in writing, in becoming more intensely involved in the development of the proposed project.

Juvenile. Young fish that are no longer fry (less than 50 millimeters long) but have not reached reproductive age.

Lateral accretion. Sediment accumulation at the side of a channel or bank. Lateral accretion deposits or sidebars grow towards the channel axis whereas cross bedding dips parallel to channel axis.

Low-flow period. See Low-flow period.

Mainstem. The main course of a stream.

Mitigation. One or all of the following: (1) Avoiding an impact altogether by not taking a certain action or parts of an action; (2) minimizing impacts by limiting the degree or magnitude of an action and its implementation; (3) rectifying an impact by repairing, rehabilitating, or restoring the affected environment; (4) reducing or eliminating an impact over time by preservation and maintenance operations during the life of an action; and (5) compensating for an impact by replacing or providing substitute resources or environments. NEPA requires agencies to identify feasible mitigation, whereas CEQA requires agencies to implement feasible mitigation (see Section 1.7).

Model. A tool used to mathematically represent a process which could be based upon empirical or mathematical functions. Models can be computer programs, spreadsheets, or statistical analyses.

Natural production. As defined by Section 3403(h) of the CVPIA, "fish produced to adulthood without direct human intervention in the spawning, rearing, or migration processes." Naturally produced is used to describe fish or populations of fish that meet these criteria.

Outstandingly Remarkable Value (ORV). A river-related value that is unique, rare, or exemplary feature that is significant at a comparative regional or national scale.

Planform. The contour of an object or mass as viewed from above.

Point Bar. A bar formed on the inside of a meander bend.

Public involvement. Process of obtaining citizen input into each stage of the development of planning documents, including NEPA documents.

Range. Geographic region in which a given plant or animal normally lives.

Reach. 1) The length of channel uniform with respect to discharge, depth, area, and slope; 2) The length of a channel for which a single gage affords a satisfactory measure of the stage and discharge; 3) The length of a river between two gaging stations; 4) More generally, any length of a river.

Recreational Rivers. As defined by the Wild and Scenic Rivers Act (P.L. 90-542), those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along the shorelines, and may have undergone some impoundment or diversion in the past.

Redd. Depression in river or lakebed dug by fish for the deposition of eggs.

Reservoir. Artificially impounded body of water.

Restoration release period. The period starting around April 15 of each year during which releases from Trinity and Lewiston dams are scheduled for the benefit of anadromous fish population recovery.

Riffles. Stretches of shallow water that are relatively fast at low flows and slow at high flows compared to nearby pools. Riffle deposits of sediment can form by obstructions in transport caused by underlying rock shoals or roughness from river bars or other impediments to flow.

Riparian. The vegetated banks of a natural course of water (e.g., river, stream). The soil moisture along such areas typically exceeds that found farther from the water course.

River left. The left bank of the Trinity River when looking downstream.

River Mile (RM) / River Kilometer (RKM). The distance in miles (mi) or kilometers (km) from the confluence of the Trinity River and the Klamath River. The confluence is considered 0 RMs (RKMs).

River right. The right bank of the Trinity River when looking downstream.

Salmonids. Fish of the family Salmonidae, including salmon and trout.

Scenic Rivers. As defined by the Wild and Scenic Rivers Act (P.L. 90-542), those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

Scour. Vertical removal of streambed or bank material by flowing water. Streambed scour often occurs during the rising limb of a hydrograph, and the scoured material is typically replaced with sediment that fills the lowered area during the falling limb of a hydrograph. Scour and fill processes are highly spatially variable in alluvial river channels.

Side Channel (Low-Flow). A relatively narrow channel (bottom width 10–30 ft) traversing floodplains or other areas adjacent to the main channel and excavated to a depth that permits flow-through when river discharge is 300 cfs. 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 an effective salmonid habitat, it is necessary that flow through the side channel be maintained.

Smolt. A juvenile salmon or steelhead migrating to the ocean and undergoing physiological changes to adapt its body from a freshwater to a saltwater environment.

Spawning. The act of nest building followed by the release and fertilization of eggs by fish.

Spawning bed. Area in the river channel with suitable depths, velocities, and sediment sizes for salmonids to construct a nest and lay eggs.

Stream. Natural water course.

Synchronized flow releases. Elevated releases from Lewiston dam during the period between October 15 and February 15, timed to coincide with precipitation and runoff events.

Perennial stream. Natural water course that flows continuously throughout the year.

Terrace. A relatively flat surface within the riverine corridor with an elevation higher than the water surface elevation.

Tributary. A stream that flows into a larger stream or a lake.

Trinity River Division (TRD). A portion of the CVP that connects the Trinity River Basin to the Sacramento River Basin comprised of the following: Trinity Reservoir, Dam, and Powerplant; Lewiston Reservoir, Dam, and Powerplant; Clear Creek Tunnel; Judge Francis Carr Powerhouse (J.F. Carr Powerhouse); Whiskeytown Reservoir and Dam; Spring Creek Tunnel; Spring Creek Debris Dam; Spring Creek Powerplant; Hamilton Ponds; and Buckhorn Pond and Dam.

Trustee agency. As defined by CEQA, a state agency having jurisdiction by law over natural resources affected by a project held in trust for the people of the State of California (see also responsible agency).

Vertical scour. Erosion of sediment in the riverbed.

Watershed. The region draining into a river, river system, or other body of water.

Water year. The period beginning October 1 and ending September 30 of the following year and designated by the calendar year in which it ends.

Wetland. An area that is inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Wildlife habitat. An area that provides a water supply and vegetative habitat for wildlife.

Appendix B - Maps and Figures

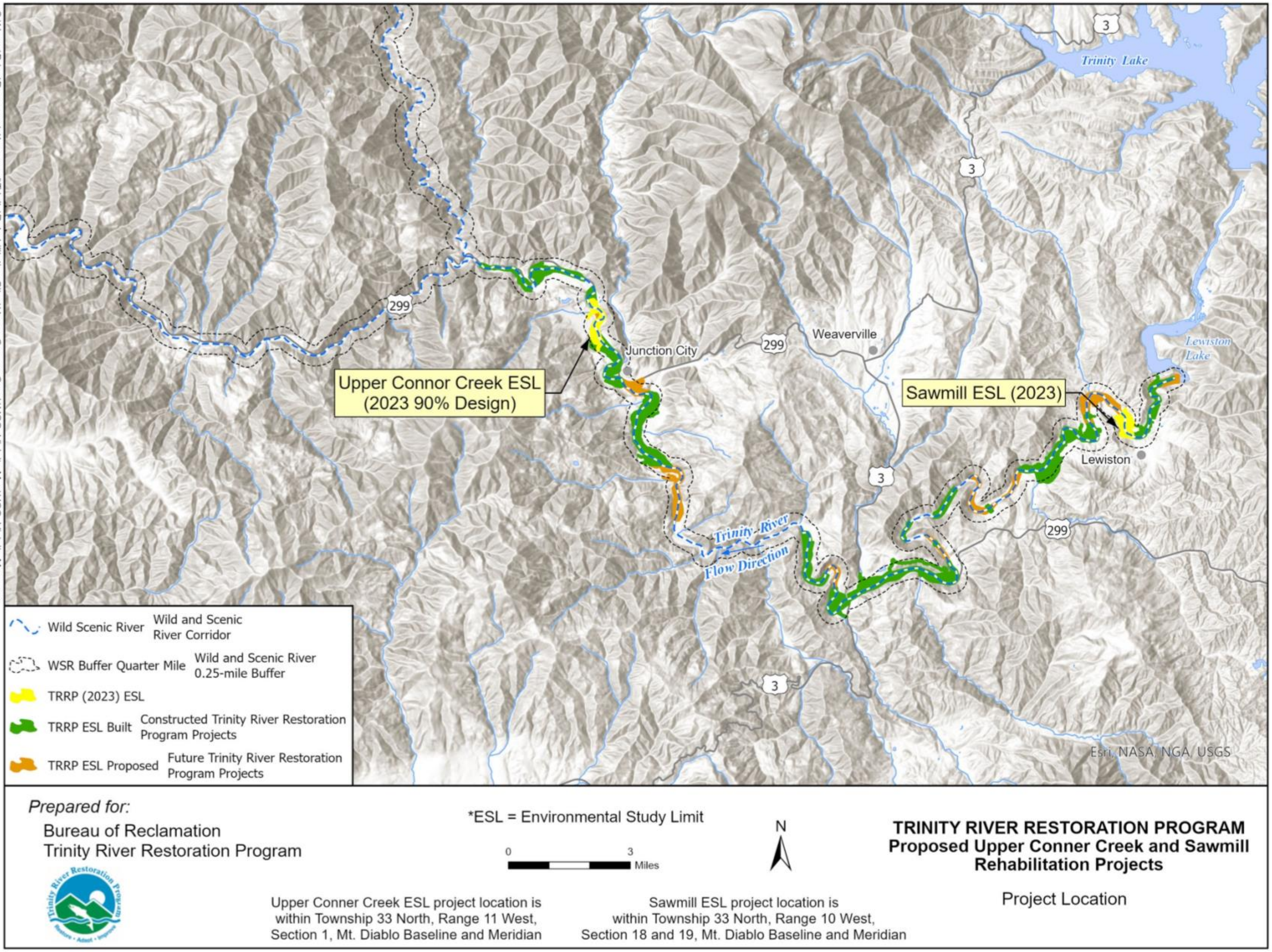

Figure 1. Location of UCC and Sawmill Rehabilitation Sites

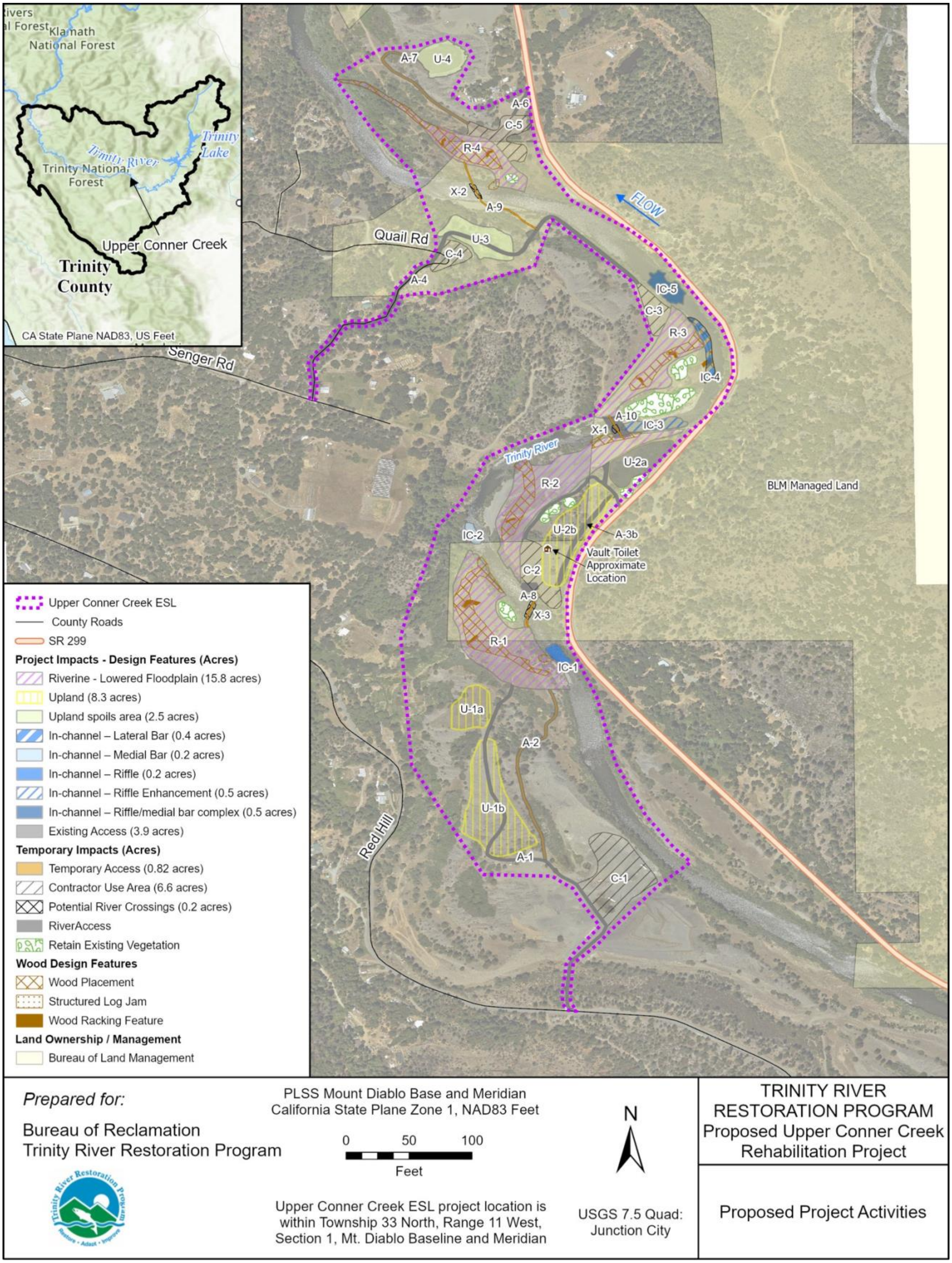

Figure 2. Proposed UCC ESL Rehabilitation Activities – Alternative 1 (Proposed Action)

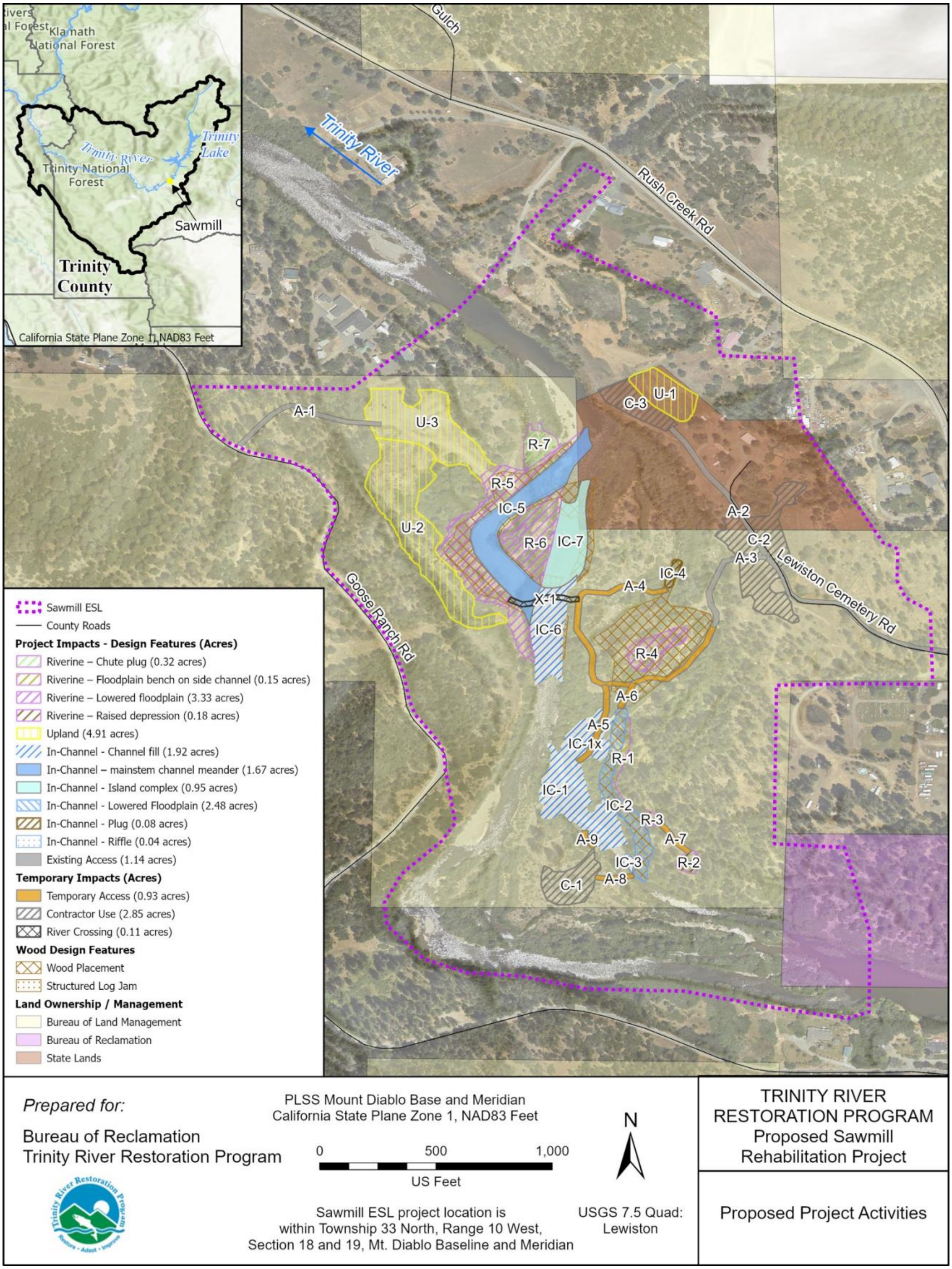

Figure 3. Proposed Sawmill ESL Rehabilitation Activities – Alternative 1 (Proposed Action)

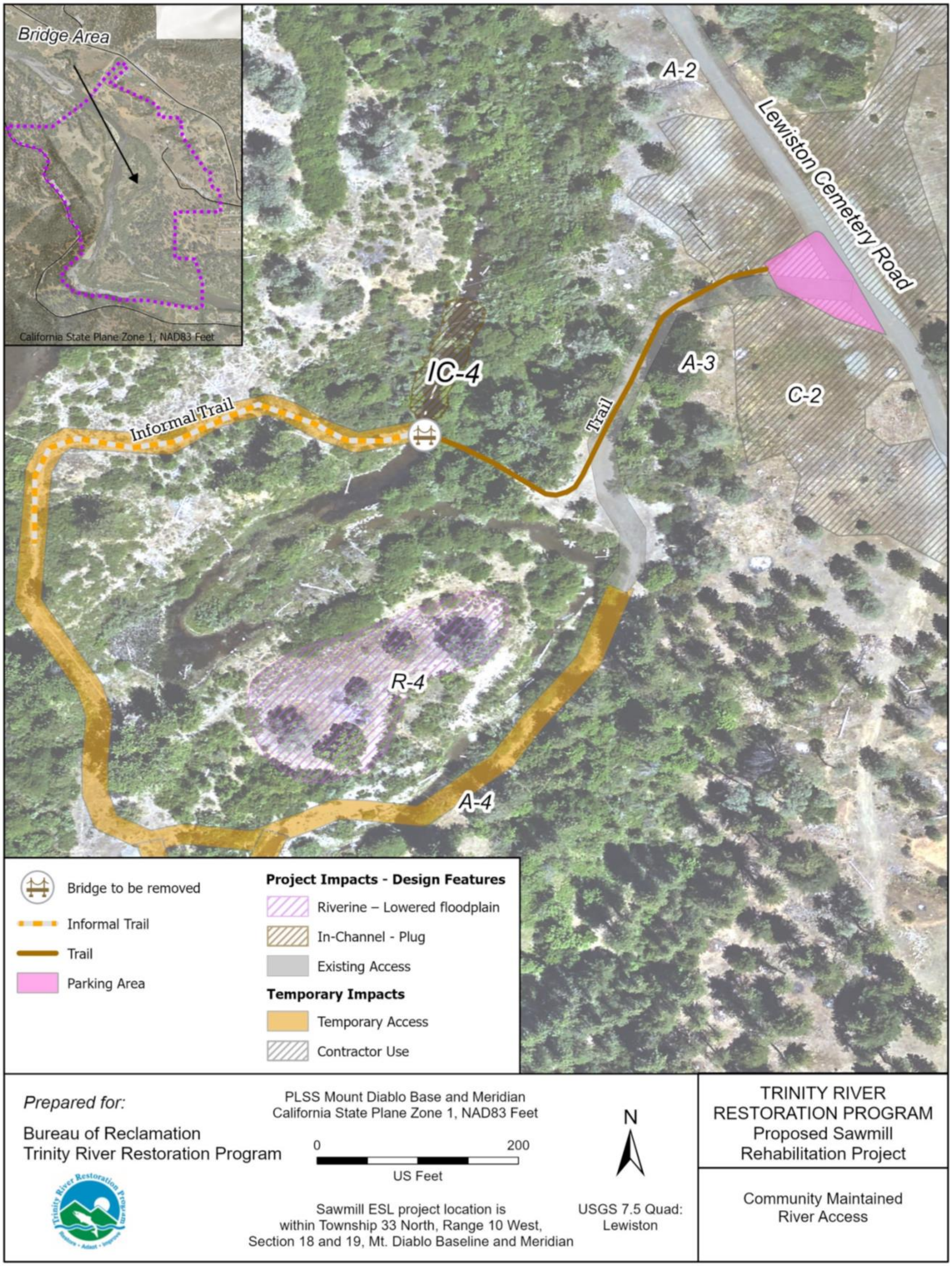

Figure 4. Unmaintained Informal River Access Trail and Footbridge at the Sawmill Site

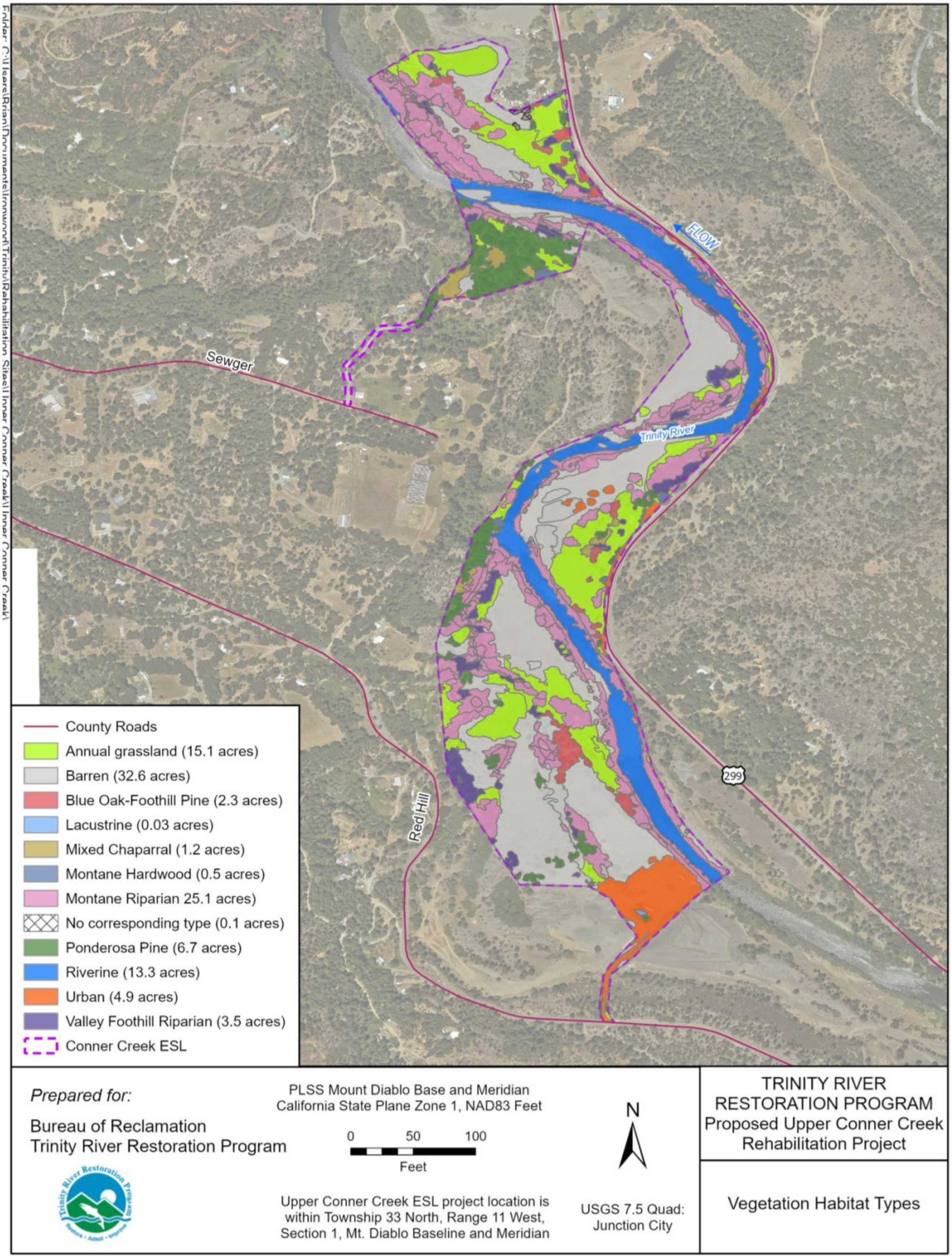

Figure 5. Habitat Types Occurring in the UCC ESL

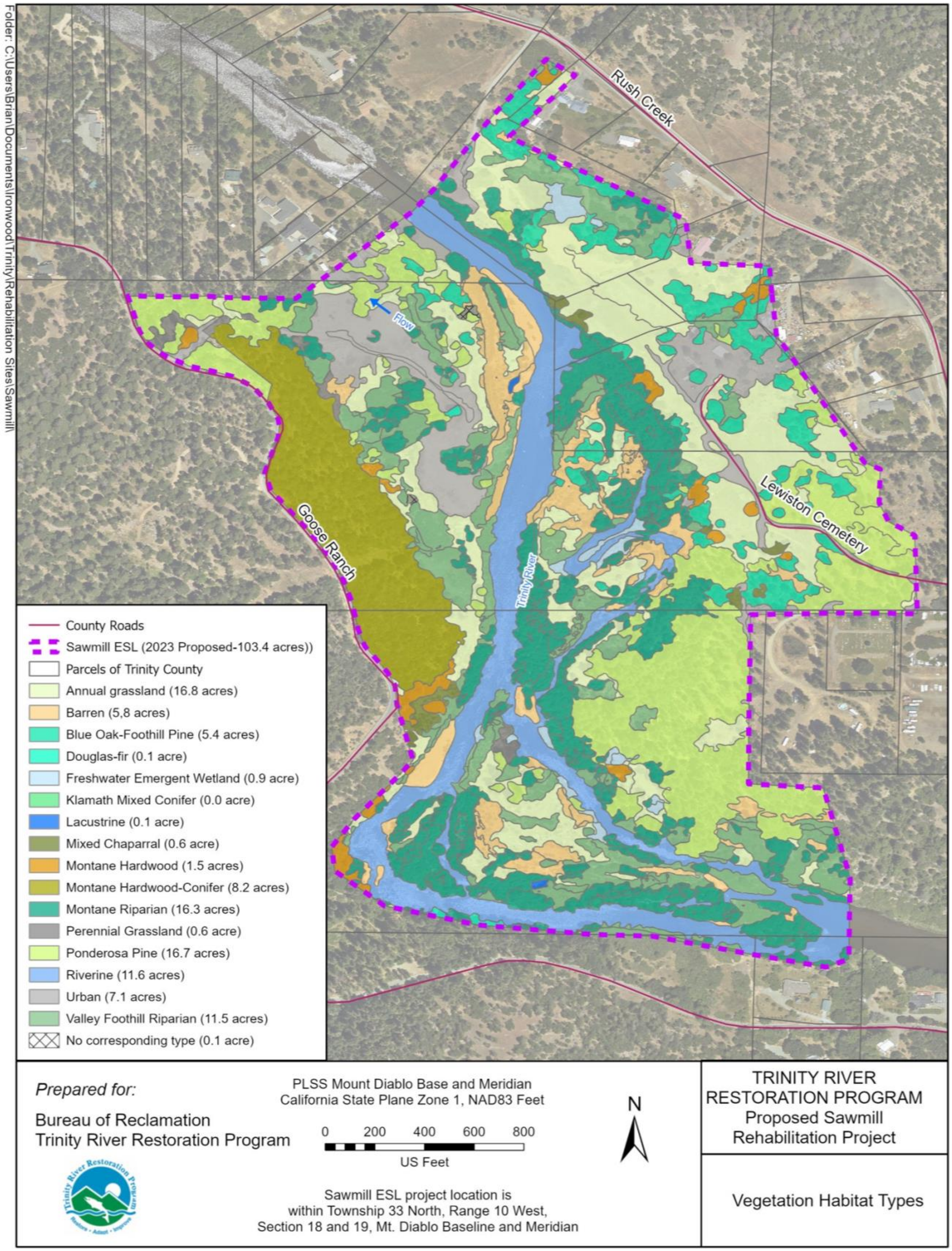

Figure 6.Habitat Types Occurring in the Sawmill ESL

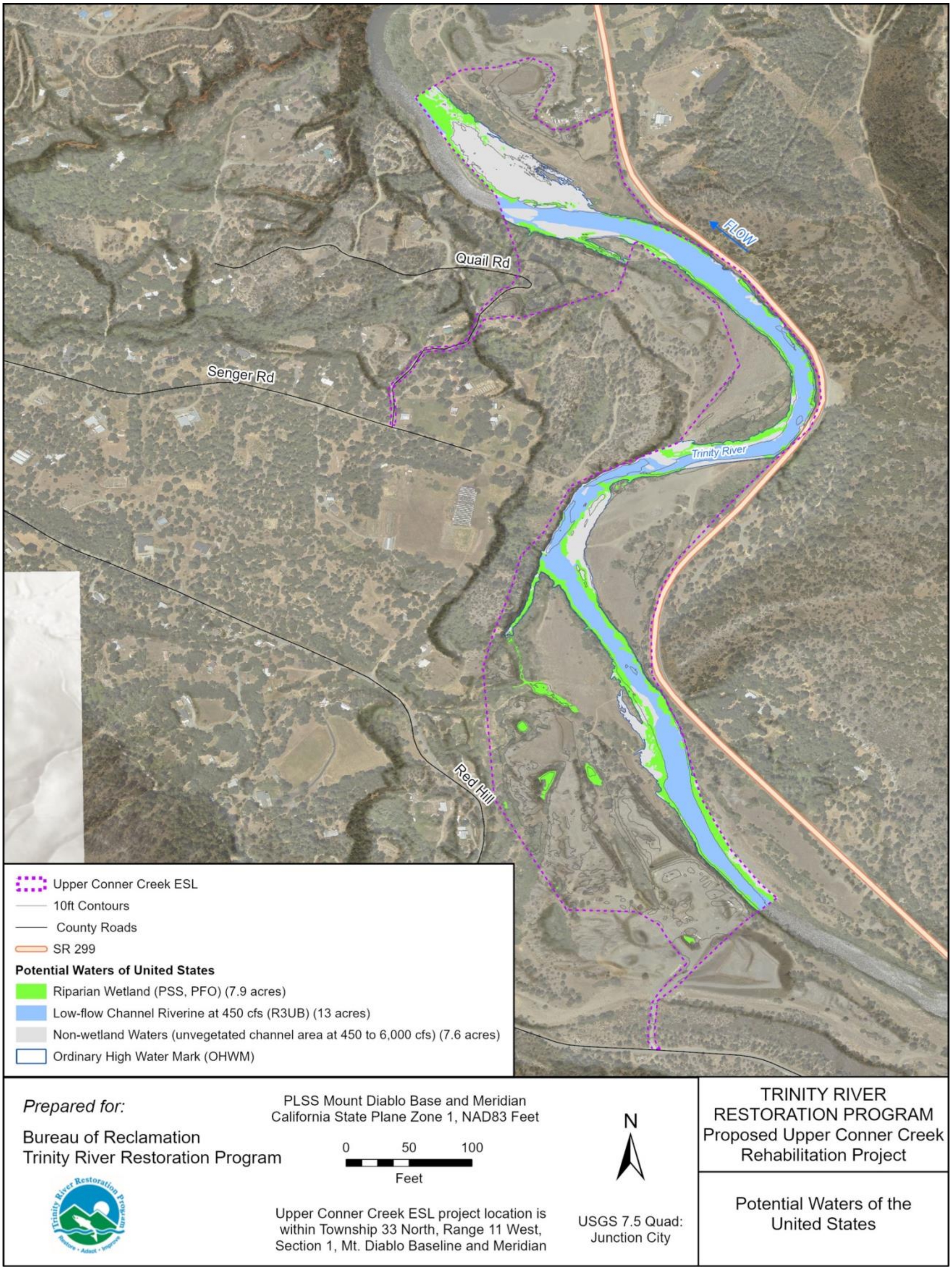

Figure 7. Potential Waters of the United States in the UCC ESL

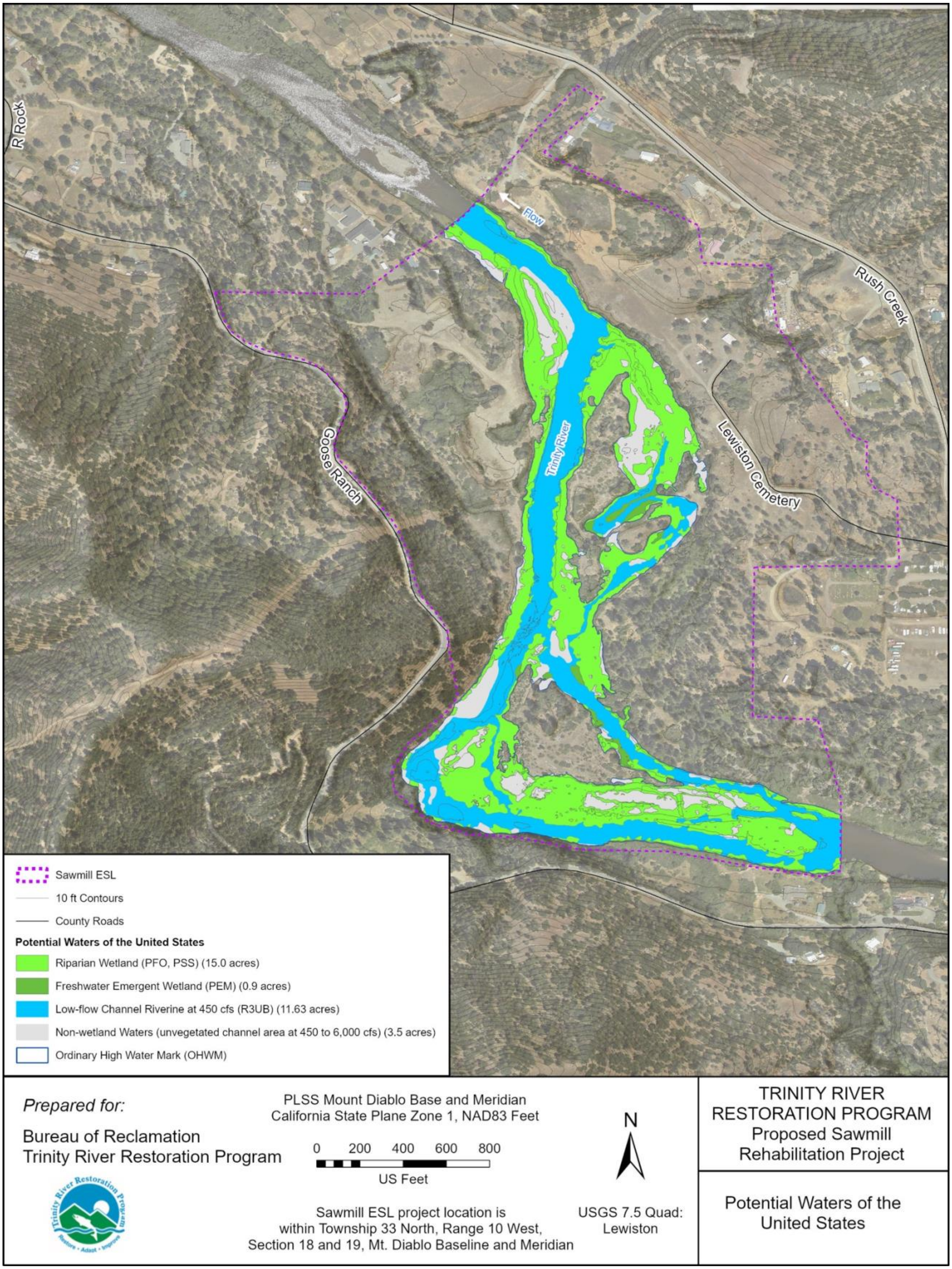

Figure 8. Potential Waters of the United States in the Sawmill ESL

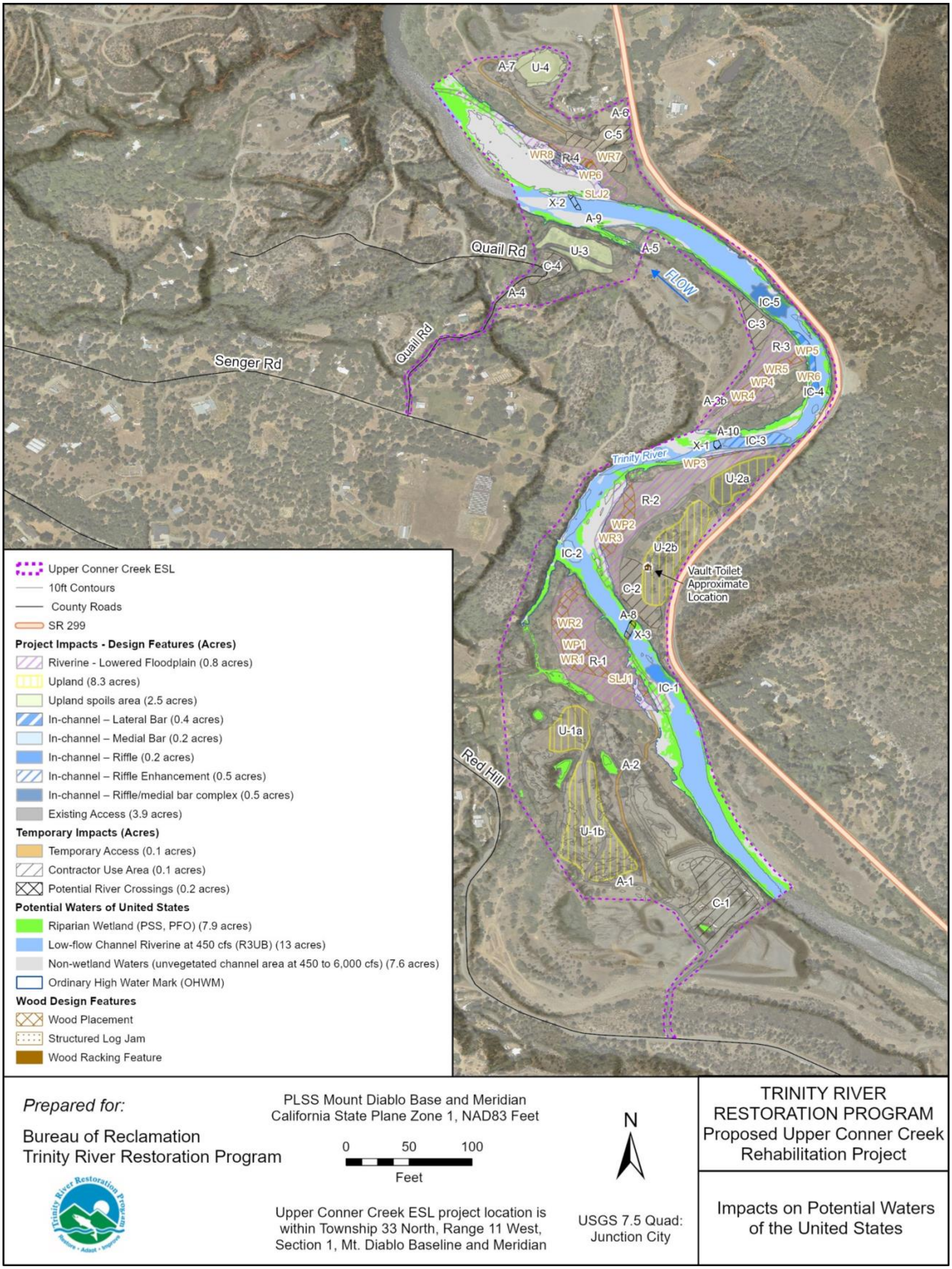

Figure 9. Impacts to Potential Waters of the United States within the UCC ESL

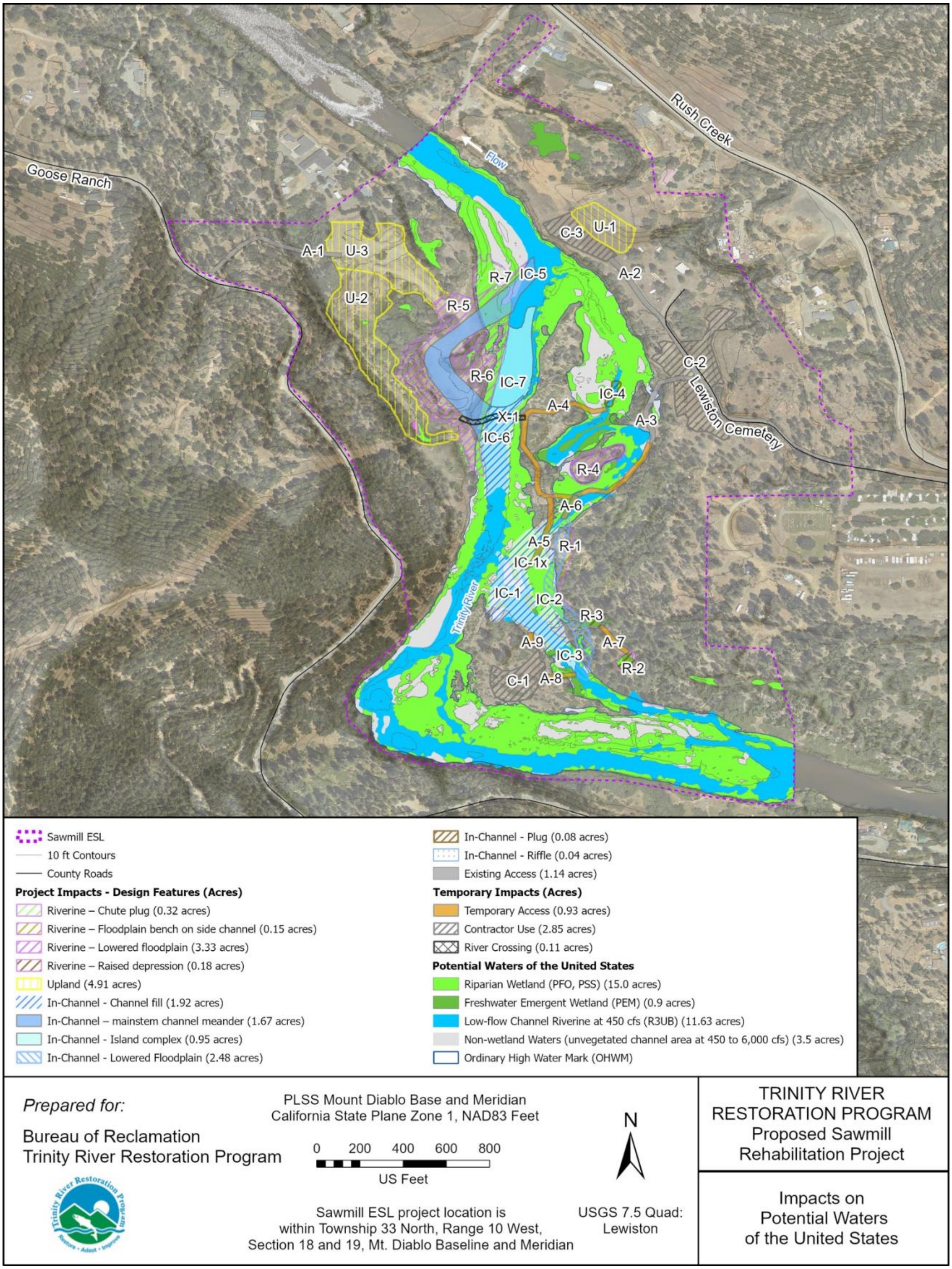

Figure 10. Impacts to Potential Waters of the United States within the Sawmill ESL

Appendix C - CEQA Initial Study Checklist

1. CEQA Environmental Checklist Form

Project Title: Trinity River Channel Rehabilitation Sites: Upper Conner Creek Site (River Mile 77.1 to 78.5) and Sawmill Gravel Processing Site (River Mile 108.9 to 109.75)

Lead Agency Name and Address:	North Coast Regional Water Quality Control Board 5550 Skylane Blvd., Suite A, Santa Rosa, California 95403
Contact Person and Phone Number:	Jacob Shannon, (707) 576-2673
Project Location:	Trinity County, California
Project Sponsor's Name:	U.S. Bureau of Reclamation Trinity River Restoration Program
General Plan Designation:	Trinity County General Plan – Resource (RE), and BLM 1993 Redding Resource Management Plan — Other (Matrix)
Zoning:	Agricultural 10-Acre Minimum (A10) and Agricultural Forest 20-Acre (AF20) Minimum
Description of Project:	See Chapter 2 of the Environmental Assessment/Initial Study (EA/IS) for the Trinity River Channel Rehabilitation Sites: Upper Conner Creek Site (River Mile 77.1 to 78.5) and Sawmill Gravel Processing Site (River Mile 108.9 to 109.75)
Surrounding Land Uses and Setting:	See Section 3.2.1 of the EA/IS

Other Public Agencies Whose Approval May Be Required (e.g., permits, financing approval, or participation agreement):

- U.S. Bureau of Land Management, Redding Field Office (Right of Way and Free Use Permit)
- Trinity County Planning Department (Federal Emergency Management Agency compliance)
- U.S. Army Corp of Engineers (Clean Water Act, Section 404 compliance)
- North Coast Regional Water Quality Control Board (Clean Water Act, Section 401 compliance)
- State Water Resources Control Board (compliance with the Construction General Permit)

2. Native American Consultation

Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code (PRC) section 2180.31?	**No**

If yes, ensure that consultation and heritage resource confidentiality follow PRC sections 21080.3.1 and 21080.3.2 and California Government Code 65352.4.

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21080.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California

Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

3. Environmental Factors Potentially Affected

Each of the environmental factors listed below was fully evaluated and one of the following four determinations was made:

- **No Impact:** No impact on the environment would occur as a result of implementing the proposed project.
- **Less Than Significant Impact:** Implementation of the proposed project would not result in a substantial and adverse change to the environment and no mitigation is required.
- **Potentially Significant Impact:** Implementation of the proposed project could result in an impact that has a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project" (California Environmental Quality Act Guidelines Section 15382).
- **Less Than Significant Impact with Mitigation Incorporated:** A "potentially significant impact," as described above, that can be reduced to a less-than-significant level with the incorporation of project-specific mitigation measures.

None of the following factors were identified as having a greater than significant impact. Under California Code of Regulations, title 14, section 15177, after a Master EIR[1] has been prepared and certified, subsequent projects which the lead agency determines as being within the scope of the Master EIR will be subject to only limited environmental review. Mitigation measures from the Master EIR will be implemented (see Footnote 1 for Master EIR reference). Please see the checklist beginning on page 4 for additional information.

Aesthetics	Agriculture and Forestry
Air Quality	Biological Resources
Cultural Resources	Energy
Geology/Soils	Greenhouse Gas Emissions
Hazards and Hazardous Materials	Hydrology/Water Quality
Land Use/Planning	Mineral Resources
Noise	Population/Housing
Public Services	Recreation
Transportation	Tribal Cultural Resources
Utilities/Service Systems	Wildfire Mandatory Findings of Significance

[1] North Coast Regional Water Quality Control Board (RWQCB), and U.S. Bureau of Reclamation (Reclamation). 2009. *Channel Rehabilitation and Sediment Management for Remaining Phase 1 and Phase 2 Sites.* Trinity River Restoration Program (Weaverville, California). Master Environmental Impact Report, Environmental Assessment/Environmental Impact Report. August, 2009. SCH#2008032110. http://www.trrp.net/library/document/?id=476.

4. Determination

On the basis of this initial evaluation (choose one):

	I find that the proposed project COULD NOT have a significant effect on the environment and a NEGATIVE DECLATION will be prepared.
	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT (EIR) is required.
	I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
X	I find that although the proposed project could have a significant effect on the environment because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Print Name	Signature	Date

This checklist identifies physical, biological, social, and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the project indicate no impacts.
A NO IMPACT answer in the last column reflects this determination. Where there is a need for clarifying discussion, the discussion is included either following the applicable section of the checklist or is within the body of the environmental document itself. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

5. Aesthetics

Except as provided in Public Resources Code Section 21099, would the project:

Question	CEQA Determination
a) Have a substantial adverse effect on a scenic vista?	Less Than Significant Impact
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	Less Than Significant Impact
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	Less Than Significant with Mitigation Incorporated
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	No Impact

5.1 Discussion of Impacts

Refer to section 3.4.3 of the EA/IS.

5.2 Mitigation Measures

See California Environmental Quality Act (CEQA) mitigation measures described in Appendix D of the EA/IS: [4.5-1a-1e], [4.5-2a – 2c], [4.5-3a-3c], 4.5-1e] and [4.8-1a].

6. Agriculture and Forest Resources

In determining whether impacts to agricultural resources and farmland are significant, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997), prepared by the California Department of Conservation, as an optional model. In determining whether impacts to forest resources, including timberland, are significant, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state’s inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project, and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

Question	CEQA Determination
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	No Impact

Question	CEQA Determination
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	No Impact
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned for Timberland Production (as defined by Government Code section 51104(g))?	No Impact
d) Result in the loss of forest land or conversion of forest land to non-forest use?	No Impact
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use, or conversion of forest land to non-forest use?	No Impact

6.1 Discussion of Impacts

Not applicable.

6.2 Mitigation Measures

Not applicable.

7. Air Quality

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:

Question	CEQA Determination
a) Conflict with or obstruct implementation of the applicable air quality plan?	Less Than Significant Impact
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	Less Than Significant Impact
c) Expose sensitive receptors to substantial pollutant concentrations?	Less Than Significant with Mitigation Incorporated
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	No Impact

7.1 Discussion of Impacts

Refer to section 3.7.3 of EA/IS.

7.2 Mitigation Measures

See CEQA mitigation measures described in Appendix D of the EA/IS: [4.11-a-1a], [4.11-2a].

8. Biological Resources

Would the project:

Question	CEQA Determination
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, or NOAA Fisheries?	Less Than Significant with Mitigation Incorporated
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	Less Than Significant with Mitigation Incorporated
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	Less Than Significant with Mitigation Incorporated
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	Less Than Significant with Mitigation Incorporated
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	No Impact
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	No Impact

8.1 Discussion of Impacts

Refer to sections 3.12.3 and 3.13.3 of the EA/IS.

8.2 Mitigation Measures

See CEQA mitigation measures for fisheries described in Appendix D of the EA/IS: [4.6-1a, 1b], [4.6-4a-4e], [4.6-4f], [4.6-5b], and Environmental Commitment (EC)-FR-5 [4.6a-6d].

See CEQA mitigation measures for vegetation, wildlife and wetlands described in Appendix F of the EA/IS: [4.3-2b], [4.7-1a], [4.7-7 a-d], [4.7-8a-d], [4.7-9a-c], [4.7-5a-d], [4.7-6a-e], [4.7-13a-g], and [4.7-1b].

9. Cultural Resources

Would the project:

Question	CEQA Determination
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in §15064.5?	Less Than Significant with Mitigation Incorporated
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	Less Than Significant with Mitigation Incorporated
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	Less Than Significant with Mitigation Incorporated

9.1 Discussion of Impacts

Refer to section 3.5.3 of the EA/IS.

9.2 Mitigation Measures

See CEQA mitigation measures for cultural resources in Appendix D of the EA/IS: [4.10-2a] and [4.10-2a].

10. Energy

Would the project:

Question	CEQA Determination
a) Result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?	No Impact
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	No Impact

10.1 Discussion of Impacts

Not applicable.

10.2 Mitigation Measures

Not applicable.

11. Geology and Soils

Would the project:

Question	CEQA Determination
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	No Impact
ii) Strong seismic ground shaking?	No Impact
iii) Seismic-related ground failure, including liquefaction?	No Impact
iv) Landslides?	No Impact
b) Result in substantial soil erosion or the loss of topsoil?	Less Than Significant Impact
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	Less Than Significant Impact
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	No Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	No Impact
f) Directly or indirectly destroy a unique paleontological resource, site, or unique geologic feature?	Less Than Significant with Mitigation Incorporated

11.1 Discussion of Impacts

Refer to section 3.9.3 of the EA/IS.

11.2 Mitigation Measures

See CEQA mitigation measures for cultural resources in Appendix D of the EA/IS: [4.10-2a] and [4.10-2a].

12. Greenhouse Gas Emissions

Would the project:

Question	CEQA Determination
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Less Than Significant Impact

Question	CEQA Determination
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Less Than Significant Impact

12.1 Discussion of Impacts

Refer to section 3.7.3 of the EA/IS.

12.2 Mitigation Measures

See CEQA mitigation measures for air quality in Appendix D of the EA/IS: [4.11-a-1a] and [4.11-2a].

13. Hazards and Hazardous Materials

Would the project:

Question	CEQA Determination
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	Less Than Significant Impact
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	Less Than Significant Impact
c) Emit hazardous emissions, or handle hazardous or acutely hazardous materials, substances, or waste, within one-quarter mile of an existing or proposed school?	No Impact
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	No Impact
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	No Impact
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	No Impact

13.1 Discussion of Impacts

Hazards to the public were addressed in the 2009 Master EIR, and no issues were identified. Indirect public health or safety concerns are addressed under air quality, noise, recreation, and transportation and traffic.

13.2 Mitigation Measures

Not applicable.

Hydrology and Water Quality

Would the project:

Question	CEQA Determination
a) Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or ground water quality?	Less Than Significant with Mitigation Incorporated
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	No Impact
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would: (i) result in substantial erosion or siltation on- or off-site;	Less Than Significant Impact
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	Less Than Significant with Mitigation Incorporated
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems, or provide substantial additional sources of polluted runoff; or	No Impact
(iv) impede or redirect flood flows?	Less Than Significant with Mitigation Incorporated
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	No Impact
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	No Impact

13.3 Discussion of Impacts

Refer to sections 3.10.3 and 3.11.3 of EA/IS.

13.4 Mitigation Measures

See CEQA mitigation measures for water quality in Appendix D of the EA/IS: [4.5-1a, b], [4.5-1c], [4.5-1d], [4.5-1e, 4.5-2a-2c], [4.5-3a-3c] [4.11-a-1a] and [4.11-2a].

No mitigation required for hydrology and flooding.

14. Land Use and Planning

Would the project:

Question	CEQA Determination
a) Physically divide an established community?	No Impact
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	No Impact

14.1 Discussion of Impacts

Refer to section 3.2.3 of the EA/IS.

14.2 Mitigation Measures

Not applicable.

15. Mineral Resources

Would the project:

Question	CEQA Determination
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	No Impact
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	No Impact

15.1 Discussion of Impacts

Refer to section 3.9.3 of the EA/IS.

15.2 Mitigation Measures

Not applicable.

16. Noise

Would the project result in:

Question	CEQA Determination
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	Less Than Significant with Mitigation Incorporated
b) Generation of excessive ground-borne vibration or ground-borne noise levels?	Less Than Significant Impact
c) For a project located within the vicinity of a private airstrip or an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	No Impact

16.1 Discussion of Impacts

Refer to section 3.8.3 of the EA/IS.

16.2 Mitigation Measures

See CEQA mitigation measures for noise in Appendix D of the EA/IS: [4.14-1a] and [4.14-1b].

17. Population and Housing

Would the project:

Question	CEQA Determination
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	No Impact
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	No Impact

17.1 Discussion of Impacts

Not applicable.

17.2 Mitigation Measures

Not applicable.

18. Public Services

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:

Question	CEQA Determination
a) Fire protection?	No Impact
b) Police protection?	No Impact
c) Schools?	No Impact
d) Parks?	No Impact
e) Other public facilities?	No Impact

18.1 Discussion of Impacts

Not applicable.

18.2 Mitigation Measures

Not applicable.

19. Recreation

Question	CEQA Determination
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	Less Than Significant Impact
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	No Impact

19.1 Discussion of Impacts

Refer to section 3.3.3 of the EA/IS.

19.2 Mitigation Measures

The CEQA mitigation measures that address impacts to water quality on recreational use of the Trinity River include: [4.5-1a-1e], [4.5-2a – 2c], [4.5-3a-3c], and [4.5-1e].

See CEQA mitigation measures for noise in Appendix D of the EA/IS: [4.14-1a] and [4.14-1b].

20. Transportation

Would the project:

Question	CEQA Determination
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	No Impact
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	No Impact
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	Less Than Significant with Mitigation Incorporated
d) Result in inadequate emergency access?	No Impact

20.1 Discussion of Impacts

Refer to section 3.6.3 of the EA/IS.

20.2 Mitigation Measures

See CEQA mitigation measures for traffic and transportation in Appendix D of the EA/IS: [4.16-2a] and [4.16-5a].

21. Tribal Cultural Resources

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

Question	CEQA Determination
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k).	No Impact
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	No Impact

21.1 Discussion of Impacts

Refer to section 3.5.3 of the EA/IS.

21.2 Mitigation Measures

See CEQA mitigation measures for cultural resources in Appendix D of the EA/IS: [4.10-2a] and [4.10-2a].

22. Utilities and Service Systems

Would the project:

Question	CEQA Determination
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	No Impact
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	No Impact
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	No Impact
d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	No Impact
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	Less Than Significant Impact

22.1 Discussion of Impacts

Refer to Appendix D (Project Details) of the EA/IS.

22.2 Mitigation Measures

Not applicable.

23. Wildfire

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

Question	CEQA Determination
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	No Impact
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	No Impact
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk, or that may result in temporary or ongoing impacts to the environment?	No Impact
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	No Impact

23.1 Discussion of Impacts

Not applicable.

23.2 Mitigation Measures

Not applicable.

24. Mandatory Findings of Significance

Question	CEQA Determination
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	Less Than Significant with Mitigation Incorporated

Question	CEQA Determination
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	Less Than Significant Impact
c) Does the project have environmental impacts which will cause substantial adverse effects on human beings, either directly or indirectly?	No Impact

24.1 Discussion

a) Refer to sections 3.5.2, 3.12.2, and 3.13.2 and of the EA/IS.

b) Refer to Chapter 4 of the EA/IS.

c) Refer to Chapters 3 and 4 of the EA/IS.

Appendix D - Mitigation, Monitoring and Reporting Program and Project Design Elements

1. Introduction

The first part of this appendix comprises the Mitigation Monitoring and Reporting Program (MMRP) for the Trinity River Channel Rehabilitation Projects: Upper Conner Creek (UCC) site (River Mile [RM] 77.1 to 78.5) and Sawmill Gravel Processing site (RM 108.9 to 109.75) (the proposed project). The purpose of providing the MMRP as an appendix is to facilitate its use as a stand-alone California Environmental Quality Act (CEQA)-compliant document, which clearly expresses to the reader the mitigation responsibilities of the Bureau of Reclamation (Reclamation) and the North Coast Regional Water Quality Control Board (Regional Water Board) in implementing the project. The mitigation measures listed herein, which are an updated version of those included in the Master Environmental Impact Report (EIR; North Coast Regional Water Board and Reclamation 2009), are required by law or regulation and will be adopted by the Regional Water Board when it issues a Notice of Availability for the project.

The second part of this appendix consists of project design elements that shall be implemented as part of the proposed project. In general, the mitigation measures identified in Chapter 3 of this Environmental Assessment/Initial Study (EA/IS) correspond to the mitigation measures in Chapter 4 of the 2009 Master EIR. The mitigation measures in this appendix are meant to mitigate the same impacts as those identified in the Master EIR. Consequently, these mitigation measures are different only to the extent necessary to tailor the mitigation measures to the site-specific conditions.

Mitigation is defined by CEQA Section 15370 as a measure that:

- Avoids the impact altogether by not taking a certain action or parts of an action
- Minimizes the impact 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 impact by replacing or providing substitute resources or environments

The mitigation program identified in this appendix to reduce potential project impacts consists of mitigation measures, project design elements, and construction criteria and methods. The mitigation measures provided in the MMRP have been identified in Chapter 3, Affected Environment and Environmental Consequences, of the EA/IS as feasible and effective in mitigating project-related environmental impacts. This appendix includes a discussion of 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.

1. Legal Requirements

The legal basis for the development and implementation of the MMRP lies within CEQA (including the California Public Resources Code [PRC]). Sections 21002 and 21002.1 of the California PRC 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.
- 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 PRC further requires: The public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted 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 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.

2. Intent of the Mitigation Monitoring and Reporting Program

The MMRP is intended to satisfy the requirements of CEQA as they relate to the project and its use by Reclamation and Regional Water Board staff, participating agencies, project contractors, and mitigation monitoring personnel is anticipated 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 monitor construction activities as needed, on-site identification and resolution of environmental problems, and proper reporting to lead agency staff.

3. Development and Approval Process

The timing elements for implementing mitigation measures and the definition of the approval process have 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.

4. Authorities and Responsibilities

As the project proponent, 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 guidance, as warranted. Reclamation will be responsible for the following activities:

- coordination of monitoring activities;
- managing the preparation and filing of monitoring compliance reports; and
- maintaining records concerning the status of all approved mitigation measures.

5. Summary of Monitoring Requirements

Table D-1, which follows, summarizes the mitigation measures and associated monitoring requirements for the proposed project. The mitigation measures are organized by environmental issue area (i.e., soils, water quality, etc.). Table D-1 is composed of the following four columns:

- **Mitigation Measure:** Lists the mitigation measures identified for each significant impact discussed in the Draft EA/IS for the project. The mitigation numbering system used in the Draft Master EIR/Draft EIR is carried forward in this MMRP.
- **Timing/Implementation:** Indicates at what point in time or project phase the mitigation measure is implemented.
- **Responsible Parties (task):** Documents which agency or entity is responsible for implementing a mitigation measure and what, if any, coordination is required (e.g., approval from the California Department of Transportation [Caltrans]). If more than one party has responsibility under a given mitigation measure, the task of each individual party is identified parenthetically (e.g., “implementation” or “monitoring”).
- **Verification (date and initials):** Provides spaces to be initialed and dated by the individual responsible for verifying compliance with each specific mitigation measure.

6. Resolution of Noncompliance Complaints

Any person or agency may file a complaint that states noncompliance with the mitigation measures adopted as part of the project's approval process. The complaint shall be directed to Reclamation at the TRRP office (P.O. Box 1300, 1313 South Main Street, Weaverville, California, 96093) and to the Regional Water Board (5550 Skylane Boulevard, Suite A, Santa Rosa, California, 95403) in written form, providing detailed information on the purported violation. Reclamation and the Regional Water Board shall investigate 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 complainant shall receive written confirmation indicating the investigation results or the final corrective action that was implemented in response to the specific noncompliance issue.

Table D-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) Bureau of Land Management (BLM) (SWPPP review) National Marine Fisheries Service (NMFS) (SWPPP review) California Department of Fish and Wildlife (CDFW) (SWPPP review)	

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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 CDFW) 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: • 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 it 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.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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. • All supervisory construction personnel will be informed of environmental concerns, permit conditions, and final project specifications.		Reclamation (implementation)	
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 landowners 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.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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% 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% 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 best management practices (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 nephelometric turbidity units (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% above the naturally-occurring background level.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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 NTUs at 500 feet downstream from construction activities, remedial actions will be implemented to reduce and maintain turbidity at or below 20 NTUs 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 NTUs.			
4.5-1c Fill gravels used on the streambeds, stream banks, and river crossings will be composed of clean spawning-sized gravels from a local Trinity River basin source. Gravel will be processed to remove silts, sand, clay, and organic matter, and will be free of contaminants such as petroleum products.			
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 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.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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 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.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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, are not 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.			
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 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 2020 TRRP Biological Opinion, Reclamation will ensure that all in-channel construction activities are conducted during late-summer, low-flow conditions (e.g., July 15–October 15). After September 15, BMPs would be in place to minimize impacts to adult coho and Chinook salmon.		Reclamation (implementation)	
4.6-1b Alluvial material used for coarse sediment additions will be composed of clean spawning-sized gravels (3/8- to 5-inch diameter) from a local Trinity River basin source. Gravel will be processed to remove any silt, sand, clay, and organic matter and will be free of contaminants, such as petroleum products.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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% 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% 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% above the naturally-occurring background level.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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 NTUs at 500 feet downstream from construction activities, remedial actions will be implemented to reduce and maintain turbidity at or below 20 NTUs 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 NTUs.			
4.6-2c Fill gravels used on the streambeds, stream banks, and river crossings will be composed of clean spawning-sized gravels from a local Trinity River basin source. Gravel will be processed to remove silt, sand, clay, and organic matter and will be free of contaminants such as petroleum products.			
4.6-2d Reclamation will prepare and implement a SWPPP that describes BMPs for the project, including silt fences, sediment filters, and routine monitoring to verify effectiveness. Proper implementation of erosion and sediment controls will be adequate to minimize sediment inputs into the Trinity River until vegetation regrowth occurs. All required controls and BMPs, including sediment and erosion control devices, will be inspected daily during the construction period to ensure that the devices are properly functioning. Excavated and stored materials will be kept in upland activity areas with erosion control properly installed and maintained. Excavated and stored materials will be staged in stable upland activity areas. All applicable erosion control standards will be required during stockpiling of materials.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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.			
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.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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.			
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 fisheries biologist immediately after recession of flood flow events designated as a 1.5-year or less frequent event (i.e., Q greater than 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)	

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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)	
4.6-5b Reclamation will continue to implement the Riparian Revegetation and Monitoring Plan during the 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 Trinity River Division (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 three years, the need for additional riparian habitat and wetland enhancement will be evaluated. At that time, Reclamation, in consultation with the US Army Corp of Engineers (USACE), Regional Water Board, and CDFW, 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 five years post-project implementation to ensure no net loss of wetland habitat. Riparian habitat reporting three years after project implementation and wetland delineation five years after implementation will provide Reclamation with needed data in a timely fashion to take additional proactive measures towards meeting the goal of no net loss of riparian and jurisdictional wetland habitat within project site boundaries after 10 years.		Reclamation (implementation)	

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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 clean spawning-sized gravels from a local Trinity Basin source. Gravel will be processed to remove silt, sand, clay, and organic matter and will be free of contaminants such as petroleum products. 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 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 2020 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)	

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
4.7-1b Reclamation will continue to implement the Riparian Revegetation and Monitoring Plan during the 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.			
4.7-1c Reclamation will initiate a 10-year mitigation monitoring program after the first growing season following project implementation. After a period of three 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 CDFW, 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 five years post-project implementation to ensure no net loss of wetland habitat. Riparian habitat reporting three years after project implementation and wetland delineation five years after implementation will provide Reclamation with needed data in a timely fashion to take additional proactive measures towards meeting the goal 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 plant 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 CDFW 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, CDFW 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-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 two 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.		Reclamation (implementation)	

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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, it 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.			
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.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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 July 31. If construction occurs outside the breeding season, no further mitigation is necessary. If construction during the breeding season cannot be completely avoided, Mitigation Measures 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 July 31. If construction occurs outside the breeding season, no further mitigation is necessary. If construction during the breeding season cannot be completely avoided, Mitigation Measures 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.			
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.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
Impact 4.7-8: Construction activities associated with the project could result in impacts to nesting bald eagles and northern goshawks.			
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 near (i.e., within 500 feet of) the construction area to be disturbed by these activities, the biologist, in consultation with CDFW, will determine the 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.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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. CDFW 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 CDFW), 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 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.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
Impact 4.7-11: Construction activities associated with the project could result in impacts to BLM and US Forest Service (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.			
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 three to five 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.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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, Shasta-Trinity National Forest (STNF), and CDFW (e.g., Bucktail River Access, Steel Bridge Campground, Douglas City Campground, Indian Creek River Access, Junction City Campground). Additionally, public notification of the 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 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)	

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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% 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% 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% above the naturally-occurring background level.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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 NTUs at 500 feet downstream from construction activities, remedial actions will be implemented to reduce and maintain turbidity at or below 20 NTUs 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 NTUs.			
4.8-3c Fill gravels used on the streambeds, stream banks, and river crossings will be composed of clean spawning-sized gravels from a local Trinity River basin source. Gravel will be processed to remove silt, sand, clay, and organic matter and will be free of contaminants such as petroleum products.			
4.8-3d Reclamation will prepare and implement a SWPPP that describes BMPs for the project, including silt fences, sediment filters, and routine monitoring to verify effectiveness. Proper implementation of erosion and sediment controls will be adequate to minimize sediment inputs into the Trinity River until vegetation regrowth occurs. All BMPs and 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 met during stockpiling of materials.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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 in compliance with the National Historic Preservation Act (NHPA).		Reclamation (implementation)	

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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 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.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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 the top of load and the trailer). • Excavation 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. • 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.		Reclamation (implementation)	
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)	

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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 onsite 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 (less than 10 mph), and temperature will be low (less than 80 ºF). • Piles will be covered with a 5-foot x 5-foot sheet of 4-mil polyethylene plastic to promote drying of the slash. At least 3/4 of each pile surface will be covered and the plastic anchored to preserve a dry ignition point. Dry fuel conditions 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 or adjacent to the rehabilitation sites, which contains a phone number for the public to contact for concerns related to air quality.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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 describe 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 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.		Reclamation (implementation)	
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 a.m. and 7:00 p.m., Monday through Saturday. No construction activities will be scheduled for Sundays, or other hours and days established by the local jurisdiction (i.e., Trinity County). The contractor may submit 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.			
4.15 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)	
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)	

7. Project 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 proposed project. These elements are excerpted from Chapter 2 of the Draft Master EIR.

8. Description of Common Activities, Construction Criteria, and Methods

8.1 Common Activities

8.1.1 Vegetation Removal

Vegetation removal would involve the following:

- Remove vegetation to provide access to activity areas using a combination of manual labor and heavy equipment (i.e., chainsaw, excavator, and vegetation masticator).
- Remove stumps, roots, and vegetative matter to allow river scour on excavated floodplain surfaces. Some large woody debris would be retained for use in the floodplain to enhance fish habitat.
- Dispose of removed vegetation by chipping, hauling offsite, burning, burying within spoil areas as authorized by agencies or land owners, or other appropriate methods. Where authorized, Reclamation buries organic material to increase water holding capacity of alluvial and colluvial materials. Reclamation would continue to work with the USFS, BLM, local agencies, and landowners to encourage the efficient use of chipping as a priority method of disposing of vegetative waste.
- Protect vegetation designated for preservation within clearing limits. Vegetation outside the clearing limits would be preserved and protected.
- Mechanically remove submerged roots from river fringe areas with ripping bars or excavator buckets. Equipment chassis (i.e., tires and tracks) would remain outside of the wetted portion of the river channel when removing submerged roots.

8.1.2 Water Use

Water would be used at all sites, in accordance with the following:

- Riparian water rights held by public and private landowners on the Trinity River would be used to obtain Trinity River water to support restoration. Dust abatement water would be obtained from onsite seep wells or the Trinity River. When drafting from the Trinity River, pump intakes would be in conformance with criteria established by NMFS and CDFW 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.

In the event irrigation is necessary for revegetation efforts, the primary water source would be the Trinity River. Any surface water sources used for irrigation would be developed to comply with the water rights of land management agencies and landowners. Pump intakes would be in conformance with criteria established by NMFS and CDFW 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 feet per second (fps).

8.1.3 Monitoring

The Record of Decision (ROD) provided a restoration strategy for the TRRP but did not identify methods for assessing the effectiveness of the management actions in achieving TRRP goals or management targets. Instead, it directed the TRRP to organize assessments around the principles of Adaptive Environmental Assessment and Management (AEAM) and to use this to rigorously assess the river’s response to management actions. The Integrated Assessment Plan (IAP) provides the basis for applying the AEAM principles outlined in the ROD.

These principles would be applied to quantitatively determine the overall status and trend of river system attributes relative to TRRP objectives, using appropriate data to describe each attribute, with data collected based upon scientifically defensible monitoring designs. The causal relationship between rehabilitation of the fluvial nature of the river and increasing salmonid production would be the major focal point for monitoring and modeling. The focus of the IAP is to identify key assessments that:

- Evaluate long-term progress toward achieving program goals and objectives; and
- Provide short-term feedback to improve program management actions by testing key hypotheses and reducing management uncertainties.

The IAP provides a general framework for integrating and linking assessments across monitoring domains. Integration of assessments would be essential for evaluating the TRRP’s overall restoration strategy, involving coordinated actions to support multiple ecosystem processes and components. This integration allows development of coordinated sampling designs and assessments that serve multiple or complementary objectives and is intended to improve the understanding of qualitative and quantitative functional relationships associated with the mainstem Trinity River.

The IAP framework focuses on six key elements; each of these would be integrated into the MMRP to ensure that authorized activities are consistent with the AEAM. Key elements of the IAP include:

1. Create and maintain spatially complex channel morphology.
2. Increase/improve habitats for freshwater life stages of anadromous fish to the extent necessary to meet or exceed production goals.
3. Restore and maintain natural production of anadromous fish populations.
4. Restore and sustain the natural production of anadromous fish populations downstream of the Lewiston Dam to pre-dam levels to facilitate dependent tribal, commercial, and sport fisheries’ full participation in the benefits of restoration via enhanced harvest opportunities.
5. Establish and maintain riparian vegetation that supports fish and wildlife.
6. Rehabilitate and protect wildlife habitats and maintain or enhance wildlife populations following implementation.

Additional information on the IAP is available on the TRRP website: http://www.trrp.net/science/IAP.htm

8.2 Design Elements

Attachment 1 following the appendices in Volume IV of the 2009 Master EIR is a glossary of design and construction terms for use by the design team.

8.2.1 Hydraulics

The Proposed Project would occur in areas that the Federal Emergency Management Agency (FEMA) has designated as Special Hazard Zones AE and X, as described in Section 3.2 of this EA/IS. 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 the Proposed Project 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 previously described, 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. 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 proposed project requires comparing estimated seasonal base flows and estimated return-period flows. USACE's HEC-RAS hydraulic model would be used by the design team during final design activities to predict changes in flood elevations at various points along the project reach. Table D-2 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 meets the flood constraints described above.

Table D-2. Estimated Mainstem Trinity River Flow Conditions Used for Design.

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 = flow rate; Q1.5 = 1.5-year return interval design flow; Q100 = 100-year flood flow; Qs = summer base flow.

A HEC-RAS model for the Trinity River from Lewiston Dam to the North Fork Trinity River was developed by the California Department of Water Resources (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 rehabilitation 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 Proposed Project. 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 shown in Table D-2 as the “best available information” per FEMA requirements. The FEMA Q_{100} “near Douglas City” (38,500 cfs) was established in the 1976 USACE report (USACE 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 Proposed Project.

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 would ensure that constructed surfaces are self-draining to minimize potential fish stranding.

8.2.2 Roadway Approaches

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 proposed project could require substantial truck traffic to off-site locations. The traffic would be staged over the project duration, generally between August 1 and November 15. Traffic control measures would be applied in accordance with BLM, Trinity County, and Caltrans requirements.

8.2.3 Recreation Facilities

As appropriate, federal, state, county, or private recreation facilities (e.g., parking areas, access trails, and 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 managers and owners of these facilities, could enhance one or more of these facilities consistent with project objectives and in compliance with federal, state, and county planning requirements. While the USFS and BLM have not identified any recreational enhancements, these agencies may require barricades along existing access routes to confine recreational traffic to the existing routes on federal lands.

8.2.4 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.

8.2.5 Rights-of-Way/Easements

Prior to construction, formal realty agreements would be made between Reclamation, land managers for BLM, DWR, and CDFW, 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.

8.2.6 Utilities

There are a number of utility features located within and/or adjacent to the project 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 to ensure that service would not be disrupted.

8.3 Construction Criteria and Methods

8.3.1 Construction Process Overview

- 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 L in the Master EIR) would be used to access the activity areas. New access roads and haul routes (activity M in the Master EIR) would be constructed when necessary and restored to a stable condition in accordance with landowner/land manager requirements at the completion of the project.[1]
- 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; no ripping would occur under wet soil conditions. The furrows developed by this ripping would ensure that most storm water runoff is retained and filtered onsite 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 would increase before the floodplain can be excavated, excavation would occur at the lower elevations (i.e., adjacent to the 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 October 15 as allowed by the coho salmon in-river work window in NMFS' 2020 Trinity River Restoration Program 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 of

[1] Activity types L and M were included in the 2009 Master EIR but do not apply to this project.

the Master EIR). 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 would be taken (e.g., sediment plug, sandbags) to isolate the work area from flowing water. If necessary, pumps would 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 would 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 would 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.

8.3.2 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.

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

8.3.4 Staging Areas

Staging areas and storage facilities for the Proposed Project are shown in Figure 2-1 and Figure 2-2. 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.

8.3.5 Air Pollution and Dust Control

Efforts would 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 would 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 would also be required to provide recycling bins for onsite waste materials.

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

8.3.6 Fire Protection and Prevention

Due to the high fire hazard and history of equipment-caused fires in Trinity County, construction contractors would 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.

8.3.7 Water Pollution Prevention

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

- Every reasonable precaution would be exercised and BMPs would be implemented to protect the Trinity River from being polluted by fuels, oils, petroleum byproducts, and other harmful materials. Operations shall be conducted and scheduled 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 would be cleaned of dirt and grease prior to any in-channel activities. All construction equipment would be inspected daily and maintained to ensure that fuel or lubricants do not contaminate the Trinity River. Spill containment kits would be always on-site and, where feasible, berms or other containment methods would 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 would 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.

- Deep ripping (18”) of riparian areas that have been compacted during construction activity is expected to minimize or stop delivery of stormwater runoff to the river. As necessary, Reclamation would provide temporary water pollution control measures, including, but not limited to, spill containment booms, 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 would develop an agency-approved SWPPP to effectively control water pollution during construction of the project. The SWPPP would show the schedule for the erosion control work included in the project, 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 would 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 would not be allowed to enter, or be placed where they would later enter, a live stream

Table E-1. Environmental Commitments (EC)[1]

Label	Commitment
Mineral Resources	
EC-MR-1	The Bureau of Reclamation (Reclamation) will provide notice of the project to landowners in and adjacent to the project area 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 closures. Reclamation will coordinate with private landowners 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.
Fluvial Geomorphology and Soils	
EC-GS-1	Reclamation will implement the following measures during construction activities: • Areas where ground disturbance will occur will be identified in advance of construction and limited to only those areas that have been approved by Reclamation, as outlined in this Environmental Assessment/Initial Study (EA/IS). (Best Management Practice [BMP] Plan-2). • All vehicular construction traffic will be confined to the designated activity areas, access routes, and staging areas. • Disturbance will be limited to the minimum necessary to complete all rehabilitation activities. (BMP AqEco-3). • The work zone will be clearly delineated. (BMP AqEco-2). • All supervisory construction personnel will be informed of environmental concerns, permit conditions, and final project specifications.
EC-GS-2	Reclamation will prepare a Storm Water Pollution Prevention Plan (SWPPP) to prevent erosion and control sediment into adjacent water bodies. Measures for erosion control will be prioritized based on proximity to the Trinity River. Reclamation will provide the SWPPP for review by associated agencies (i.e., Bureau of Land Management [BLM], the Regional Water Board, National Marine Fisheries Service [NMFS], and California Department of Fish and Wildlife [CDFW]) 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 features will be used as a guide to develop this plan: • Prepare for unexpected failures of erosion control measures. Maintain a supply of erosion control materials onsite to facilitate a quick response to unanticipated storm events or emergencies. (BMP Fac-2). • Consider the needs for solid waste disposal and worksite sanitation. (BMP AqEco-2). • Restore disturbed areas to pre-construction contours to the fullest extent feasible. (BMP Fac-10).

[1] Practices specific to Minerals, Geomorphology and Soils, Water Quality, and Fisheries are consistent with or include measures from the April 2012 National Best Management Practices for Water Quality Management on National Forest System Lands. (USDA, Forest Service, Volume 1: National Core BMP Technical Guide, FS-990a.) USFS measures designated in parenthesis - (BMPs).

Appendix E - Environmental Commitments

Label	Commitment
	• 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 straw 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 ripping 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 will drain into a surface water feature, catch basins will be constructed to intercept sediment before it reaches the water body. Spoil sites will be recontoured and revegetated 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 is minimized. Erosion control in project areas will be monitored and maintained in good working condition until disturbed areas have been seeded and mulched or revegetated in another fashion. If work activities take place during the rainy season, erosion control structures will be in place and operational at the end of each construction day. (BMP Fac-2)
Water Quality	
EC-WQ-1	The project will comply with the water quality objective for turbidity levels in the Trinity River, as listed in the most recent version of the Basin Plan for the North Coast Region (current version dated May 19, 2011), except during construction and the first extended period of high flows, which will comply with the General Permits issued to the Trinity River Restoration Program (TRRP): • 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. The 2015 General Order provides an allowable zone of turbidity dilution within which turbidity levels may be increased to more than 20% above naturally-occurring background levels. Project activities that occur in areas outside of the active river channel will not increase turbidity levels by more than 20% 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 will be tolerated is defined in the 2015 general discharge permits as the full width of the river

Label	Commitment
	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 nephelometric turbidity units (NTUs), turbidity levels immediately downstream of the zone of turbidity dilution shall not exceed 20 NTUs[2]. 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% above the naturally-occurring background level. • To ensure that turbidity levels do not exceed the thresholds described above during in-river project construction activities, Reclamation will 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. • 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 (point of compliance) that could increase turbidity. Reclamation shall monitor for turbidity increases and shall collect field turbidity measurements in accordance with Mitigation Measure 4.5 1a and Mitigation Measure 4.51b in the Mitigation Monitoring and Reporting Program (MMRP). 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 at the point of compliance indicate that turbidity levels exceed 20% above the naturally-occurring background or 20 NTUs, whichever is greater, remedial actions will be implemented to reduce and maintain turbidity at or below this threshold level at the point of compliance. Potential remedial actions include halting or slowing construction activities and implementation of additional BMPs until turbidity levels are at or below 20% above the naturally-occurring background or 20 NTUs, whichever is greater. A monitoring report containing all turbidity measurements shall be submitted in a tabular format to the Regional Water Board and the land management agencies (US Forest Service and BLM) upon annual project completion. The monitoring report shall be written in a manner that clearly demonstrates compliance with all water quality monitoring requirements.

[2] At the time in-stream construction is authorized, the natural background of the Trinity River near the project area typically ranges between 0 and 5 NTUs.

<table>
<tr><th>Label</th><th>Commitment</th></tr>
<tr><td>EC-WQ-2</td><td>Fill gravels used on the streambeds, stream banks, and river crossings, or alluvial material used for coarse sediment additions, will be composed of clean, spawning-sized gravels (3/8- to 5-inch diameter) from a local Trinity River Basin source. Gravel will be washed to remove any silt, sand, clay, and organic matter and will be free of contaminants such as petroleum products. Clean gravel will pass California Department of Transportation (Caltrans) cleanliness test #227 with a value of 85 or greater. Abutment and embankment materials will be native alluvium available from the project area. (BMP AcEco-2).</td></tr>
<tr><td>EC-WQ-3</td><td>Reclamation will prepare and implement a SWPPP that describes BMPs for the project, including silt fences, sediment filters, and routine monitoring to verify effectiveness. Proper implementation of erosion and sediment controls will be adequate to minimize sediment inputs into the Trinity River until vegetation regrowth occurs. All required controls and BMPs, including sediment and erosion control devices, will be inspected daily during the construction period to ensure that the devices are properly functioning. Excavated and stored materials will be kept in upland activity areas with erosion control properly installed and maintained. Excavated and stored materials will be staged in stable upland activity areas. All applicable erosion control standards will be required during stockpiling of materials.</td></tr>
<tr><td>EC-WQ-4</td><td>To minimize the potential for increases in turbidity and suspended sediments entering the Trinity River because of access routes (e.g., roads), Reclamation will implement the following design features, as appropriate:
Keep bare soil to the minimum required by designs. Erosion control devices/measures will be applied to areas where vegetation has been removed as needed to reduce short-term erosion prior to the start of the rainy season.
Keep runoff from bare soil areas well dispersed. Dispersing runoff keeps sediment onsite and prevents sediment delivery to streams. (BMP-Fac-2)
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 or other water bodies.
Decompact (i.e., deep ripping up to 18 inches) floodplain areas so that surfaces are permeable, and no surface water runoff occurs. (BMP Fac-10)
To reduce sedimentation to the Trinity River, access routes will be stabilized or decommissioned upon completion of work in those areas. Decommissioning is defined as removing those elements of a road that reroute hillslope drainage and present slope stability hazards.</td></tr>
</table>

Label	Commitment
EC-WQ-5	Construction specifications will include the following features to reduce potential impacts associated with accidental spills of pollutants (fuel, oil, grease, etc.) on vegetation and aquatic habitat resources within the project boundary: (BMP Fac-7) • Equipment and materials will be stored away from wetland and surface water features. No hazardous materials, including fuels, oils, and solvents, will be stored or transferred within 150 feet of the active Trinity River channel. Areas for fuel storage, refueling, and servicing of construction equipment must be in an upland location at least 150 feet from the active river channel or within an adequate secondary fueling containment area. • Vegetable oil or other biodegradable hydraulic oil will be used for heavy equipment hydraulics whenever practicable when operating in or near water. (BMP AqEco-2) • Reclamation will ensure all equipment operated in or adjacent to the waterbody is clean of aquatic invasive species as well as oil and grease and is well maintained. • Construction equipment that will come in contact with the Trinity River will be inspected daily. Vehicles will receive proper and timely maintenance to reduce the potential for mechanical breakdowns leading to a spill of materials. • External oil, grease, and mud will be removed from equipment using steam cleaning. Wash sites must be in upland locations so that dirty wash water does not flow into stream channels or wetlands. Untreated wash and rinse water will be adequately treated prior to discharge if that is the desired disposal option. • Gasoline engines and pumps operated on the floodplain will be isolated from the ground by an impermeable barrier so that any leaking petroleum products are isolated from the ground. • Spill containment booms will be maintained 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. • The contractor will develop and implement site-specific BMPs, a water pollution control plan, and spill prevention and containment plan in accordance with applicable federal and state requirements. The contractor will be responsible for immediate containment and removal of any toxins released.
Fishery Resources	
EC-FR-1	The proposed construction schedule avoids in-channel work during the period which 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 (NMFS 2000). Reclamation will ensure that all in-channel construction activities are conducted during late-summer, low-flow conditions (i.e., July 15-September 15). 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 silt, sand, clay, and organic matter, will be free of contaminants, such as petroleum products, and will pass Caltrans cleanliness test #227 with a value of 85 or greater.

Label	Commitment
EC-FR-2	To avoid or minimize potential injury and mortality of fish during riverine activities (e.g., 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. Reclamation will minimize potential injury and mortality of fish during the use of low-flow channel crossings. The number and frequency of vehicles crossing the river will be minimized. Equipment and vehicles will be operated slowly and deliberately to alert and scare adult and juvenile salmonids away from the crossing area, or a person will wade ahead of equipment to scare fish away from the crossing area. If it is necessary to divert flow around the work site, either by pump or by gravity flow, the suction end of the intake pipe shall be fitted with fish screens meeting CDFW and NMFS criteria to prevent entrainment or impingement of small fish. Prior to dewatering, the best means to bypass flow through the work area will be determined to minimize disturbance to the channel and avoid direct mortality of fish and other aquatic vertebrates. Project site dewatering will be coordinated with a fisheries biologist qualified to perform fish and amphibian relocation activities. The length of the dewatered stream channel and duration of dewatering will be minimized. If the work area requires periodic pumping of seepage, pumps will be placed in flat areas well-away from the stream channel. Any turbid water pumped from the work site itself to maintain it in a dewatered state shall be disposed of in an upland location where it will not drain directly into any stream channel. 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. To avoid impacts to juvenile salmonids during high flow gravel injections, gravel will be injected only in select locations where juvenile salmonids would not be expected to be holding due to high water velocities.
EC-FR-3	Monitoring of the constructed inundation surfaces for salmon fry stranding will be performed by a qualified fisheries biologist immediately after recession of flood flow events designated as a 1.5-year or less frequent event (i.e., Q more than 6,000 cfs) for a period of 3 years following construction. These flows, and associated fry stranding surveys, will 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.

Label	Commitment
EC-FR-4	Reclamation will continue to implement the Riparian Revegetation and Monitoring Plan during 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 Trinity River Division (TRD). (BMP AcEco-2) Reclamation will initiate a 10-year mitigation monitoring program after the first growing season following project implementation. After five years, the need for additional riparian habitat and wetland enhancement will be evaluated in a written report. At that time, Reclamation, in consultation with the US Army Corp of Engineers, Regional Water Board, and CDFW, 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. If the standard set in the revegetation plan is not met, infill with additional plantings. In addition, wetlands will be re-delineated five years post-project implementation to ensure no net loss of wetland habitat. Riparian habitat reporting 5 years after project implementation and wetland delineation 5 years after implementation will provide Reclamation with needed data in a timely fashion to take additional proactive measures towards meeting the goals of no net loss of riparian and jurisdictional wetland habitat within rehabilitation site boundaries after 10 years.
EC-FR-5	Low water crossings will only be constructed and used between July 15 and September 15. The number of vehicle and equipment crossings of the Trinity River will be minimized. Reclamation will construct 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 2/3 of the river channel to provide adequate depth for adult salmon and steelhead passage. 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 (NMFS 2000) or result in a temporary impairment to fish passage related to a bridge.

Label	Commitment
Vegetation, Wildlife, and Wetlands	
EC-VW-1	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 riparian habitats and 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 biologically sensitive areas on a regular basis throughout the construction phase. (BMP AqEco-2)
EC-VW-2	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 if the species occur, and the quality, location, and extent of any populations. If a special-status plant species is found within 250 feet of any proposed disturbance, the following measures will be implemented. (BMP AqEco-2) 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 repaired, as necessary. 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 CDFW staff.

Label	Commitment
EC-VW-3	Prior to the start of construction, a qualified biologist will conduct a survey of the rehabilitation sites to determine whether suitable nesting habitat for the little willow flycatcher is present. If suitable habitat is present, the following measures will be implemented. 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 will be necessary. If the breeding season cannot be completely avoided, the following measures will be implemented. A qualified biologist will conduct a minimum of one pre-construction survey for the little willow flycatcher within the rehabilitation sites and a 250-foot buffer around the sites. The survey will be conducted no more than 15 days prior to the initiation of construction in any given area. The pre-construction survey(s) will be used to ensure that no nests of this species within or immediately adjacent to the rehabilitation site will be disturbed during project implementation. To the extent possible given timing for construction and with the contract award, pre-construction surveys will conform to methodologies identified in the Willow Fly Catcher Survey Protocol for California available online at https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=84019&inline (Bombay et al. 2003). If an active nest is found, CDFW will be contacted prior to the start of construction to determine the appropriate mitigation measures. 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 will be done so before the onset of the nesting season, if feasible. This will help preclude nesting and substantially decrease the likelihood of direct impacts.
EC-VW-4	If any construction in the Trinity River channel will occur prior to August 1 of any construction season, a pre-construction survey for the foothill yellow-legged frog larvae and/or eggs will be conducted by a qualified biologist. This survey will be conducted within the construction boundary no more than two 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. If a foothill yellow-legged frog is observed within the construction boundary, the contractor will temporarily halt in-stream construction activities until qualified personnel have moved the frog(s) to a safe location within suitable habitat outside of the construction limits. Planned locations for placement of transferred animals will be downstream of the construction limits and will be reported to the CDFW prior to construction.

Label	Commitment
EC-VW-5	A minimum of one survey for western pond turtle nests will be conducted during the nesting season (generally late June-July) prior to construction. A qualified biologist will be retained by Reclamation to conduct the survey. If a western pond turtle nest is found, the biologist will flag the site and determine whether construction activities can avoid affecting the nest. If the nest cannot be avoided, a qualified biologist will trap and move western pond turtles out of the construction area to nearby suitable habitats. During construction, if a western pond turtle is observed within the construction limits, the contractor will temporarily halt construction activities until qualified personnel have moved the turtle(s) to a safe location within suitable habitat outside of the construction limits. Planned locations for placement of transferred animals will be downstream of the construction limits and will be reported to the CDFW prior to construction.
EC-VW-6	Prior to the start of construction, a qualified biologist will conduct surveys of the rehabilitation sites to determine whether suitable nesting habitat for California yellow warblers, yellow-breasted chats, yellow rails, and Vaux's swifts is present. If suitable habitat is present, the following measures will be implemented. Grading and other construction activities will be scheduled to avoid the nesting season for these species to the extent possible. The nesting season for these species in Trinity County extends from March 15 through July 31. If construction occurs outside the breeding season, no further mitigation is necessary. If construction during the breeding season cannot be completely avoided, the following measures will be implemented. A qualified biologist will conduct a minimum of one pre-construction survey for these species within the rehabilitation sites and a 250-foot buffer around the sites. The survey will be conducted no more than 15 days prior to the initiation of construction in any given area. The pre-construction surveys will be used to ensure that no nests of these species within or immediately adjacent to the rehabilitation sites will be disturbed during project implementation. If an active nest is found, a qualified biologist will determine the extent of a construction-free buffer zone to be established around the nest. 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 done so before the onset of the nesting season (typically March 1 for migratory songbirds). This will help preclude nesting and substantially decrease the likelihood of direct impacts.

Label	Commitment
EC-VW-7	Due to the removal of the bald eagle from the endangered species list and the availability of the National Bald Eagle Management Guidelines provided by the US Fish and Wildlife Service (USFWS) to protect the bald eagle, modified commitments are outlined below. These measures are now stricter than those outlined in the Master EIR and provide additional protections for the bald eagle to abide by directives of the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d). Prior to the start of construction, a qualified biologist will conduct a survey of the rehabilitation sites to determine whether potential bald eagle or northern goshawk habitat occurs. If potential habitat occurs, Reclamation will implement the following measures. Construction will be scheduled to avoid the bald eagle and northern goshawk nesting season to the extent feasible. The nesting season for most raptors in Trinity County extends from January 1 through July 31. Thus, if construction can be scheduled to occur between August 1 and January 1, the nesting season will be avoided and no impacts to nesting bald eagles or northern goshawks would occur. If it is infeasible to schedule construction during this time, Reclamation will implement the provisions outlined in the incidental take permit for bald eagles issued by the USFWS prior to initiation of construction.
EC-VW-8	Pre-construction surveys for roosting bats and ring-tailed cats will be conducted prior to the start of construction activities. The surveys will be conducted by a qualified biologist. No activities that will 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, the following measures will be implemented. CDFW will also be notified of any active bat nurseries within the disturbance zones. 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, 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 be removed will first be disturbed at dusk, just prior to removal that same evening, to allow bats to escape during darker hours.

Label	Commitment
	Ring-tailed cats are a fully protected species under Fish and Game Code Section 4700. Fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research. 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, CDFW will be contacted for their input. If approved by CDFW, demolition of the 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, prior to disturbance, CDFW will be notified to review and approve proposed procedures to ensure that no take occurs because of the action. 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.

EC-VW-9	To avoid and/or minimize the potential introduction and/or spread of noxious weeds, the following measures will be implemented: • When using imported erosion control materials (as opposed to rock and dirt berms), use only certified weed-free materials, mulch, and seed. Preclude the use of rice straw in riparian areas. Limit any import or export of fill to materials that are known to be weed-free. • Ensure all construction equipment is thoroughly washed prior to entering and leaving 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. • Use a mix of native grasses, forbs, and on USFS and private lands, potentially non-persistent non-native species (i.e., recleaned wheat) for seeding disturbed areas that are subject to infestation by non-native and invasive plant species.[3] Where appropriate, a heavy application of mulch will be used to discourage introduction of these species. The 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. • Within the first three to five 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 if those control methods are in conformance with existing agency and landowner policies and consistent with National Environmental Policy Act (NEPA)/California Environmental Quality Act (CEQA) requirements. Within the first three to five years post-project, if it is determined that onsite revegetation/post-project conditions do not meet landowner requirements, opportunities to revisit the site and remedy the concern will be considered. • Avoid areas contaminated with known occurrences of *Didymosphenia geminata* (didymo). If no uncontaminated areas are available for water drafting, water drafting equipment will be cleaned by approved methods prior to drafting water from an uncontaminated location. Didymo-infested water shall be discharged away from a water source or from the same source where it was taken.

[3] Per BLM policy, non-persistent non-native species would not be used on lands managed by BLM.

Label	Commitment
EC-VW-10	Reclamation will develop and implement a plan to minimize impacts to freshwater mussels (e.g., western pearlshell mussel), terrestrial snails, and lamprey ammocetes that occupy habitat within the project area. This plan will include measures to collect, transport, and relocate mussel populations to appropriate alluvial habitat within the project area. Relocation of ammocetes would occur using techniques to extract them from substrate habitat and move into the water column, thereby being transported to alluvial habitat downstream.
Recreation	
EC-RE-1	Reclamation will provide precautionary signage to warn recreational users of the potential safety hazards associated with project construction activities. Notification signs shall be posted at public river access areas located within the project area and managed by the BLM. Signs and/or buoys shall also 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. 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.
EC-RE-2	Reclamation will repair and/or replace any facilities associated with the project that are impacted by project activities. This includes installation of interpretive signage consistent with the requirements of the BLM. Pre-construction meetings between Reclamation and landowners/land managers will identify the amount of vegetative screening to be retained at each recreation site within the project area.
Cultural Resources	
EC-CU-1	Prior to initiation of construction or ground-disturbing activities, all construction workers will be alerted to the possibility of discovering cultural resources. This includes prehistoric and/or historic resources. Personnel will be instructed that upon discovery of buried cultural resources, work within 50 feet of the find will be halted and the designated archaeologists for Reclamation and the respective land management agency will be consulted. Once the find has been identified, Reclamation, in coordination with the respective land management agency, will be responsible for developing and authorizing a treatment plan for the cultural resource including an assessment of its historic properties and methods for avoiding any adverse effects, pursuant to the proposed action and in compliance with the National Historic Preservation Act.

Label	Commitment
EC-CU-2	If human remains are encountered during construction on non-federal lands, work in that area will be halted and the Trinity County Coroner's Office will be immediately contacted. If the remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) will be notified within 24 hours of determination, as required by California Public Resources Code, Section 5097. The NAHC will notify designated Most Likely Descendants, who will provide recommendations for the treatment of the remains within 48 hours from the time that they gain access to the site. 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 Graves 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 will be made available. Work may continue on other parts of the project while mitigation for historical or unique archaeological resources takes place.
Air Quality	
EC-AQ-1	Reclamation will implement a dust control program to limit fugitive dust and particulate matter emissions. The dust control program will include the following elements as appropriate: • Inactive construction areas will be watered as needed to ensure dust control. • Pursuant to the California Vehicle Code (Section 23114), all trucks hauling soil or other loose material to and from the construction site will be covered or will maintain adequate freeboard to ensure retention of materials within the truck's bed (i.e.., 1-2 feet of vertical distance between the 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. • 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 mph, 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. • Reclamation will comply with NCUAQMD Rule 104 (4.0) Particulate Matter. This compliance could occur by using portable internal combustion engines registered and certified under the state portable equipment regulation (Health & Safety Code 41750 through 41755).

<table>
<tr><th>Label</th><th>Commitment</th></tr>
<tr><td>EC-AQ-2</td><td>Reclamation has not burned piles on a TRRP channel rehabilitation project since the Canyon Creek Suite of sites were constructed in 2006. If burning of material is required, these practices would apply.
Vegetative piles to be burned will consist only of dried vegetative materials. Burn piles will be no larger than 10 feet in diameter. Reclamation would ensure that field personnel will be onsite during all hours of burning, and materials necessary to extinguish fires will be available at all times.
In general, all requirements of a NCUAQMD “Non-Standard” burn permit will be met for burning. Burn management planning will include, but not be limited to, the following:
Ensure that burning occurs only on approved burn days as defined by the NCUAQMD (determined by calling 1-866-BURN-DAY).
Burning will only occur during suitable conditions to ensure control of ignited fires. For instance, water to wet the litter and duff layer and penetrate the mineral soil layer to 1/4 inch or more will be present, wind speeds will be low (less than 10 mph), and temperature will be low (less than 80 ºF).
Piles will be covered with a 5-foot x 5-foot sheet of 4-mil polyethylene plastic to promote drying of the slash. At least 3/4 of each pile surface will be covered and the plastic anchored to preserve a dry ignition point. Dry fuel conditions will minimize smoke emissions.
Slash piles will not be constructed on logs, stumps, or talus slopes within 25 feet of wildlife trees with nest structures, in roadways, or in drainage ditches. Piles will not be placed within 10 feet of trees intended to be saved (reserved trees) or within 25 feet of a unit boundary.
Reclamation will notify the public each day that burning is to occur. Signs or personnel will notify residents and traffic on nearby access routes.</td></tr>
<tr><td>EC-AQ-3</td><td>Construction activity occurring within 300 feet of elementary schools will be limited to the period when school is not in session. Construction activity occurring within 300 feet of residences will be limited to Monday through Saturday, from the hours of 9:00 a.m. to 5:00 p.m. Reclamation will notify residences within 300 feet of the site and project activity, and elementary schools will be notified of construction activity located near the school prior to site construction activities.</td></tr>
<tr><td>EC-AQ-4</td><td>Reclamation will ensure that a notice is posted at or adjacent to the rehabilitation site, which contains a phone number for the public to contact for concerns related to air quality.</td></tr>
<tr><td colspan="2">Noise</td></tr>
<tr><td>EC-NO-1</td><td>Construction activities near residential areas will be scheduled between 7:00 a.m. and 7:00 p.m., Monday through Saturday. No construction activities will be scheduled for Sundays, or other hours and days established by the local jurisdiction (i.e., Trinity County). The contractor may submit a request for variances in construction activity hours from Reclamation, as needed.</td></tr>
</table>

Label	Commitment
EC-NO-2	Reclamation will require that all construction equipment be equipped with the manufacturer's specified noise muffling devices. Reclamation will require placement of all stationary noise-generating equipment as far away as feasibly possible from sensitive noise receptors or in an orientation minimizing noise impacts (e.g., behind existing barriers, storage piles, unused equipment).
Public Services	
EC-PS-1	Reclamation will require that staging and construction work, including temporary road or bridge closures, occur in a manner that allows for access by emergency service providers. Reclamation will provide 72-hour notice to the local emergency providers and affected users prior to the start of temporary closures.
EC-PS-2	Reclamation will coordinate road closures occurring during the school year (mid-August through mid-June) with the appropriate school districts to avoid disruption of school attendance and student access to bus service.
Transportation/Traffic Circulation	
EC-TC-1	Reclamation will post signs during gravel haul activities notifying travelers of trucks entering the roadway. Reclamation will ensure that gravel trucks maintain a speed limit of 15 mph on residential and private roads and operate only between the hours of 7:00 a.m. and 7:00 p.m., Monday through Saturday.
EC-TC-2	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. 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. All large equipment "lowbed" movements will be performed as required by California Highway Patrol/Caltrans/etc., using pilot vehicles in the front and rear. A "scout vehicle" can be sent forward in the narrow areas to avoid/advise oncoming public traffic.
EC-TC-3	Reclamation will perform a pre-construction survey of local federal and state roads to determine the existing roadway conditions of the construction access routes and will consult with the relevant agencies/private parties about road conditions prior to construction activity and post construction activity. An agreement will be entered into prior to construction that will detail the pre-construction conditions and post-construction requirements for potential roadway rehabilitation.

Label	Commitment
EC-TC-4	Reclamation will prepare and implement a traffic control plan that will include provision and maintenance of temporary access through the construction zone, reduction in speed limits though the construction zone, signage and appropriate traffic control devices, illumination during hours of darkness or limited visibility, use of safety clothing/vests to ensure visibility of construction workers by motorists, and fencing as appropriate to separate bicyclists, pedestrians, and equestrians from construction activities. During the times that truck traffic and movement of equipment may result in a traffic obstacle or safety hazard (as defined in the traffic control plan), construction flagging and/or pilot cars will be used to ensure safe traffic conditions on Sky Ranch Road and other public access routes. Reclamation will obtain encroachment permits from the appropriate entities to work within road easements. These permits will require traffic control and signage to meet California standards.

Appendix F Aquatic - Conservation Strategy Consistency Evaluation

1 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 the Lewiston Dam. This evaluation is for the Upper Conner Creek (UCC) site (River Mile [RM] 77.1 to 78.5) and Sawmill Gravel Processing site (RM 108.9 to 109.75), as described in Chapter 2 and Appendix D of the project Environmental Assessment/Initial Study (EA/IS).

This document evaluates and determines the consistency of the TRRP activities at the UCC and Sawmill sites with the Aquatic Conservation Strategy (ACS) in the 1994 Record of Decision (ROD[1]) 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 ROD amended the Redding Resource Management Plan (RMP) prepared by the Bureau of Land Management (BLM) in 1994 and is incorporated into the 1995 Shasta-Trinity National Forest (STNF) Land and Resource Management Plan (LRMP).

The intent of this evaluation is to ensure that decision makers have the information necessary to determine whether the TRRP activities at the UCC and Sawmill sites are consistent with the ACS objectives. This evaluation incorporates information provided in the Mainstem Trinity River Watershed Analysis[2], incorporates by reference the 2009 Master Environmental Impact Report prepared by Reclamation in cooperation with BLM, and other information in the administrative record to assist the decision-maker. 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 states 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 both the 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 1994 ROD recognized that it is a long-term strategy that may take decades, and possibly more than a century, to accomplish all 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 1994 ROD. A detailed discussion of these components is provided in the ROD.

Attachment A of the 1994 ROD includes Standards and Guidelines (S&Gs) that were incorporated as management direction into the BLM Redding RMP and STNF LRMP to ensure compliance with the ROD. This hierarchy of land allocations is described below.

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[1] The Northwest Forest Plan and ROD can be found at https://www.fs.usda.gov/r6/reo/overview.php.

[2] Bureau of Land Management (BLM). 1993. *Redding Resource Management Plan and Record of Decision.* (California. June 1993).

At some locations on BLM-managed lands, land allocations overlap. Standards and Guidelines (S&Gs) for Congressionally Reserved Areas must be met first. Second, Riparian Reserve S&Gs apply and are added to the S&Gs of other designated areas (e.g., Late Successional Reserves [LSRs], matrix). For example, where riparian reserves occur within LSRs, both sets of S&Gs apply. In all land allocations, S&Gs in current plans apply where they are more restrictive or provide greater benefits to late-successional forest-related species. For this project, two land allocations are applicable to BLM. These are:

- **Riparian Reserves** – Trinity River and Carr Creek and related areas associated with their respective floodplains; and
- **Matrix** – The matrix consists of federal lands not subject to another land allocation.

The activities proposed by Reclamation under the auspices of the TRRP are confined to a narrow corridor that parallels the Trinity River from the Lewiston Dam downstream to Helena, California. This section of the Trinity River is both federally- and state-designated as a wild and scenic river. Riparian reserve and matrix designations are also used to classify lands within this corridor. This evaluation focuses on riparian reserves as defined in the Redding RMP and STNF LRMP.

The following sections of this evaluation address the consistency of the TRRP's Proposed Action (Alternative 1) at the UCC and Sawmill sites as a single project with the four components of the ACS and the nine ACS objectives described in Attachment B to the 1994 ROD.

2 Components of the Aquatic Conservation Strategy

2.1 Riparian Reserves

The project area contains riparian reserves, as defined in BLM's Redding RMP and the STNF LRMP. Watershed analyses have been completed by BLM and the US Forest Service (USFS) for federal lands within the Trinity River corridor; these analyses did not modify the designated widths of the riparian reserves established in the 1994 ROD S&Gs. 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 within the project area defined for the UCC and Sawmill sites. Table F-1at the end of this appendix shows the S&Gs that were integrated into the project.

2.2 Key Watersheds

There are no key watersheds within or downstream of the 40-mile reach of the Trinity River downstream of the Lewiston Dam, although USFS 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 UCC and Sawmill EA/IS.

2.3 Watershed Analysis

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. 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.

2.4 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.

2.5 Aquatic Conservation Strategy Objectives

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

The lands managed by 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, which 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 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.

Project activities would be implemented in a manner that complements the functional values offered by the Trinity River between Lewiston and Helena. The TRRP, in cooperation with BLM, has been involved in the identification and prioritization of channel rehabilitation sites for a number of years. This project has been designed to acknowledge the interrelationship between aquatic and riparian habitats that occur throughout this reach. Specifically, this project includes a number of activities to enhance the connectivity of aquatic and riparian habitat in the general vicinity of the project area consistent with the overall objectives of the TRRP for the 40-mile reach of the Trinity River downstream of the Lewiston Dam. Modifications of floodplains, removal of grade control structures, construction of functional side-channel and off-channel habitat, and augmentation of spawning gravel are examples of restoring connectivity for a variety of aquatic and riparian-dependent species. The intent of this project is to assist BLM 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, construction of side channels, efforts to enhance the coarse sediment supply, and placement of large wood structures and boulders that provide refugia habitat are examples of the activities intended to restore the physical integrity of the aquatic system. Collectively, these efforts are designed to restore the alluvial habitat and associated riparian character of the Trinity River, which was impaired by reductions in flow and sediment upstream. The intent of this project is to assist BLM 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. In 2015, the North Coast Regional Water Quality Control Board (Regional Water Board) reissued three General Permits to the TRRP that provide authorization for channel rehabilitation, fine sediment management, and coarse sediment management activities under Section 401 of the Clean Water Act (CWA). BLM, as co-lead agency, has also worked closely with the TRRP to ensure that Best Management Practices are incorporated into the project description as environmental commitments to minimize effects on water quality. Compliance with conditions established by the US Army Corps of Engineers (USACE) consistent with the requirements of Nationwide Permit 27 will ensure compliance with Section 404 of the CWA. As proposed, this project would be consistent with the requirements of the Regional Water Board, the BLM’s Redding RMP, and the STNF LRMP; it would therefore 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 the Lewiston Dam. The UCC and Sawmill projects 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 inclusion of large wood and boulder clusters also increases the functional benefits of gravel augmentation. While there may be a change in the timing or volume of sediment input, overall, the project is intended to assist BLM 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 Proposed Action 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 boundary 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 within the boundaries of the UCC and Sawmill sites will provide conditions that are receptive to the reintroduction of a diverse assemblage of native riparian vegetation and reduce the potential for non-native, invasive, and noxious plant species. Woody material of various size classes removed as part of the rehabilitation activities will be incorporated into the project as appropriate. Placement of large wood structures within and/or adjacent to constructed alluvial features will enhance channel complexity and edge habitat. Onsite mulching of vegetative debris will provide effective ground cover and increase the success of revegetation efforts. 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 downstream of the Lewiston Dam. The project activities emphasize creation and/or rehabilitation of aquatic and riparian habitat within the boundaries of the UCC and Sawmill sites. 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 Trinity River Division. The activities that are proposed on federal lands subject to the ACS are an integral part of the overall objective of the TRRP and are intended to assist BLM in attaining this ACS objective.

3 Conclusion

Based on this evaluation, BLM finds that the project described in the National Environmental Policy Act decision document has been designed and would be constructed in a manner that does not prevent future attainment of the ACS objectives. The management actions incorporated into the proposed action will maintain the existing condition or lead to improved conditions in the long term, consistent with the intent of the ACS.

Table F-1. Riparian Reserves Applicable Standards and Guidelines

Resource	S&G #	Standard and Guideline
All Land Allocations		
Survey and Manage	2	Survey prior to ground disturbing activities. (Surveys not required as discussed in Appendix H of the UCC and Sawmill EA/IS.)

Resource	S&G #	Standard and Guideline
Riparian Reserves		
Timber Management	TM 1-c	Apply silvicultural practices for riparian reserves to control stocking, reestablish and manage stands, and acquire 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 ACS objectives.
Road Management (continued)	RF-2	For each existing or planned road, meet ACS objectives by implementing RF2a through f: • RF2a: Minimizing road and landing locations in riparian reserves. • RF2b: Completing watershed analyses (including appropriate geotechnical analyses) prior to construction of new roads or landings in riparian reserves. • RF2c: Preparing road design criteria, elements, and standards that govern construction and reconstruction. • RF2d: Preparing operation and maintenance criteria that govern road operation, maintenance, and management. • RF2e: Minimizing disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow. • RF2f: Restricting side casting as necessary to prevent the introduction of sediment to streams.
	RF-3	Determine the influence of each road on the ACS objectives through watershed analysis. Meet ACS objectives by implementing RF3a through RF2c: • RF3a: Reconstructing roads and associated drainage features that pose a substantial risk. • RF3b: Prioritizing reconstruction based on current and potential impact to riparian resources and the ecological value of the riparian resources affected. • RF3c: Closing and stabilizing or obliterating and stabilizing roads based on the ongoing and potential effects to ACS 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.

Resource	S&G #	Standard and Guideline
	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 ACS objectives. As a minimum, this plan shall include provisions for the following activities (RF7a through RF7e): • RF7a: Inspections and maintenance during storm events. • RF7b: Inspections and maintenance after storm events. • RF7c: Road operation and maintenance, giving high priority to identifying and correcting road drainage problems that contribute to degrading riparian resources. • RF7d: Traffic regulation during wet periods to prevent damage to riparian resources. • RF7e: 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 without preventing meeting ACS 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 ACS objectives.
Land Use	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 the Federal Energy Regulatory Commission (FERC) that ensure ACS 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 in the riparian reserves will be located, operated, and maintained with an emphasis to eliminate adverse effects that retard or prevent attainment of ACS 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 ACS objectives. Adjust existing leases, permits, rights-of-way, and easements to eliminate adverse effects that retard or prevent the attainment of ACS 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.

Resource	S&G #	Standard and Guideline
General Riparian Area Management	RA-2	Fell trees in riparian reserves when they pose a safety risk. Keep felled trees onsite when needed to meet coarse woody debris objectives.
	RA-3	Herbicides, insecticides, other toxicants, and other chemicals shall be applied only in a manner that avoids impacts that retard or prevent attainment of ACS objectives.

Appendix G - Wild and Scenic River Analysis and Determination

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Abbreviations and Acronyms

ac	acres
BLM	US Bureau of Land Management
BMP	best management practices
C	contractor use
CEQA	California Environmental Quality Act
cfs	cubic feet per second
cy	cubic yards
EA	Environmental Assessment
EA/IS	Environmental Assessment/Initial Study
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
ESL	environmental study limit
ft	foot/feet
FEMA	Federal Emergency Management Agency
HVT	Hoopa Valley Tribe
IC	in-channel construction
MDB&M	Mount Diablo Baseline and Meridian
NTU	nephelometric turbidity unit
ORV	outstandingly remarkable value
Project	Upper Conner Creek and Sawmill Channel Rehabilitation Project
R	riverine construction
Reclamation	Bureau of Reclamation
RMP	Resource Management Plan
ROD	Record of Decision
ROW	right-of-way
Sawmill	Sawmill Channel Rehabilitation Project
SLJ	structure log jam
TMDL	total maximum daily load
TRD	Trinity River Division
TRH	Trinity River Hatchery
TRRP	Trinity River Restoration Program
U	upland
UCC	Upper Conner Creek
UKTR	Upper Klamath/Trinity River
USFS	US Forest Service
WCW	Willow Creek Weir
WP	wood placement
WR	wood racking
WSE	water surface elevation
WSR	wild and scenic river
WSRA	Wild and Scenic Rivers Act
YT	Yurok Tribe

1 Introduction

Section 7(a) of the Federal Wild and Scenic Rivers Act (WSRA) requires the river-administering agency to evaluate the effects of a federally-assisted water resources project proposed within a wild and scenic river (WSR) corridor on the river's free-flowing condition, water quality, and outstandingly remarkable values (ORVs). The following analysis summarizes the impacts of the Upper Conner Creek (UCC) and Sawmill Channel (Sawmill) Rehabilitation Project (Project) on the Trinity River. UCC is about 1.5 miles west of Junction City, California, and 35 miles downstream from the Lewiston Dam. Sawmill is about 2.5 miles downstream of the Lewiston Dam near Lewiston, California.

The UCC and Sawmill project is designed to benefit anadromous fish. Because the Trinity River intersects Bureau of Land Management (BLM)-administered lands at the UCC and Sawmill project sites, BLM has the responsibility to determine whether the proposed Project would directly and adversely affect the river's free-flowing condition, water quality, and/or ORVs.

The Trinity River was designated as a WSR in 1981 under the WSRA. The mainstem Trinity River is designated as a recreational river from 100 yards below the Lewiston Dam downstream to Cedar Flat, just upstream of the Trinity River's Burnt Ranch Gorge. In addition to the mainstem section, three other sections of the river were designated: the North Fork from the Trinity River confluence to the southern boundary of the Trinity Alps Wilderness Area, the South Fork from the Trinity River confluence to the California State Highway 36 bridge crossing, and the New River from the Trinity River confluence to the Trinity Alps Wilderness Area.

These river segments were designated as WSRs to preserve the anadromous and resident fisheries, outstanding geologic resource values, scenic values, recreational values, and cultural and historical values. The ORV that is specific to the Trinity River section that encompasses the Project is its anadromous fishery. Under an interagency agreement between the National Park Service and the US Forest Service (USFS), BLM generally has the responsibility for conducting WSRA Section 7 determinations for the mainstem Trinity River from the Lewiston Dam to the confluence with the North Fork Trinity River.

The proponent for the proposed action at UCC (River Mile [RM] 77.2 to 78.4) and Sawmill (RM 108.9 to 109.7) is the Bureau of Reclamation (Reclamation), Trinity River Restoration Program (TRRP). Because a portion of the proposed activity would occur on federally managed lands, BLM serves as a co-lead federal agency along with the TRRP for an environmental assessment/initial study (EA/IS) of the combined National Environmental Policy Act and California Environmental Quality Act (CEQA) document prepared for this Project.

This analysis and the subsequent determination evaluate the effects of the proposed action on the Trinity River's free-flowing condition, water quality, and the anadromous fishery ORV; and ensures their protection as required under Section 7 of the WSRA. Because of the length and level of detail provided in the EA/IS, this WSR analysis is presented in summary form and refers the reader to the specific sections of Chapter 3 of the EA/IS for additional information on water quality, fisheries, wildlife, flora and fauna, and recreational and aesthetic values.

2 Definition of the Activity

2.1 Project Proponent

The Project proponents are Reclamation and TRRP. BLM is a co-lead for this project.

2.2 Purpose and Need for the Project

The overarching purpose of the TRRP is to restore fish populations to pre-dam levels and restore dependent fisheries, including those held in trust by the federal government for the Hoopa Valley Tribe (HVT) and the Yurok Tribe (YT). The fundamental purpose of the proposed action is to enhance the fishery and other values provided by the Trinity River in the general vicinity of the UCC and Sawmill sites by implementing the rehabilitation activities illustrated in Figure 2 and Figure 3 of the environmental assessment (EA), and described in detail in the Design Report Sawmill Gravel Processing Site Rehabilitation Project Yurok Tribe Fisheries et al. 2023 and the Upper Conner Creek Rehabilitation Site 90% Design Report McBain Associates 2023. All figures and appendices referenced in this document are from the UCC and Sawmill Rehabilitation Project EA/IS.

Specifically, the proposed action would reestablish complex functional habitat for salmonids and other aquatic organisms (e.g., Pacific lamprey), enhance natural river processes for the benefit of aquatic, riparian, and terrestrial species, and provide conditions suitable for reestablishing native riparian vegetation. The proposed action would include two of the original 47 projects listed in the 2000 Record of Decision (ROD) to restore the Trinity River's fish resources. These projects are in addition to the TRRP's ongoing flow and sediment management and watershed restoration elements. The Project is intended to enhance channel complexity and juvenile salmonid refugia habitat (e.g., large shallow, slow areas in proximity to cover).

Implementation of the proposed action would incorporate environmental commitments and project design features to ensure that it is consistent with BLM's management goals and objectives for the Trinity River under its Redding Resource Management Plan (RMP) to support management actions intended to enhance the fishery and recreational ORVs of the Trinity River. The Project is consistent with the Aquatic Conservation Strategy objectives established by the Northwest Forest Plan.[1]

The proposed action was developed through a cooperative effort by the TRRP, BLM, YT, and HVT. It is intended to improve the conveyance of flows by reestablishing the alluvial attributes of the Trinity River, namely floodplains and side channels, while decreasing the potential for channel constriction by modifying floodplain widths and elevations.

2.3 Geographic Location of the Project

2.3.1 Upper Conner Creek

The UCC rehabilitation site is approximately 1.5 miles west of Junction City, California, below the Canyon Creek confluence within the North Fork Reach of the mainstem Trinity River. The Project site is approximately 35 miles downstream of the Lewiston Dam, between the previously constructed Hocker Flat (RM 78.4) and Conner Creek (RM 77.2) restoration sites. It is in Township 33 North, Range 11 West, Section 1, Mount Diablo Baseline and Meridian (MDB&M) (Figure 1). The Project environmental study limit (ESL or the Project site)[2] encompasses approximately 105.9 acres (ac), including 40.8 ac of BLM-managed land and 65.1 ac of private land. The river

[1] USDA, USDI. 1994c. Standards and guidelines for management of habitat for late-successional and old-growth forest related species within the range of the northern spotted owl: Attachment A to the Record of Decision for Amendments to Forest Service and Bureau of Land Management planning documents within range of the northern spotted owl. p. B-11.

[2] The Environmental Study Limit, or ESL, is the anticipated maximum geographic limit of project activities (the site boundary). The ESL includes a buffer applied for the purposes of resource identification and associated impact analyses and is the area where pre-project resource surveys are concentrated.

elevation at the UCC site is approximately 1,900 feet (ft) above mean sea level. Access to the UCC ESL is via State Route 299 on river right; and Dutch Creek Road, Red Hill Road, Senger Road, and Quail Road on river left. Throughout this document, the terms “river left” and “river right” are used to refer to the banks of the Trinity River when looking downstream. For this Project, the left bank is generally the west and south side of the river, and the right bank is generally the east and north side.

2.3.2 Sawmill

The Sawmill site is about 2.5 miles downstream of the Lewiston Dam. The Sawmill ESL encompasses about 103.4 ac, including 67.2 ac of BLM-managed lands, 10.7 ac of State of California-managed lands, 3.5 ac of Reclamation land, and 22.0 ac of private land. It is in Township 33 North, Range 8 West, Sections 18 and 19, MDB&M (Figure 1). The river elevation at the site is approximately 1,800 ft above mean sea level. River left access to the Sawmill ESL would be from an existing road off Goose Ranch Road. River right access would be from Rush Creek Road.

2.4 Duration of the Activities

The proposed activities would take place in different phases for the different sites. In general, in-river construction (in in-channel construction [IC] areas) is proposed to take place between July 15 and October 15. After September 15, additional BMPs would be in place to minimize impacts to adult coho and Chinook salmon. Excavation, processing of excavated material, and placement of excess material in upland areas would occur primarily during the in-river construction window. Floodplain and upslope construction (e.g., excavation and movement of materials to upslope areas and revegetation) would take place concurrently, but also could occur throughout the year so long as water quality impacts were immeasurable.

Revegetation activities would occur primarily in the wet months. Large-scale revegetation efforts would not occur until the fall after construction. After site construction, maintenance activities, including efforts to maintain or enhance vegetation or riverine habitat diversity (e.g., channel topography), may be conducted as needed in authorized public land use areas in accordance with the general environmental commitments listed in Appendix E. Construction activities for site maintenance would be conducted as needed post-project during the period covered by the BLM right-of-way (ROW). Affected landowners would be notified in advance when maintenance activities are scheduled to occur.

Construction for both projects would be sequenced as funding and environmental constraints allow and may span several years at each site. At the UCC project, upslope areas could be excavated to remove tailings (mining waste) as early as winter/spring 2024. IC and riverine construction (R) work would be initiated as early as summer 2024 and may continue into 2026. At Sawmill, IC and R work would most likely occur over one summer to fall period, although the construction schedule is also dependent on funding. Based only upon current TRRP funding levels, project work at Sawmill could begin as early as 2026 but may begin as late as 2030, depending on program funding and priorities. The flow-release schedule established for a particular water year could limit surface disturbance activities below the ordinary high-water mark during the late spring through early summer. Processing of alluvial material (e.g., from IC areas or the R areas) onsite would occur during the summer/fall construction period. Revegetation work (e.g., planting of willow pole cuttings and/or container plants and seeding with native grasses) would generally occur during construction, in the wet season (fall/winter) following construction, or during subsequent wet seasons after construction. Construction activities for site maintenance would be conducted as needed post-project during the period covered by the BLM ROW; affected landowners would be notified in advance.

After site construction, maintenance activities, including efforts to maintain/enhance vegetation or riverine habitat diversity, may be conducted as needed within authorized public land use areas in accordance with the general environmental commitments listed in Appendix E, Environmental Commitments.

2.5 Magnitude and Extent of the Project Activities

The magnitude and extent of the activities associated with the Project are summarized below. The Description of Alternatives and the UCC and Sawmill design reports McBain Associates 2023; Yurok Tribe Fisheries et al. 2023 provide an in-depth description of each activity area's design objectives. Except for recontouring and vegetation removal, each activity type and area has been assigned a unique alphabetic and numeric identification and descriptive label that corresponds to the activity area's type and location illustrated in Figures 2 and 3.

2.5.1 Upper Conner Creek

2.5.1.2 Recontouring and Vegetation Removal

Under the recontouring and vegetation removal activities, the ground surface would be modified to reduce riparian encroachment and the risk of stranding juvenile salmonids. To varying degrees, vegetation would be cleared and removed at all activity areas that would be subject to rehabilitation activities, except for crossings. Where recontouring is part of the Proposed Action (e.g., floodplain lowering), the entire site would be subject to vegetation removal, but sensitive vegetation communities would be avoided and where possible, riparian vegetation (e.g., willows) would be salvaged and stored within the ESL for use in subsequent revegetation efforts. Grading would be required to construct or enhance topographic features that could develop into functional riparian habitat; excavation and fill placement would be balanced. In addition to the activity areas that would be cleared before grading, site-specific removal of trees (e.g., conifers and hardwoods) would be required to enhance the safety of the work site, reduce fuel loading, and improve local conditions for individual tree growth and wildlife; the trees that are removed would be used to construct large wood habitat structures. As illustrated in Figure 2, upland (U) and contractor use (C) areas include discrete locations where vegetation removal is anticipated based on coordination with, and authorization by, BLM and landowners.

Vegetation removed from activity areas, including C areas, would be used for in-river placement. Large wood structures would be chipped or masticated for use as organic material to increase nutrients and enhance water holding in revegetation areas. Activities would be accomplished using a variety of methods, including hand tools and heavy equipment such as excavators, bulldozers, dump trucks, and potentially scrapers. Where feasible, existing native riparian vegetation would be maintained to facilitate future recruitment.

2.5.1.3 Riverine Construction – Lowered Floodplains

Four lowered floodplains (R-1, R-2, R-3, and R-4) are separate sections of a single, larger, valley-grade concept that is the foundation for stage-eight restoration design; these floodplains would be constructed to be inundated and function at flows ranging from about 500 cubic feet per second (cfs) to more than 3,500 cfs. Activities associated with constructing these surfaces would also enhance the type and degree of connection to the mainstem at various flows. These activities are intended to expand the channel's surface area that could be inundated by reoccurring flows below the ordinary high water mark (i.e., 3,500 cfs). Vegetation would be cleared as necessary, and earth would be excavated to meet design elevations for periodic inundation. Figure 2 shows the proposed activities at each of the riverine construction areas.

Together, R-1, R-2, R-3, and R-4 represent approximately 15.8 ac of new floodplain that would provide high-quality juvenile rearing habitat at discharge levels that are frequently exceeded during the months when juvenile salmon are in the river. Construction of these floodplains would require a total excavation volume of 4,920 cubic yards (cy) of mine tailings. Multiple wood structures at structure log jam (SLJ)-1 and SLJ-2 and wood racking (WR) features WR-1 through WR-8 would bifurcate overbank flow streamlines, creating hydraulic variability and local scour and deposition. Interactions between structured log jams, wood racking placements, and overbank flows would increase topographic and ecological diversity on the floodplain and, if fully developed, could create vegetated islands between two channel anabranches.

Due to their low elevation and large width, the R-1, R-2, R-3, and R-4 floodplains are expected to be depositional in some areas and experience scour in other areas. Overbank deposition is likely in R-3 and scour has the potential to occur due to head cutting at the upstream end through a portion of the bank that was avoided during construction. R-2 could see increased fine sediment deposition while R-4 could see deposition at the mouth of the side channel which would result in the abandonment of the feature. The low elevation of the valley grade surface would also encourage rapid colonization of riparian vegetation. This would increase both trophic production and rearing habitat quality in the area.

These features would increase the likelihood of channel migration resulting in enhanced sinuosity, thereby providing the habitat variability that was historically present and required to support the rapid growth of native fishes. Removal of alluvial material and placement of log jams would be used to create lowered and tiered floodplains, side channels, and ponds. Native riparian vegetation would be planted in newly lowered floodplains.

Newly inundated surfaces would provide important rearing and slow-water habitat for juvenile salmonids and other native anadromous fish and wildlife. They would also increase the likelihood of channel migration that would result in enhanced sinuosity, thereby providing the habitat variability that was historically present and is required to support the rapid growth of native fishes.

These treatment areas would rely on a combination of natural recruitment of native riparian vegetation and riparian planting to establish a more diverse assemblage of native vegetation. Revegetation efforts would be consistent with the requirements and commitments outlined in the TRRP's Draft Riparian Mitigation and Monitoring Plan. This plan requires supplemental efforts (e.g., in-planting, weed control, irrigation) as necessary to establish riparian vegetation to meet the standard of no net loss in riparian vegetation from pre-project levels.

2.5.1.4 In-Channel Construction – Channel, Wetlands, and Large Wood Structures

The Project would include a meander channel complex consisting of a riffle (IC-1), a medial bar (IC-2), a riffle enhancement (IC-3), a lateral bar (IC-4), and a riffle/medial bar complex (IC-5). Large wood placement (WP) would occur throughout the riverine zone and as habitat structures (WP-1 through WP-6). Structure log jam (SLJ)-1 would be constructed immediately adjacent to IC-1 on the left bank, while SLJ-2 would be constructed downstream of IC-5 along the right bank in R-4. These would increase topographic and hydraulic diversity and promote roughness and vegetation establishment. Fill for in-channel construction would require 4,920 cy of cleaned gravel, cobble, pit run, and fines.

The meander complex would provide a diversity of water depths and velocities across a wider range of flows than the existing mainstem channel configuration. Activity area IC-1 would raise the low-flow water surface elevation (WSE) and create a backwater to inundate the adjacent lowered surface (R-1). Target flows between 500-3,500 cfs would inundate the R-1 floodplain, generating large increases in wetted area and rearing habitat availability as flows increase through the range of flows typical of the period when juvenile salmon are in the river. Two previous restoration efforts have occurred at UCC, yet monitoring efforts have shown that the previously lowered surfaces were not inundating on a frequent enough basis to provide substantial increases in juvenile winter rearing habitat under average river conditions.

All lowered surfaces (R areas) incorporate varying topography, along with large wood placements, to create physical perturbations and complexity on the floodplain, resulting in a varied hydraulic environment that includes eddies, multiple flow pathways, and low-velocity refugia.

In-channel construction includes activities in the river under base flow conditions (e.g., 450 cfs) during the in-channel construction window (July 15 to October 15). After September 15, best management practices (BMPs) would be in place to minimize impacts to adult coho and Chinook salmon. The construction of various types and sizes of grade control structures, including construction or excavation of alluvial features (e.g., sloughs and wetlands), would increase channel complexity through the promotion of channel migration, increased sinuosity, reduced fine sediment storage, increased coarse sediment transport, and restoration of depositional features (e.g., riffles, bars, and islands) available for spawning and rearing habitat.

During construction of in-channel activity areas, earthen berms may be left as necessary near the upstream and downstream ends of constructed features to ensure that water quality standards are met. These berms would be removed at the end of construction if the water within these contained areas is of appropriate quality for discharge to the river, or they could be left in place for removal by subsequent high flows. Alternatively, water in the constructed features could be pumped to uplands or slowly metered into the mainstem river during construction. These techniques would ultimately reduce the amount of turbid water that would reach the Trinity River and ensure that water quality permit requirements are met (e.g., no more than 20 nephelometric turbidity units [NTUs] at 500 ft downstream of construction).

2.5.1.5 Upland – Upland Spoils

Excavated materials (e.g., fill) that would not be used for instream construction would be placed in an upland area as fill on mine tailings, legacy bars, and terraces formerly subjected to a variety of placer mining activities. A total of 6 sites have been designated as upland areas within the Project accounting for 10.75 ac. The upland areas would receive up to 136,930 cy total throughout the Project.

Upland activity areas have been located to ensure that there would be no increase in the elevation of the 100-year floodplain, consistent with requirements of Trinity County’s Floodplain Ordinance. These activity areas would be used to place excess material excavated during construction of the riverine and in-channel activity areas. The boundaries of these fill areas were defined using a Federal Emergency Management Agency (FEMA)-approved modeling process; field verification by surveyors and engineers was performed to ensure these areas would be located at an elevation above the FEMA 100-year floodplain. Within these activity areas, the depth of fill would range from about 1 ft near the edge to as much as 35 ft, depending on the activity area's size and location. Fill materials would be spread in uniform layers that would blend in with the natural terrain and provide stable slopes for revegetation.

2.5.1.6 Wood Features – Structured Log Jams, Wood Racking Features, and Wood Placements

Woody material is a natural part of healthy rivers. It provides important habitat for aquatic species by providing cover from high flows and predators. The low-velocity areas collect suitable spawning materials, and woody organic materials are a food source for aquatic insects. It can help create and maintain beneficial habitat features such as pools, islands, and gravel bars. WPs are included in the in-channel and riverine design elements above as WP-1 through WP-6, SLJ-1, and SLJ-2, and WR-1 through WR-8.

Large wood features for the UCC project are designed to direct flow, prevent recapture of the existing mainstem channel, provide salmonid cover and velocity refugia, temporarily protect constructed surfaces, and increase large wood supply to the Trinity River over the long term. SLJs are not anchored to the bank with cables, bolts, or large boulders. Therefore, SLJs are expected to begin to break down at higher flows several years after installation. Small woody material (slash) would be added to structures, pinned underneath rootwads, and added to the gravel-cobble matrix between the large wood pieces. Pinned and submerged material will provide additional cover and forage for juvenile salmonids, and material mixed into the gravel-cobble matrix will increase the stability of the structure.

A combination of whole trees harvested onsite and rootwad logs from both onsite and offsite staging would be used. The SLJ-1 and SLJ-2 features are planned for construction on the UCC side channel entrances in R-1 and R-4, respectively, while simultaneously allowing the design channel morphology to naturally evolve over time. They are designed to direct flow, prevent recapture of the existing mainstem channel, provide salmonid cover and velocity refugia, temporarily protect constructed surfaces, and increase large wood supply to the Trinity River over the long term.

Large wood and racking features would be placed throughout the riverine areas (R-1 through R-4) for habitat and additional cover. IC-1 would receive a wood racking feature within and adjacent to R-1 along the current shoreline. Wood and slash would also be heavily used on the floodplain to provide roughness and high-quality cover for fish. Large wood would be harvested from the U-3 area, as it contains ponderosa pine (*Pinus ponderosa*) to use in habitat WPs.

Impacts associated with the use of organic (e.g., large wood, slash) and inorganic (e.g., boulder) materials were analyzed in the Master Environmental Impact Report (EIR) under Sediment Management activities, along with other activities that would facilitate channel construction and maintenance (e.g., excavation and placement of alluvial material in in-channel and riverine areas). The TRRP would use appropriate materials to cause and enhance changes in channel geometry intended to improve aquatic and wildlife habitat as well as ecological function. No “oversized” skeletal rock is required for stability based on these embedment specifications; a matrix of gravel, cobbles, and small boulders would be sufficient. Some large boulders may be used if available and desired, but this is not necessary for stability if these specifications are followed.

As appropriate, large wood and accompanying slash removed as part of vegetation clearing activities would be retained and used to construct SLJ, WR, and WP structures during riverine and in-channel activities to provide additional hydraulic and habitat complexity and temporary erosion control measures. These activities would potentially occur in any of the IC or R features. This activity could include large wood placement of individual pieces, small accumulations, and large habitat structures. The creation of SLJ, WR, and WP structures would develop topographical complexity and increase bank length to provide additional salmonid rearing habitat over a wide range of flows. The use of these structures would also improve spawning, holding, and rearing habitat for anadromous salmonids.

All fill materials would be processed from materials excavated from within the Project. Unprocessed material or “pit-run” dirt and gravel from onsite excavation could be used to construct features and for habitat enhancement, using methods that would be continuously monitored for compliance with turbidity standards when equipment is working in or near the river.

All large wood features would be designed so that local velocities would be safe for navigation during relatively low river flows (less than approximately 2,000 cfs). Natural wood material would be placed in a manner to reduce the chances of hazardous contact with swimmers and boaters at flows less than about 2,000 cfs.

Species of trees for large wood features would include Douglas fir and Ponderosa pine for SLJs while whole tree placement logs include additional onsite salvaged species including, but not limited to, white alder, cottonwood, grey pine, and Pacific willow. Whole tree placements would be included in habitat wood placement regions on lowered surfaces. In total, 793 logs would be incorporated into habitat structures, in addition to 40 whole tree placements and 1,700 cy of slash.

2.5.2 Sawmill

2.5.2.1 Recontouring and Vegetation Removal

Under the recontouring and vegetation removal activities, the ground surface would be modified to reduce riparian encroachment and the risk of stranding juvenile salmonids. To varying degrees, vegetation would be cleared and removed at all activity areas that would be subject to rehabilitation activities, except for crossings. Where recontouring is part of the proposed action (e.g., floodplain lowering), the entire site would be subject to vegetation removal, but where possible, riparian vegetation (e.g., willows) would be salvaged and stored within the ESL for use in subsequent revegetation efforts. Grading would be required to construct or enhance topographic features that could develop into functional riparian habitat; excavation and fill placement would be balanced. In addition to the activity areas that would be cleared before grading, site-specific removal of trees (e.g., conifers and hardwoods) would be required to enhance the safety of the work site, reduce fuel loading, and improve local conditions for individual tree growth and wildlife; the trees that are removed would be used to construct large wood habitat structures. As illustrated in Figure 3, U and C areas include discrete locations where vegetation removal is anticipated based on coordination with, and authorization by, BLM and landowners.

Vegetation removed from activity areas, including C areas, would be used for in-river placement. Large wood would be chipped or masticated for use as organic material to increase nutrients and enhance water holding in revegetation areas. Activities would be accomplished using a variety of methods, including hand tools and heavy equipment such as excavators, bulldozers, dump trucks, and potentially scrapers. Where feasible, existing native riparian vegetation would be maintained to facilitate future recruitment.

2.5.2.2 Riverine Construction – Lowered Floodplains, Raised Depressions, and Chute Plug

Seven R areas are proposed. R-1 is a 0.15-ac floodplain bench that would be adjacent to a proposed excavated side channel (IC-2) to reroute flow from the Cemetery/Sawmill side channel complex (Figure 3 in the EA/IS). IC-1 is proposed to block and reroute flows into IC-2. Together, IC-1, IC-2 and R-1 would re-establish perennial flow into the Sawmill side channel. Riparian vegetation that establishes on R-1 would support the increased rearing habitat for juvenile salmonids in the new proposed side channel.

R-2 and R-3 are existing depressions within the floodplain and are proposed to be filled to eliminate bullfrog habitat. Within three years, these areas are expected to develop riparian vegetation. R-2 is not expected to be inundated under all discharge volumes, but R-3 would be inundated and would provide aquatic habitat at a discharge of about 3,500 cfs.

R-4 is an existing terrace composed of legacy mine tailings, which would be lowered to create an additional 0.45 ac of floodplain that would be partially inundated at about 1,000 cfs and mostly inundated at 3,000 cfs. Riparian vegetation is expected to develop within three years and provide quality lotic habitat over a wide range of moderate to high discharge volumes.

R-5 is an existing terrace on river left of the proposed mainstem channel meander that would be lowered to create 1.86 ac of new floodplain that would be partially inundated at 600 cfs and fully inundated at 1,000 cfs. R-5 has the potential to provide a large area of high-quality juvenile rearing habitat during the rearing season, especially after riparian vegetation has become established and new winter flow regimes are adopted. Because the proposed elevation of R-5 is slightly higher than baseflow water surface elevation, riparian vegetation is expected to quickly establish over most of R-5. This would improve juvenile rearing habitat quality and contribute to greater trophic production over time. Riparian vegetation colonization would be accompanied by fine sediment deposition, but rates of vertical accretion would likely remain low because of limited supply of fine sediments upstream of Rush Creek.

R-6 is adjacent to the proposed mainstem channel meander on river right and would consist of excavating 1.02 ac of existing terrace to create a portion of an island complex. R-6 would form the right bank of the proposed channel meander (IC-5) and would provide shallow water areas along its wetted edge. This area would be fully inundated at 8,500 cfs and would support a large eddy region that offers refuge from high velocities over the full range of discharges, including up to 11,500 cfs.

R-7 is a proposed chute plug that would consist of wood and coarse sediment at the head of an existing chute channel that traverses the existing bar opposite the Burner Hole. The plug would reduce flood conveyance over the backside of the bar so that floods would be more effective for maintaining the baseflow depth and volume of Burner Hole in the future. The 0.32-ac plug would prevent flood waters from entering the chute for discharges less than 6,000 cfs.

2.5.2.3 In-Channel Construction – Containment Structure, Side Channel Realignment, Riffle, Side Channel Plug and Fill, and Mainstem Channel Meander

The IC would consist of eight proposed areas to improve the in-channel complexity. IC-1 and IC-1x would consist of filling an existing side channel composed of alluvial fill with strategically-placed wood, large cobble, and small boulders that would prevent flow in the existing Cemetery side channel from flowing into the mainstem through a breach that developed over the past decade. The 0.72-ac structure would contain all flow in the side channel during low flow periods but would begin to overtop and pass flow back to the mainstem channel as discharge exceeds 8,500 cfs. At 11,500 cfs, over top flow would approach 1 ft in depth in some locations.

Some uncertainty remains regarding whether IC-1 is sufficiently large to prevent another breach through the narrow strip of floodplain that separates the side channel from the mainstem. IC-1x is a possible expansion of IC-1 that would add 1.19 ac. The same material would be used for the IC-1x expansion. IC-1 is intended to last for many years and is also intended to be a natural-looking structure composed of natural alluvial materials to the extent possible. The design therefore calls for a relatively low-profile structure that can be overtopped by large floods and minimal use of oversize materials. As a result, there is some risk that the structure could be subject to incision that would allow more of the water carried in the side channel to flow back into the mainstem than is projected for the as-built condition. In addition, as currently designed, IC-1 does not address the potential for another breach to develop in the divide between the side channel and the main channel elsewhere. Development of such a breach is possible where the side channel currently “leaks” back to the main channel about 190 ft downstream from the downstream end of the containment structure. For additional details on the location and elevation of this “leak”, refer to the design report Yurok Tribe Fisheries et al. 2023. IC-2 is a new 0.81-ac channel alignment for the Cemetery/Sawmill side channel complex. The new alignment would be excavated and graded to reroute a portion of the channel. The new channel alignment would be about 100 ft to the east of the current alignment. The side channel would result in surface flow through the Sawmill side channel during the winter baseflow period, when about 1/3 of the discharge is expected to flow through the side channel complex. The slow flow through the side channel complex at base flow would greatly increase the availability of rearing habitat for juvenile salmonids.

IC-3 would be a 0.04- ac constructed riffle within the existing Cemetery side channel immediately downstream of the mouth of the IC-2 side channel realignment. The riffle would encourage flow into the new alignment and reduce flow conveyance in the existing side channel downstream from that point.

IC-4 is a proposed side channel plug of a short section (about 110 ft) of the Sawmill side channel. The side channel would be raised to the level of the adjacent floodplain elevation. The proposed side channel plug would be about 0.08 ac and would promote inundation of the surrounding overbank area to increase salmonid rearing habitat.

IC-5 would be a 1.86-ac excavated channel meander that would reroute a short reach of the mainstem to convey nearly all streamflow at all discharge levels. The new channel meander would increase hydraulic and geomorphic complexity compared to the existing straight, entrenched channel. The alignment was designed to minimize impacts to established beneficial vegetation.

Coarse sediment would be placed in an 0.95-ac area (IC-6) of the mainstem to raise the bed elevation to direct flow into the new channel meander (IC-5) as well as into a portion of the existing mainstem channel along the bank on river right. The fill added to IC-6 would mitigate the bed incision that has occurred since the removal of artificial grade control in 2009. Maintenance of IC-6 would rely on replacement of coarse bed material from upstream. Failure to adequately supply mobile coarse sediment downstream of Lewiston Dam could eventually deplete the input fluxes needed to prevent incision. On the upstream edge of IC-6, large wood features consisting primarily of vertical posts intended to rack wood delivered from upstream during high flow events would be installed. IC-7 (0.95 ac) would continue the fill material of IC-6 downstream. R-6 is adjacent to IC-7 and together they form an island complex along the new channel meander (IC-5). The island complex would also provide shallow water areas along its wetted edge over a wide range of flows from base flow to more than 8,500 cfs when the island complex would be fully inundated. Additionally, the island complex would support a large eddy region that would offer refuge from high velocities over the full range of discharges.

2.5.2.4 Upland – Upland Spoils

Excavated materials (e.g., fill) that would not be used for instream construction would be placed in U areas for storage. U-1, which would cover 0.63 ac and could accommodate about 6,650 cy of material, would receive all spoils generated on river right. U-2 would cover about 2.5 ac and could accommodate more than 53,000 cy of material. Higher-value coarse alluvium would be preferentially spoiled in the northern part of U-2 to facilitate future processing of material for coarse sediment augmentation operations. Lower-value material would be preferentially spoiled in the southern part of U-2. This area would be seeded to support the establishment of native grasses and shrubs. Because a portion of U-2 would be used for sediment supply, the elevation would be lowered through the years.

U-3 is an additional upland spoils and processing area. Like U-1 and U-2, U-3 would receive excess excavated materials, but in U-3 the spoiled material would be graded to create a flat surface covering 1.77 ac that could serve as a materials processing yard after construction is complete. Depending on the elevation of this working surface, about 16,500 cy of materials could be stored in the U-3 area. Sediments stored in U-2 or harvested directly from U-3 could be sieved and stockpiled in U-3 or loaded onto trucks for rehabilitation purposes elsewhere along the Trinity River.

2.5.2.5 Large Wood Features

Woody material is a natural part of healthy rivers. It provides important habitat for aquatic species by providing cover from high flows and predators. The low-velocity areas collect suitable spawning materials, and woody organic materials are a food source for aquatic insects. It can help create and maintain beneficial habitat features such as pools, islands, and gravel bars. Some of the design features would incorporate large wood features in some manner. One large wood structure consisting primarily of vertical posts located at the upstream end of the R-6/IC-7 island is proposed. Smaller clusters (three to five pieces) of large wood will likely to be utilized as structural elements in other locations where resistance to erosion is important, such as in the IC-1 containment structure and the R-5 chute plug. These smaller wood installations are typically designed in the field during construction. Finally, wood would be installed in selected locations throughout the site to provide immediate habitat for juvenile fish and other organisms. Individual installations of this “habitat wood” typically consists of one to a few pieces, often with slash, keyed into stream banks or floodplain areas.

2.5.2.6 Contractor Use Areas

C areas would be used for stockpiling and sorting materials, staging equipment, contractor parking, and similar activities. Disturbance would be minimized to the extent possible. They could also serve as transportation corridors for moving equipment and materials from one activity area to another. Water would be applied to transportation corridors for dust abatement. To support the intent of rehabilitation, the design team designated C areas in locations that avoid sensitive resources.

There are three areas (C-1, C-2, and C-3) that would be available as C areas. These areas respectively occupy 0.62, 1.70, and 0.52 ac. The C areas would be reviewed by the TRRP and construction contractor before channel rehabilitation activities begin. At that time and as construction begins, decisions would be made to minimize disturbance to sensitive zones and limit work to needed zones within designated C areas. C areas would be restored to pre-project conditions or better when construction is completed.

2.5.2.7 Access Routes

Access roads throughout the site support equipment access and construction within the project area, on both river right and river left via existing roads. River left access would be from an existing spur (A-1) off Goose Ranch Road. River right access would be from Rush Creek Road, which would provide access to existing roads (A-2 and A-3). Whenever possible, existing roads would be used for access, although some widening may be necessary. The total length of existing roads that would be used and possibly widened or improved is 0.3 mile.

Several temporary access roads (A-4, A-5, A-6, A-7, A-8, A-9 and a portion of A-2) are proposed. The total length of temporary access roads to be used during construction would be 0.6 mile. Following completion of the Project, temporary access roads would be restored to either pre-project condition or incorporated into the new feature. One temporary crossing (X-1) that would provide access from river right across the existing channel to the southern end of the proposed channel meander is proposed. The temporary crossing would be 0.05 mile.

3 Baseline Conditions

3.1 Free Flowing Condition

Existing conditions at the UCC and Sawmill site have been influenced by historic mining and subsequent flood flow reductions on the Trinity River. The past disturbances to the river, floodplain, and flow regimes simplified the available habitat for aquatic, riparian, and upland species.

A variety of natural and management disturbance mechanisms have occurred at the sites over the past 175 years. The channelization of the Trinity River associated with historic dredge activities was exacerbated by modifications to the Trinity River flow regime downstream of Lewiston Dam, beginning in 1964, when the Trinity River Division (TRD) of the Central Valley Project became fully operational. In 1981 when the Trinity River was designated as a Wild and Scenic River, the riparian berms had been developing for more than 15 years and were channelizing the river in several locations. Scientists have recognized that the river's alluvial nature had been modified extensively due to changes in the flow regime and sediment flux.

Although changes in the flow regime since 2006 have provided some opportunity to modify the form and function of the river, the ROD for the Trinity River Mainstem Fishery Restoration Environmental Impact Statement/Environmental Impact Report (Department of Interior 2000) required the establishment of the TRRP and stipulated that mechanical channel rehabilitation, including management of sediment input (reduction in fine sediments [sand] and augmentation of coarse sediment [gravel]), would be required to reconfigure sections of the river and provide opportunities for alluvial processes to become reestablished, albeit at a smaller scale than had occurred before the construction and operation of TRD facilities (e.g., Lewiston Dam) in 1964.

3.2 Water Quality

Trinity River water is used to lower the water temperature and improve water quality conditions of the Klamath during low water conditions in late summer. The water quality downstream of the Lewiston Dam is notably of high quality. Water releases from the TRD influence flow volumes and velocities, water quality, and channel geometry downstream of the Lewiston Dam. These influences are particularly important to water quality parameters such as temperature, turbidity, and suspended sediments. Water quality in the Trinity Basin supports municipal and domestic water supplies and beneficial uses primarily associated with sustaining high-quality fish habitat (i.e., cold-water spawning and rearing habitat) and recreational pursuits (swimming and boating). These benefits are protected by numeric and narrative water quality objectives defined in the Water Quality Control Plan for the North Coast Region (Basin Plan 2018).

In 1992, the Environmental Protection Agency (EPA) added the Trinity River to its list of impaired drivers under the provisions of Section 303(d) of the Clean Water Act in response to a determination by the State of California that the water quality standards for the river were not being met due to excessive sediment. In 2001, the EPA established a total maximum daily load (TMDL) for sediment in the river. The Regional Water Board has continued to identify the Trinity River as impaired in subsequent listing cycles. The primary adverse impacts of excessive sediment in the Trinity River pertain to the degradation of habitat for anadromous salmonids. The restriction of streamflow downstream of the TRD has contributed significantly to the Trinity River's impairment below the Lewiston Dam (EPA 2001). Since 2006, TRRP recommended spring flow releases for fisheries that have scoured sediment downstream of the TRD and have reduced excess sediment measured in the substrate in areas near the Lewiston Dam. Additional information on this topic is available for review in Section 3.11 of the EA/IS.

Water temperature is one of the most important variables affecting salmonids and other aquatic organisms (Carter 2005). It influences feeding rates and growth, metabolism, development, the timing of migration, spawning, rearing, and food availability. Since the construction of the TRD, discharge from Lewiston Dam has played an important role in regulating water temperatures in the Trinity River downstream. Depending on the type of water year and time of year, this effect diminishes to varying degrees with distance from Lewiston Dam.

A key objective of the TRRP's flow management is to improve the thermal regimes for all anadromous salmonid life stages that use the Trinity River. The TRRP has been using flow management practices to meet specific temperature management targets, and temperature monitoring data have been collected as part of the Adaptive Environmental Assessment and Management process since 2002. The UCC ESL is located between the Trinity River above Burnt Ranch and the Trinty River above Big French Creek water temperature monitoring sites. The Sawmill ESL is between the Trinity River above Big French Creek and the Trinity River above North Fork Trinity River water temperature monitoring sites.

Water temperatures in the Trinity River through the UCC and Sawmill ESLs are primarily influenced by flows, topography, and aspect. Flows in the Trinity River below the dam typically exceed the temperature targets for short periods in the fall (Magneson and Chamberlain 2015). Currently, river temperature requirements maintain the health of adult spawners. When juvenile salmon and steelhead grow before their seaward migration during spring rearing periods, the temperature is often cooler than optimal growth conditions. The extensive mining activities and lack of fertile soil along the river limit the establishment of riparian forests. Project activities would plant the floodplain and amend soils to enhance localized conditions for riparian vegetation so that needed diverse water temperatures may be more available in the ESL reaches.

The Trinity River is typically very clear. Oil, gas, and chemical pollutants are generally not measurable, and its flow is often withdrawn to provide drinking water. Natural background turbidity levels range from 0 to 1 NTUs during low-flow conditions (300 to 450 cfs). On June 8, 2020, the Regional Water Board issued a General Water Quality Certification (Order R1-2020-0025) to the TRRP under the auspices of Reclamation. This order implements portions of the Trinity River TMDL and provides an allowable zone of turbidity dilution (protective of sensitive aquatic life), within which turbidity levels shall not exceed 20 NTUs or 20% above naturally-occurring background levels, whichever is greater. During in-river construction activities, the TRRP would monitor turbidity levels within 50 ft upstream of project activities (i.e., to serve as the natural background level) and 500 ft downstream of the in-river construction activities (point of compliance) that could increase turbidity. If naturally-occurring background levels are greater than 20 NTUs, turbidity levels at the point of compliance shall not exceed 20% above the naturally-occurring background level.

3.3 Outstandingly Remarkable Value: Anadromous Fishery

The ORV identified for this segment of the Trinity Wild and Scenic River is the anadromous fishery. Specifically, the Trinity River supports the Southern Oregon/North California Coast coho salmon evolutionarily significant unit, which was federally-listed as threatened under the Endangered Species Act in 1997. The Trinity River also supports Klamath Mountain Province steelhead trout, Upper Klamath/Trinity River (UKTR) fall-run Chinook salmon, a remnant population of UKTR spring-run Chinook salmon, and Pacific lamprey.

All anadromous salmonid species begin their life in freshwater, migrate to the ocean to rear and mature, and return to spawn in freshwater. Although the three Trinity River native species have generally similar life histories, they differ in the time of year they migrate and spawn and when egg incubation typically occurs.

Adequate flows, water temperatures, water depths, and velocities, appropriate spawning and rearing substrates (e.g., riverbed gravels), and availability of instream cover and food are critical for the production of all anadromous salmonids. Spring-run Chinook salmon and summer-run steelhead also need long-term adult holding habitat for which pool size and depth, temperature, cover, and proximity to spawning gravel are essential requirements. Newly emerged fry and juveniles of all species require rearing habitat with low velocities, open cobble substrate, and cool water temperatures. The emigration of smolts to the ocean and the immigration of spawning adults require adequately timed flows with the appropriate temperature, depth, and velocity.

The life histories and freshwater habitat requirements of these species and their distinct spawning populations are described in Appendix G of the Master EIR (2009 Regional Water Board and Reclamation: http://www.trrp.net/library/document/?id=476).

The TRRP has prioritized enhancing Trinity River juvenile salmonid rearing conditions through management actions. Juvenile habitat availability and quality were determined to be the limiting factors for salmonid production during early Trinity River habitat evaluations (USFWS and HVT 1999). Current native river salmonid populations are dramatically reduced from historical abundance, and the TRRP is charged with restoring populations to pre-dam levels. Fall-run Chinook salmon are the primary target for tribal harvest, commonly taken by sport fishermen, and arguably the species that would benefit most from the implementation of TRRP management actions. Consequently, Chinook salmon numbers are targeted for juvenile population assessments.

Since full implementation of the TRRP began in 2005, there has been a positive trend in the number of out-migrating naturally-produced juvenile Chinook salmon. Increases in Trinity River spring water release volumes, coupled with enhancement of channel habitat (like those proposed in this project), are believed to have increased rearing habitat that has supported this trend. In general, out-migrating naturally-produced juvenile Chinook numbers have increased from approximately 1 million in the early 1990s to just under 4 million per year currently measured at the Willow Creek rotary screw traps (September 11, 2019, TMC presentation in Weitchpec, CA).

Baseline numbers of adult salmon returning to the river are more problematic to interpret than juvenile data as many factors outside of river restoration may impact fisheries' escapement to the river. Though habitat restoration in the river may be improving conditions, fishery harvest (ocean and in-river) and poor ocean conditions (e.g., high temperatures or low food abundance) may drastically reduce the number of adults that return to natural spawning grounds and the Trinity hatchery. In general, salmon and steelhead population estimates are cyclical over time; however, general trends may be evident. Since TRRP efforts began, the proportion of spring and fall-run spawners returning to natural spawning areas has generally increased, but overall numbers have diminished since peak escapement in 1987. Coho salmon numbers have also decreased since the mid-1980s, and the proportion of hatchery spawners has increased. However, steelhead escapement has increased since the mid-1980s, and this is considered the current strongest population of salmonids on the Trinity River. Current Trinity River basin adult escapement goals set by the TRRP for natural-origin adults are 6,000 spring Chinook, 62,000 fall Chinook, 1,400 coho, and 40,000 steelhead.

The following paragraphs summarize current adult-run sizes reported in the Trinity River Basin Salmon and Steelhead Monitoring Project: Chinook and coho salmon and Fall-run Steelhead run-size estimates using mark-recapture methods 2022-2023 Season (available at: https://www.trrp.net/library/document/?id=2625).

3.3.1 Spring-run Chinook Salmon 2022 Status Summary

Spawning escapement above the Junction City Weir was an estimated 13,262 fish, including the 3,971 spring-run adult Chinook that entered the Trinity River Hatchery (TRH) and 8,531 estimated natural area adult spawners.

There was insufficient data to estimate the contribution of hatchery adults to the total run or towards the TRRP goal of 6,000. This year's run size estimate of 13,262 is approximately 87.2% of the average of 15,212 since 1978. Estimated spring Chinook run-size had ranged from 2,381 fish in 1991 to 62,692 fish in 1988.

3.3.2 Fall-run Chinook Salmon 2022 Status Summary

An estimated 14,179 fall-run Chinook salmon migrated upstream of the Willow Creek Weir (WCW) in 2022. The run-size of 3,772 jacks (precocious fish) and 10,407 adult fall Chinook adults comprised an estimated 6,368 natural-origin adults, 2,556 natural-origin jacks, 3,866 hatchery-origin adults, and 1,072 hatchery-origin jacks. An estimated 317 fall Chinook salmon were harvested (144 jack and 173 adults), yielding an escapement of 13,862, including the 4,938 fall Chinook that entered TRH and the 8,924 estimated natural area spawners. There were insufficient data to estimate the contribution of hatchery adults to the total run or towards the TRRP goal of 62,000. This year's run size estimate of 14,179 is approximately 36.4% of the 46-year average of 38,903 since 1977.

3.3.3 Coho Salmon 2022 Status Summary

An estimated run-size of 6,551 coho salmon comprised of 380 natural-origin jacks, 2,664 natural-origin adults, 237 hatchery jacks, and 3,240 hatchery adults migrated into the Trinity River basin upstream of the WCW in 2022. The estimated escapement of 550 natural origin coho salmon adults is 39.3% of the TRRP goal of 1,400 fish. This year's run size estimate of 6,551 is approximately 44.8% of the 45-year average of 14,615 since 1977. Estimated coho salmon run size has ranged from 655 in 2017 to 59,079 in 1987.

3.3.4 Fall Steelhead 2022 Status Summary

An estimated 10,597 adult fall steelhead migrated upstream of WCW in 2022. Of those, 322 were estimated to have been harvested by anglers. An estimated 10,274 potential spawners (7,642 natural-origin and 2,632 hatchery-origin) escaped. The estimated escapement of 7,642 natural-origin steelhead adults is 19.1% of the TRRP goal of 40,000 (Table 4). This year's estimated run size is 79.0% of the average of 13,420 since 1980, with a range from 2,972 in 1998 to 53,885 in 2007.

4 WSR Act Section 7(A) Evaluation Standard and Evaluation Criteria

4.1 Evaluation Standard

The Project will be evaluated to determine if the proposed activities will result in any "direct and adverse" effects on the river's values (free flow, water quality, and ORV, i.e., its anadromous fishery). The Redding Field Manager will approve the determination for the BLM.

4.2 Evaluation Criteria

The following specific criteria were used to evaluate for direct and adverse effects to the free flow, water quality, and ORVs.

4.2.1 Free-Flowing Condition

Alteration of within-channel conditions including:

- active channel location
- channel geometry
- channel slope
- channel form
- navigation of river

Alteration of riparian and/or floodplain conditions including:

- vegetation composition, age structure, quantity, or vigor
- relevant soil properties such as compaction or percent bare ground
- relevant floodplain properties such as width roughness, bank stability, or susceptibility to erosion

Alteration of upland conditions including:

- vegetation composition, age structure, quantity, or vigor
- relevant soil properties such as compaction or percent bare ground
- relevant floodplain properties such as width roughness, bank stability, or susceptibility to erosion
- relevant hydrologic properties such as drainage patterns or the character of the surface and subsurface flows

Alteration of hydrological processes including:

- the ability of the channel to change course, reoccupy former segments, or inundate its floodplain
- streambank erosion potential, sediment routing and depositions, or debris loading
- the amount or timing of flow in the channel
- existing flow patterns
- surface and subsurface flow characteristics
- flood storage (detention storage)
- aggradation or degradation of the channel

Magnitude and extent of offsite changes including:

- Changes that influence other parts of the river system including:
    - range of circumstance under which offsite changes might occur
    - the likelihood that predicted changes will be realized
    - Processes involved, such as water and sediment, and the movement of nutrients

4.2.2 Water Quality

- Temperature
- Turbidity
- Pollutants (i.e., oil and grease)
- Sediment

4.2.3 Outstandingly Remarkable Value: The Anadromous Fish Habitat

To maintain/restore the fishery, the TRRP is charged with restoring ecosystem function and diverse conditions to support juvenile salmon and steelhead. The evaluation criteria for the anadromous fisheries ORV are:

- water temperature
- water quality (physical, biological, chemical)
- aquatic habitat:
  - geomorphic condition
  - substrate quality
  - nutrient cycling
  - condition of aquatic invertebrate, amphibian, and mollusk habitat
  - species composition and diversity
- Fish species population conditions, specifically:
  - anadromous salmonid fish species
  - resident fish species
  - species traditionally used by and culturally important to Native Americans

This Section 7(a) evaluation addresses the Project's potential to directly and negatively impact the anadromous fishery ORV and other values identified by the WSRA. Chapters 2, 3, and 4 prepared for the Project provide additional information and analysis on the WSR, water quality, fisheries, wildlife, flora and fauna, recreational, and aesthetic values.

5 Analysis of Effects to Free Flow

5.1 How the Activity Will Directly Alter Within-Channel Conditions

5.1.1Position of the Activity Relative to the Streambed and Streambanks

Consistent with the purpose and need described in Section 2.2(Purpose and Need for the Project), the TRRP is mandated to reestablish the form and function of the Trinity River in a manner that reestablishes the fishery to pre-dam conditions. The Project would occur within and adjacent to the bed and banks of the Trinity River to improve the functions and values of the river concerning the fisheries ORV while ensuring the protection of water quality. The Project activities described above (Magnitude and Extent of the Project Activities) would change the river's form and function within and, to varying degrees, downstream of the ESLs by expanding floodplain habitat, increasing channel complexity, and reestablishing self-sustaining riparian vegetation.

5.1.1 Potential Project-Related Changes to Free Flow

5.1.1.1 Active Channel Location

The active channel of the Trinity River within the UCC and Sawmill ESLs is subject to extreme changes in flow throughout the water year, in part due to the TRRP flow release schedule that is implemented on an annual basis based on water year type. Base flows may be as low as 300 cfs in the fall and often exceed 6,000 cfs in the winter and spring; during wet years, TRRP releases may be as high as 11,000 cfs from the Lewiston Dam. Reducing the elevation of the active floodplain and incorporating alluvial features (e.g., riffles, point bars) within the active channel would provide opportunities for both short- and long-term changes in channel morphology (width, depth, and gradient), therefore increasing the amount and quality of habitat for all life stages of anadromous salmonids. The Project's physical modifications would improve the free-flowing conditions at this site by allowing the river to more frequently inundate and move within its floodplain.

5.1.1.2 Channel Geometry

As described in the project Purpose and Need, the fundamental objective of the Project is to implement activities intended to change the channel geometry in the short term and provide opportunities for continuous dynamic processes within the channel over time in response to ongoing changes in sediment and flow regimes associated with both natural and anthropogenic processes. The Project would encourage the development of a dynamic channel geometry that would increase the amount and quality of habitat, especially for juvenile salmonids.

5.1.1.3 Channel Slope

The existing river channel within the ESLs is low gradient (~0.0009 ft/mile). The UCC project would include a channel complex consisting of a riffle (IC-1), a medial bar (IC-2), a riffle enhancement (IC-3), a lateral bar (IC-4), and a riffle/medial bar complex (IC-5). The IC-1 feature has a crest elevation of 1,425.2 ft and a 0.19% grade. The primary goals of the feature are to add roughness to the mainstem channel, raise the low-flow WSE, and create a backwater to inundate the adjacent lowered surface (R-1). Large wood feature placement would occur throughout the riverine zone and as habitat structures (WP-1 through WP-6). Structure log jams (SLJ-1) would be constructed immediately adjacent to IC-1 on the left bank, while SLJ-2 would be constructed downstream of IC-5 along the right bank in R-4. These would increase topographic and hydraulic diversity and promote roughness and vegetation establishment. At UCC, the surfaces of R-1, R-2, R-3, and R-4 would incorporate multiple wood structures (SLJ-1 and SLJ-2) and wood racking features (WR-1 through WR-8), which would bifurcate overbank flow, creating hydraulic variability and local scour and deposition. Due to their low elevation and large width, the R-1, R-2, R-3, and R-4 floodplains are expected to be depositional in some areas and experience scour in other areas. The low elevation of the valley grade surface would also encourage rapid colonization of riparian vegetation. This would increase both trophic production and rearing habitat quality in the area.

At Sawmill, the IC would consist of eight proposed areas to improve the in-channel complexity. IC-1 and IC-1x would consist of filling an existing side channel composed of alluvial fill with strategically placed wood, large cobble, and small boulders that would prevent flow in the existing Cemetery side channel from flowing into the mainstem through an existing breach. Because greater sinuosity is proposed for the channel, the slope would be lessened from the existing channelized channel.

5.1.1.4 Channel Form

At UCC, the design for IC-1 includes a 160-ft long riffle composed of spawning gravels (5/8 to 5 in) and oversized rock (6 to 12 in) with a target D_{84} of 7 in. The primary goals of the feature are to add roughness to the mainstem channel, raise the low-flow WSE, and create a backwater to inundate the adjacent lowered surface (R-1). The feature is designed to be stable up to a flow of 8,300 cfs; sufficient bed-load material is expected to be supplied from upstream by Canyon Creek to replenish material that is transported from the riffle. IC-2, a medial bar, is designed to add topographical complexity and additional roughness to the mainstem channel. The feature is designed to have a bar apex 1.1 ft above the summer baseflow WSE at an elevation of 1,425.5 ft. The bar is composed of spawning gravel and has a target D_{84} of 4 in. IC-3 includes a 340-ft length riffle enhancement composed of spawning gravel with a target D_{84} of 5-in. The additional spawning gravels would raise the crest elevation from 1,417.9-ft to 1,419.1-ft and have a grade of 0.2%. The primary goal of the feature is to add roughness elements to the mainstem channel and raise low-flow WSEs. IC-4, a lateral bar, would constrict flow going into the upstream end of the existing pool. This would focus stream energy into the pool, reducing risks of aggradation. The feature also incorporates a wood racking feature (WR-6) at the upstream end. IC-5, a riffle/medial bar complex, would direct flow towards channel banks, promoting erosion along the left bank.

At Sawmill, the new mainstem channel, IC-5, would be excavated to create a 1.67-ac channel meander with greater hydraulic and geomorphic complexity. The existing Cemetery side channel would be filled with alluvium and strategically-placed wood, large cobble, and small boulders to redirect flow into a new side channel that would not allow flow into the mainstem. The 0.72-ac structure would contain all flow in the side channel during low flow periods but would begin to overtop and pass flow back to the mainstem channel as discharge exceeds 8,500 cfs. The new alignment of the Cemetery/Sawmill side channel would be excavated and graded to reroute 0.81 ac of the channel. The slow flow through the side channel complex at baseflow would greatly increase the availability of rearing habitat for juvenile salmonids. R-6 is adjacent to IC-7 and together they form an island complex along the new channel meander (IC-5). The island complex would also provide shallow water areas along its wetted edge over a wide range of flows from base flow to more than 8,500 cfs when the island complex would be fully inundated.

While the fundamental objective of the activities associated with UCC is to increase the extent and frequency of floodplain inundation so that rearing habitat for salmonids is continuously available above baseflows, isolated instances of bank erosion could result in the loss of riverbank, sedimentation, and loss of riparian vegetation. The environmental commitments outlined in Table 2-2 of the EA/IS and Appendix E, Environmental Commitments, are an integral component of this alternative. As a whole, the design of this alternative was developed to ensure that no people or structures would be exposed to a risk of injury, death, or loss involving flooding and/or erosional processes.

5.1.1.5 Navigation of the River

The Trinity River provides year-round recreational opportunities, including boating, kayaking, canoeing, rafting, inner tubing, fishing, swimming, camping, gold panning, wildlife viewing, picnicking, hiking, and sightseeing. Fishing for Chinook salmon, steelhead, and rainbow and brown trout is a major recreational activity on the Trinity River throughout the year.

BLM, in agreement with USFS, issues up to 100 permits for commercial fishing guides along the upper reach of the Trinity River. USFS issues 13 rafting permits for the river downstream at Pigeon Point. Visitor use in the project ESLs is generally light throughout the year, with an occasional bank fisherman or drift boat or raft transiting the area. The Sawmill processing site is mostly BLM-managed land that currently does not have recreational activities, and there is no designated access to the river. Temporary construction activities associated with the Project could pose a physical hazard to the river's recreational users and cause short-term resource damage to lands used for recreational activities in and adjacent to the ESLs. Potential physical hazards to recreationists include the presence of temporary river crossings (e.g., X-1 at Sawmill and X-1 at UCC), operation of construction equipment and vehicles in and adjacent to the river, changes in the river’s subsurface flow patterns as a result of the in-channel addition or removal of gravel, the addition of wood into the channel, and an increased potential for a hazardous materials spill (e.g., diesel and hydraulic fluid) from construction equipment and vehicles operating in and adjacent to the river.

During Project implementation, public access in the construction area would be limited. Access to the ESLs would be restricted to project traffic based on individual agreements with landowners; however, river access to float through the Project would be maintained at all times.

An environmental commitment described in Appendix E, Environmental Commitments, requires Reclamation to post precautionary signage and other public notification warning of in-river construction to reduce the hazards to recreational users associated with in-river construction activities. This approach has worked well for previous TRRP projects and has been particularly effective in reducing short-term impacts for in-water recreational activities such as boating and fishing over the past 10 years. In the long-term, natural vegetation and a more sinuous naturally functioning river will benefit river recreation.

5.2 How the Activity Will Directly Alter Riparian and/or Floodplain Conditions

5.2.1 The Position of the Activity Relative to the Riparian Area and Floodplain

As described above, the primary purpose of the Project is to make physical changes to the landscape within the ESLs that would allow the river to interact with its floodplain and allow for dynamic changes to continue over the long term under the flow and sediment regimes that persist after the construction of the TRD.

5.2.2 Potential Project-related Changes to Floodplain Conditions

5.2.2.1 Vegetation Composition, Age Structure, Quantity, or Vigor

Figure 4 shows the habitat types (based on dominant vegetation type) present in the UCC ESL. Figure 5 shows the habitat types within the Sawmill ESL. Currently, the riparian vegetation along the Trinity River lacks complexity with respect to composition, age structure, and quality. The entire corridor was subjected to a variety of placer mining activities, including both hydraulic and dredge operations within the ESLs. As a result, the floodplains have increased in elevation over time due to excessive deposition of mine tailings with virtually no soil available to support riparian or upland vegetation other than extensive populations of invasive weeds (e.g., star thistle and Himalayan blackberry).

The Project would lower floodplain elevations to enable alluvial processes to reestablish under lower flows and provide opportunities to reestablish a complex assemblage of native riparian and upland vegetation, including trees, shrubs, and grasses at elevations that enable rooting within the hyporheic zone of alluvial features.

The revegetation efforts described in McBain Associates 2023; Yurok Tribe Fisheries et al. 2023) have been developed in conjunction with BLM botanists and fisheries biologists to ensure that a complex riparian community becomes reestablished within 5 to 10 years after construction is completed. In addition, the clearing and grading of both floodplain and upland areas are expected to reduce the populations of invasive plants and increase the probability for the recruitment of native plant species along with extensive planting efforts.

5.2.2.2 Relevant Soil Properties Such as Compaction or Percent Bare Ground

The majority of both ESLs have been disturbed by historic mining activities. The large-scale historic mining activities through the ESLs essentially left isolated locations where a soil profile remains intact; however, large portions of the ESLs have no soil or vegetation remaining. By removing many of the tailings within the ESLs and preserving soils where found, the Project proposes to enhance riparian conditions for vegetation to quickly colonize newly open areas. Revegetation efforts and natural recruitment are expected to decrease the amount of bare ground over the long term as riparian and upland vegetation become reestablished on the newly constructed surfaces. The nature of the alluvial and upland landscapes subject to Project activities is not conducive to the compaction typically associated with heavy equipment.

5.2.2.3 Relevant Floodplain Properties Such as Width, Roughness, Bank Stability, or Susceptibility to Erosion

As described previously, changes in floodplain properties to enhance habitat for anadromous salmonids (the single ORV) are among the key objectives of the Project. The overall goal of the TRRP is to provide opportunities for the river to adjust to modified flow and sediment regimes required under the 2000 ROD.

5.3 How the Activity Will Directly Alter Upland Conditions

5.3.1 The Position of the Activity Relative to the Uplands

As described in Section 3and shown in Figures 4 and 5 of the EA/IS, much of the ESLs have been subjected to some disturbance associated with historic mining activities. U-1a, U-1b, U-2a, U-2b, U3, and U-4 at UCC and U-1, U-2, and U-3 at Sawmill would be used for placement of excess excavation. Upland areas would be revegetated after construction activities are completed.

5.3.2 Potential Project-related Changes to Uplands

5.3.2.1 Vegetation Composition, Age Structure, Quantity, or Vigor

Figures 4 and 5 of the EA/IS shows the type of habitat that occurs within the upland activity areas. The composition, age structure, and quantity of vegetation is impacted by boat line dredge piles from the 1930s and 1940s. Reclamation of large mine tailing deposits would include revegetation with native trees (conifers and hardwoods), shrubs, and grasses.

5.3.2.2 Relevant Soil Properties Such as Compaction or Percent Bare Ground

The Project would change much of the site so that it is lower in elevation, causing many of the upland areas to be converted to floodplain habitat and colonized by riparian vegetation.

5.3.2.3 Relevant Hydrologic Properties Such as Drainage Patterns or the Character of Surface and Subsurface Flows

The grading plan developed for upland disposal areas includes topographic features intended to disperse rather than concentrate overland flow. Permeable soils and low slope angles would minimize erosion from the project upland areas post project.

5.3.2.4 Archaeological, Cultural, or Other Identified Significant Resource Values

As described in Section 5.3.2.4 (Archaeological, Cultural, or Other Identified Significant Resource Values), pre-historic and historic cultural resources occur within and adjacent to the activity areas associated with the Project. Close coordination between Reclamation and BLM cultural resource managers resulted in a Project that will have no Adverse Effect on Historical Properties as established under a Section 106 determination of the National Historic Preservation Act.

5.4 How Changes in Onsite Conditions Can or Will Alter Existing Hydrologic Processes

5.4.1 Ability of the Channel to Change Course, Reoccupy Former Segments, or Inundate Its Floodplain

The Project is expected to increase the river's ability to evolve into a more complex and dynamic channel structure. Created floodplains (such as R-1 through R-4 at UCC and R-1 through R-7 at UCC) would serve as functional floodplains that are accessible at a much wider range of flows than current conditions. Post-project conditions would promote a site-specific morphological response to changes in the flow on-site, resulting in a much more productive and functioning river system than currently exists.

5.4.2 Potential Project-related Changes to Hydrologic Processes

5.4.2.1 Streambank Erosion Potential, Sediment Routing and Deposition, or Debris Loading

A key objective of the TRRP is reestablishing the alluvial processes that occurred before the construction of the TRD, but at a reduced level of scale and intensity. Periodic disturbances to the river such as bank erosion, sediment flux, and debris loading, support positive outcomes for long-term river function.

5.4.2.2 The Amount or Timing of Flow in the Channel

The flow regime of the upper reach of the Trinity River is highly influenced by the TRD and releases from the Lewiston Dam. Section 3.1provides an in-depth discussion of this topic. The Project would result in surfaces at UCC that would be lowered to inundate at flows that occur on a more frequent basis (between 500 cfs and 4,000 cfs). This water will maintain floodplain habitat that will be important for juvenile fish rearing. Slow productive off-channel habitats will warm and improve nursery fish habitat along the UCC reach. At Sawmill, excavation (i.e., at R-5) would create new floodplains that would begin to inundate at discharges near 600 cfs. Section 5provides additional discussion of this topic.

5.4.2.3 Existing Flow Patterns, Surface and Subsurface Flow Characteristics

The Trinity River is highly regulated through both ESLs, particularly under base-flow conditions. The Project would not change the flow patterns in the river within or adjacent to the ESLs but would substantially increase floodplain inundation during periods of juvenile fish inhabitation. The complexity of flow would also be added in the new meander bend (IC-5 at Sawmill) and construction of side channels (IC-2 and IC-3). Where SLJs and other large wood structures are placed, flow complexity would increase and immediate refuge habitat would be created for many fish species. Near wood installation, flow variability would be increased through all river depths.

5.4.2.4 Flood Storage (Detention Storage)

The existing topographic setting of the ESLs is not conducive to flood storage. However, the reduction in the floodplain elevations would increase the hyporheic connection between the river and shallow groundwater. Because overbank and sub-surface flows would be increased in the area, it is expected that native riparian plants will quickly recruit to the area.

5.4.2.5 Aggradation or Degradation of the Channel

The Project is meant to reestablish morphological processes that would enhance opportunities for aggradation and degradation of riverbank features to emulate the processes found on an unregulated river. River and in-channel activities are intended to jumpstart natural processes and provide the river with the means to continue this over time under the TRRP-managed flow regime.

5.4.3 Estimation of the Magnitude and Spatial Extent of Potential Off-Site Changes

5.4.3.1 Changes that Influence Other Parts of the River System

The Project is likely to affect downstream areas of the river in several ways. The short-term episodic increases in turbidity related to in-river construction and access activities would be noticeable for periods of time ranging from several hours to several days, even though the turbidity levels would not exceed the permit thresholds. High flows following construction are expected to remobilize floodplain material to depositional features downstream and to increase the meander's complexity. Over time, wood structures will degrade and offer a source of large wood to areas downstream. The modification of hydraulic conditions within the ESLs could have an effect on the channel downstream while the channel adjusts to the new configuration. During this period, alluvial material may mobilize and deposit along the downstream reach.

5.4.3.2 The Range of Circumstances under which Off-site Changes Might Occur

During and after Project construction and after flooding events, increases in turbidity may be visible for several miles for short periods of time before dilution and mixing occur downstream of Canyon Creek, a perennial stream that enters the river about 5 miles below the ESL. The downstream mobilization of large wood could occur periodically for several years; the distance downstream would vary considerably depending on the duration and magnitude of flood events.

5.4.3.3 The Likelihood that Predicted Changes will be Realized

The predicted changes for the Project will likely be realized. Recent TRRP projects intended to restore alluvial processes and benefit anadromous fish habitat in the mainstem Trinity River have resulted in similar changes predicted for this Project. However, this Project is unique in that more scour and floodplain deposition are expected. This Project truly anticipates that floodplain conditions will be created and maintained by Trinity River flows.

5.4.3.4 Specify Processes Involved, Such as Water and Sediment, and the Movement of Nutrients

The construction of a river meander and expansion of inundated floodplain conditions, coupled with placement of large wood throughout the ESLs, will have effects on how water, sediment (including organic sediment), and nutrient-cycling processes occur. The Project is expected to have a beneficial effect on the Trinity River's ORV in both the short and long term.

6 Analysis of Effects to Water Quality

6.1 Relevant Water Quality Parameters

Due to the very low background concentrations during the summer, turbidity levels immediately downstream of the most carefully planned and implemented in-channel restoration activities would likely be increased by more than 20% above background levels, and short-term plumes extending downstream of restoration activities would be visible. However, turbidity levels will not exceed 20 NTUs at 500 ft downstream of the Project (as permitted by the Water Quality Control Board). Consequently, turbidity would remain well below levels detrimental to aquatic life and levels experienced during natural winter storm runoff.

Over the years, the TRRP has increasingly conducted in-channel work to enhance aquatic habitat and create self-sustaining (functioning) conditions. Effective turbidity control measures would be incorporated to minimize turbidity impacts during construction. These include:

- Structural Containment – Use structures such as earth barriers, K-rail containment dams, and silt curtains to isolate turbid water from the active channel. These structures typically remain in place until the riverine features are fully excavated and graded.
- Processing – Gravel and cobbles excavated from alluvial deposits (e.g., floodplain, dredge tailings) are processed and, in some cases, washed to help maintain low turbidity levels associated with the placement of gravel and cobbles in or adjacent to the channel.
- Pace of Construction – Controlling the pace of in-channel excavation and placement of alluvial material ensures that sediment input into the water column is consistent with permit requirements. This method requires direct field observations and real-time turbidity construction monitoring.
- Flushing – Within structurally-contained areas, turbid water is flushed by allowing flow into the work area and regulating the outflow as a function of measured turbidity levels. Small weirs are used to adjust inflow and outflow rates to ensure that permit requirements are met.
- Channel Bottom Cleaning – This method entails removing silt- and clay-sized sediment from the channel bottom, typically by pumping or hand excavation. Turbid effluent water is pumped upslope to containment ponds or areas that are subsequently incorporated into site rehabilitation efforts.

7 Analysis of Effects to the Outstandingly Remarkable Value: The Anadromous Fishery

The Trinity River supports a number of native and non-native fish and other aquatic organisms. Before installing the TRD, the river provided habitat for numerous anadromous fish species, including Chinook salmon, coho salmon, steelhead trout, and Pacific lamprey. Since completion of the TRD, anadromous fish populations have decreased in abundance so that the TRRP is charged with the restoration of ecological river processes, and thereby, recovery of the Trinity River fishery. The anadromous fishery is the ORV identified in the Trinity River's 1981 WSR designation.

7.1 Water Temperature

Water temperature is one of the most important variables affecting salmonids and other aquatic organisms (Carter 2005). It influences feeding rates and growth, metabolism, development, the timing of migration, spawning and rearing, and food availability. Since the construction of the TRD, discharge from the Lewiston Dam has played an important role in regulating water temperatures in the Trinity River downstream. Depending on the type of water year and time of year, this effect diminishes to varying degrees with distance from Lewiston Dam. The Project is not intended to increase cold water adult fish refuge areas, but would substantially increase areas with shallow slow water. These locations will support juvenile salmonids that will benefit from warmer temperatures and higher growth rates.

The Project would include clearing and grading a number of activity areas, some of which have some riparian vegetation. Functionally, the existing riparian vegetation has little influence on water temperature through the reaches, but it does provide shaded riparian area habitat for aquatic organisms at isolated locations along the channel margin. While there would be some localized effects on water temperature because of clearing and grading activities, the main channel's realignment (IC-5 at Sawmill) and lowering of the floodplains (R-1 through R-4 at UCC and R-1 through R-7 at Sawmill) are expected to help establish and recruit riparian vegetation. Revegetation efforts associated with these activities would increase functional riparian vegetation, which in turn would increase shade and improve habitat for juvenile salmonids along the margins of these features under a wide range of flow conditions, including those that may occur during late-summer releases when air temperatures are high.

7.2 Water Quality (Turbidity, Sediment, and Pollutants)

The activities incorporated into the Project have been developed to meet the objectives described in the EA/IS and are intended to reestablish functional fluvial and alluvial processes in, and to some extent downstream, of the ESLs. In the following discussion, the Project's environmental consequences on water quality and the associated beneficial uses of the Trinity River focus on three water quality parameters: turbidity, sediment, and pollutants.

Due to the extremely low background turbidity levels during low-flow construction conditions, maintenance of turbidity levels to within 20% of background is generally not feasible, even with the environmental commitments (see Appendix E). However, short-term increases in turbidity levels that occur during permitted restoration activities are not considered biologically detrimental to aquatic organisms because the duration of these increased levels is typically several hours, and fish can move away from the activity area. Monitoring turbidity increases during the implementation of previous TRRP projects has shown that periods of increased turbidity are generally less than 24 hours at monitoring points located 500 ft downstream, and beneficial uses continued to be protected. Also, the quantity of fine sediment introduced to the river during activities at low flows is typically small and restricted with respect to timing and location; furthermore, not all activity areas are experiencing disturbance simultaneously.

The consequences of the Project on water quality associated with in-channel activities and the lowering of floodplains would change the location and nature of sediment in and adjacent to the low-flow channel. The placement of spawning-sized gravel at river crossings necessary to access the activity areas would be sized to ensure that it would mobilize during high flows in the first year following construction. The extent of downstream sedimentation would be a function of the size and mobility of the substrate. For example, fine-grained sediments such as silts and clays can be carried several thousand ft downstream of construction zones, while larger-sized sediments such as coarse sands and gravels tend to drop out of the water column within several ft of the construction zone. The Project's activities could collectively result in short-term increases in turbidity and suspended solid concentrations in the water column that could potentially violate the Basin Plan objectives for turbidity in the Trinity River.

In conjunction with the construction of R and IC activity areas, channel crossings would be used at I-X at both UCC and Sawmill using temporary fords. Placement of alluvial fill materials could temporarily increase turbidity and suspended materials during and immediately following crossing construction. Removal and distribution of alluvial materials upon deconstruction of the low-flow channel crossings could also increase turbidity and suspended materials during and immediately following excavation.

As described in the EA/IS and Appendix E, Environmental Commitments, the environmental commitments and design measures would be incorporated into the construction contract to minimize the potential for pollutants (e.g., hydraulic fluid) to leak into the river at locations where equipment is working in the water. These commitments and measures would be adequate to protect the beneficial uses of the Trinity River.

The activities incorporated into the UCC and Sawmill project are intended to reconnect the existing floodplains with the channel, which would result in shallow depths and slow velocities across a broader range of stream flows than those currently being provided. Other activities incorporated into the Project would increase the channel's complexity to increase habitat for all life stages. The water temperature in the river below the Lewiston Dam is heavily influenced by flow releases from the dam and input from tributaries downstream.

The activities described in Yurok Tribe Fisheries et al. 2023; McBain Associates 2023would temporarily increase turbidity and total suspended solids in the Trinity River. Incorporating the environmental commitments listed Appendix E, Environmental Commitments, with the design elements and construction criteria (e.g., in-river construction, water pollution prevention, and construction schedules) is intended to limit turbidity in the Trinity River.

7.3 Aquatic and Riparian Habitat

The Project is designed to restore the Trinity River function within the UCC site and the Sawmill site. At the Sawmill site, modeling showed increases in salmonid fry capacity by up to 134% under low-flow conditions (450 cfs) and up to 64% under moderate flows (1,000 cfs). Pre-smolt capacity would increase by 124% at low-flow conditions and by 60% at moderate-flow conditions (1,000 cfs). At the UCC, modeling showed increases in salmonid fry capacity site by up to 65% under low-flow conditions (450 cfs) and up to 111% under moderate flows (1,000 cfs). Pre-smolt capacity would increase by 61% at low-flow conditions and by 77% at moderate-flow conditions (1,000 cfs). About 1.7 ac of meander channel at Sawmill would be constructed, and 3.98 ac of the floodplain would be enhanced and/or improved because of the proposed action. At UCC, 15.8 ac of new floodplain would be enhanced and improved.

The Project would result in the localized loss of vegetation and general disturbance to the bed and banks of the Trinity River. Removal of vegetation and soil could accelerate erosion processes in the ESLs and increase sediment delivery potential to the Trinity River.

The Project’s rehabilitation activities are intended to enhance the wetland, riverine, and upland areas for wildlife and fish. The Project would convert almost 20 ac of non-riparian areas (e.g., terrace deposits) to floodplain and riparian habitat within a 3- to 5-year post-project time frame. Temporary disturbance of these habitats in the ESLs during project implementation would occur in conjunction with vegetation removal, grading, and other construction activities.

The Project is intended to reduce the existing populations of noxious weeds and invasive plant species through grading, clearing, and revegetation activities and periodic flooding of newly constructed floodplains. During the rehabilitation activities, control measures for invasive plants (e.g., star thistle and Himalayan blackberry), including weed-free erosion control materials and washing equipment, would be implemented per environmental commitment EC-VW-9 (see Table E-1 in Appendix E, Environmental Commitments) to prevent the spread of noxious weeds in the ESLs.

Some trees and downed logs would be reused onsite to establish wood jams and structures along the river. Riparian and wetland habitats would be protected outside the activity areas and clearly marked for avoidance in accordance with EC-VW-1[4.7-1a] outlined in Appendix E, Environmental Commitments. Special-status plants have not been found in the ESLs and would not be affected by the rehabilitation activities.

Implementation of the Project (i.e., impacts associated with work in the proposed activity areas) would potentially result in total project impacts on riparian habitat. Because of the restoration nature of the Project, both riparian project potential impacts (to riparian function) and temporary potential impacts (associated with access and C areas) would result in temporary potential riparian impacts. Impacted riparian habitat is expected to recover over time.

Construction activities associated with the Project would result in temporary impacts to waters under the jurisdiction of the US Army Corps of Engineers (jurisdictional waters), which include the Trinity River and the wetlands and streams in the ESLs. Figures 8 and 9 of the EA/IS illustrates the size and location of waters of the United States that would be affected by the Project. These potential impacts would not be permanent. However, because of the nature of the Project, it is anticipated that there would be a net increase in jurisdictional waters within 5 to 10 years after implementing the Project.

As described in the EA/IS, both planting and natural recruitment of native species are planned for the revegetation of the riparian and upland areas under the Project. These revegetation efforts would follow TRRP’s Riparian Revegetation and Monitoring Plan Trinity River Restoration Program (TRRP) 2022 and would result in the reestablishment of native vegetation in all areas where project disturbance has occurred.

Reconstruction of the Sawmill floodplain would result in the potential removal of approximately 5.4 ac of riparian vegetation. Reconstruction of the UCC floodplain would result in the potential removal of about 4.4 ac of riparian vegetation. Existing vegetation at or below the final constructed elevation will remain in place. Post-project, the site will inundate frequently, and the 20-ac floodplain will be covered with water until July during the first few years after construction, until the river reconfigures the site. The water table will be close to the surface and will support riparian vegetation as the floodplain surface elevation will be less than 1 ft above the water surface elevation at 300 cfs at Sawmill and 450 cfs at UCC.

The removal of mine tailings and subsequent reconstruction of the project site would result in several new landforms that require revegetation. Revegetation would consist of live-stakes of willows, cottonwoods, and red osier dogwoods. Oregon ash would also be planted in select areas. Upland landforms would be planted with species suited to dry, hot conditions. Willow clumps (rooted clumps of willow excavated from the project site) would be installed along wood features designed to resist erosion, and cottonwood poles would be installed in deep layers of fill material used to construct the upland plug. In addition to the woody plantings, native herbaceous plants (forbs and graminoids) would be seeded to provide additional native plant diversity and cover, and prevent invasive, exotic species colonization. An upland seed mix and a riparian seed mix for the floodplain would be used. This revegetation design represents the surrounding vegetation communities and provides a buffer to complement and protect remnant riparian vegetation. The Project would meet the TRRP's objective of no net loss of riparian habitat in the long term.

The revegetation design prescribes revegetating with tree and shrub plantings and seeding. Revegetation would be achieved using a combination of bareroot trees and shrubs, some nursery container stock, live cuttings, poles, and native seed (including acorns). Irrigation and mulch may be used to increase plant survival in the uplands. Plant installation would vary. Live-stakes and poles would also be installed during floodplain construction. Planting of bareroot and container stock would occur after construction during the dormant winter season. Seeding would occur in the fall and in late spring/early summer after flows subside on the floodplain.

Erosion and deposition of fine sediments associated with implementing the Project are expected to be localized and temporary. Some fine-textured sediment may settle near or on a spawning habitat located downstream of riverine activity areas, but this sediment is not expected to impair excavation or spawning activities. Excavation, grading, and coarse sediment addition within the channel would occur only during low-flow conditions between July 15 and October 15. After September 15, additional BMPs would be in place to minimize impacts to adult coho and Chinook salmon. In-river work, including the construction of temporary crossings, may temporarily displace adult salmonids using holding habitat within the ESL to other holding habitat either upstream or downstream of the Project reach due to transient turbidity and short-duration sediment plumes created by construction activity. Juvenile salmonids using this reach during this timeframe could also be temporarily displaced, or their social behavior could be temporarily disrupted due to increases in turbidity or suspended sediment. Even temporarily, behavioral disruption could result in some increased vulnerability to competitive interactions or predation for salmonids. These temporary impacts were anticipated and addressed in the August 2020 Trinity River Restoration Program Biological Opinion, which describes the implementation strategies and conservation measures that would be employed during the proposed TRRP construction of the UCC and Sawmill project.

National Marine Fisheries Service staff expect that all displaced juvenile fish, including coho salmon, would find suitable habitat in river reaches upstream or downstream of the Project reach because juvenile rearing habitat in the mainstem Trinity River is likely under-saturated during summer and fall months (National Marine Fisheries Service 2006). The construction period identified above would completely avoid the spawning period for coho salmon; therefore, direct impacts to adult coho salmon or their eggs/alevins (yolk-sac fry) would not occur.

A small, temporary, but uncertain level of stranding of coho salmon fry could occur on the newly constructed UCC and Sawmill inundation surfaces during rapidly receding flow periods in the winter and early spring. Although stranding of fry under such receding flood conditions occurs naturally, the constructed features could increase the potential for stranding. As fluvial channel migration occurs through these surfaces, the potential for fry stranding is expected to equilibrate to that of a natural stranding risk. Table G- 1 shows the estimated fry and pre-smolt holding capacity provided after implementation of the Project as flows increase through the Project reach.

Table G- 1. Estimated Fish Capacity (Total Number of Fish) for the UCC and Sawmill Rehabilitation Site at Existing and Design Conditions

Discharge	Existing Fry	Existing Pre-smolt	Design Fry[1]	Design Pre-smolt[1]	Percent Increase Fry	Percent Increase Pre-smolt
UCC						
450	3,970,000	1,150,000	6,540,000	1,850,000	65	61
770	3,590,000	1,150,000	7,330,000	2,020,000	104	76
950	3,490,000	1,160,000	7,370,000	2,060,000	111	78
1,000	3,430,000	1,150,000	7,230,000	2,040,000	111	77
1,300	3,420,000	1,190,000	6,910,000	2,030,000	102	71
1,500	3,420,000	1,210,000	6,820,000	2,030,000	99	68
2,000	3,650,000	1,320,000	7,620,000	2,230,000	109	69
2,500	3,990,000	1,480,000	8,310,000	2,470,000	108	67
3,000	4,510,000	1,690,000	9,310,000	2,810,000	106	66
3,500	5,250,000	1,960,000	10,610,000	3,190,000	102	63
6,000	9,620,000	3,460,000	15,390,000	5,280,000	60	53
8,300	12,640,000	4,530,000	18,750,000	6,950,000	48	53
11,000	15,190,000	5,470,000	21,510,000	8,460,000	42	55
300	1,676,768	389,172	3,879,281	878,288	131	126
450	1,600,622	384,406	3,738,039	861,660	134	124
600	2,536,371	572,420	4,139,701	908,794	63	59
1,000	2,531,965	598,519	4,149,888	957,434	64	60
2,000	3,397,739	832,829	4,897,431	1,196,896	44	44
3,000	4,251,898	1,061,367	5,471,906	1,419,987	29	34
4,000	5,047,290	1,270,915	6,028,648	1,639,854	19	29
6,000	5,847,239	1,563,749	6,977,424	2,024,188	19	29
8,500	7,567,890	34,320	7,754,113	2,363,514	2	16
11,500	8,694,809	2,439,361	8,741,553	2,692,826	1	10

[1]Design fry and pre-smolt capacity were determined using the 90% Design Report for UCC and the 60% Design Report for Sawmill.

As indicated in Table G- 1. Estimated Fish Capacity (Total Number of Fish) for the UCC and Sawmill Rehabilitation Site at Existing and Design Conditions, the Project would result in a large increase in fry and pre-smolt capacity in the Project reaches over a range of flows. These increases in capacity for extremely young fish can be critical for their survival. The Project is not expected to have a long-term effect on the amount or utility of holding habitat for adult salmonids. These beneficial effects would also apply to varying degrees to other aquatic organisms that use habitat in this reach.

7.3.1 Geomorphic Condition (Sediment Transport and Substrate Quality)

The UCC and Sawmill ESLs are characterized by a relatively wide alluvial valley bottom, relatively low water-surface slopes, low sinuosity, and simple channel geometry. The channel is almost exclusively single thread, with some evidence of riffles, bars, or similar topographic elements. Dredger tailing piles occupy up to 75% of that width and eliminate the river's ability to access most of the valley. Hydraulic mining caused significant aggradation, so the depth to bedrock is anticipated to be at least 10 ft or more. Flow velocities increase rapidly with discharge and greatly exceed the thresholds deemed to be suitable for rearing salmon (1–2 ft/s) throughout most of the channel. The flow remains mostly confined to the channel even at flows of 9,000 cfs due to confinement by the tailing piles on the right bank.

At the downstream end of the project site, UCC and Sawmill discharged millions of cubic yards of mining debris from hydraulic mining at the LaGrange Mine on Oregon Mountain over 60 years, ending in the 1930s. Massive aggradation during the period dominated by hydraulic mining was followed by large-scale dredge mining of the alluvial valley floor that continued into the 1940s. The channel and associated alluvial features of the Trinity River were dredged extensively, and the dredge tailing deposits are evident throughout the ESLs. Essentially, the floodplain soils in the area were removed by historical mining. Floodplain soils will be enhanced both via placement of materials during construction and as flows deposit sediment in newly lowered locations. The overall effects on river geomorphology would benefit aquatic resources and result in more natural alluvial processes that would increase the size, amount, and complexity of riverine features that support diverse aquatic habitats, as discussed in the EA/IS.

7.3.2 Substrate Quality

Project construction would directly amend the floodplain substrate as historically mined areas would receive fines and wood augmentation. In addition, enhanced post-project floodplain topography will encourage the deposition of fines in upslope areas and vegetation development. The resultant vegetation will provide cover for fish, future wood structures, and invertebrate production to the river and the benefit of fishery resources.

7.3.3 Nutrient Cycling

The addition of large wood structures and other organic materials on all disturbed areas would increase nutrient cycling (addition of organic material) throughout the ESLs. Placement of large wood structures and other organic materials (chips, slash) and their subsequent decomposition will encourage nutrient recycling as aquatic invertebrates, saprotrophic fungi, and detritivores such as bacteria directly consume dead wood. In turn, these organisms will release nutrients by converting them into other forms of organic matter that may then be consumed by other organisms.

7.3.4 Condition of Aquatic Invertebrate, Amphibian, and Mollusk Habitat

The meander complex, lowered floodplains, and wood structures all increase the complexity of habitat available to amphibian and aquatic invertebrate species, including mollusk beds.

7.3.5 Species Composition and Diversity

The Project is expected to increase species composition and diversity and habitat complexity in the project reach. Activities included under the proposed action are intended to benefit fisheries within the ESLs, and these benefits are expected to increase over time. While protecting high-quality holding and spawning habitat as discussed above and in greater detail in the EA/IS, in-channel activities would:

- Ensure that habitat availability increases as discharges rise above baseflow.
- Substantially increase rearing habitat capacity across the range of frequent discharges during the period when juvenile salmon are present in the river (350–4,000 cfs).
- Enhance existing native amphibian habitat.

- Create seasonal surface water connections to off-channel habitats.

7.4 Fish Species Population Conditions

7.4.1 Anadromous Salmonid Fish Species

Anadromous adult fish spawning success would be improved in several ways. R-1 through R-4 at UCC and R-1 through R-7 at Sawmill would be constructed to be inundated and function at flows ranging from about 350 cfs to more than 11,000 cfs and graded to ensure stranding does not occur. Activities associated with constructing these surfaces would also enhance the type and degree of connection to the mainstem at various flows. These activities are intended to expand the channel's surface area that could be inundated by reoccurring flows below the ordinary high-water mark (i.e., 6,000 cfs). Due to their low elevation and large width, the R area floodplains are expected to be depositional in some areas and experience scour in other areas. Deposition is expected to be the dominant geomorphic process in the upstream fourth of R-1 at UCC, whereas local scour, possibly involving the incision of new secondary channels, is more likely toward the downstream end. Overbank deposition is likely in R-3 and scour has the potential to occur due to head cutting at the upstream end through a portion of the bank that would be avoided during construction. R-2 could see increased fine sediment deposition while R-4 could see deposition at the mouth of the side channel which would result in the abandonment of the feature. The low elevation of the valley grade surface would also encourage rapid colonization of riparian vegetation. This would increase both trophic production and rearing habitat quality in the area.

The meander channel at Sawmill (IC-5) would increase the amount of substrate suitable for spawning and rearing habitat, as well pools used for adult holding habitat. Placement of wood structures near spawning habitat would provide extensive cover from predators for adult anadromous fish during spawning activities. The sequestration of fine sediments around various wood structures is also expected to reduce the amount of fine sediment available for deposition within spawning areas.

7.5 Resident Fish Species

The construction of a meandering main channel and reduction of floodplain elevations to increase timing and extent of inundation offer opportunities to increase the success of spawning and rearing of aquatic organisms, including fish and others (e.g., mussel beds). The placement of structured log jams and other large wood features throughout the ESLs are expected to benefit both anadromous and resident adult fish spawning, and juvenile fish rearing success in the project reaches.

7.6 Species Traditionally Used By, and Culturally Important to, Native Americans

The need to restore and maintain the natural production of anadromous fish in the mainstem Trinity River is derived in part from the federal government’s trust responsibility to protect the fishery resources of the region’s Indian tribes. The Trinity River Basin Fish and Wildlife Restoration Act of 1984 (Public Law 98-541) expressly acknowledges tribal interests in the basin’s fishery resources by declaring that the measure of successful restoration of the Trinity River fishery includes the “ability of dependent tribal…fisheries” to participate fully, through enhanced in-river “harvest opportunities, in the benefits of restoration.” In addition, the 1992 Central Valley Project Improvement Act specifically recognizes the federal trust responsibility regarding the Trinity River fishery. The Project could potentially affect anadromous fish, non-anadromous fish, water, wildlife, vegetation, and overall riverine health; these impacts, in turn, could affect tribal cultures and economics.

Salmon, steelhead, sturgeon, and lamprey that spawn in the Trinity River pass through the Hoopa Valley and Yurok Reservations and are harvested in tribal fisheries. The fishing traditions of these tribes stem from practices that far pre-date the arrival of non-Indians. Accordingly, when the federal government established what are today the Hoopa Valley and Yurok Indian Reservations on the Trinity and lower Klamath Rivers, it reserved for the benefit of the Indian tribes of those reservations a right to the fish resources in the rivers running through them. The YT and HVT's federally reserved fishing rights entitle them to take fish for ceremonial, subsistence, and commercial purposes.

While the focus of the legal history surrounding Indian rights to resources has concentrated on water and fisheries, other resources, such as wildlife and vegetation, are also extremely important to the tribes, and the tribes have assessed that these resources are no less reserved. In the case of the HVT and YT, the decline in the health of the region's rivers has limited the availability of grasses and other plants important to traditional basketry, art, and medicine. Thus, while anadromous fish are the focus of the TRRP, other trust assets, such as vegetation, are embodied in the federal government's trust responsibility and, accordingly, need to be considered in the decision-making process. Table 7.17-1 of the Master EIR/EA (Regional Water Board and Reclamation 2009) lists 10 aquatic resources (fish species) and 12 terrestrial resources (e.g., willows, cottonwoods, wild grape, bulrush) that are considered trust assets protected on behalf of the Tribes of the Klamath/Trinity Region. These species would generally benefit from restoring historic floodplain functions as this Project is intended to do.

Implementation of the UCC and Sawmill project would continue to support tribal trust assets. The short-term impacts described in sections of the EA/IS pertaining to geology, fluvial geomorphology, soils, water quality, fishery resources, vegetation, wildlife, and wetlands would occur if the Project is implemented. These impacts are expected to be short-term and outweighed by the overall benefits to Tribal trust assets gained through the implementation of the overall TRRP.

8 Period Over Which Effects are Likely to Occur

The proposed Project is expected to begin achieving its objectives immediately following Project implementation and continue to provide benefits to the habitat within the project reach and downstream well into the future.

During Project implementation, insignificant amounts of turbidity are expected to occur in conjunction with in-channel and riverine activities due to excavation and placement of alluvial materials. These effects are expected to be ephemeral and would generally be confined to the area within and adjacent to the activity areas. Directly following implementation, the constructed meander complex and side channel within the Sawmill ESL would provide adult and juvenile salmonids and other aquatic organisms habitat. The first significant precipitation event following implementation is when stream flow, and therefore flow patterns, will be increased enough to inundate the expanded floodplain surfaces, providing refugia habitat for juvenile salmonids.

9 Comparison of Project Analyses to Management Goals

The BLM's Redding Field Office manages federal lands in the Trinity River Basin in accordance with its 1993 RMP and ROD (BLM 1993). The Trinity Management Area section of the RMP discusses the general condition of natural resources in the plan area and prescribes appropriate land use management for lands within the plan's jurisdiction, including BLM-managed lands at the UCC and Sawmill rehabilitation sites. As part of its decision-making process, BLM must evaluate the consistency of the proposed action at UCC and Sawmill with the RMP, as amended.

In addition to the BLM RMP, the Wild and Scenic River Implementation Guide of July 31, 1996, cites the following pertinent (paraphrased) goals, both of which are met by implementation of the Project's activities:

- Protect the river's free-flowing character and protect or enhance its ORVs, and
- Maintain or improve water quality and quantity to meet fish habitat requirements.

10 Section 7 Determination

The Project is a habitat restoration project located primarily on lands managed by BLM. An EA/IS was prepared by two federal agency co-leads, TRRP and BLM. The California Regional Water Quality Control Board (North Coast Region) serves as state lead for compliance with CEQA. Included in the EA/IS is an analysis of the UCC and Sawmill Project's consistency with the WSRA.

Based on the EA/IS findings and considering the direction established by the BLM RMP, the US Fish and Wildlife Service has determined that the UCC and Sawmill Project would have minimal short-term adverse effects related to turbidity and immediate and long-term benefits to anadromous fish and their habitat. There will be no direct and adverse effects on free-flowing conditions, water quality, or the ORV of anadromous fisheries habitat.

The scale of the UCC and Sawmill Project is small when viewed at the watershed scale. It is an element of the TRRP's program to improve habitat for anadromous salmonids and other aquatic and riparian-dependent organisms within the 40-mile section of the Trinity River downstream of the Lewiston Dam. Scenic values would not be degraded by the activities associated with the Project; Section 3.4 provides additional information on visual resources and aesthetics. In addition, the proposed meander bend at Sawmill, lowered floodplains, side channels, wetlands, and wood structures all increase the complexity of habitat available to riparian-dependent avian species.

Implementation of the UCC and Sawmill project provides a net effect of protecting and enhancing river values by restoring the river's natural characteristics, including free-flowing conditions with improved floodplain accessibility, and improving habitat quality for fish and other aquatic organisms. We have determined that there would be no direct and adverse effect on the river's free-flowing condition, water quality, or anadromous fishery ORV.

Jennifer Mata Date
Redding Field Manager
Bureau of Land Management

11 References

McBain Associates. December 15, 2023 2023. *Upper Conner Creek Rehabilitation Site 90% Design Report.* Trinity River Restoration Program.

Trinity River Restoration Program (TRRP). 2022. *Riparian Revegetation and Monitoring Plan.* (Weaverville, CA). https://www.trrp.net/library/document/?id=2580.

Yurok Tribe Fisheries, California Department of Water Resources, and California Department of Fish and Game. October 2023. *Draft 60% Design Report Sawmill Gravel Processing Site Rehabilitation Project.* Trinity River Restoration Program.

Appendix H - Public Scoping Materials

1 Introduction

Trinity River Restoration Program (TRRP) is proposing channel rehabilitation at two sites: Upper Conner Creek and Sawmill. On December 4, 2023, TRRP released a public scoping announcement to request input from the public on the proposal for two new channel rehabilitation sites that will be analyzed in an Environmental Assessment (Figure H-1, Figure H-2, and Figure H-3). The public scoping period was open from December 4 to 17, 2023, and the public was invited to provide comments by mail, e-mail, or in person to TRRP staff. A public scoping meeting was not held for the Upper Conner Creek and Sawmill channel rehabilitation proposal.

At the onset of the public scoping period, notices informing the public of the intent to begin the environmental review process were posted on the TRRP website and at the TRRP Weaverville office. Hardcopy scoping notices were also mailed and e-mailed to local landowners and interest groups.

The TRRP provided the scoping flyer on its website to outline the proposed project and receive public input (. The Scoping flyer is provided below. This appendix provides the scoping material and results of the public scoping phase of the Environmental Assessment.

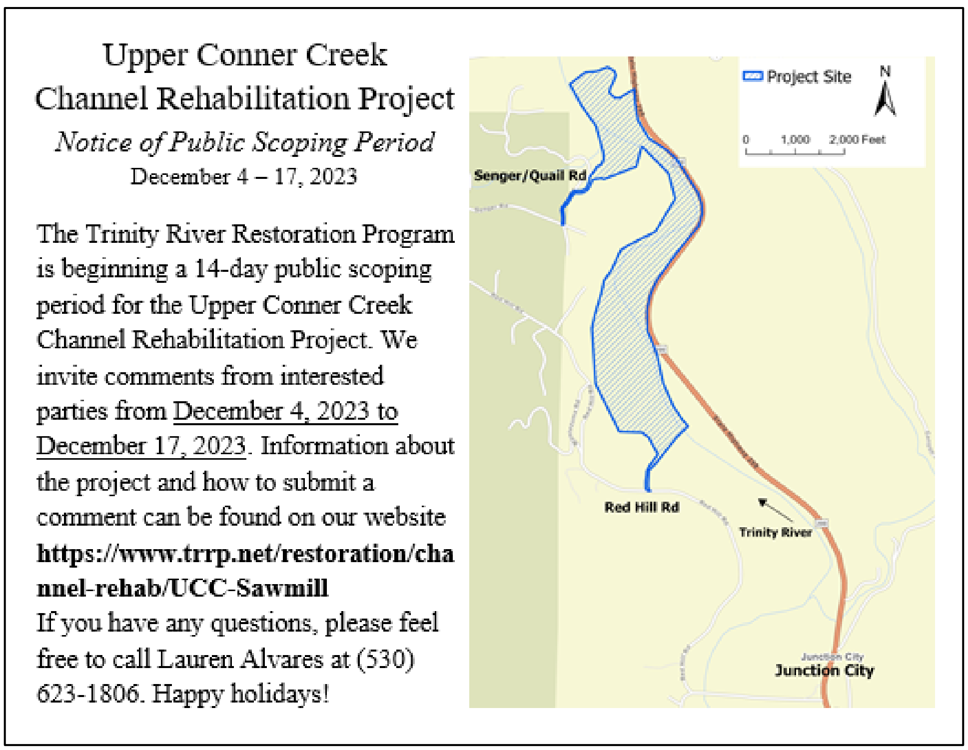

Figure H-1. TRRP Public scoping announcement for the Upper Conner Creek Channel Rehabilitation Project, December 4 to December 17, 2023.

Sawmill Channel Rehabilitation Project

Notice of Public Scoping Period

December 4 – 17, 2023

The Trinity River Restoration Program is beginning a 14-day public scoping period for the Sawmill Channel Rehabilitation Project. We invite comments from interested parties from December 4, 2023 to December 17, 2023. Information about the project and how to submit a comment can be found on our website **https://www.trrp.net/restoration/channel-rehab/UCC-Sawmill**
If you have any questions please feel free to call Lauren Alvares at (530) 623-1806. Happy holidays!

Figure H-2. TRRP public scoping announcement for the Sawmill Channel Rehabilitation Project, December 14 to December 17.

BUREAU OF RECLAMATION

Public Scoping Period

Proposed Upper Conner Creek and Sawmill Channel Rehabilitation Projects

The Trinity River Restoration Program, Bureau of Reclamation, and the Bureau of Land Management are beginning a 14-day public scoping period for the Upper Conner Creek (Junction City) and Sawmill (Lewiston) Channel Rehabilitation Projects. The TRRP encourages community members to provide input on the proposed projects during the public scoping period listed below.

Scoping Period

December 4 - December 17, 2023

Visit the TRRP website for details about the project, access the document and provide comment: **www.trrp.net/UCC-Sawmill**

Figure H-3. TRRP Public scoping period announcement for the proposed Upper Conner Creek and the Sawmill Channel Rehabilitation projects.

2 Scoping Results

During public scoping for this project, TRRP received four email comment submissions. The comment submissions were read for substantive comments about the proposed project. Substantive comments for each individual or group of commenters are summarized in Table G-1.

Table G-1. Summary of Scoping Comments by individual or group of commenters

Commenter or Group of Commenters	Comment Topic	Specific Comment or Question	Section of EA where comment is addressed
Fornaciari, Kathy & Michael	Noise and dust, property value	Our property borders the proposed work site [Upper Conner Creek]. Now that we are entering our retired twilight years, we will be subject to constant construction noise from heavy equipment, the back up noise from heavy equipment, and the noise from trucks being loaded and unloaded with rock and dirt… Speaking of construction zone, our property value will plummet. Who would want to purchase a piece of property that is bordering constant noise and dust from all the equipment.	Sections 2.1.1.4 and 3.8
Fornaciari, Kathy & Michael	Project duration	He could not truthfully tell us how long this project is scheduled. We may be living next to a construction zone for years. As long as TRRP is receiving funding, this will be a non-ending project.	Section 2.1.1.4
Fornaciari, Kathy & Michael	Visual resource, property value	There is a plan to put a seventeen foot wall of dirt material ... on our property line. My question is why is this wall being built right next to us when there is ample space in the gravel pit. Again, our property value will go down, knowing you are viewing this massive wall.	Section 3.4
Fornaciari, Kathy & Michael	Pool filling	Nature is going to deposit that overburden which is being removed, back in the same space that the TRRP is removing … If this proposed project continues, it will silt in the salmon holding holes below the Junction City Campground ...More holes are needed for the fish, not less.	Section 3.12
Nor Rel Muk Wintu Nation	Tribe Recognition/inclusion	The Tribe respectfully requests to be included on the Upper Conner Creek restoration and the Sawmill Gravel Rehabilitation project in Lewiston. The Upper Conner Creek project does fall within a NRMWN reservation on the south side of the river. This was revealed to TRRP and Mike Dixon at our last meeting. The TRRP director, Mike Dixon, has not been inclusive to the nor Rel Muk Wintu nation or the Tsnugwe and has not followed through with his words spoken to the Tribe. We have had several meetings with Mike on this topic – equity and inclusion of the Tribes whose projects the TRRP falls within. He has stated that he does not have to work with State Recognized Tribes or nonfederal recognized Tribes.	Section 3.5

Commenter or Group of Commenters	Comment Topic	Specific Comment or Question	Section of EA where comment is addressed
Olson, Dennis	Safety/Roads	As far as you working in Junction City and running trucks on Red Hill Road we don't want the trucks running pass the school and disturbing the kids trying to get a education and destroying the road anymore than it already is	Section 2.1.1.4
Olson, Dennis	Fisheries	I was a guide on this river for years and have given up along with a lot of local Business because the fish are gone, and yes I have talked to a few of you and you all say the same thing, it's my job and the fish will come back...well so far your job has cost me mine and a lot of other people in business and the fish won't come back when you blow out the reds with high water releases	Section 3.12
Olson, Dennis	Dam releases	if you people want to play GOD then as far as the water releases go....what ever comes in the lake that is what you release into the river..that way we could have a full lake again and the river will be like before dam days and maybe just maybe we can get the fish back	Section 3.10
Ulrich, Donna & Larry	In favor of project	We live on the coast but have a house in Junction City that abuts Conner Creek. For years we have heard that it does not flow 'directly' into the Trinity because of miners' tailings and adverse stream flows. We are in favor of this project and hope that someday fish will return to Conner Creek. We occasionally hear a kingfisher on Conner Creek; that gives us hope that at least part of the ecosystem is intact.	Sections 3.12 and 3.13

Appendix I - Upper Conner Creek Project Details

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List of Tables

Abbreviations and Acronyms

A	access road
BLM	Bureau of Land Management
C	contractor use
cfs	cubic feet per second
CGC	clean gravel and cobble
cy	cubic yards
EA/IS	Environmental Assessment/Initial Study
EIR	Environmental Impact Report
ESL	environmental study limit
FEMA	Federal Emergency Management Agency
ft	feet
ft^2	square feet
HVT	Hoopa Valley Tribe
IC	in-channel
in	inches
LAM	large amplitude meander
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
PR	pit-run
R	riverine
Reclamation	Bureau of Reclamation
Regional Water Board	North Coast Regional Water Quality Control Board
SLJ	structured log jams
TRRP	Trinity River Restoration Program
U	upland
VE	value engineering
WP	wood placement
WR	wood racking feature
WSE	water surface elevation

1. Design Context

The environmental conditions and highly modified nature of aquatic, riparian, and upland habitat within the Upper Conner Creek environmental study limit[1] (ESL) presents a unique opportunity to reshape the channel geometry in this reach of the Trinity River, increase floodplain connectivity, reintroduce large wood features, and increase the overall complexity and functionality of the habitat for fish and wildlife species.

The Upper Conner Creek project design incorporates input from an independent value engineering (VE) study and numerous consultations between the Trinity River Restoration Program (TRRP) and other design team members. The Hoopa Valley Tribe (HVT) Design Group prepared a design report that incorporated input from consultants and the TRRP design team into the rehabilitation site's design (HVT 2023). The design report includes existing conditions at the project site as well as an evaluation of future desired conditions. Copies of the VE study and Design reports are available on the TRRP data portal at http://odp.trrp.net/. The design allows for immediate and dramatic improvements in juvenile salmonid habitat by introducing large areas with suitable flow depth, velocity, and cover. Riparian ecosystem health and floodplain connectivity are addressed throughout the project site. The design is intended to stimulate geomorphic processes that would drive the evolution of a structurally diverse floodplain landscape that offers a wide range of habitats and hydraulic conditions.

The proposed Upper Conner Creek project relies on improving floodplain connectivity, as well as coarse sediment additions and large wood features. The magnitude of the disturbance to the site from historical gold mining cannot be overstated. Mining debris washed off the hillslope during upslope hydraulic mining burying the historical valley bottom, and subsequent dredging coupled with fluvial incision left a narrow, canal-like channel with almost no functional floodplain area. The result a pronounced dip in rearing habitat capacity at flows between 450 cubic feet per second (cfs) and 1,800 cfs.

The Upper Conner Creek project design incorporates elements of the stage-eight restoration concept described by Cluer and Thorne (2013) consisting of an inset floodplain within a broader valley that has the second-highest level of ecological benefits after a “Stage-0” approach. The stage-eight restoration approach focuses on increasing floodplain connectivity to contemporary flows, adding large wood features, and creating abundant habitat features. The aim is to create a valley reach with abundant roughness elements that promote multi-channel morphology and spreads baseflows over the valley. The stage-eight concept has been implemented at various projects in the Pacific Northwest by creating a geomorphic grade surface that spans the valley width and has a longitudinal slope defined by the elevation of hydraulic controls at the upstream and downstream ends of the project reach (Powers et al. 2019). This approach is well-suited to low-slope areas where valley and floodplain connectivity can be restored to promote longitudinal and lateral sediment deposition. The Upper Conner Creek project site is well-suited to this approach due to its low slope, wide valley (accessible with tailings removal), and stable geomorphic control near the Upper Conner Creek confluence. However, the necessity to maintain boat passage precludes implementing a true stage-zero design, so the final design for the project incorporates elements of a large amplitude meander (LAM) rehabilitation design focused on increasing sinuosity through the reach by

[1] The ESL is the anticipated geographic limit of project activities, with a buffer applied for the purposes of resource identification and associated impact analyses. In addition to in-river rehabilitation/construction areas, project activity areas include upland work areas, contractor use (i.e., staging) areas, unpaved access routes, and locations of pre-construction vegetation removal and other disturbances necessary to facilitate work activities. The buffer is sized appropriately for local conditions based on data available at the time of its development, including wetland habitat and wildlife surveys, information from previously prepared cultural resource inventory reports, etc.

extending the length of the main channel. The LAM rehabilitation design for the Upper Conner Creek project includes side channel and high-flow channel creation through the existing tailings ponds as well as extensive tailings lowering to encourage riparian growth.

In addition to significantly increasing juvenile habitat availability at flows typical of the winter fry-rearing period, the Upper Conner Creek project design is intended to stimulate geomorphic processes that would drive the evolution of a structurally diverse floodplain landscape that offers a wide range of habitats and hydraulic conditions. As discharges increase to magnitudes capable of transporting appreciable volumes of sediment, flow divergence in the valley grade area is expected to result in the deposition of sediment and woody debris in some floodplain locations. At the same time, overbank flows are expected to become concentrated in specific areas, leading to localized scour. When coupled with aggradation within the constructed channel, these processes have the potential to produce avulsions and the incision of new channels into the floodplain surface. In summary, the designed low-flow channel is not intended to be a stable or static feature. Temporary effects on low-flow navigation at certain times of the year are possible, depending on geomorphic evolution.

2. Design Objectives

The TRRP identified the Upper Conner Creek site as having high potential for rapid and dramatic improvement in juvenile salmonid rearing habitat. The purpose of the project is to advance one of the primary TRRP objectives, which is to mechanically reshape and scale the current channel form to interact with the contemporary flow regime, reestablishing physical processes that would create and maintain fish habitat.

The general project objectives are to allow for immediate and notable improvements in salmonid habitat for all life stages by creating large areas with suitable flow depth, velocity, and cover. The project site is located approximately 1.5 miles west of Junction City, California, below the Canyon Creek confluence within the North Fork Reach (River Mile [RM] 79.3 to RM 72.2) of the mainstem Trinity River. Previous restoration efforts have occurred at the upstream and downstream end of the 2023 Upper Conner Creek ESL, including the Hocker Flat Channel Rehabilitation Site constructed upstream in 2005 and the Conner Creek Channel Rehabilitation Site constructed downstream in 2006. Following implementation, monitoring efforts determined that the lowered surfaces were not inundating frequently enough to provide significant increases in juvenile winter rearing habitat under average river conditions. Thus, the Design Workgroup has concluded that surfaces should be lowered to inundate at flows that occur on a more frequent basis (between 500 cfs and 4,000 cfs) since the originally-constructed surfaces were designed to inundate at thresholds higher than most flows that have occurred in the past 17 years.

The specific design objectives are as follows.

2.1 Physical (Geomorphic/Flow)

- Promote dynamic river processes (scour/deposition, width changes, lateral migration, sinuosity).
- Preserve alluvial potential of reach. Avoid armoring elements, such as ballast material using cobble or boulders greater than six inches (in) and large wood pilings.
- Promote fine sediment deposition on floodplain and low bench surfaces.

- Utilize mainstem, tributary, valley wall water sources, and perched groundwater to reduce excavation to develop functional floodplains capable of natural riparian recruitment, as well as benefit natural and constructed off-channel habitats.
- Reduce wood storage deficit (dynamic wood structures and standing inventory).
- Reconnect and reinvigorate abandoned floodplains.
- Preserve bed complexity resulting from bedrock connections.

2.2 Biological

- Increase and sustain fry rearing habitat area across a range of flows between January 1–April 30.
- Increase lateral and longitudinal connectivity of fry/juvenile rearing habitat (January 1–April 30) and pre-smolt/smolt habitat (April 1–June 30).
- Increase area of vegetated surfaces experiencing a continuous inundation duration of 14 days or more during normal and wetter years for fry/juvenile rearing (January 1–April 30).
- Increase area of vegetated surfaces experiencing continuous inundation duration of 14 days or more during normal and wetter years for pre-smolt and smolt rearing (April 1–May 31).
- Enhance existing good amphibian habitat (i.e., facilitate local warming in channel margin habitats to improve existing populations and breeding use).

2.3 Riparian

- Preserve patchy existing multi-story riparian vegetation and cottonwoods.
- Increase surfaces providing more than 21 days of moist soils within 0.85 feet (ft) of the ground surface during seed dispersal (April 1–June 30) in normal and wetter years.
- Surfaces for natural riparian regeneration, especially near local cottonwood seed sources. Surfaces meeting the flow duration criteria would inundate at flows ranging from approximately 2,200 cfs to 3,500 cfs.
- Revegetate constructed floodplains and benches with native woody riparian species, conifers, and understory species.

3. Design Elements

This section describes the discrete activity areas incorporated into the Proposed Action. The activities proposed for these areas are based on those described and analyzed in Section 2.3.2 of the Master Environmental Impact Report (EIR)[2] (North Coast Regional Water Quality Control Board [Regional Water Board] and Bureau of Reclamation [Reclamation] 2009). Figure 2 of the Environmental Assessment/Initial Study (EA/IS) for the Upper Conner Creek project shows the locations where design elements are proposed and where rehabilitation activities would occur.

[2] The 2009 Master EIR can be found at https://www.trrp.net/library/document/?id=476.

Activity areas identified:

- R – Riverine (riparian) activity areas (floodplain, side channel)[3]
- IC – In-channel activity areas (riffles, medial bars, etc.)
- U – Upland activity areas (spoils, piles)
- SLJ – Structured log jam
- WP – Wood placement
- WR – Wood racking feature
- C – Contractor use area (site access, staging)
- A – Access roads

The depicted activity areas cover the maximum range of work that might be completed (the worst-case scenario). The actual disturbance footprint would typically be smaller than that depicted in the EA/IS figures. In support of the construction process, temporary access routes and stream crossings would be used. Structured log jams (SLJs), wood racking (WR), and wood placement (WP) are also included as discrete activity areas, although they may coincide with other riverine and in-channel activity areas. In addition, multiple contractor use areas connecting activity areas would allow the contractor the flexibility to choose where and how it would complete work in the most efficient and least impactful manner based on real-time conditions (e.g., to avoid nesting birds or previously planted areas). Activities in riverine and in-channel areas would typically occur during the in-channel construction window authorized by the US Fish and Wildlife Service, the National Marine Fisheries Service (NMFS), and the Regional Water Board[4].

Riverine areas are labeled with an R preceding the site number (e.g., R-1), upland areas are labeled with a U (e.g., U-1), in-channel work areas are labeled with an IC (e.g., IC-1), construction staging/contractor use areas are labeled with a C (e.g., C-1), access roads are labeled with an A, structured log jams are labeled with an SLJ, wood placement areas are labeled with a WP, and wood racking features with a WR. These labels are used throughout this appendix.

3.1 Riverine Construction – Lowered Floodplains

Four lowered floodplains (R-1, R-2, R-3, and R-4) are separate sections of a single larger valley grade concept that is the foundation for stage-eight restoration design; these floodplains would be constructed to be inundated and function at flows ranging from about 500 cfs to more than 3,500 cfs. Activities associated with constructing these surfaces would also enhance the type and degree of connection to the mainstem at various flows. These activities are intended to expand the channel's surface area that could be inundated by reoccurring flows below the ordinary high-water mark (i.e., 3,500 cfs). Vegetation would be cleared as necessary, and earth would be excavated to meet design elevations for periodic inundation. Figure 2 of the Upper Conner Creek Project EA/IS shows the proposed activities at each of the riverine construction areas.

[3] The 90% Design Report (HVT and McBain and Associates 2023) identifies “R” areas as riparian; This appendix and the EA/IS follows the nomenclature used in the 2009 Master EIR, in which “R” areas are denoted as riverine. For the purposes of this project, riverine and riparian are synonymous when referencing design features.

[4] The in-river work window has been expanded to July 15 through October 15 to protect all life stages of threatened fish while ensuring that the TRRP is efficient in completing projects that have been initiated. In agreement with the NMFS, best management practices that are protective of all native anadromous fish and their habitats are required after September 15.

Together, R-1, R-2, R-3, and R-4 represent approximately 15.8 acres of new floodplain that would provide high-quality juvenile rearing habitat at discharge levels that are frequently exceeded during the months when juvenile salmon are in the river. Construction of these floodplains would require a total excavation volume of 4,920 cubic yards (cy) of mine tailings. Multiple wood structures at SLJ-1 and SLJ-2 and wood racking features WR-1 through WR-8 (see Section 3.4 would bifurcate overbank flow streamlines, creating hydraulic variability and local scour and deposition. Interactions between structured log jams and wood racking placements and overbank flows would increase topographic and ecological diversity on the floodplain and, if fully developed, could create vegetated islands between two channel anabranches.

Due to their low elevation and large width, the R-1, R-2, R-3, and R-4 floodplains are expected to be depositional in some areas and experience scour in other areas. Deposition is expected to be the dominant geomorphic process in the upstream fourth of R-1, whereas local scour, possibly involving the incision of new secondary channels, is more likely toward the downstream end. Overbank deposition is likely in R-3 and scour has the potential to occur due to head cutting at the upstream end through a portion of the bank that was avoided during construction. R-2 could see increased fine sediment deposition while R-4 could see deposition at the mouth of the side channel which would result in the abandonment of the feature. The low elevation of the valley grade surface would also encourage rapid colonization of riparian vegetation. This would increase both trophic production and rearing habitat quality in the area. Table I-1 outlines the riverine activities that would occur under the Project.

Table I-1. Riverine Construction Activity Area Descriptions

Riverine Construction Area	Feature Type(s)	Description
R-1	Lowered surface	A lowered floodplain that extends about 251,100 square feet (ft^2) and encompasses 5.76 acres. R-1 is separated from R-2, R-3, and R-4 by the designed main river channel (IC-1 and IC-2) and is located upstream. The area spanned by R-1 currently supports mainly non-native vegetation.
R-2	Lowered surface	R-2 is a broadly-lowered surface within the remnant point bar along the right bank and encompasses 4.93 acres. It occupies the footprint of reworked dredge tailings covered with non-native annual grasses. The design retains areas of existing ground between the lowered surface and the existing mainstem to constrict flow in portions of the channel that have deep pools to minimize aggradation risks in existing holding habitat.
R-3	Lowered surface	R-3 spans 2.73 acres within the left bank legacy bar in the approximate center of the project. The surface is sparsely vegetated with Oregon goldenaster (*Heterotheca oregana*) and mature black cottonwoods near the channel margin.
R-4	Lowered surface and side channel	R-4 was constructed within the 2006 Conner Creek Project and spans 2.39 acres. The existing surface is vegetated with non-native annual grasses and other non-native species, along with some remnant cottonwood and willow plantings from the 2006 Conner Creek project. The downstream end of the feature is thickly vegetated with willow and other riparian species.

3.2 In-Channel Construction – Channel, Slough, Wetlands, and Large Wood Structures

The project would include a meander channel complex consisting of a riffle (IC-1), a medial bar (IC-2), a riffle enhancement (IC-3), a lateral bar (IC-4), and a riffle/medial bar complex (IC-5). Large wood features would be placed throughout the riverine zone and as habitat structures (WP-1 through WP-6). SLJ-1 would be constructed immediately adjacent to IC-1 on the left bank, while SLJ-2 would be constructed downstream of IC-5 along the right bank in R-4. These would increase topographic and hydraulic diversity and promote roughness and vegetation establishment. Table I-2 outlines the in-channel activities that would occur under the Proposed Action. Fill for in-channel construction would require 4,920 cy of cleaned gravel, cobble, pit-run, and fines.

The meander complex would provide a diversity of water depths and velocities across a wider range of flows than the existing mainstem channel configuration. Activity area IC-1 would raise the low-flow water surface elevation (WSE) and create a backwater to inundate the adjacent lowered surface (R-1). Target flows between 500-3,500 cfs would inundate the R-1 floodplain, generating large increases in wetted area and rearing habitat availability as flows increase through the range typical of the period when juvenile salmon are in the river. Two previous restoration efforts have occurred at Upper Conner Creek, yet monitoring efforts have shown that the previously-lowered surfaces were not inundating frequently enough to provide substantial increases in juvenile winter rearing habitat under average river conditions.

Spreading the flow over a wide area would greatly reduce unit stream power and sediment transport capacity in lowered surfaces that incorporate varying topography, along with large wood feature placements, to create physical perturbations and complexity on the floodplain. This would result in a varied hydraulic environment that includes eddies, multiple flow pathways, and low-velocity refugia. Sediment deposition is expected on all four floodplain features, especially in the upstream half of R-1 and within the IC-1 channel itself. Deposition on the channel bed could further reduce channel capacity, forcing more water onto the floodplains. Simultaneously, irregularities in the floodplain surface could cause the flow to concentrate into defined flow paths that evolve into alternative channels. The net results could range from avulsion of the channel to a new location on the floodplain to the formation of a branching delta-like channel network. The precise outcome cannot be accurately predicted, but the as-built terrain is, by intention, almost certain to evolve dynamically in the years following construction.

In-channel construction includes activities that would occur in the river under base flow conditions (i.e., 450 cfs) during the in-channel construction window (July 15–October 15). After September 15, best management practices would be in place to minimize impacts to adult coho and Chinook salmon. The construction of various types and sizes of grade control structures, including construction or excavation of alluvial features (e.g., sloughs and wetlands), would increase channel complexity through promotion of channel migration, increased sinuosity, reduced fine sediment storage, increased coarse sediment transport, and restoration of depositional features (e.g., riffles, bars, and islands) available for spawning and rearing habitat.

During construction of in-channel activity areas, earthen berms would be left as necessary near the upstream and downstream ends of constructed features to ensure that water quality standards are met. These berms would be removed at the end of construction if the water within these contained areas is of appropriate quality for discharge to the river or if they could be left in place for removal by subsequent high flows. Alternatively, water in the constructed features could be pumped to uplands or slowly metered into the mainstem post-construction. These techniques would ultimately reduce the amount of turbid water that would reach the Trinity River and would ensure that water quality permit requirements are met (i.e., no more than 20 nephelometric turbidity units at 500 ft downstream of construction).

Table I-2. In-Channel Construction Activity Area Descriptions

In-channel Construction Area	Feature Type(s)	Description
IC-1	Riffle	IC-1 covers an area of 0.24 acres. The design for IC-1 includes a 160-ft long riffle composed of spawning gravels (5/8–5 in) and oversized rock (6–12 in) with a target D_{84} of 7 in. The feature has a crest elevation of 1,425.2 ft and a 0.19% grade. The primary goals of the feature are to add roughness to the mainstem channel, raise the low-flow WSE, and create a backwater to inundate the adjacent lowered surface (R-1). The feature is designed to be stable up to a flow of 8,300 cfs. Sufficient bed load material is expected to be supplied from upstream by Canyon Creek to replenish material that is transported from the riffle.
IC-2	Medial bar	IC-2 covers an area of 0.18 acres. The feature is designed to add topographical complexity and additional roughness to the mainstem channel. The feature is designed to have a bar apex 1.1 ft above the summer baseflow WSE at an elevation of 1,425.5 ft. Side slopes of the bar vary from 2:1 to 5:1 to create hydraulic complexities around the bar. The bar is composed of spawning gravel and has a target D_{84} of 4 in.
IC-3	Riffle enhancement	IC-3 covers an area of 0.53 acres. Design features include a 340-ft length riffle enhancement composed of spawning gravel with a target D_{84} of 5 in. The additional spawning gravels would raise the crest elevation from 1,417.9 ft to 1419.1 ft and have a grade of 0.2%. The primary goal of the feature is to add roughness elements to the mainstem channel and raise low flow WSEs.
IC-4	Lateral bar	IC-4 covers a 0.39-acre area. It is designed with a 460-ft long bar with a bar apex elevation of 1,420-ft, a toe slope of 4:1 (horizontal, vertical), and a targeted D_{84} of 4 in. The design goal is to constrict flow going into the upstream end of the existing pool. This should focus stream energy into the pool, reducing risks of aggradation. The feature also incorporates a wood racking feature (WR-6) at the upstream end.
IC-5	Riffle/medial bar complex	IC-5 is 0.53-acre area. Design elements include a 275-ft medial bar-riffle complex with a riffle crest elevation of 1,418-ft and a grade 0.37%. A steeper slope is meant to provide habitat for benthic macroinvertebrate production. The riffle is bisected by a raised medial bar-like feature with a top elevation of 1,419 ft. The top width of the bar is 25 ft and was scaled to an existing medial bar near Reading Creek. The goal of this feature is to direct flow towards channel banks, promoting erosion along the left bank. An existing hole along the right bank would remain within the footprint to create complexity in the feature. The feature would be constructed using spawning gravels and oversized rock to meet a target D_{84} of 6 in.

3.3 Upland – Upland Spoils

Excavated materials (e.g., fill) that would not be used for instream construction would be placed in an upland area as fill on mine tailings, legacy bars, and terraces formerly subjected to a variety of placer mining activities. A total of 6 sites have been designated as upland areas within the project accounting for 10.75 acres. The upland areas would receive up to 136,930 cy of excavated materials total throughout the project. Table I-3 shows the activities, area size, and location at each upland activity area.

Upland activity areas have been located to ensure that there would be no increase in the elevation of the 100-year floodplain, consistent with requirements of Trinity County's Floodplain Ordinance. Excess material excavated during construction of the riverine and in-channel activity areas would be placed in these activity areas. The boundaries of these fill areas were defined using a Federal Emergency Management Agency (FEMA)-approved modeling process; field verification by surveyors and engineers was performed to ensure these areas would be located at an elevation above the FEMA 100-year floodplain. Within these activity areas, the depth of fill would range from about 1 ft near the edge to as much as 35 ft, depending on the activity area's size and location. Fill materials would be spread in uniform layers that would blend in with the natural terrain and provide stable slopes for revegetation.

Table I-3. Upland Construction Activity Area Descriptions

Riverine Construction Area	Feature Type(s)	Description
U-1a	Upland area	U-1a is located on an existing mining tailings pile on the left bank, just upstream of the Hocker Flat floodplain at RM 78.31, and covering an area of 48,000 ft^2 (1.10 acres). The feature is located entirely on private property. The side slopes of the feature are roughly 2:1 and the top elevation is 1,470 ft. This feature would receive fine and coarse sediments from excavation activities associated with R-1.
U-1b	Upland area	U-1b is located on an existing mining tailings pile on the left bank, just upstream of the Hocker Flat floodplain from RM 78.4 to RM 78.5, covering an area of 156,600 ft^2 (3.60 acres). The feature is located entirely on private property. The side slopes of the feature are roughly 6:1. The feature has two top terraces with the lower top elevation of 1,464 ft and the upper top elevation of 1,466.5 ft. This feature would receive fine and coarse sediments from excavation activities associated with R-1.
U-2a	Upland area	U-2a is located on the upper portion of the legacy bar near Highway 299 at RM 77.9, covering an area of 50,400 ft^2 (1.16 acres). The feature is located entirely on public Bureau of Land Management (BLM) property. The side slopes of the feature are roughly 5:1 on the channel side and 6:1 on the highway side. The feature has a top elevation of 1,446 ft. This feature would receive fine and coarse sediments from excavation activities associated with R-2.

Riverine Construction Area	Feature Type(s)	Description
U-2b	Upland area	U-2b is located on the upper portion of the legacy bar near Highway 299 at RM 77.95 to RM 78.18, covering an area of 104,820 ft^2 (2.41 acres). The feature is located partially on private land and partially on public BLM land. The side slopes of the feature are approximately 5:1 on the channel side and 6:1 on the highway side. The feature has a top elevation of 1,450-ft. This feature would receive fine and coarse sediments from excavation activities associated with R-2. The toe of U-2b on the highway side of the feature would be recontoured to develop A-3b, which would provide a permanent public access route to the river.
U-3	Upland spoils area	U-3 is located on an upper terrace, accessed via A-5, along the left bank at RM 77.4, covering an area 62,800 ft^2 (1.44 acres). The feature is located entirely on public BLM land. The area is currently vegetated with ponderosa pine (*Pinus ponderosa)* that would be harvested for use in habitat wood placements. The side slope on the river side of the feature is approximately 5:1 and the top grades into existing ground on the opposite side. The feature has a top elevation of 1,443.5 ft. This feature would receive fine and coarse sediments from excavation activities associated with R-3.
U-4	Upland spoils area	U-4 is located on a previously-occupied upland area used as part of the 2006 Conner Creek project at RM 77.2, covering an area of 45,350 ft^2 (1.04 acres). The feature is located entirely on private property. The side slope of the feature is approximately 3:1 and the top elevation is 1,473 ft. The feature would receive fine and coarse sediments from excavation activities associated with R-4.

3.4 Wood Features – Structured Log Jams, Wood Racking Feature, and Wood Placement

Woody material is a natural part of healthy rivers. It provides important habitat for aquatic species by providing cover from high flows and predators. The low-velocity areas collect suitable spawning materials, and woody organic material is a food source for aquatic insects. It can help create and maintain beneficial habitat features such as pools, islands, and gravel bars. WPs are included in the in-channel and riverine design elements above as WP-1 through WP-6, SLJ-1, SLJ-2, and WR-1 through WR-8.

Large wood feature objectives for the Upper Conner Creek design can be summarized into three categories: hydraulic, habitat, and roughness elements. The preferred strategy to accomplish these objectives is to design and build wood features that emulate natural wood jams that are deformable, evolve over time, and perform as dynamic features in the landscape. This approach provides a unique opportunity to implement large wood features that provide a balance between physical process and the ecosystem. This approach does, however, have the potential to shorten the design life of the structures. Natural river processes and channel evolution that can cause physical instability are supported by the TRRP and Reclamation, and are consistent with the 2000 Trinity River Environmental Impact Statement/EIR Record of Decision framework.

Large wood features for the Upper Conner Creek project are designed to direct flow, prevent recapture of the existing mainstem channel, provide salmonid cover and velocity refugia, temporarily protect constructed surfaces, and increase large wood material supply to the Trinity River over the long term. SLJs are not anchored to the bank with cables, bolts, or large boulders. Therefore, SLJs are expected to begin to break down at higher flows several years after installation. Small woody material (slash) would be added to structures, pinned underneath rootwads, and added to the gravel-cobble matrix between the large wood pieces. Pinned and submerged material will provide additional cover and forage for juvenile salmonids, and material mixed into the gravel-cobble matrix will increase the stability of the structure.

A combination of whole trees harvested onsite and rootwad logs from both onsite and offsite staging areas would be used. The SLJ-1 and SLJ-2 features are planned for construction on the Upper Conner Creek side channel entrances in R-1 and R-4, respectively, while simultaneously allowing the design channel morphology to naturally evolve over time. They are designed to direct flow, prevent recapture of the existing mainstem channel, provide salmonid cover and velocity refugia, temporarily protect constructed surfaces, and increase large wood material supply to the Trinity River over the long term.

Large wood and racking features would be placed throughout the riverine areas (R-1 through R-4) for habitat and additional cover. IC-1 would receive a wood racking feature within and adjacent to R-1 along the current shoreline. Wood and slash would also be heavily used on the floodplain to provide roughness and high-quality cover for fish. Slash would also be used as mulch and worked into the soil to increase moisture-holding capabilities. Large wood materials would be harvested from the U-3 area, as it contains ponderosa pine (*Pinus ponderosa*) ideal for use in habitat wood placements.

Impacts associated with the use of organic (e.g., large wood, slash) and inorganic (e.g., boulders) materials were analyzed in the Master EIR under Sediment Management activities along with other activities that would facilitate channel construction and maintenance (e.g., excavation and placement of alluvial material in in-channel and riverine areas). The TRRP would use appropriate materials to cause and enhance changes in channel geometry intended to improve aquatic and wildlife habitat as well as ecological function. No “oversized” skeletal rock is required for stability based on these embedment specifications; a matrix of gravel, cobbles, and small boulders will be sufficient. Some large boulders may be used if available and desired, but this is not necessary for stability if these specifications are followed.

As appropriate, large wood features and accompanying slash removed as part of vegetation clearing activities would be retained and used to construct SLJ, WR, and WP structures during riverine and in-channel activities to provide additional hydraulic and habitat complexity and temporary erosion control measures. These activities would potentially occur in any of the IC or R features. This activity could include placing large wood features including individual pieces, small accumulations, and large habitat structures. The creation of SLJ, WR, and WP structures would develop topographical complexity and increase bank length to provide additional salmonid-rearing habitat over a wide range of flows. The use of these structures would also improve spawning, holding, and rearing habitat for anadromous salmonids.

All fill materials would be processed from materials excavated from within the project site. Unprocessed material or “pit-run” dirt and gravel from onsite excavation could be used to construct features and for habitat enhancement, using methods that would be continuously monitored for compliance with turbidity standards when equipment is working in or near the river.

All large wood features would be designed so that local velocities would be safe for navigation during relatively low river flows (less than approximately 2,000 cfs). Natural wood material would be placed in a manner to reduce the chances of hazardous contact with swimmers and boaters at flows less than about 2,000 cfs.

Species of trees for large wood features would include Douglas fir and Ponderosa pine for SLJs while whole tree placement logs include additional onsite salvaged species such as white alder, cottonwood, grey pine, and Pacific willow. Whole tree placements would be included in habitat wood placement regions on lowered surfaces. In total, 793 logs would be incorporated into habitat structures, in addition to 40 whole tree placements and 1,700 cy of slash (Table I-4).

Table I-4. Large wood material schedule for habitat WPs.

Wood Type	Description	Hatch Color in Civil/Revegetation Plan Set (See Sheets C-4 and R-3)	Diameter (in)	Length (ft)	Rootwad	Quantity
Whole Trees	Whole trees	Blue	> 12	not specified	Yes	40 logs
Horizontal Log	Habitat or structural logs	Blue	12–24	+/- 35	Yes	720 logs
Slash	Small trees, tree branches, and bushes	Blue	-	-	-	4,000 cy
Willow Cuttings	Willow cuttings	Blue/Purple	0.75–1.5	8–10	-	4,320–5,760 pieces (6-8 per horizontal log)

Table I-5. Large wood material schedule for structured log jams (SLJ) and wood racking features (WR).

Feature ID	Wood Type	Diameter (in)	Length (ft)	Rootwad	Length of Feature (ft)	Distance Between Logs (ft)	Quantity
WR 1- 8	Vertical Logs	+/- 18	+/- 12	No	40	10	4 logs per feature
SLJ-1	Toe Log	12–16	+/- 35	Yes	45	-	1 log
SLJ-1	Horizontal Log	16–18	+/- 35	Yes	45	10	4 logs
SLJ-1	Pin Log	12–16	+/- 20	No	-	25	24 logs
SLJ-2	Toe Log	12–18	+/-35	Yes	35	-	1 log
SLJ-2	Horizontal Log	16–18	+/- 35	Yes	35	6	3 logs
SLJ-2	Pin Log	12–16	+/-20	No	-	12	18 logs
SLJ-1 & 2	Slash	-	-	-	-	-	450 cy
SLJ-1	Willow Cuttings	0.75–1.5	8–10	-	-	-	102–136 cuttings (6–8 per log)
SLJ-2	Willow Cuttings	0.75–1.5	8–10	-	-	-	132–176 cuttings (6–8 per log)

3.5 Contractor Use Areas

Contractor use areas would be used for stockpiling and sorting materials, staging equipment, contractor parking, and similar activities. They could also serve as transportation corridors for moving equipment and materials from one activity area to another. In this event, water would be applied to these areas for dust abatement. To support the intent of rehabilitation, the design team designated contractor use areas in locations that avoid sensitive resources.

There are up to five activity areas that would be available as contractor use areas. Construction activities in contractor use areas may include grading, processing earth and tailing materials, clearing vegetation, and staging and stockpiling construction equipment. Disturbance would be minimized to the extent possible. The contractor use areas would be reviewed by the TRRP and construction contractor before channel rehabilitation activities begin. At that time and as construction begins, decisions would be made to minimize disturbance to sensitive zones and limit work to needed zones within designated contractor use areas.

3.6 Access Routes

There are six routes identified as discrete activity areas (A-1 through A-6). One road (A-3) is associated with an existing route open to the public accessed from Highway 299, the Junction City Campground. Access route A-4 is an existing road that originates on private property and crosses onto BLM land. This route would need to be widened, and an additional access ramp would be constructed to drop from the upper terrace down to the river. The Jim Smith Mine would provide access via Red Hill Road (A-1 and A-2). Routes may require widening and would be used primarily by heavy equipment and other vehicles, often requiring two-way traffic. Access route A-5 would lead to the C-5 contractor use area from Highway 299. Access route A-6 starts at this contractor area (C-4) and provides access to upland spoils area (U-4). The site-specific design and use of these routes would consider factors like topography, soils, existing vegetation, and the need for future vehicle access (e.g., for revegetation maintenance). Highway 299, Dutch Creek Road, Red Hill Road, Senger Road, and Quail Road would be used to access the site.

Following completion of the project, A-3b would be developed into the public access road along the eastern slope of U-2b. Access roads throughout the site support equipment access and construction within the ESL. Whenever possible, existing roads would be used for access, although some widening could be necessary. The total length of access roads to be used during project construction is 1.65 miles.

A river crossing, located at X-1, would be constructed of coarse material that shall meet specifications provided for IC-3. The river crossings, made of local native alluvium and clean gravel, would be graded to final design elevations or left in place to be moved downstream by high flows post-construction. All temporary crossings along the access routes would be designed and constructed to meet the requirements for heavy equipment such as trucks and excavators. All excavated material (e.g., from lowering floodplains) would be placed on the same side of the river from which it was taken.

Due to requirements to retain passage for fish and boats, at least one-third of a river crossing would be submerged to a minimum depth of one foot under base flow conditions. The construction of these temporary crossings would likely require some vegetation removal on either side of the crossing within an approved activity area adjacent to the crossing (e.g., IC-3). All temporary crossings would be constructed to not impede the passage of aquatic organisms or vessels' navigability at the crossings.

3.7 Design Constraints

Early in the planning process, the TRRP identified several sensitive features that are critical with respect to design considerations (e.g., cultural resources, infrastructure, and private landowner concerns). The design teams worked closely with private landowners and Reclamation and BLM cultural resources staff to avoid cultural resource features (e.g., dredge tailing deposits) that provide important information on historic mining along this reach of the Trinity River.

No homes are within the ESL, and the implemented project would not increase the 100-year water-surface elevation near any insurable structures.

Constraints include the following:

- Junction City Campground boat launch (RM 78.1) is a heavily-accessed boat launch and any modifications to this location must include public access.
- Currently there are no comprehensive geotechnical investigation data available for much of the project, and therefore, the quality and quantity of coarse sediment resources available at the site are uncertain.
- The Trinity River is located directly adjacent to Highway 299 between RM 77.55 and RM 77.85, and the project must not endanger the highway and associated infrastructure.
- Riprap along the right bank from RM 78.25 to RM 78.3 and RM 77.7 to RM 77.85 constrain the potential design features in these areas.
- Bedrock outcroppings along the left (RM 78.05 to RM 77.95) and right (RM 77.7 to RM 77.55) banks constrain alluvial processes.
- A power line crosses the river at RM 77.45. Power poles are located in areas that may be impacted by construction activities in U-1b.
- Deep holding pools exist at RM 78.05, RM 77.75, and RM 77.7 that are popular with local fishing groups, and any project-related impacts to these holding pools would likely be opposed.
- Landowners have denied the TRRP access to parcels 012-370-19-000, 012-370-18-000, 012-370-17-000, 012-260-014-000, and 012-260-016-000.
- Adjacent landowners have identified a local swimming hole that should not be directly affected by the project.
- The project cannot raise the FEMA 100-year WSE.
- Sensitive vegetation communities exist within the project site and must be avoided.
- The California Department of Transportation right-of-way easement along Highway 299 must be avoided.

Due to the high fire hazard and history of equipment-caused fires in Trinity County, construction contractors would be required to follow BLM requirements as well as applicable regulations of California Public Resource Code 4428-4442 (Fire Plan for Construction and Service Contracts) during dry periods to minimize the potential for initiation and spread of fires from the work site. Removing vegetation (e.g., weed whipping) along access routes could be required to enhance fire prevention and protection during the work period.

4. Rehabilitation Activities

This section describes the proposed rehabilitation activities that would occur under the Proposed Action. A combination of these activities would take place at each location, concurrently and in sequence. Rehabilitation activities include recontouring, vegetation removal, sediment and gravel movement and augmentation, and revegetation activities. Proposed construction methods are also discussed at the end of this section.

4.1 Recontouring and Vegetation Removal

Under the recontouring and vegetation removal activities, the ground surface would be modified to reduce riparian encroachment and the risk of stranding juvenile salmonids. To varying degrees, vegetation would be cleared and removed at all activity areas that would be subject to rehabilitation activities, except for crossings. Where recontouring is part of the Proposed Action (e.g., floodplain lowering), the entire site would be subject to vegetation removal, but sensitive vegetation communities would be avoided, and where possible, riparian vegetation (e.g., willows) would be salvaged and stored within the ESL for use in subsequent revegetation efforts. Grading would be required to construct or enhance topographic features that could develop into functional riparian habitat; excavation and fill placement would be balanced. In addition to the activity areas that would be cleared before grading, site-specific removal of trees (e.g., conifers and hardwoods) would be required to enhance the safety of the work site, reduce fuel loading, and improve local conditions for individual tree growth and wildlife. Furthermore, the trees that are removed would be used to construct large wood habitat structures. As illustrated in Figure 2, upland and contractor use areas include discrete locations where vegetation removal is anticipated based on coordination with, and authorization by, BLM and landowners.

Vegetation removed from activity areas, including contractor use areas, would be used for in-river placement. Large pieces of wood would be chipped or masticated for use as organic material to increase nutrients and enhance water holding in revegetation areas. Activities would be accomplished using a variety of methods, including hand tools and heavy equipment such as excavators, bulldozers, dump trucks, and potentially scrapers. Where feasible, existing native riparian vegetation would be maintained to facilitate future recruitment.

4.2 Sediment and Gravel Placement

Implementation of the Proposed Action would require placement of alluvial materials at activity areas throughout the site. The size of alluvial materials necessary to construct the in-channel and floodplain features varies depending on the activity areas’ function and location.

Three basic classes of rock materials would be used (Table I-6). Clean gravel and cobble (CGC) would be used to construct the submerged portions of IC-1 through IC-5 when river turbidity is a potential problem during material placement. Pit-run (PR) would be used as above-water fill in situations when turbidity is not a concern. Fines would be added to PR or CGC as needed to coarsen the grain-size distribution of the fill placed in areas where greater resistance to erosion is required. Several different mixtures of materials would be used to meet the requirements for turbidity control.

Table I-6 describes the size classes of processed alluvial materials specified by the design team that would be excavated from riverine and in-channel activity areas (e.g., IC-1) and processed onsite at contractor use areas (Figure 2). All materials would be provided from onsite excavation, no outside sourcing would occur.

Table I-6. Sediment Material Types and Size Classes for Construction of IC Features.

Feature	Area (ft^2)	Total Fill (cy)	Substrate Size Parameters (in)			Pit-run		Cleaned Gravel and Cobbles	
						Unsorted	Fish Rock	Oversized Rock	Skeletal Rock
						Sand to 8 in	5/8–5 in	6–12 in	12–24 in
			D_{min}	D_{max}	D_{84}	cy	cy	cy	cu. yds.
IC-1-Riffle									
Medium-Grain Coarse Sediment	10,630	740	5/8	12	7	0	410	330	0
IC-2: Medial Bar									
Small-Grain Coarse Sediment	7,990	610	5/8	6	4	0	610	0	0
IC-3: Riffle									
Small-Grain Coarse Sediment	23,100	1,360	5/8	6	4	0	1,360	0	0
IC-4: Lateral Bar									
Small-Grain Coarse Sediment	17,000	810	5/8	6	4	0	810	0	0
IC-5: Riffle/Medial Bar Complex									
Medium-Grain Coarse Sediment	24,760	1,400	5/8	12	6	0	910	490	0
Totals		**4,920**				**0**	**4,100**	**820**	**0**

* Fines are sediment particles less than 2 millimeters in diameter and are not analyzed separately from cleaned gravel, cobble, and pit-run.

* Fines can make up 15% of fill material in cleaned gavel and cobbles and up to 20% in pit-run.

Table I-7 displays the cut and fill quantities, fill types, and numbers of large wood pieces required for the various design features. Excavation of R-1, R-2, R-3, and R-4 would involve upwards of 141,850 cy of cut. All 141,850 cy of cut would be used as fill for the in-channel activities or discarded in the upland areas. Quantities of wood needed are discussed in more detail below.

Table I-7. Cut and Fill Material Types and Quantities Required at Each Activity Area.

Feature	Cut (cy)	Fill (cy)	Net (cy)	Material Types
IC-1	0	740	740 <Fill>	1*
IC-2	0	610	610 <Fill>	1*
IC-3	0	1,360	1,360 <Fill>	1*
IC-4	0	810	810 <Fill>	1*
IC-5	0	1,400	1,400 <Fill>	1*
R-1	63,000	0	63,000 <Cut>	2*
R-2	47,300	0	47,300 <Cut>	2*
R-3	18,550	0	18,550 <Cut>	2*
R-4	13,000	0	13,000 <Cut>	2*
U-1a	0	21,050	21,050 <Fill>	3*
U-1b	0	41,210	41,210 <Fill>	3*
U-2a	0	15,920	15,920 <Fill>	3*
U-2b	0	29,410	29,410 <Fill>	3*
U-3	0	16,340	16,340 <Fill>	3*
U-4	0	13,000	13,000 <Fill>	3*
Total	**141,850**	**141,850**	**0**	

* Material types:

[1] See Table I-6. Sediment Material Types and Size Classes for Construction of IC Features.
[2] Unsorted alluvial mixture.
[3] Remnant alluvial mixture.

4.3 Wood Placement

Implementation of the Proposed Action would use large wood materials to enhance aspects of the design features. These features would be integrated into the design of R and IC activity areas to provide habitat cover and structure and would slow high-flow velocities to improve aquatic habitat over a range of flows.

SLJs and large wood structures would be installed to mimic natural wood features that formed under historical conditions. Large wood materials used to construct the project would be supplied from within the project site and from nearby sources where permitting for tree removal has been completed independently of this project. Full-length trees would primarily be sourced from the U-3 area where Ponderosa pine occurs and may also be sourced from offsite. There are up to 40 trees and 793 logs that would be used for both structural and habitat placements.

Logs from offsite locations would be harvested and transported to the project site via haul trucks. Additional needed logs and slash would come from a combination of onsite and offsite locations. Excess slash would be chipped or masticated and used as mulch for erosion control and revegetation efforts to increase site productivity, provide effective ground cover on disturbed areas, and function as cover habitat for terrestrial organisms.

A strategic combination of various wood materials would be used at each project location to meet individual feature objectives. The exact size, quantity, and quality of wood materials would depend on availability and may need to be adjusted to accommodate site-specific constructability needs and source availability. Structural members used to construct the main architectural components would consist of Douglas fir and Ponderosa pine wood in good condition.

SLJ features would include toe logs set into the channel bed elevation to stabilize the toe of the channel bank, provide a foundation on which to build the key logs, slash pile, cuttings, and rock pilings, and reduce the tendency for the toe of the bank to slump in the event that channel incision occurs. A layer of key logs would be installed on top of the toe logs perpendicular to flow. In some cases, it could be beneficial to place the rootwads of key logs into the flow path at an angle of at least 45 degrees. Slash would be placed under some of the key log rootwads and in thin layers on top of the key rootwads before the addition of ballast and backfill. The intended result is a sequence of cut banks, rootwad cover, and fine wood material, providing year-round salmonid rearing habitat and better-protecting the channel bank from erosion.

Structural components of the SLJs would primarily use Douglas fir and Ponderosa pine. The exact size, quantity, and quality of wood materials used for all wood placements onsite would be dependent on availability and needs. Wood use would be adjusted to accommodate site-specific constructability needs and source availability. Placement of whole tree logs would use additional species salvaged on site. Logs would be primarily Douglas fir and Ponderosa pine, but may also include white alder, cottonwood, grey pine, and Pacific willow. Whole tree placements would be constructed by toppling salvaged trees into the flow, pointed in the downstream direction. Some whole tree placements may be pinned or woven between living trees to prevent entrainment. Whole trees would be cut to limit the maximum length to 80 ft. Logs with rootwads would be a minimum length of 35 ft.

4.4 Revegetation Activities

The Upper Conner Creek 90% revegetation design includes 15.8 acres of planting, 36.3 acres of seeding, and 20.6 acres of mulching. Plantings include approximately 4.0 acres of channel margin plantings, 403 willow clusters, 493 cottonwood clusters, 3.7 acres of upland plantings, 1.0 acre of slope plantings, 0.4 acres of willow clumps, and 0.2 acres of willow trenches.

The removal of mine tailings and subsequent reconstruction would result in several new landforms. Revegetation would be required at all upland features including U-1a, U-1b, U-2a, U-2b, U-3, and U-4 (10.8 acres), as well as new floodplain landforms at R-1, R-2, R-3, and R-4 (15.8 acres) that include existing ponds, wetlands, and forested islands. The 1.9 acres planned to become in-channel features would not require revegetation. About 0.4 acres of existing wetlands and 0.1 acres of wood features would require little or no revegetation. Temporary impacts would occur on up to 7.0 acres of contractor use areas and 1.7 miles of temporary access roads. Construction activities within contractor use areas would minimize disturbance to native vegetation where possible. The areas where disturbance occurs would be revegetated with native plants.

The TRRP's objective for revegetation of the Upper Conner Creek rehabilitation site is to promote the establishment and growth of a more diverse assemblage of riparian shrubs and deciduous hardwoods than presently exists. This would feature varying ages of vegetation so that the size, frequency, and distribution of native vegetation would increase in the future. By meeting this objective, the functions and values of native riparian and upland vegetation are expected to increase over time. In addition, the revegetation plan emphasizes the expansion of large conifers and hardwoods that could be naturally recruited as woody material into the mainstem.

To varying degrees, impacts to vegetation are anticipated at each activity area. Project activities are designed to ensure that riparian vegetation in particular is minimally affected by implementation of the Proposed Action and is replaced at a 1:1 ratio to meet the California Department of Fish and Wildlife's standard of no net loss of riparian area habitat within the Trinity River corridor. Revegetation would provide aquatic refugia at high flows, improve terrestrial habitat for birds and other wildlife, provide future wood material recruitment, and provide future input of terrestrial nutrients to the river. Revegetation efforts would emphasize actions to create conditions that promote natural revegetation with the creation of wet (riparian) conditions. This would include burying or ripping wood into the soil in Upland activity areas to enhance moisture retention.

Under this activity, revegetation of riverine and upland areas would rely on a combination of planting and natural recruitment of native species, consistent with TRRP's Riparian Revegetation and Monitoring Plan Trinity River Restoration Program (TRRP) 2022 and the needs of BLM. Native willows salvaged from activity areas, including contractor use areas, would be used to revegetate activity areas, and the willows would be replanted during or after construction to speed vegetation recovery. Replanting of affected native vegetation (e.g., shrubs and trees) would be completed in accordance with site-specific revegetation guidelines prepared by the TRRP. TRRP uses only plant materials from *Phytophthora*-inspected nurseries[5]. The intent at this site is largely to improve riparian capacity by increasing ground water levels so that revegetation may occur naturally and using onsite plant and seed materials. Wood material placements could be used in any activity area to enhance site conditions to benefit the revegetation effort. All C and U areas would be seeded and mulched with a blend of native grass and forb seeds. R activity areas would be seeded with a blend of native riparian grasses and forbs, in conjunction with wetland plants and willows where appropriate[6].

Revegetation at the Upper Conner Creek rehabilitation site would include preparing planting areas and planting a mixture of wetland, riparian, and upland plant species. The plantings would include plants salvaged from the site, nursery container stock, including bare-root plants and herbaceous plugs, and grass, forb, and oak (*Quercus* spp.) seeds.

Plant species expected to be incorporated into the revegetation plan include California brome (*Bromus carinatus*), California fescue (*Festuca californica*), California grape (*Vitis californica*), fragrant sumac (*Rhus aromatica*), hardstem bulrush (*Schoenoplectus acutus*), small-fruited bulrush (*Scirpus microcarpus*), western service berry (*Amelanchier alnifolia*), blue elderberry (*Sambuscus nigra* spp. *caerulea*), Oregon ash (*Fraxinus latifolia*), western clematis (*Clematis ligusticifolia*), tufted hair grass (*Deschampsia cespitosa*), Douglas' spiraea (*Spirea douglasii*), sedge (*Carex* spp.), wildrye (*Elymus* spp.), rush (*Juncus* spp.), ponderosa and grey pine (*Pinus* spp.), Douglas fir (*Pseudotsuga menziesii*), mugwort (*Artemesia douglasii*), whiteleaf manzanita (*Arctostaphylos viscida*), cottonwood (*Populus* spp.), oak (*Quercus* spp.), and willow (*Salix* spp.). Arroyo willow (*Salix lasiolepis),* red willow (*S. laevigata*), and shiny willow (*S. lasiandra*) clumps that are salvaged from excavated areas would primarily be placed in or near wood structures. Cottonwood and willow poles would be planted in select areas as appropriate to increase species diversity. Conifers, manzanita, and oaks would be planted in the upland areas where the soil can be amended with organic material, and planting microsites would be prioritized by the amount of afternoon shade provided by the surrounding topography and vegetation. The organic material amendment would consist of wood of various types (chipped, pieces, or logs) buried or ripped into surfaces and/or placed on top (e.g., as mulch). Disturbed areas higher than 4 ft above the summer baseflow WSE would be mulched with certified weed-free native grass straw at the rate of 1–2 tons per acre. Revegetation activities (e.g., planting and watering as appropriate) could start during the latter part of construction and would continue during the wet season (i.e., October–March) after final grading and site stabilization measures have been completed. Planting and seeding efforts could extend into the year following construction, depending on site and weather conditions. Plantings would consist primarily of herbaceous and woody container plants and hardwood poles. Herbaceous bare root material may be used if planting occurs in or after November.

[5] TRRP would ensure that plant materials used on BLM lands meet the standards of the appropriate land management agency.

[6] Per BLM policy, recleaned wheat would not be planted on lands managed by BLM.

The revegetation plan at the Upper Conner Creek rehabilitation site would include several planting zones, each with different combinations of herbaceous, shrub, and tree species. In wetland and toe zones, herbaceous species would be planted with approximately 18 inches between plant centers and about 21,000 plugs per acre. Sedges, shrubs, and trees would be planted in willow, cottonwood, and transition zones, with approximately 2–4 ft between plant centers and about 1,417 plants per acre. Finally, in upland zones, approximately 1,131 shrubs and trees would be planted per acre. Willow trenches would be selectively installed.

The TRRP anticipates that select planting areas would be irrigated for up to five years after planting. Water for any irrigation would be pumped from the Trinity River, consistent with existing riparian water rights from the river on public lands. Equipment would be used to water plants during the dry season for a minimum of three years on project areas that have easy long-term access with landowner permission. Any irrigation measures would be temporary to improve the establishment and survival of vegetation. Post-project monitoring could indicate the need for additional irrigation and other measures to ensure successful revegetation. These measures could include weeding, in-planting, and replanting as conditions require. At the outset of tailings removal, efforts would be made to remove invasive vegetation. Removed weeds will be disposed of properly to stop any spread of seed or rhizome.

4.5 Construction Methods and Schedule

Earthmoving equipment that could be used includes off-road articulated dump trucks, wheel loaders, tracked excavators, dozers, push-pull scrapers, water tenders, and graders. In addition, equipment capable of driving piles (e.g., large logs) with a hydraulic ram could be used to anchor or stabilize wood structures in various activity areas. For materials such as large wood structures that would be hauled from offsite, trucks capable of hauling up to 20 cy at a time would legally obtain the materials from forested lands throughout the Trinity River watershed.

The proposed rehabilitation activities may start after the National Environmental Policy Act (NEPA) process has been completed and all required authorizations have been obtained. Preconstruction activities, such as vegetation removal for access and materials (i.e., wood and gravel) staging, could occur in the interim between completing the NEPA process and the rehabilitation activities if requisite permits and access agreements associated with these activities are in place. Upslope areas could be excavated to remove tailings (mining waste) as early as winter/spring 2024. In-river work would be initiated as early as summer 2024 and is expected to continue into 2025 or 2026. The flow-release schedule established for a particular water year could limit surface disturbance activities below the ordinary high-water mark during the late spring through early summer. Processing of alluvial material (e.g., from IC-1 through IC-5) could require up to six weeks. Revegetation work (e.g., planting of willow pole cuttings and/or container plants and seeding with native grasses) would generally occur during construction, in the wet season (i.e., fall/winter) following construction, or during subsequent wet seasons after construction. Construction activities for site maintenance would be conducted post-project as needed during the time period covered by the right-of-way, and affected landowners would be notified in advance.

Large boulders, cobbles, and gravel would be obtained by processing alluvial material in the ESL within contractor use areas. The processing of alluvial material needed for in-river work and fill, and subsequent in-river construction, are priorities to achieve project goals and reduce environmental impacts. If needed, processing of rock and sediment materials would take place onsite in contractor use areas (i.e., C-1 through C-5).

When the in-river (IC and R) work is completed, excavation and grading in the floodplains would continue through the fall, with construction completed by December. Alternatively, construction would be sequenced as funding and environmental constraints allow, within the guidelines discussed in the EA/IS. Post-project in-river site maintenance work (e.g., regrading of riverine areas and replenishing wood features) would generally occur during the in-river work window (July 15–October 15) of the year in which maintenance is deemed appropriate. Site maintenance that does not require in-river work or river crossings would generally occur in the fall or the wet season, outside of the nesting period for bird species present in the area.

5. Environmental Commitments

The environmental commitments have been incorporated as design features as defined under NEPA and are included in the Proposed Action for NEPA analysis purposes. They also serve the California Environmental Quality Act mitigation measures that would be implemented in accordance with a project-specific mitigation monitoring and reporting program (see Appendix D, Mitigation Monitoring Reporting Program and Project Design Elements in the EA/IS). As the implementing agency for the proposed rehabilitation activities, Reclamation has committed to implementing the environmental commitments—also known as the mitigation measures—identified in the Master EIR to avoid or minimize potential project impacts (refer to Appendix A of the Master EIR, the Mitigation Monitoring Reporting Program, for a description of these measures).

Trinity River Restoration Program (TRRP). 2022. *Riparian Revegetation and Monitoring Plan.* (Weaverville, CA). https://www.trrp.net/library/document/?id=2580.

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Appendix J - Sawmill Project Details

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ABBREVIATIONS AND ACRONYMS

A	access roads
ac	acre or acres
BLM	Bureau of Land Management
C	contractor use
CDFW	California Department of Fish and Wildlife
cfs	cubic feet per second
CGC	clean gravel and cobble
CSB	cobble and small boulder
cy	cubic yards
EA/IS	Environmental Assessment/Initial Study
EIR	Environmental Impact Report
ESL	environmental study limit
ft	feet
IC	in-channel
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
PR	pit-run
R	riverine
Reclamation	Bureau of Reclamation
Regional Water Board	North Coast Regional Water Quality Control Board
TRRP	Trinity River Restoration Program
U	upland

1. Design Context

The environmental conditions and highly-modified nature of aquatic, riparian, and upland habitat within the Sawmill Gravel Processing Site (Sawmill Site) environmental study limit[1] (ESL) present a unique opportunity to reshape the channel geometry in this reach of the Trinity River, increase floodplain connectivity, reintroduce large wood elements, and increase the overall complexity and functionality of the habitat for fish and wildlife species.

The Sawmill Site project design incorporates input from an independent value study and numerous consultations between the Trinity River Restoration Program (TRRP) and other design team members. The Yurok Tribe Fisheries Department, California Department of Water Resources, and California Department of Fish and Wildlife (CDFW) prepared a design report for the TRRP that incorporated input from consultants and the TRRP Design Team into the rehabilitation site's design Yurok Tribe Fisheries et al. 2023. The design report includes existing conditions at the project site as well as an evaluation of future desired conditions. Copies of the value study and design reports are available on the TRRP data portal at http://odp.trrp.net/. The design allows for immediate and dramatic improvements to juvenile salmonid habitat by introducing large areas with suitable flow depth, velocity, and cover. Riparian ecosystem health and floodplain connectivity are addressed throughout the project site. The design is intended to stimulate geomorphic processes that will drive the evolution of a structurally-diverse floodplain landscape that offers a wide range of habitats and hydraulic conditions.

Prior to any restoration activities, the Sawmill Site was occupied by tailings piles left over from the period of industrial gold mining when connected-bucket dredges operated along the Trinity River from Trinity Center to the North Fork Trinity River Bailey 2008. Early rehabilitation efforts in the Sawmill reach focused on the construction of spawning riffles. Of 14 spawning riffles built by the Task Force during the 1970s, three were located within the Sawmill ESL Krause 2012. In 2009, a previous TRRP rehabilitation project was conducted within the Sawmill ESL, with restoration features both upstream and downstream of the current gravel harvesting and processing/stockpiling area. Since 2009, the Sawmill Site has continuously been used as a source area and processing site for coarse sediment used in TRRP's gravel augmentation and mechanical channel rehabilitation activities within the restoration reach of the Trinity River (between the Lewiston Dam and the North Fork Trinity River). The removal of the tailing piles and the resulting disturbance necessitated rehabilitation of the Sawmill Site.

The Trinity River, at this location, is 2.5 miles downstream of the Lewiston Dam and upstream of any major tributaries or important sources of coarse sediment. This results in the flow regime being almost entirely regulated USFWS and HVT 1999. Floodplain surfaces in the design are intended to inundate rapidly as flows exceed 600 cubic feet per second (cfs). Floodplains near the gravel processing area begin to inundate at 600 cfs, and are completely inundated at 1,000 cfs with flow velocities near 0 feet (ft) per second. The proposed design also offers large increases in inundation around the Sawmill side channel in the right overbank area.

[1] The ESL is the anticipated geographic limit of project activities, with a buffer applied for the purposes of resource identification and associated impact analyses. In addition to in-river rehabilitation/construction areas, project activity areas include upland work areas, contractor use (i.e., staging) areas, unpaved access routes, and locations of pre-construction vegetation removal and other disturbances necessary to facilitate work activities. The buffer is sized appropriately for local conditions based on data available at the time of its development, including wetland habitat and wildlife surveys, information from previously prepared cultural resource inventory reports, etc.

Modeling of the proposed design using SRH-2D, a two-dimensional hydraulic model developed at the Bureau of Reclamation's (Reclamation) Technical Services Center, indicates significant increases around inundation over existing conditions within the project area. In addition to increasing juvenile habitat availability at flows typical of the winter fry-rearing period, the Sawmill project design is intended to stimulate geomorphic processes that would drive the evolution of a structurally-diverse floodplain landscape that offers a wide range of habitats and hydraulic conditions. As discharges increase to magnitudes capable of transporting appreciable volumes of sediment, flow divergence in the valley grade area is expected to result in the deposition of sediment and woody debris in some floodplain locations. At the same time, overbank flows are expected to become concentrated in specific areas, leading to localized scour. When coupled with aggradation within the constructed channel, these processes have the potential to produce avulsions and the incision of new channels into the floodplain surface. In summary, the designed low-flow channel is not intended to be a stable or static feature. Temporary effects on low-flow navigation at certain times of the year are possible, depending on geomorphic evolution.

2. Design Objectives

The purpose of the project is to advance one of the primary TRRP objectives of mechanically reshaping and scaling the current channel form to interact with the contemporary flow regime, and thereby reestablish the physical processes that would create and maintain anadromous fish habitat.

The general project objectives are to increase juvenile salmonid rearing habitat across all flows, increase the functional floodplain area, and increase topographic and hydraulic complexity throughout the site. Notably, the "habitat dip" observed at many sites is absent at Sawmill, which is likely due to the Sawmill side channel becoming connected to the Cemetery side channel and the mainstem river at flows greater than 450 cfs, substantially increasing habitat availability at intermediate flows.

The goals and objectives of the proposed Sawmill Site rehabilitation project include:

- Increasing the quality and availability of rearing habitat for juvenile salmonids over a wide range of discharges.
- Increasing the extent and frequency of floodplain inundation.
- Promoting fluvial processes such as cut and fill alluviation.
- Maintaining/improving existing adult holding habitat.
- Promoting the development of healthy, diverse riparian vegetation.
- Increasing the supply of large wood materials available to the river.

In addition, the TRRP has indicated the rehabilitation design at the gravel processing site should consider the additional objective of supporting ongoing sediment augmentation activities (i.e., harvesting/processing coarse sediment, stockpiling processed material, gravel augmentation, etc.).

Another important objective of the project is to repair a breach in the left bank of a side channel complex (referred to as the Cemetery side channel) that conveys flow back into the mainstem Trinity River. Restoring flow in the downstream half of that side channel complex would contribute to most of the ecological objectives listed above, particularly at the relatively low discharges that prevail when juvenile salmonids are present.

3. Design Elements

This section describes the discrete activity areas incorporated into the Proposed Action. The activities proposed for these areas are based on those described and analyzed in Section 2.3.2 of the Master Environmental Impact Report (EIR)[2] North Coast Regional Water Quality Control Board (RWQCB) and U.S. Bureau of Reclamation (Reclamation) 2009. Figure 3 of the Environmental Assessment/Initial Study (EA/IS) for the Upper Connor Creek and Sawmill Site rehabilitation project shows the locations where design elements are proposed and where rehabilitation activities would occur for the Sawmill Site.

Activity areas identified are as follows:

- Riverine/Riparian (R): areas at elevations within the ordinary high water mark and above or below the present water surface elevation;
- In-channel (IC): areas below present water surface elevation and contiguous to the active channel;
- Upland (U): land lying above the 100-year flood level where normal inundation occurs;
- Contractor use (C): areas for temporary construction staging and access; and
- Access roads (A): areas that provide access for construction equipment and contractors.

The depicted activity areas cover the maximum range of work that could be completed. However, the actual disturbance footprint would typically be smaller than that depicted in the EA/IS figures. In support of the construction process, temporary access routes and temporary stream crossings would be utilized following established best management practices. Structured log jams and wood placement features are also included as discrete activity areas, although they may coincide with other riverine/riparian and in-channel activity areas. In addition, multiple contractor use areas associated with nearby activity areas would allow contractors the flexibility to complete restoration work in the most efficient and least impactful manner based on real-time conditions (e.g., to avoid nesting birds or previously planted areas). Activities in riverine/riparian and in-channel areas would typically occur during the in-channel construction window (July 15–October 15) as authorized by the US Fish and Wildlife Service, the National Marine Fisheries Service (NMFS), and the Regional Water Board[3].

Riverine/Riparian areas are labeled with an R preceding the site number (e.g., R-1), upland areas are labeled with a U (e.g., U-1), in-channel work areas are labeled with an IC (e.g., IC-1), construction staging/contractor use areas are labeled with a C (e.g., C-1), and access roads are labeled with an A. These labels are used throughout this appendix.

3.1 Riverine Construction – Lowered Floodplains, Raised Depressions, and Chute Plug

Seven riverine/riparian construction activity areas, referred to as R areas, are proposed and summarized in Table J-1. R-1 is a 0.15-acre (ac) floodplain bench that would be adjacent to a proposed excavated side channel (IC-2) to reroute flow from the Cemetery/Sawmill side channel complex (Figure 3 in the EA/IS). IC-1 is proposed to block

[2] The 2009 Master EIR can be found at https://www.trrp.net/library/document/?id=476.

[3] The in-river work window has been expanded to July 15 through October 15 to protect all life stages of threatened fish while ensuring that the TRRP is efficient in completing projects that have been initiated. In agreement with the NMFS, best management practices that are protective of all native anadromous fish and their habitats are required after September 15.

and reroute flows into IC-2. Together, IC-1, IC-2, and R-1 would re-establish perennial flow into the Sawmill side channel. Riparian vegetation that establishes on R-1 would support the increased rearing habitat for juvenile salmonids in the new proposed side channel.

R-2 and R-3 are existing depressions within the floodplain and are proposed to be filled to eliminate bullfrog habitat. Within three years, these areas are expected to develop riparian vegetation. R-2 is not expected to be inundated under all discharge volumes, but R-3 would be inundated and would provide aquatic habitat at a discharge of about 3,500 cfs.

R-4 is an existing terrace composed of legacy mine tailings, which would be lowered to create an additional 0.45 ac of floodplain that would be partially inundated at about 1,000 cfs and mostly inundated at 3,000 cfs. Riparian vegetation is expected to develop within three years and provide quality lotic habitat over a wide range of moderate to high discharge volumes.

R-5 is an existing terrace on river left of the proposed mainstem channel meander that would be lowered to create 1.86 ac of new floodplain that would be partially inundated at 600 cfs and fully inundated at 1,000 cfs. R-5 has the potential to provide a large area of high-quality juvenile rearing habitat during the rearing season, especially after riparian vegetation has become established and in the eventuality that winter flow regimes are adopted by TRRP. The proposed elevation is slightly higher than the baseflow water surface elevation and riparian vegetation is expected to quickly establish over most of R-5. This would improve juvenile rearing habitat quality and contribute to greater trophic production over time. Riparian vegetation colonization would be accompanied by fine sediment deposition, but rates of vertical accretion would likely remain low because of a limited supply of fine sediments upstream of Rush Creek.

R-6 is adjacent to the proposed mainstem channel meander on river right and would consist of excavating 1.02 ac of existing terrace to create a portion of an island complex. R-6 would form the right bank of the proposed channel meander (IC-5) and would provide shallow water areas along its wetted edge. This area would be fully inundated at 8,500 cfs and would support a large eddy region that offers refuge from high velocities over the full range of discharges, including up to 11,500 cfs.

R-7 is a proposed chute plug consisting of wood and coarse sediment at the head of an existing chute channel that traverses the existing bar opposite the Burner Hole. The plug would reduce flood conveyance over the backside of the bar so that floods would be more effective for maintaining the baseflow depth and volume of Burner Hole in the future. The 0.32-ac plug would prevent flood waters from entering the chute for discharges less than 6,000 cfs.

Table J-1. Riverine Construction Activity Area Descriptions

Riverine Construction Area	Feature Type(s)	Description
R-1	Floodplain bench on side channel	A floodplain bench of about 0.15 ac, adjacent to a newly-proposed side channel.
R-2	Raised depression	An existing aquatic depression that would be filled to create about 0.12 ac of riparian habitat and eliminate bullfrog habitat.

Riverine Construction Area	Feature Type(s)	Description
R-3	Raised depression	An existing aquatic depression that would be filled to eliminate bullfrog habitat and create about 0.06 ac of riparian habitat. A flow discharge of about 3,500 cfs would create aquatic habitat at R-3.
R-4	Lowered floodplain	A lowered floodplain to create an additional 0.45 ac of floodplain that would be partially inundated at 1,000 cfs and mostly inundated at 3,000 cfs.
R-5	Lowered floodplain	R-5, which is adjacent to the proposed mainstem channel meander on river left, would be lowered to create an additional 1.86 ac of floodplain that would start to be inundated at 600 cfs and fully inundated at 1,000 cfs.
R-6	Lowered floodplain	R-6, which is adjacent to the proposed mainstem channel meander on river right, would be lowered to create an additional 1.02 ac of floodplain that would be fully inundated at 8,500 cfs.
R-7	Chute plug	A 0.32-ac wood and coarse sediment plug at the head of a chute channel that traverses the existing bar opposite the Burner Hole. The R-7 chute plug would prevent flood waters from entering the chute below 6,000 cfs.

3.2 In-Channel Construction (IC) – Containment Structure, Side Channel Realignment, Riffle, Side Channel Plug and Fill, and Mainstem Channel Meander

The in-channel construction (IC) would consist of eight proposed areas to improve the in-channel complexity. IC-1 and IC-1x would consist of filling an existing side channel composed of alluvial fill with strategically-placed wood, large cobble, and small boulders that would prevent flow in the existing Cemetery side channel from entering the mainstem through a breach that developed over the past decade. The 0.72-ac structure would contain all flow in the side channel during low flow periods but would begin to overtop and contribute flow back to the mainstem channel as discharge exceeds 8,500 cfs. At 11,500 cfs, overtopping flow would approach 1 ft in depth in some locations.

Some uncertainty remains whether IC-1, as designed, is sufficiently large to prevent another breach through the narrow strip of floodplain that separates the side channel from the mainstem. IC-1x is a possible expansion of IC-1 that would add 1.19 ac using the same material. IC-1 is intended to last for many years and is also intended to be a natural-looking structure composed of natural alluvial materials to the extent possible. The design therefore calls for a relatively low-profile structure that can be overtopped by large floods and minimal use of oversize materials. As a result, there is some risk that the structure could be subject to incision that would allow more of the water carried in the side channel to flow back into the mainstem than is projected for the as-built condition. In addition, as currently designed, IC-1 does not address the potential for another breach to develop in the divide between the side channel and the main channel elsewhere. Development of such a breach is possible where the side channel currently "leaks" back to the main channel about 190 ft downstream from the downstream end of the containment structure. For additional details on the location and elevation of this "leak", refer to the design report Yurok Tribe Fisheries et al. 2023.

IC-2 is a new 0.81-ac channel alignment for the Cemetery/Sawmill side channel complex. The new alignment would be excavated and graded to reroute a portion of the channel about 100 ft east of the current alignment. The side channel would result in surface flow through the Sawmill side channel during the winter baseflow period, when approximately 1/3 of the total discharge is expected to flow through the side channel complex. The slow flow through the side channel complex at baseflow would greatly increase the availability of rearing habitat for juvenile salmonids.

IC-3 would be a 0.04-ac constructed riffle within the existing Cemetery side channel immediately downstream of the mouth of the IC-2 side channel realignment. The riffle would encourage flow into the new alignment and reduce flow conveyance in the existing side channel downstream from that point.

IC-4 is a proposed side channel plug for a short section (about 110 ft) of the Sawmill side channel. The side channel would be raised to the elevation of the adjacent floodplain, and the proposed side channel plug would be about 0.08 ac. This would promote inundation of the surrounding overbank area to increase salmonid rearing habitat.

IC-5 would be a 1.86-ac excavated channel meander that would reroute a reach of the mainstem channel to convey nearly all streamflow at all discharge levels. The new channel meander would increase hydraulic and geomorphic complexity compared to the existing straight, entrenched channel. Large eddy regions that offer low-velocity rearing habitats and to increase the scouring forces against the bedrock on river right near Burner hole. The alignment was designed to minimize impacts to established beneficial vegetation.

Coarse sediment would be placed in an 0.95-ac area (IC-6) of the mainstem to raise the bed elevation to direct flow into the new channel meander (IC-5) as well as into a portion of the existing mainstem channel along the bank on river right. The fill added to IC-6 would mitigate the streambed incision that has occurred since the removal of artificial grade controls in 2009. Maintenance of IC-6 would rely on replacement of coarse bed material from upstream. Failure to adequately supply mobile coarse sediment downstream of the Lewiston Dam could eventually deplete the input fluxes needed to prevent incision. On the upstream edge of IC-6, large wood elements would be installed, consisting primarily of vertical posts intended to rack wood delivered from upstream during high flow events.

IC-7 (0.95 ac) would continue the fill material of IC-6 downstream. R-6 is adjacent to IC-7 and together they form an island complex along the new channel meander (IC-5). The island complex would also provide shallow water areas along the wetted edge over a wide range of flows, from baseline to more than 8,500 cfs when the island complex would be fully inundated. Additionally, the island complex would support a large eddy region that would offer refuge from high velocities over the full range of discharges.

Table J-2. In-Channel Construction Activity Area Descriptions

In-Channel Construction Activity	Feature Type(s)	Description
IC-1	Fill in existing side channel	The existing Cemetery side channel has a breach that allows flow into the mainstem. The existing Cemetery side channel would be filled with alluvium and strategically-placed wood, large cobble, and small boulders to redirect flow into a new side channel that would not allow flow into the mainstem. The 0.72-ac structure would contain all flow in the side channel during low flow periods but would begin to overtop and pass flow back to the mainstem channel as discharge exceeds 8,500 cfs.

In-Channel Construction Activity	Feature Type(s)	Description
IC-1x	Extension of fill in existing side channel	A 1.19-ac extension of IC-1 to increase stability. This represents the maximum disturbance footprint.
IC-2	Excavated side channel	The new alignment of the Cemetery/Sawmill side channel would be excavated and graded to reroute 0.81 ac of the channel. The slow flow through the side channel complex at baseflow would greatly increase the availability of rearing habitat for juvenile salmonids.
IC-3	Riffle	This 0.04-ac constructed riffle within the existing Cemetery side channel (IC-1) would encourage flow into the new channel alignment and reduce flow through the existing side channel.
IC-4	Side channel plug	The side channel plug would consist of alluvial fill and wood that would be placed in a short section (0.08 ac) of the Sawmill side channel. The proposed side channel plug would promote inundation of the surrounding overbank area to increase salmonid rearing habitat.
IC-5	Mainstem channel meander	A new mainstem channel would be excavated to create a 1.67-ac channel meander with greater hydraulic and geomorphic complexity.
IC-6	Channel fill	Coarse sediment would be placed in the existing mainstem channel to raise the elevation and re-direct the flow to IC-5. IC-6 covers 0.95 ac.
IC-7	Island complex	R-6 is adjacent to IC-7 and together they form an island complex along the new channel meander (IC-5). The island complex would also provide shallow water areas along its wetted edge over a wide range of flows from baseline to more than 8,500 cfs when the island complex would be fully inundated. IC-7 would be 0.95 ac.

3.3 Upland – Upland Spoils

Excavated materials (e.g., fill) that would not be used for instream construction would be placed in upland areas for storage. U-1, which would cover 0.63 ac and could accommodate about 6,650 cubic yards (cy) of material, would receive all spoils generated on river right. U-2 would cover about 2.5 ac and could accommodate more than 53,000 cy of material. Higher-value coarse alluvium would be preferentially spoiled or processed, and stockpiled in the northern part of U-2 to facilitate future coarse sediment augmentation operations. Lower-value material would be preferentially spoiled in the southern part of U-2; this area would be seeded to support the establishment of native grasses and shrubs. Because a portion of U-2 would be used for sediment supply, the elevation would be lowered in the years following project implementation.

U-3 is an additional upland spoils and processing area. Like U-1 and U-2, U-3 would receive excess excavated materials. The spoiled material would be graded to create a flat surface covering 1.77 ac that could serve as a materials processing/stockpiling area after construction is complete. Depending on the elevation and intended use of this working surface, about 16,500 cy of materials could be stored in the U-3 area. Sediments stored in U-2 or harvested directly from U-3 could be sieved and stockpiled in U-3 or loaded onto trucks for rehabilitation purposes elsewhere along the Trinity River.

Table J-3. Upland Construction Activity Area Descriptions

Riverine Construction Area	Feature Type(s)	Description
U-1	Upland spoils	A 0.63-ac area that could accommodate about 6.650 cy of material generated on river right.
U-2	Upland spoils	U-2 would cover about 2.5 ac and could accommodate more than 53,000 cy of material. Higher-value coarse alluvium and lower-value material would be spoiled or processed and stockpiled in U-2 to supply material for future sediment augmentation operations. Because a portion of U-2 would be used for sediment supply, the elevation would be lowered in the years following project implementation.
U-3	Upland spoils and processing area	A 1.77-ac upland spoils and processing/stockpiling area that would be configured to create a working surface that could be used as a materials processing/stockpiling area after construction is complete. About 16,500 cy of materials could be stored in the U-3 area.

3.4 Large Wood Features

Woody material is a natural component of healthy river systems. It provides important habitat for aquatic species by providing cover from high flows and predators. For example, low-velocity areas collect suitable spawning materials, and woody organic materials are a food source for aquatic insects. Woody material can also help create and maintain beneficial habitat features such as pools, islands, and gravel bars. Some of the design features would incorporate large wood elements in some manner. One large wood structure consisting primarily of vertical posts located at the upstream end of the R-6/IC-7 island is proposed. Smaller clusters (i.e., three to five pieces) of large wood will likely be utilized as structural elements in other locations where resistance to erosion is important, such as in the IC-1 containment structure and the R-5 chute plug. These smaller wood installations are usually configured to address site-specific conditions encountered in the field during construction and follow typical designs and specifications. Finally, wood materials would be installed in selected locations throughout the site to provide immediate habitat for juvenile fish and other organisms. Individual installations of this “habitat wood” typically consists of one to a few pieces, often with slash, keyed into stream banks or floodplain areas.

3.5 Contractor Use Areas

Contractor use areas would be used for stockpiling and sorting materials, staging equipment, contractor parking, and similar activities. They could also serve as transportation corridors for moving equipment and materials from one activity area to another. Disturbance would be minimized to the extent possible, and water would be applied to transportation corridors for dust abatement. To further support the intent of rehabilitation, the design team designated contractor use areas in locations that avoid sensitive resources.

There are three areas (C-1, C-2, and C-3) currently identified that would be available as contractor use areas. These areas occupy 0.62, 1.7, and 0.52 ac, respectively. The contractor use areas would be reviewed by the TRRP and construction contractor before channel rehabilitation activities begin. As identified in the approved Contractor’s Work Plan, opportunities to minimize disturbance to sensitive areas and limit the extent of designated contractor use areas will be considered. Contractor use areas would be decommissioned upon project completion, unless otherwise specified by the Government.

3.6 Access Routes

Access roads throughout the site support equipment access and construction within the project area, on both river right and river left via existing roads. River left access would be from an existing spur (A-1) off Goose Ranch Road. River right access would be from Rush Creek Road, which would provide access to existing roads A-2 and A-3. Whenever possible, existing roads would be used for access, although some widening may be necessary. The total length of existing roads that would be used and possibly widened or improved is 0.3 mile.

Several temporary access roads (A-4, A-5, A-6, A-7, A-8, A-9 and a portion of A-2) are proposed. The total length of temporary access roads to be used during construction would be approximately 0.6 mile. Following completion of the Project, temporary access roads would be decommissioned, unless otherwise specified by the Government. One temporary river crossing (X-1) that would provide access across the existing channel to the southern end of the proposed channel meander is proposed. The temporary crossing would be approximately 0.05 mile.

3.7 Design Constraints

Early in the planning process, the TRRP identified several sensitive features that are critical with respect to design considerations (e.g., cultural resources and infrastructure). The design teams worked closely with Reclamation and Bureau of Land Management (BLM) cultural resources staff to avoid cultural resource features (e.g., dredge tailing deposits) that provide valuable information on historic mining along this reach of the Trinity River.

Goose Ranch Road (County Road 215) is located adjacent to the Sawmill ESL on river left and Rush Creek Road (County Road 204) and Lewiston Cemetery Road (County Road 214) is on river right, all of which are outside of the Sawmill ESL. These three roads would not be affected by project activities. Access to the ESL would be from spur roads off either Goose Ranch Road or Lewiston Cemetery Road/Rush Creek Road.

The ESL is a total of 75.5 ac, most of which is managed by BLM (62.5 ac) or the State of California (6.0 ac). The remaining 7 ac within the ESL are private property, consisting of 9 separate parcels. One home and a few outbuildings are within the ESL. Other permanent infrastructure is limited to two sets of power poles that support overhead transmission lines that span the valley near the center of the site.

Due to the high fire hazard and history of equipment-caused fires in Trinity County, construction contractors would be required to follow BLM requirements as well as applicable regulations of California Public Resource Code 4428-4442 (Fire Plan for Construction and Service Contracts) during dry periods to minimize the potential for the initiation and spread of fires from the work site. Removing vegetation (e.g., weed whipping) along access routes could be required to enhance fire prevention and protection during the work period.

4. Rehabilitation Activities

This section describes the rehabilitation activities that would occur under the Proposed Action. A combination of these activities would take place at each location, concurrently and in sequence. Rehabilitation activities include recontouring, vegetation removal, sediment and gravel placement, large wood material placement, and revegetation activities. Proposed construction methods are also discussed at the end of this section.

4.1 Recontouring and Vegetation Removal

Under the recontouring and vegetation removal activities, the ground surface would be modified to reduce riparian encroachment and the risk of stranding juvenile salmonids. To varying degrees, vegetation would be cleared and removed at all activity areas that would be subject to rehabilitation activities, except for crossings. Where recontouring is part of the Proposed Action (e.g., floodplain lowering), the entire site would be subject to vegetation removal, but where possible, riparian vegetation (e.g., willows) would be salvaged and stored within the ESL for use in subsequent revegetation efforts. Grading would be required to construct or enhance topographic features that could develop into functional riparian habitat; excavation and fill placement would be balanced. In addition to the activity areas that would be cleared before grading, site-specific removal of trees (e.g., conifers and hardwoods) would be required to enhance the safety of the work site, reduce fuel loading, and improve local conditions for individual tree growth and wildlife; the trees that are removed would be used to construct large wood habitat structures. As illustrated in Figure 3, upland and contractor use areas include discrete locations where vegetation removal is anticipated based on coordination with, and authorization by, BLM and landowners.

Vegetation removed from activity areas, including contractor use areas, would be used for in-river placement. Large wood pieces would be chipped or masticated for use as organic material to increase nutrients and enhance water holding in revegetation areas. Activities would be accomplished using a variety of methods, including hand tools and heavy equipment such as excavators, bulldozers, dump trucks, and potentially scrapers. Where feasible, existing native riparian vegetation would be maintained to facilitate future recruitment.

4.2 Sediment and Gravel Placement

Implementation of the Proposed Action would require placement of alluvial materials at activity areas throughout the site. All or most of the materials used to construct design features would be sourced by processing materials generated by excavation of design features that require cut. Fill materials for constructing features on river left would be derived from the excavation of new channels and floodplains in the left overbank area. Much of the fill required on river right could be derived from source areas on river right (i.e., R-4). It may be necessary to truck limited quantities of processed material from river left.

Excavated coarse material is considered useable pit-run provided the content of sand and other fines exceeds 30% (Table J-4). Other materials would be derived by processing pit-run (PR). Material retained on a 5-inch screen would be designated cobble and small boulder (CSB). Materials that pass a 5-inch screen but are retained on a half-inch screen would be designated clean gravel and cobble (CGC). Materials passing a half-inch screen are considered fines.

Table J-4 specifies the size classes of unsorted and processed alluvial materials that would be excavated from riverine and in-channel activity areas (e.g., IC-1) and generated onsite at contractor use areas (Figure 3). If quantities of specific size classes are unavailable from within the site, material would be imported from local sources available to the TRRP.

Table J-4. Sediment Material Types and Size Classes for Construction of IC Features

Material	Description	D_{50} (inches)	D_{90} (inches)	D_{max} (inches)	Percent Fines
Fines	Particles less than 0.5 in			0.5	
Pit-run (PR)	Excavated alluvium/tailings	2–3	5–6	10–12	<30
Clean Gravel and Cobble (CGC)	Gravel and cobble between 0.5- and 6-in intermediate diameter	2	5	6	0
Cobble and Small Boulders (CSB)	CSB between 5- and 16-in intermediate diameter	7–9	10–12	16	<5

D_{50} indicates that the average particle size falls within this range.

D_{90} indicates that 90 percent of the particles have a diameter smaller than this range.

D_{max} indicates the maximum particle diameter.

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Table J-5 lists total cut and fill quantities and cut and fill quantities for each geologic material type associated with each design feature. Total cut and fill quantities listed in .

Table J-5 include all earth work, including spoils volumes, on both sides of the river. The net cut volumes to be spoiled (total cut minus fill to construct design features) are approximately 6,000 cy on river right and approximately 69,100 cy on river left. These net volumes are slightly smaller than the identified spoils capacities available on each side of the river, which are estimated to be 6,600 cy on river right and 72,300 cy on river left. Several determinations regarding processing of material for gravel augmentation versus excavation/construction of the final surface have yet to be made. In addition to its use as fill material within the project site, a large but currently undetermined proportion of the materials generated by excavation of design features on river left will be processed and stockpiled for future use for sediment augmentations and/or for building features at rehabilitation projects elsewhere. Conversion of excavated material to usable products, perhaps coupled with a staged excavation and processing schedule, would reduce the need to permanently store spoiled materials on site, as well as reduce TRRP’s costs for subsequent sediment augmentations.

Table J-5. Cut and Fill Material Types and Approximate Quantities Required at Each Activity Area

Feature	Cut (cy)	Fill (cy)	Fill PR (cy)	Fill CGC (cy)	Fill CSB (cy)	Large Wood
IC-1	--	3,880	2,330	--	1,550	Structural
IC-2	6,080	--	--	--	--	Habitat
IC-3	--	40	30	--	10	Structural
IC-4	--	180	160	--	20	Habitat
IC-5	30,480	--	--	--	--	Habitat
IC-6	--	2,000	--	1,800	200	Habitat
IC-7	--	10,030	5,020	2,505	2,505	Designed

Feature	Cut (cy)	Fill (cy)	Fill PR (cy)	Fill CGC (cy)	Fill CSB (cy)	Large Wood
R-1	855	--	--	--	--	Habitat
R-2	--	505	505	--	--	Habitat
R-3	--	120	120	--	--	Habitat
R-4	3,835	--	--	--	---	Habitat
R-5	44,645	--	--	--	-	Habitat
R-6	8,240	--	--	--	--	Habitat
R-7	--	1,125	790	--	335	Structural
U-1	--	6,635	--	--	--	--
U-1	--	53,265	--	--	--	--
U-1	--	16,440	--	--	--	--
Total	**94,135**	**95,345**	**8,955**	**4,305**	**4,620**	--

Note: PR = pit-run, CGC = clean gravel and cobble, CSB = cobble and small boulders, R = riverine, U = upland, IC = in-channel.

4.3 Large Wood Material Placement

Implementation of the Proposed Action would use large wood elements to enhance aspects of the design features. These features would be integrated into the design of R and IC activity areas to provide habitat cover and structure and channel roughness and complexity, and to slow water velocities to improve aquatic habitat over a range of flows.

Most of the design features would incorporate large wood elements. One large wood structure consisting primarily of vertical posts located at the upstream end of the R-6/IC-7 island is proposed. A more detailed design of that structure will be undertaken as the project advances toward the final design. Smaller clusters (3–5 pieces) of large wood would likely be utilized as structural elements in other locations where resistance to erosion is important, such as in the IC-1 containment structure and the R-5 chute plug. These smaller wood installations are usually configured to address site-specific conditions encountered in the field during construction and follow typical designs and specifications. Finally, wood would be installed in selected locations throughout the site to provide immediate habitat for juvenile fish and other organisms. Individual installations of this “habitat wood” typically consist of one to a few pieces, often with slash, keyed into stream banks or floodplain areas. The number of large wood pieces needed for all installation types would be quantified at a later stage of design.

4.4 Revegetation Activities

Revegetation with native vegetation and control of invasive plants would occur in areas that would be disturbed by project activities. The project activities would result in several new landforms. Many of the riparian areas (R-1 through R-7) would become vegetated naturally and are expected to be at least 80% revegetated after three years, adding approximately 4 ac of new riparian habitat. Temporary impacts would occur on up to 2.84 ac of contractor use areas and 1.45 ac of temporary access roads. Construction activities within contractor use areas would minimize disturbance to native vegetation where possible, and the areas where disturbance occurs would be seeded and mulched and revegetated with native plants.

The TRRP’s objective for revegetation of the Sawmill Site is to promote the establishment and growth of a more diverse assemblage of riparian shrubs and deciduous hardwoods than presently exists. This would feature varying ages so that the size, frequency, and distribution of native vegetation would increase in the future. By meeting this objective, the functions and values of native riparian and upland vegetation are expected to increase over time. In addition, the revegetation plan emphasizes the expansion of large conifers and hardwoods that could be naturally recruited as woody material into the mainstem.

To varying degrees, impacts to vegetation are anticipated at each activity area. Project activities are designed to ensure that riparian vegetation in particular is minimally affected by implementation of the Proposed Action, and is replaced at a 1:1 ratio to meet the CDFW standard of no net loss of riparian area habitat within the Trinity River corridor. Revegetation would provide aquatic refugia at high flows, improve terrestrial habitat for birds and other wildlife, provide future wood recruitment, and provide future input of terrestrial nutrients to the river. Revegetation efforts would emphasize actions to create conditions that promote natural revegetation with the creation of wet (riparian) conditions. This would include burying or ripping woody material into the soil in U activity areas to enhance moisture retention.

Under this activity, revegetation of riparian and upland areas would rely on a combination of planting and natural recruitment of native species, consistent with TRRP's Riparian Revegetation and Monitoring Plan Trinity River Restoration Program (TRRP) 2022 and the needs of BLM. Native willows salvaged from activity areas, including contractor use areas, would be used to revegetate activity areas by replanting them during or after construction to speed vegetation recovery. Replanting of affected native vegetation (e.g., shrubs and trees) would be completed in accordance with site-specific revegetation guidelines prepared by the TRRP. TRRP uses only plant materials from *Phytophthora*-inspected nurseries[4]. The intent at this site is largely to increase riparian capacity by increasing ground water levels so that revegetation may occur naturally and using onsite plant and seed materials. Wood feature placements could be used in any activity area to enhance site conditions to benefit the revegetation effort. All C and U areas would be seeded and mulched with a blend of native upland grass and forb seed. R activity areas would be seeded with a blend of native riparian grasses and forbs, in conjunction with wetland plants and willows where appropriate[5].

Revegetation at the Sawmill Site would include preparing planting areas and installing a mixture of wetland, riparian, and upland plant species. The plantings would include material salvaged from the site, nursery container stock including bare-root plants and herbaceous plugs, and grass, forb, and oak (*Quercus* spp.) seeds.

Plant species expected to be incorporated into the revegetation plan include California brome (*Bromus carinatus*), incense cedar (*Calocedrus decurrens*), sedge (*Carex* spp.), wildrye (*Elymus* spp.), rush (*Juncus* spp.), ponderosa pine (*Pinus ponderosa*), Douglas fir (*Pseudotsuga menziesii*), mugwort (*Artemesia douglasii*), madrone (*Arbutus menziesii),* black cottonwood (*Populus trichocarpa),* oak, and willow (*Salix* spp.). Arroyo willow (*Salix lasiolepis*), red willow (*S. laevigata*), and shiny willow (*S. lasiandra*) clumps that are salvaged from excavated areas would primarily be placed in or near wood structures. Cottonwood and willow poles would be planted in select areas as appropriate to increase species diversity. Conifers, madrones, and acorns would be planted in the upland areas where the soil can be amended with organic material, and planting microsites would be prioritized by the amount of afternoon shade provided by the surrounding topography and vegetation. The organic material amendment would consist of wood of several types (i.e., chipped, pieces, or logs) buried or ripped into surfaces and/or placed on top (i.e., as mulch).

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[4] TRRP would ensure that plant materials used on BLM lands meet the standards of the appropriate land management agency.

[5] Per BLM policy, recleaned wheat would not be planted on lands managed by BLM.

Disturbed areas higher than 4 ft above the summer baseflow water surface elevation would be mulched with weed-free straw at the rate of 1-2 tons per ac. Revegetation activities (e.g., planting and watering as appropriate) could start during the latter part of construction and would continue during the wet season (October through March) after final grading and site stabilization measures have been completed. Planting and seeding efforts could extend into the year following construction, depending on site and weather conditions. Herbaceous bare-root material and hardwood poles would be used if planting occurs in or after November.

As a general concept, the revegetation plan at the Sawmill Site would include several planting zones. Each zone would have different combinations of herbaceous, shrub, and tree species. Wetland and toe zones would include herbaceous species with approximately 3 ft between plant centers, and about 5,500 plants per ac. Plantings in willow, cottonwood, and transition zones would include sedges, shrubs, and trees with approximately 5 to 8 ft between plant centers, and about 872 plants per ac. Plantings in upland zones would feature shrubs and trees with approximately 10 to 12 ft between plant centers, and 326 plants per ac. Willow trenches would be selectively installed. The planting design may change as designs are finalized.

The TRRP anticipates that select planting areas would be irrigated for up to five years after planting. Water for any irrigation would be pumped from the Trinity River, consistent with existing riparian water rights from the river on public lands. Equipment would be used to water plants during the dry season for a minimum of three years on project areas that have easy long-term access with landowner permission. Any irrigation measures would be temporary to improve the establishment and survival of vegetation. Post-project monitoring could indicate the need for additional irrigation and other measures to ensure successful revegetation. These measures could include weeding, in-planting, and replanting as conditions require. At the outset of tailings removal, efforts would be made to remove invasive vegetation. Removed weeds would be disposed of properly to stop any spread of seed or rhizome.

5. Construction Methods and Schedule

Earthmoving equipment that could be used to construct the project includes, but is not limited to, off-road articulated dump trucks, front end loaders, excavators, bulldozers, push-pull scrapers, water tenders, and graders. In addition, equipment capable of driving piles (e.g., large logs) with a hydraulic ram could be used to anchor or stabilize wood structures in various activity areas. For materials such as large wood elements that would be imported from offsite, trucks capable of hauling up to 20 cy at a time would legally obtain the materials from forested lands throughout the Trinity River watershed.

Large boulders, cobbles, and gravel would be obtained primarily by processing alluvial material harvested within the ESL or imported from a local commercial source.

The proposed rehabilitation activities may start after the National Environmental Policy Act (NEPA) process has been completed and all required authorizations have been obtained. Preconstruction activities, such as vegetation removal for access and materials (i.e., wood and gravel) staging, could occur in the interim between completing the NEPA process and the rehabilitation activities if requisite permits and access agreements associated with these activities are in place. The flow release schedule established for a particular water year type could limit ground disturbance activities below the ordinary high water mark during the late spring through early summer. Processing of alluvial material (e.g., from IC-1 and IC-2) could require up to six weeks. Revegetation work (e.g., planting willow pole cuttings and/or container plants and seeding with native grasses) would generally occur during construction, in the wet season (i.e., fall/winter) following construction, or during subsequent wet seasons after construction. Construction activities for site maintenance would be conducted post-project as needed during the time covered by the right-of-way; affected landowners would be notified in advance.

The processing of alluvial material needed for in-river work and fill and subsequent in-river construction are priorities to achieve project goals and reduce environmental impacts. Processing of rock and sediment materials would take place onsite in the C-1, C-2, and C-3 areas.

When the in-river (IC and R) work is completed, excavation and grading in the floodplains would continue through the fall, with construction completed by December. Alternatively, construction would be sequenced as funding and environmental constraints allow, within the guidelines discussed in the EA/IS. Post-project in-river site maintenance work (e.g., regrading riverine areas and replenishing wood features) would generally occur during the in-river work window (July 15–October 15) of whatever year maintenance is deemed appropriate. Site maintenance that does not require in-river work or river crossings would generally occur in the fall or the wet season, outside of the nesting period for bird species present in the area.

6. Environmental Commitments

The environmental commitments have been incorporated as design features as defined under NEPA and are included in the Proposed Action for NEPA analysis purposes. They also serve as the California Environmental Quality Act mitigation measures that would be implemented in accordance with a project-specific mitigation monitoring and reporting program (see Appendix D, Mitigation Monitoring Reporting Program and Project Design Elements, in the EA/IS). As the implementing agency for the proposed rehabilitation activities, Reclamation has committed to implementing the environmental commitments—also known as the mitigation measures—identified in the Master EIR to avoid or minimize potential project impacts (refer to the Master EIR – Appendix A [the MMRP], for a description of these measures).

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Appendix K - Compliance with Standards and Guidelines for Survey and Manage Species

The Trinity River Channel Rehabilitation Project at the Upper Conner Creek (UCC) site (River Mile [RM] 77.1 to 78.5) and the Sawmill Gravel Processing (Sawmill) site (RM 108.9 to 109.75) is consistent with court orders relating to the Survey and Manage mitigation measure of the Northwest Forest Plan, as incorporated into the Bureau of Land Management's (BLM's) 1993 Redding Resource Management Plan.

On December 17, 2009, the US District Court for the Western District of Washington issued an order in Conservation Northwest, et al. v. Rey, No. 08-1067 (W.D. Wash.) (Coughenour, J.), granting the Plaintiffs' motion for a partial summary judgment and finding a variety of violations of the National Environmental Policy Act (NEPA) in the BLM and US Forest Service 2007 Record of Decision (ROD) eliminating the Survey and Manage mitigation measure. Judge Coughenour deferred issuing a remedy in his December 17, 2009, order until further proceedings and did not enjoin BLM from proceeding with projects. Plaintiffs and Defendants entered into settlement negotiations that resulted in the 2011 Survey and Manage Settlement Agreement, adopted by the District Court on July 6, 2011.

The Ninth Circuit Court of Appeals issued an opinion on April 25, 2013, that reversed the District Court for the Western District of Washington's approval of the 2011 Survey and Manage Settlement Agreement. The case is now remanded back to the District Court for further proceedings. This means that the December 17, 2009, District Court order which found NEPA inadequacies in the 2007 analysis and records of decision removing Survey and Manage requirement is still valid.

Previously, in 2006, the District Court (Judge Pechman) had invalidated the agencies' 2004 RODs eliminating Survey and Manage due to NEPA violations. Following the District Court's 2006 ruling, parties to the litigation had entered into a stipulation exempting certain categories of activities from the Survey and Manage standard (hereinafter "Pechman exemptions"). Judge Pechman's Order from October 11, 2006, directs: "Defendants shall not authorize, allow, or permit to continue any logging or other ground-disturbing activities on projects to which the 2004 ROD applied unless such activities are in compliance with the 2001 ROD (as the 2001 ROD was amended or modified as of March 21, 2004), except that this order will not apply to:

A. Thinning projects in stands younger than 80 years old;
B. Replacing culverts on roads that are in use and part of the road system, and removing culverts if the road is temporary or to be decommissioned;
C. Riparian and stream improvement projects where the riparian work is riparian planting, obtaining material for placing in-stream, and road or trail decommissioning; and where the stream improvement work is the placement of large wood, channel and floodplain reconstruction, or removal of channel diversions; and
D. The portions of project involving hazardous fuel treatments where prescribed fire is applied.

Any portion of a hazardous fuel treatment project involving commercial logging will remain subject to the survey and management requirements except for thinning of stands younger than 80 years old under subparagraph a. of this paragraph."

Following the District Court's December 17, 2009, ruling, the Pechman exemptions still remained in place. BLM has reviewed the Environmental Assessment/Initial Study (EA/IS) for the UCC and Sawmill sites in consideration of both the December 17, 2009, partial summary judgment and Judge Pechman's October 11, 2006, order. Because this site is the focus of a riparian and stream improvement project where the riparian work is riparian planting, obtaining material for placing in-stream, and road or trail decommissioning; and where the stream improvement work is the placement of large wood, channel and floodplain reconstruction, or removal of channel diversions, BLM has made the determination that this project meets Exemption C of the Pechman Exemptions

(October 11, 2006, Order), and therefore may still proceed even if the District Court sets aside or otherwise enjoins use of the 2007 Survey and Manage ROD since the Pechman exemptions would remain valid in such case.

Appendix L - Bureau of Land Management Sensitive Species List

Bureau of Land Management Sensitive Species

Table K-1. Sensitive Fish and Wildlife Species, Bureau of Land Management (BLM) Redding Field Office (Updated February 2019).

Scientific Name	Common Name	Status	Assessment[1]
Birds			
Accipiter gentilis	Northern goshawk	BLMS/SSC	Marginal habitat for this species occurs within the Project ESLs[2], but it is very unlikely that species occurrences exist because high-quality habitat is present within 10 miles of the ESLs. EC-VW-7 would ensure that this species is protected if present.
Agelaius tricolor	Tricolored blackbird	BLMS/SSC	Habitat for this species does not occur within the augmentation reach.
Aquila chrysaetos	Golden eagle	BLMS/BGEPA	Foraging habitat for this species occurs within the augmentation reach, but nesting habitat does not. Occurrences are known in the augmentation reach vicinity. EC-VW-3 would ensure that this species is protected.
Athene cunicularia	Burrowing owl	BLMS/SSC	Habitat for this species does not occur within the Project ESLs.
Buteo swainsoni	Swainson's hawk	BLMS/ST	Habitat for this species does not occur within the Project ESLs.
Coccyzus americanus occidentalis	Western yellow-billed cuckoo	BLMS/FC/SE	Habitat for this species does not occur within the Project ESLs.
Elanus leucurus	White-tailed kite	BLMS/SF	Nesting habitat occurs for this species within the Project ESLs, but foraging habitat does not as they require open grasslands and meadows. The Project ESLs are outside of the species range, and therefore it is unlikely to occur.

[1] All environmental commitments (ECs), incorporated as design features as defined under the National Environmental Policy Act, will be implemented in accordance with a project-specific mitigation monitoring and reporting program (MMRP; Appendix F of the Environmental Assessment/Initial Study [EA/IS] for the Oregon Gulch channel rehabilitation site). The ECs are fully described in Appendix E of the EA/IS.

[2] The Environmental Study Limit, or ESL, is the anticipated geographic limit of project activities with a buffer applied for the purposes of resource identification and associated impact analyses. In addition to in-river rehabilitation/construction areas, these project activities include upland work areas, contractor use (i.e., staging) areas, unpaved access routes, and locations of preconstruction vegetation removal and other disturbances necessary to facilitate work activities. The buffer is sized appropriately for local conditions, based on data available at the time of its development (e.g., wetland habitat and wildlife surveys, information from previously prepared cultural resource inventory reports, etc.).

Scientific Name	Common Name	Status	Assessment
Grus canadensis tabida	Greater sandhill crane	BLMS/ST/SF	Habitat for this species does not occur within the Project ESLs.
Haliaetus leucocephalus	Bald eagle	BLMS/FD/SE/BGEPA	Habitat for this species occurs within the augmentation reach, and occurrences are known along the Trinity River corridor. EC-VW-7 would ensure that this species is protected.
Laterallus jamaicensis coturniculus	California black rail	BLMS/ST/SF	Habitat for this species does not occur within the Project ESLs.
Riparia tabiya ssp. *riparia*	Bank swallow	BLMS/ST	Habitat for this species does not occur within the Project ESLs.
Strix occidentalis caurina	Northern spotted owl	FT/ST	Habitat for this species does not occur within the Project ESLs. The closest documented occurrence of the species is approximately a half-mile from the Trinity House Gulch ESL.
Strix occidentalis occidentalis	California spotted owl	BLMS/SSC	Habitat for this species does not occur within the Project ESLs.
Mammals			
Antrozous pallidus	Pallid bat	BLMS/SSC	Habitat for this species could occur within the Project ESLs. EC-VW-8 would ensure that this species is protected.
Corynorhinus townsendii	Townsend's big-eared bat	BLMS/SSC	Habitat for this species could occur within the Project ESLs. EC-VW-8 would ensure that this species is protected.
Euderma maculatum	Spotted bat	BLMS/SSC	Nesting habitat for this species does not occur within the Project ESLs but foraging habitat may occur. EC-VW-8 would ensure that this species is protected.
Eumops perotis californicus	Western mastiff bat	BLMS/SSC	Habitat for this species does not occur within the Project ESLs.
Myotis evotis	Long-eared myotis	BLMS	Habitat for this species could occur within the Project ESLs. EC-VW-8 would ensure that this species is protected.
Myotis thysanodes	Fringed myotis	BLMS	Habitat for this species could occur within the Project ESLs. EC-VW-8 would ensure that this species is protected.
Myotis yumanensis	Yuma myotis	BLMS	Habitat for this species does not occur within the Project ESLs.

Scientific Name	Common Name	Status	Assessment
Pekania pennanti pacifica	Pacific fisher	BLMS/FC/SC/SSC	Transitory/matrix habitat for this species could occur within the Project ESLs. EC-VW-8 would ensure that this species is protected.
Perognathus inornatus	San Joaquin pocket mouse	BLMS	Habitat for this species does not occur within the Project ESLs and is outside of the species range.
Amphibians			
Hydromantes shastae	Shasta salamander	BLMS	Habitat for this species does not occur within the Project ESLs.
Rana boylii	Foothill yellow-legged frog	BLMS	Habitat for this species could occur within the Project ESLs. EC-VW-4 would ensure that this species is protected.
Spea hammondii	Western spadefoot	BLMS	Habitat for this species does not occur within the Project ESLs and is outside of the species range.
Reptiles			
Actinemys marmorata	Northwestern pond turtle	BLMS/FP	Habitat for this species could occur within the Project ESLs. EC-VW-5 would ensure that this species is protected.
Lampropeltis zonata	California mountain kingsnake	BLMS	Habitat for this species could occur within the Project ESLs. EC-VW-5 would ensure that this species is protected.
Phrynosoma blainvillii	Coast horned lizard	BLMS	Habitat for this species does not occur within the Project ESLs and is outside of the species range.
Invertebrates, Terrestrial			
Ancotrema voyanum	Hooded lancetooth	BLMS	Habitat for this species could occur within the Project ESLs. EC-VW-10 would ensure that this species is protected.
Helminthoglypta hertleini	Oregon shoulderband	BLMS	Habitat for this species does not occur within the Project ESLs.
Helminthoglypta talmadgei	Trinity shoulderband	BLMS	Habitat for this species could occur within the Project ESLs. EC-VW-10 would ensure that this species is protected.
Monadenia chaceana	Siskiyou (Chace) sideband	BLMS	Habitat for this species does not occur within the Project ESLs.

Scientific Name	Common Name	Status	Assessment
Trilobopsis tehamana	Tehama chaparral snail	BLMS	Habitat for this species does not occur within the Project ESLs.
Invertebrates, Aquatic - Mollusks			
Anodonta californiensis	California floater (freshwater mussel)	BLMS	Surveys indicate that this species does not occur within the UCC or Sawmill ESLs.
Anodonta oregonensis	Oregon floater	BLMS	Surveys indicate that this species does not occur within the project area.
Gonidea angulata	Western ridged mussel	BLMS	Surveys indicate that this species does not occur within the project area.
Margaritifera falcata	Western pearlshell mussel	BLMP	Habitat for this species occurs within the Project ESLs. BLM surveys conducted in 2020 indicate that this species does not occur in the Sawmill ESL but does occur within Upper Conner Creek ESL. EC-VW-10 would ensure that this species is protected.
Fishes			
Cottus asperrimus	Rough sculpin	BLMS/ST	Habitat for this species occurs within the augmentation reach. The primary objective of the project is to enhance habitat for anadromous species, including rough sculpin. EC-FR-1 through 5 would ensure that this species is protected.
Entosphenus tridentatus	Pacific lamprey	BLMS	Habitat for this species occurs within the augmentation reach. The primary objective of the project is to enhance habitat for anadromous species, including Pacific lamprey. EC-VW-10 would ensure that this species is protected.
Oncorhynchus mykiss	Steelhead – Klamath Mountains Province ESU	BLMP	Habitat for this species occurs within the augmentation reach. The primary objective of the project is to enhance habitat for anadromous species, including steelhead. EC-FR-1 through 5 would ensure that this species is protected.
Oncorhynchus tshawytscha	Upper Klamath–Trinity fall-run chinook ESU	BLMP	Habitat for this species occurs within the augmentation reach. The primary objective of the project is to enhance habitat for anadromous species, including Chinook salmon. EC-FR-1 through 5 would ensure that this species is protected.

Scientific Name	Common Name	Status	Assessment
Oncorhynchus tshawytscha	Upper Klamath–Trinity spring-run chinook ESU	BLMP	Habitat for this species occurs within the augmentation reach. The primary objective of the project is to enhance habitat for anadromous species, including Chinook salmon. EC-FR-1 through 5 would ensure that this species is protected.
Oncorhynchus kisutch	Coho salmon	BLMP	Habitat for this species occurs within the augmentation reach. The primary objective of the project is to enhance habitat for anadromous species, including coho salmon. EC-FR-1 through 5 would ensure that this species is protected.

Note: Common names may not always meet official standards used by various scientific organizations but have been edited for document consistency. Only the first letter of the common name has been capitalized unless referring to a personal or geographic name.

Federal Status: FE = Federally Endangered, FT = Federally Threatened, FC = Federal Candidate, FP = Proposed for Federal Listing, FD = Delisted from Federal ESA; State Status: SE = State Endangered, ST = State Threatened, SC = Delisted from State ESA; Other Status: BGEPA = Bald and Golden Eagle Protection Act, SF = Fully Protected, SSC = Species of Special Concern.

ESU = Evolutionarily Significant Unit.

BLMS = Bureau of Land Management Redding Field Office Sensitive Species.

BLMP = Bureau of Land Management Redding Field Office Priority Species.

Table K-2. Sensitive Plant Species, Bureau of Land Management Redding Field Office (updated October 2023).

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment[3]
Vascular Plants/Lichen/Bryophytes			
Red-flowered bird's-foot trefoil *Acmispon rubriflorus*	BLMS/1B.1	Cismontane woodlands and valley and foothill grasslands. Elevation: 655–1,395 feet. Bloom: Apr–Jun.	Not known to occur in Trinity County; known from adjacent Tehama County. Project ESLs contain suitable habitat.

[3] EC-VW-2 would require any area where disturbance is to occur to be surveyed before ground-disturbing activities commence and protective measures be implemented for all sensitive plant species. This EC would reduce or eliminate impacts to sensitive plant species from project activities. A full description of EC-VW-2 can be found in Appendix E of the EA/IS.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Jepson's onion *Allium jepsonii*	BLMS/1B.2	Cismontane woodland, lower montane coniferous forest; serpentinite or volcanic. Elevation: 985–4,330 feet. Bloom: Apr–Aug.	Not known to occur in Trinity County; known from element occurrences in Butte County over 100 km to the east. Project ESLs contain suitable habitat.
Bent-flowered fiddleneck *Amsinckia lunaris*	BLMS/1B.2	Grassland slopes, foothill woodland slopes, and occasionally cut/fill slopes. Elevation: 160–2,600 feet. Bloom: Mar–Jun.	Not known to occur in Trinity County; known from adjacent Humboldt County on the Van Duzen River. Project ESLs contain suitable habitat.
Scabrid alpine tarplant *Anisocarpus scabridus*	BLMS/1B.3	Upper montane coniferous forest (metamorphic, rocky). Elevation: 5,415–7,545 feet. Bloom: Jul–Aug (Sep).	No occurrences within 5-mile project buffer. Project ESLs do not contain suitable habitat.
Klamath manzanita *Arctostaphylos klamathensis*	BLMS/1B.2	Open submontane chaparral and open mixed forest of Shasta red fir, lodgepole pine, mountain hemlock on shallow rocky, often gabbro but sometimes serpentinite, soils. Elevation: 4,495–7,380 feet. Bloom: May–Aug.	All known occurrences in Trinity County are outside the 5-mile project buffer. Project ESLs are outside of the elevation range for this species and do not contain suitable habitat.
Jepson's milk-vetch *Astragalus rattanii* var. *jepsonianus*	BLMS/1B.2	Chaparral, cismontane woodland, valley and foothill grassland often in serpentinite soils. Elevation: 970–2,295 feet. Bloom: Mar–Jun.	Not known to occur in Trinity County, known from adjacent Tehama County. Project ESLs contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Ferris's milk-vetch *Astragalus tener* var. *ferrisiae*	BLMS/1B.1	Vernally mesic meadows and seeps, valley and foothill grassland, and subalkaline flats. Elevation: 5–245 feet. Bloom: Apr–May.	Not known to occur in Trinity County; known from Butte and Glenn Counties. Project ESLs do not contain suitable habitat.
McDonald's rockcress *Arabis mcdonaldiana*	FE/CE/1B.1	Lower montane coniferous forest, upper montane coniferous forest. Elevation: 440–5,905 feet. Bloom: May–Jul.	Not known to occur in Trinity County; nearest Humboldt County records are limited to serpentine substrate. Project ESLs do not contain suitable habitat.
Konocti manzanita *Arctostaphylos manzanita* ssp. *elegans*	None/None/1B.3	Chaparral, cismontane woodland, lower montane coniferous forest. Elevation: 1,295–5,300 feet. Bloom: (Jan) Mar–May (Jul).	Project ESLs are outside the known distribution of this subspecies. Project ESLs contain suitable habitat.
Shasta County arnica *Arnica venosa*	None/None/4.2	Cismontane woodland, lower montane coniferous forest; often disturbed. Elevation: 1,095–4,890 feet. Bloom: May–Jul (Sep).	Populations are known near Project ESLs, and outside 5-mile buffer of Sawmill ESL. Project ESLs contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Woolly balsamroot *Balsamorhiza lanata*	BLMS/1B.2	Grassy slopes and roadsides, cismontane woodland, rocky or volcanic microhabitat. Elevation: 2,625–6,215 feet. Bloom: Apr–Jun.	One known occurrence in Trinity County; known from Siskiyou County. Project ESLs do not contain suitable habitat.
Big-scale balsamroot *Balsamorhiza macrolepis*	BLMS/1B.2	Open grassy or rocky slopes and valleys, chaparral, cismontane woodland, valley and foothill grassland, sometimes serpentinite microhabitat. Elevation: 150–5,100 feet. Bloom: Mar–Jun.	Not known to occur in Trinity County; known from nearby Shasta and Tehama Counties. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Silky balsamroot *Balsamorhiza sericea*	BLMS/1B.3	Hillsides on serpentine outcrops, among surface rocks and cobbles, and in crevices; lower montane coniferous forest. Elevation: 2,790–6,990 feet. Bloom: Apr–May (Jun-Jul).	All known occurrences in Trinity County are outside the 5-mile project buffer. Project ESLs do not contain suitable habitat.
Serpentine Rockcress *Boechera serpenticola*	BLMS/1B.2	Lower montane coniferous forest, upper montane coniferous forest, serpentinite ridges and talus. Elevation: 2,590–6,890 feet. Bloom: Mar–Jun.	Project ESLs are outside the known distribution of this subspecies. Project ESL's do not contain suitable habitat.
Sulphur Creek brodiaea *Brodiaea matsonii*	BLMS/1B.1	Foothill woodlands in intermittent streambeds, cismontane woodland (streambanks), meadows and seeps. Elevation: 640–720 feet. Bloom: May–Jun.	Not known to occur in Trinity County, known from adjacent Shasta County. Project ESL's do not contain suitable habitat.
Indian Valley brodiaea *Brodiaea rosea*	SE/BLMS/1B3.1	Closed-cone coniferous forest, chaparral, cismontane woodland, valley and foothill grassland. Elevation: 1,095–4,755 feet. Bloom: May–Jun.	Nearby known population at Trinity Lake is outside 5-mile project buffer of Sawmill ESL. Project ESLs contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Yellow-twist horsehair *Bryoria tortuosa*	BLMS	On trees in well-lit, open stands, ponderosa pine forests, mixed conifer-Douglas-fir forests, and oak woodlands.	Project ESLs contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Green bug moss *Buxbaumia viridis*	BLMS/2.B2	Large-diameter coarse woody debris in advanced decay stage and inserted directly in perennially wet seeps or streams; riparian habitat in conifer forest. Any elevation below subalpine.	No occurrences within 5-mile project. Project ESLs contain suitable habitat. No habitat or populations were observed during 2023 surveys.

Common Name **Scientific Name**	**Status[1]**	**General Habitat Description and Blooming Period**	**Habitat Suitability Assessment**
Greene's mariposa *Calochortus greenei*	BLMS/1B.2	Cismontane woodland, meadows and seeps, pinyon and juniper woodland, upper montane coniferous forest. Substrate is often volcanic. Elevation: 3,395–6,200 feet. Bloom: Jun–Aug.	Not known to occur in Trinity County; known from Siskiyou County. Project ESLs do not contain suitable habitat.
Long-haired star tulip *Calochortus longebarbatus* var. *longebarbatus*	BLMS/1B.2	Great Basin scrub, lower montane coniferous forest (openings, drainages), meadows and seeps, vernal pools. Elevation: 3,295–6,235 feet. Bloom: Jun–Aug (Sep).	Not known to occur in Trinity County; known from adjacent Siskiyou and Shasta counties. Project ESLs do not contain suitable habitat.
Shasta River mariposa *Calochortus monanthus*	BLMS/1A	Meadows and seeps. Known only from the type collection (in 1876) along the Shasta River, now mostly converted to agriculture. Rediscovery attempts unsuccessful. Elevation: 2,445–2,625 feet. Bloom: Jun.	Not known to occur in Trinity County; known from adjacent Siskiyou County. Project ESLs do not contain suitable habitat.
Siskiyou mariposa lily *Calochortus persistens*	FC/SR/BLMS/1B.2	Open areas of ridgeline rock outcrops and talus within montane shrub plant communities of coniferous forests. Grows on dry, acidic, well drained, rocky soils. Elevation: 3,280–6,105 feet. Bloom: Jun–Jul.	Not known to occur in Trinity County; known from adjacent Siskiyou County. Project ESLs do not contain suitable habitat.
Castle Crags harebell *Campanula shetleri*	BLMS/1B.3	Lower montane coniferous forest (rocky). Elevation: 4,005–6,005 feet. Bloom: Jun–Sep.	Not known to occur in Trinity County; known from adjacent Siskiyou and Shasta Counties. Project ESLs do not contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Flagella-like atractylocarpus *Campylopodiella stenocarpa*	None/None/2B.2	Cismontane woodland. Elevation: 325–1,640 feet.	Known occurrences within 5-mile project buffer near Upper Connor Creek. Project ESLs contain suitable habitat. EC-VW-2 would ensure that this species is protected.
Klamath sedge *Carex klamathensis*	BLMS/1B.2	Fens and springs on ultramafic (serpentine) soils, co-occurring with herbaceous plants, often including *Darlingtonia californica*. Surrounded by chaparral with cypresses, grey pine, and typical chaparral shrubs. Elevation: 3,280–3,740 feet.	Not known to occur in Trinity County; known from adjacent Tehama County. Project ESLs do not contain suitable habitat.
Bristle-stalked sedge *Carex leptalea*	None/None/2B.2	Bogs and fens, meadows, and seeps (mesic), marshes and swamps. Elevation: 0–2,295 feet. Bloom: Mar–Jul.	Meadows in Project ESLs are not mesic enough to support this species. Project ESLs do not contain suitable habitat.
Pink creamsacs *Castilleja rubicundula* subsp. *rubicundula*	BLMS/1B.2	Chaparral (openings), cismontane woodland, meadows and seeps, and valley and foothill grassland. Elevation: 65–2,985 feet. Bloom: Apr–Jun.	Not known to occur in Trinity County; known from adjacent Shasta County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Shasta chaenactis *Chaenactis suffrutescens*	BLMS/None/1B.3	Serpentine soils in montane mixed-conifer forest, including road cuts. Elevation: 2,460–9,185 feet. Bloom: Jul.	Limited to serpentine substrate. Project ESLs do not contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Dwarf soaproot *Chlorogalum pomeridianum* var. *minus*	BLMS/1B.2	Chaparral (serpentinite). Elevation: 1,000–3,280 feet. Bloom: May–Aug.	Not known to occur in Trinity County; known from adjacent Tehama County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Ashland thistle *Cirsium ciliolatum*	SE/BLMS/2B.1	Open dry grassy slopes, open areas within oak woodlands, on thin, rocky soil, and along roadsides. Elevation: 2,625–4,595 feet. Bloom: Jun–Aug.	Not known to occur in Trinity County; known from adjacent Siskiyou County. Project ESLs do not contain suitable habitat.
Shasta clarkia *Clarkia borealis* ssp. *Arida*	BLMS/1B.1	Cismontane woodland, lower montane coniferous forest (openings). Elevation: 1,610–1,950 feet. Bloom: Jun–Aug.	Not known to occur in Trinity County; known from adjacent Tehama and Shasta Counties. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
White-stemmed clarkia *Clarkia gracilis* ssp. *Albicaulis*	BLMS/1B.2	Chaparral, cismontane woodland, sometimes serpentinite. Elevation: 805–3,560 feet. Bloom: May–Jul.	Not known to occur in Trinity County; known from adjacent Tehama and Shasta Counties. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Mildred's clarkia *Clarkia mildrediae* ssp. *Mildrediae*	BLMS/1B.3	Cismontane woodland, lower montane coniferous forest, usually granitic, sandy soils. Elevation: 805–5,610 feet. Bloom: May–Aug.	Not known to occur in Trinity County; known from Butte County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Mosquin’s clarkia *Clarkia mosquinii*	BLMS/1B.1	Cismontane woodland, lower montane coniferous forest, and on roadsides. Elevation: 605–4,890 feet. Bloom: May–Jul (Sep).	Not known to occur in Trinity County; known from Butte County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Pallid bird’s beak *Cordylanthus tenuis* ssp. *Pallescens*	BLMS/1B.2	Lower montane coniferous forest (gravelly, volcanic alluvium). Elevation: 2,280–5,395 feet. Bloom: Jul–Sep.	Not known to occur in Trinity County; known from adjacent Siskiyou County. Project ESLs do not contain suitable habitat.
Silky cryptantha *Cryptantha crinita*	BLMS/1B.2	Gravelly streambanks, gravel bars, rocky volcanic soils, cismontane woodland, lower montane coniferous forest, riparian forest, riparian woodland, valley and foothill grassland, open gray pine and blue oak woodland, and montane chaparral. Elevation: 200–3,985 feet. Bloom: Apr–May.	Not known to occur in Trinity County; known from adjacent Shasta and Tehama Counties. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Northern moon shrub *Dendriscocaulon intricatulum*	BLMS	Open-grown conifer and mixed conifer-deciduous stands, mixed oak/conifer forested communities, coastal fog areas, old growth forests. Associated with high humidity and the presence of cyanolichens. Elevation: 30–2,170 feet.	Project ESLs do not contain suitable habitat.

Common Name Scientific Name	Status¹	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Fungus (no common name) *Dendrocollybia racemosa*	BLMS	Occurs in mixed hardwood-conifer forests, usually clustered on the remains of rotting mushrooms, particularly those of *Lactarius* and *Russula* species. One host mushroom species is *Russula crassotunicata*. Elevation: less than 3,937 feet.	Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Oregon fireweed *Epilobium oreganum*	BLMS/None/1B.2	Bogs and fens, lower montane coniferous forest, meadows and seeps, upper montane coniferous forest. Elevation: 1,640–7,350 feet. Bloom: Jun–Sep.	Known population about 10 miles north of Sawmill ESL. Meadows in project ESLs are not mesic enough to support this species. Project ESLs do not contain suitable habitat.
Siskiyou fireweed *Epilobium siskiyouense*	BLMS/1B.3	Open serpentine areas: outcrops, screes, talus slopes, ridges. Elevation: 5,580–8,205 feet. Bloom: Jul–Sep.	Closest record is 10.8 miles southeast of the Project area at the border of Trinity and Shasta Counties. Project ESLs do not contain suitable habitat.
Brandegee's eriastrum *Eriastrum brandegeeae*	BLMS/1B.1	Chaparral or cismontane woodland on volcanic substrates that are often barren or with little to no canopy. Elevation: 1,395–2,755 feet. Bloom: Apr–Aug.	Not known to occur in Trinity County; known from Lake County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Tracy's eriastrum *Eriastrum tracyi*	None/CR/3.2	Chaparral, cismontane woodland, valley, and foothill grassland. Elevation: 1,030–5,840 feet. Bloom: May–Jul.	Trinity County populations fall outside 5-mile project buffer. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.

Common Name Scientific Name	Status¹	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Ahart's buckwheat *Eriogonum umbellatum* var. *ahartii*	BLMS/1B.2	Chaparral, cismontane woodland. Elevation: 1,310–6,560 feet. Bloom: Jun–Sep.	Not known to occur in Trinity County; known from Butte County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Blushing wild buckwheat *Eriogonum ursinum* var. *erubescens*	BLMS/1B.3	Chaparral (montane), lower montane coniferous forest, rocky, scree, talus microhabitat. Elevation: 2,460–6,235 feet. Bloom: Jun–Sep.	Occurs in Trinity County 5 miles southeast as well as 7 miles Northeast of the Project ESLs. Project ESLs do not contain suitable habitat.
Ephemeral monkeyflower *Erythranthe inflatula*	BLMS/1B.2	Sagebrush-juniper plant associations, among rocky rubble and boulders in vernally moist, heavy gravel. Generally restricted to a narrow ecotone on fluctuating banks of intermittent streams or pools, between sagebrush on the upper bank and emergent wetland species on the lower bank. Elevation: 4,100–5,710 feet. Bloom: May–Aug.	Not known to occur in Trinity County; known from adjacent Siskiyou and Shasta Counties. Project ESLs do not contain suitable habitat.
Pink-margined monkeyflower *Erythranthe trinitiensis*	None/None/1B.3	Cismontane woodland, lower montane coniferous forest, meadows and seeps, upper montane coniferous forest; limited to serpentine substrate. Elevation: 1,310–7,495 feet. Bloom: Jun–Jul (Aug).	Occurs outside of 10-mile buffer and is limited to serpentine substrate. Project ESLs do not contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Hoover's spurge *Euphorbia hooveri* (*Chamaesyce hooveri)*	FT/1B.2	Dried mudflats in the deepest portions (often middle) of vernal pools. Emerges from large cracks which spread as the clay of the pool bottom dries. Usually, little herbaceous cover growing with *Chamaesyce hooveri*, though it has been observed to grow in the shade of other low-growing species. Frequently associated with *Orcuttia Pilosa*. Elevation: 80–820 feet. Bloom: Jul–Sep (Oct).	Not known to occur in Trinity County; known from adjacent Tehama County. Project ESLs do not contain suitable habitat.
Stony Creek spurge *Euphorbia ocellata* ssp. *Rattanii*	BLMS/1B.2	Chaparral, riparian scrub (streambanks), valley and foothill grassland (sandy, rocky). Elevation: 215–2,625 feet. Bloom: May–Oct.	Not known to occur in Trinity County; known from adjacent Tehama County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Gentner's fritillaria *Fritillaria gentneri*	FE/1B.1/BLMS	Dry hillsides in open canopies of oak and mixed-species woodlands and chaparral shrub communities, mixed hardwood forests, coniferous forests, and grasslands. Elevation: 3,295–9,745 feet. Bloom: Apr–May.	Not known to occur in Trinity County; known from adjacent Siskiyou County. Project ESLs do not contain suitable habitat.

Common Name **Scientific Name**	**Status[1]**	**General Habitat Description and Blooming Period**	**Habitat Suitability Assessment**
Adobe lily *Fritillaria pluriflora*	BLMS/1B.2	Occurs only where there are deep clay soils with a high water-holding capacity and direct sunlight. Chaparral, cismontane woodland, valley and foothill grassland. Elevation: 195–2,315 feet. Bloom: Feb–Apr.	Not known to occur in Trinity County; known from adjacent Tehama County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Scott Mtn. Bedstraw *Galium serpenticum* ssp. *scotticum*	BLMS/1B.2	Lower montane coniferous forest (serpentinite). Elevation: 3,280–6,810 feet. Bloom: May–Aug.	Occurs in Trinity County north of Project ESLs on ultramafic substrate. Project ESLs do not contain suitable habitat.
Boggs Lake hedge-hyssop *Gratiola heterosepala*	SE/BLMS/1B.2	Shallow water or in wet mud at the margins of lakes and vernal pools, marshes, and swamps. Elevation: 35–7,790 feet. Bloom: Apr–Aug.	Not known to occur in Trinity County; known from adjacent Siskiyou and Tehama Counties. Project ESLs do not contain suitable habitat.
Niles's harmonia *Harmonia doris-nilesiae*	BLMS/1B.1	Lower montane coniferous forest; serpentine barrens. Elevation: 2,135–5,445 feet. Bloom: May–Jul.	Occurs in Trinity County eight miles south of project ESLs. Project ESLs do not contain suitable habitat.

Common Name Scientific Name	Status¹	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Stebbins's harmonia *Harmonia stebbinsii*	BLMS/1B.2	Barrens (sparsely vegetated areas with less than 5% cover of chaparral and/or woodland dominants), woodland-brush edges, and roadsides, on rocky, shallow serpentine soils. Associated species include *Pinus jeffreyi*, *P. sabiniana*, *Arctostaphylos canescens*, *Ceanothus cuneatus*, and *Quercus durata*. Found within chaparral and yellow pine forest communities. Elevation: 1,310–5,185 feet. Bloom: May–Jun.	Occurs in Trinity County 21 miles southwest of Project ESLs. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Tehama County western flax *Hesperolinon tehamense*	BLMS/1B.3	Chaparral, cismontane woodland, serpentinite. Elevation: 330–4,100 feet. Bloom: May–Jul.	Not known to occur in Trinity County; known from adjacent Tehama County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Henderson's horkelia *Horkelia hendersonii*	BLMS/1B.1	Granitic peaks at high elevation above tree line. Surrounding habitat is upper montane coniferous forest. Elevation: 6,560–7,545 feet. Bloom: Jun–Aug.	Not known to occur in Trinity County; known from adjacent Siskiyou County. Project ESLs do not contain suitable habitat.
California globe mallow *Iliamna latibracteata*	None/None/1B.2	Chaparral (montane), lower montane coniferous forest, North Coast coniferous forest (mesic), riparian scrub (streambanks). Elevation: 195–6,560 feet. Bloom: Jun–Aug.	Project ESLs are located beyond the eastern distribution of this species. Project ESLs do not contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Castle Crags ivesia *Ivesia longibracteata*	BLMS/1B.3	Rock crevices in granitic cliffs within montane coniferous forest community with a surrounding overstory that includes *Pinus ponderosa, Pinus lambertiana, Pseudotsuga menziesii, Quercus chrysolepis, Lithocarpus densiflorus,* and *Arctostaphylos patula.* It is associated with *Campanula shetleri.* Elevation: 3,935–4,595 feet. Bloom: Jun.	Not known to occur in Trinity County; known from adjacent Shasta County. Project ESLs do not contain suitable habitat.
Pickering's ivesia *Ivesia pickeringii*	BLMS/1B.2	Mesic to wet and sometimes rocky areas in meadows (such as seeps, swales, and rocky ephemeral stream beds), usually on serpentine clay soils. Meadows are located within yellow pine forest communities. Elevation: 2,625–4,955 feet. Bloom: Jun–Aug (Oct).	Occurs in Trinity County 16.5 miles north of project ESLs. Project ESLs do not contain suitable habitat.
Dudley's rush *Juncus dudleyi*	None/None/2B.3	Lower montane coniferous forest (mesic). Elevation: 1,490–6,560 feet. Bloom: Jul–Aug.	Nearby occurrences are north and south of project ESLs within 5 to 10 miles. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Red Bluff dwarf rush *Juncus leiospermus* var. *leiospermus*	BLMS/1B.1	Chaparral, cismontane woodland meadows and seeps, valley and foothill grasslands, vernal pools, vernally mesic microhabitat. Elevation: 115–4,100 feet. Bloom: Mar–Jun.	Not known to occur in Trinity County; known from adjacent Shasta and Tehama Counties. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Colusa layia *Layia septentrionalis*	BLMS/1B.2	Fields, grassy slopes, and bluff/cliff tops, on serpentine or sandy soils. Found within chaparral, valley and foothill grassland, and (oak-dominated) foothill/cismontane woodland communities. Elevation: 330–3,595 feet. Bloom: Apr–May.	Not known to occur in Trinity County; known from adjacent Tehama County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Legenere *Legenere limosa*	BLMS/1B.1	Vernal pools and similar seasonal wetlands, including seasonal marshes and the margins of small lakes or stock ponds. Most commonly found in vernal pools which also contain *Eleocharis macrostachya* and *Lasthenia glaberrima* (generally indicative of pools with long inundation periods). Generally occurs on heavy clay soils within vernal pools. Elevation: 5–2,885 feet. Bloom: Apr–Jun.	Not known to occur in Trinity County; known from adjacent Shasta and Tehama Counties. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Mt. Tedoc linanthus *Leptosiphon nuttallii* ssp. *howellii*	BLMS/1B.3	Lower montane coniferous forest (serpentinite). Elevation: 4,005–9,185 feet. Bloom: May–Aug.	Not known to occur in Trinity County; known from adjacent Tehama County. Project ESLs do not contain suitable habitat.
Cantelow's lewisia *Lewisia cantelovii*	BLMS/1B.2	Usually shaded, moist, rocky ravine and canyon walls. Generally granitic or mesic microhabitat, sometimes in serpentinite or seeps. Elevation: 1,085–4,495 feet. Bloom: May–Oct.	Not known to occur in Trinity County; known from adjacent Shasta County. Project ESLs do not contain suitable habitat.
Heckner's lewisia *Lewisia cotyledon* var. *heckneri*	BLMS/None/1B.2	Lower montane coniferous forest (rocky). Elevation: 735–6,890 feet. Bloom: May–Jul.	Occurrence nearby (within a mile) to the north of Upper Conner Creek Project ESL. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Bellinger's meadowfoam *Limnanthes floccosa* ssp. *bellingeriana*	BLMS/1B.2	Cismontane woodland, meadows and seeps, mesic microhabitat. Elevation: 950–3,610 feet. Bloom: Apr–Jun.	Not known to occur in Trinity County; known from adjacent Shasta County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Butte County meadowfoam *Limnanthes floccosa* ssp. *californica*	FE/SE/1B.1	Valley and foothill grassland (mesic), vernal pools. Elevation: 150–3,050 feet. Bloom: Mar–May.	Not known to occur in Trinity County; known from Butte County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.

Common Name **Scientific Name**	**Status[1]**	**General Habitat Description and Blooming Period**	**Habitat Suitability Assessment**
Veiny monardella *Monardella venosa*	BLMS/1B.1	Cismontane woodland, valley and foothill grassland, clay microhabitat. Elevation: 195–1,345 feet. Bloom: May–Jul.	Not known to occur in Trinity County; known from Butte County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Baker's navarretia *Navarretia leucocephala* ssp. *bakeri*	BLMS/1B.1	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools, mesic microhabitat. Elevation: 15–5,710 feet. Bloom: Apr–Jul.	Not known to occur in Trinity County; known from adjacent Tehama County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Shasta snow wreath *Neviusia cliftonii*	BLMS/1B.2	Lower montane coniferous forest, riparian woodland; carbonate soils. Elevation: 985–1,935 feet. Bloom: Apr–Jun.	Not known to occur in Trinity County; known from adjacent Shasta County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.

Common Name Scientific Name	**Status[1]**	**General Habitat Description and Blooming Period**	**Habitat Suitability Assessment**
Wolf's evening primrose *Oenothera wolfii*	None/None/1B.1	Coastal bluff scrub, coastal dunes, coastal prairie, lower montane coniferous forest, gravel bars. Elevation: 5–2,625 feet. Bloom: May–Oct.	No occurrences within 5-mile project buffer. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Hairy orcutt grass *Orcuttia pilosa*	FE/SE/1B.1	Grows in Vernal Pools occurring on the eastern side of the Central Valley. Plant germinates underwater and blooms after dry-down. Elevation: 150–655 feet. Bloom: May–Sep.	Not known to occur in Trinity County; known from adjacent Tehama County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Slender orcutt grass *Orcuttia tenuis*	FT/SE/1B.1	Vernal Pools with a very well-developed soil profile, clay soils which shrink and swell. As they dry, large cracks develop which allow seeds trapped deeply in the soil to float to the surface with the first inundation. Elevation: 115–5,775 feet. Bloom: May–Sep (Oct).	Not known to occur in Trinity County; known from adjacent Tehama, Shasta, and Siskiyou Counties. Project ESLs do not contain suitable habitat.
Shasta orthocarpus *Orthocarpus pachystachyus*	BLMS/1B.1	Ultramafic alluvium with sagebrush and native bunchgrasses. Grasslands, barrens, shrubland/chaparral. Elevation: 2,755–2,790 feet. Bloom: May.	Not known to occur in Trinity County; known from adjacent Siskiyou County. Project ESLs do not contain suitable habitat.
Cut-leaved ragwort *Packera eurycephala* var. *lewisrosei*	BLMS/1B.2	Chaparral, cismontane woodland, lower montane coniferous forest, serpentinite microhabitat. Elevation: 900–6,200 feet. Bloom: Mar–Jul (Aug–Sep).	Not known to occur in Trinity County; known from Butte and Plumas Counties. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Layne's butterweed *Packera layneae*	FT/SR/1B.2	Chaparral communities primarily on gabbro-derived soils; occasionally on serpentine, barrens. Elevation: 655–3,560 feet. Bloom: Apr–Aug.	Not known to occur in Trinity County. Project ESLs are located beyond the northern distribution of this species. Project ESLs do not contain suitable habitat.
Ahart's paronychia *Paronychia ahartii*	BLMS/1B.1	Well-drained rocky outcrops and rocky soils within volcanic uplands; often on vernal pool edges, higher ground around vernal pools, nearly barren clay of vernal swales, or other vernally-moist sites with thin soils. Prefers the most stony microsites within its habitat, where vegetation is sparse and the density of competing annual plants is low. Sites are within valley and foothill grassland and cismontane (foothill) woodland plant communities. This species is restricted to the poorest, most sterile, rocky terrace soils bordering the Central Valley. Elevation: 100–1,675 feet. Bloom: Feb–Jun.	Not known to occur in Trinity County; known from adjacent Tehama and Shasta Counties. Project ESLs are located beyond the known range of this species. Project ESLs do not contain suitable habitat.

Common Name Scientific Name	Status¹	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Closed-throated beardtongue *Penstemon personatus*	BLMS/1B.2	Conifer forests (yellow pine forest, red fir forest), often moist and with a substantial Shasta red fir component. In semi-shade or open places, such as dry hillsides, forest openings and edges, and disturbed places such as clearcuts and roadsides; sometimes within montane chaparral areas. Often on metavolcanic substrates. Elevation: 3,495–6,955 feet. Bloom: Jun–Sep (Oct).	Not known to occur in Trinity County; known from Butte and Plumas Counties. Project ESLs do not contain suitable habitat.
Cooke's phacelia *Phacelia cookei*	BLMS/1B.1	Open areas, including disturbed roadsides, seedling conifer plantations, and recently burned sites, on loose volcanic sand. Found within Great Basin (sagebrush) scrub and yellow pine forest communities, often with a scattered ponderosa pine-juniper overstory. Associated species include *Artemisia tridentata*, *Purshia tridentata*, and *Chrysothamnus* sp. at lower elevations, and *Ceanothus velutinus* and *Arctostaphylos* sp. at higher elevations. Elevation: 3,595–5,580 feet. Bloom: Jun–Jul.	Not known to occur in Trinity County; known from adjacent Siskiyou County. Project ESLs do not contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Scott Valley phacelia *Phacelia greenei*	BLMS/1B.2	Gravelly serpentine ridges and slopes within coniferous forest communities (subalpine forest, montane coniferous forest, yellow pine forest, closed-cone coniferous forest). Elevation: 2,625–8,005 feet. Bloom: Apr–Jun.	Occurs in Trinity County 38 miles north of the project ESLs. Project ESLs do not contain suitable habitat.
Siskiyou phacelia *Phacelia leonis*	BLMS/1B.3	Habitat is open, stony ground in relatively sunny areas at moderate to high elevations. Upper montane coniferous forest openings; sometimes serpentinite. Sandy flats, slopes, conifer forest, meadows, and seeps. Elevation: 3,935–6,560 feet. Bloom: Jun–Aug.	Occurs in Trinity County 16 miles north of the project ESLs. Project ESLs do not contain suitable habitat.
California phaeocollybia *Phaeocollybia californica*	BLMS	Presumed ectomycorrhizal associate of *Pinaceae*, forming gilled mushrooms that emerge above the soil surface at maturity. Found associated with the roots of *Abies amabilis*, *Tsuga heterophylla*, *Pseudotsuga menziesii*, and *Picea sitchensis.* Known sites in California: Humboldt Co., Murray Rd. near McKinleyville; Mendocino Co., Fern Canyon trail at Van Damme State Park.	Project ESLs are outside of the known range of this species. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.

Common Name Scientific Name	**Status[1]**	**General Habitat Description and Blooming Period**	**Habitat Suitability Assessment**
Olive phaeocollybia *Phaeocollybia olivacea*	BLMS	Generally found in complex mid- to late-successional/old growth coniferous rainforests where it forms symbiotic partnerships with *Quercus* or *Lithocarpus* spp. and possibly members of *Pinaceae* (it rarely is found in strictly fagaceous or coniferous stands). Its precise biological and ecological requirements are unknown. It is generally found in the more southern part of the northern spotted owl region, and fruits on soil in early to late autumn, producing arcs of closely gregarious fruitbodies. It is like all *Phaeocollybias* in its extremely patchy distribution.	Project ESLs are outside of the known range for this species. Project ESLs do not contain suitable habitat.
Spadicea phaecollybia *Phaeocollybia spadicea*	BLMS	Restricted to very moist, mesic, late-successional, and old-growth coniferous forests. Associated with coastal or low-lying closed-canopy stands containing *Tsuga heterophylla*, *Picea sitchensis*, *Pseudotuga menziesii*, and rarely in mixed deciduous/coniferous *(Pinus, Pseudotsuga, Lithocarpus, Quercus)* forests. It appears to grow slowly, but its precise biological and ecological requirements are not known. Bloom: The fungus fruits sporadically (not annually).	Project ESLs are outside of the known range for this species. Project ESLs do not contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Yreka phlox *Phlox hirsuta*	FE/SE/1B.2	Serpentine talus in lower and upper montane coniferous forest communities. Elevation: 2,690–4,920 feet. Bloom: Apr–Jun.	Not known to occur in Trinity County; known from adjacent Siskiyou County. Project ESLs do not contain suitable habitat.
White-flowered rein orchid *Piperia candida*	None/None/1B.2	Broadleaf upland forest, lower montane coniferous forest, North Coast coniferous forest. Elevation: 95–4,300 feet. Bloom: (Mar) May–Sep.	Project ESLs are located at the eastern distribution of this species. Occurs 11.5 miles north of Upper Conner Creek. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
White bark pine *Pinus albicaulis*	BLMS/FP	Grows on the subalpine timberline and is associated with lodgepole pine. Elevation: 4,300–12,100 feet. Bloom: Jul–Aug.	Occurs about 14.5 miles north of Upper Conner Creek. Project ESLs do not contain suitable habitat.
Howell's alkali grass *Puccinellia howellii*	BLMS/1B.1	Mineralized soils of meadows of seeps and springs. Elevation: 1,610 feet. Bloom: Apr–Jun.	Not known to occur in Trinity County; known from adjacent Shasta County. Project ESLs do not contain suitable habitat.
Showy raillardella *Raillardella pringlei*	BLMS/1B.2	Wet serpentine soils along streams, in hillside seeps, in wet meadows, and in bogs and fens. Found within red fir forest to subalpine forest communities. Elevation: 3,935–7,515 feet. Bloom: Jul–Sep.	Occurs in Trinity County 14.5 miles north of Project ESLs. Project ESLs do not contain suitable habitat.
White beaked rush *Rhynchospora alba*	None/None/2B.2	Bogs and fens, meadows and seeps, marshes, and swamps (freshwater). Elevation: 195–6,695 feet. Bloom: Jun–Aug.	Occurs 19 miles north of Sawmill ESL. Meadows in Project ESLs are not mesic enough to support this species. Project ESLs do not contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment
California beaked rush *Rhynchospora californica*	BLMS/1B.1	Herb-dominated marshes (predominantly freshwater, rarely coastal), wet meadows, bogs, and seeps (often in canyons or on hillsides). Habitats may be situated within yellow pine forest communities as well as in Butte County, foothill woodland or chaparral communities. Elevation: 150–3,315 feet. Bloom: May–Jul.	Not known to occur in Trinity County; known from Butte County. Meadows in Project ESLs are not mesic enough to support this species. Project ESLs do not contain suitable habitat.
Brownish beaked rush *Rhynchospora capitellata*	None/None/2B.2	Lower montane coniferous forest, meadows and seeps, marshes and swamps, upper montane coniferous forest. Elevation: 145–6,560 feet. Bloom: Jul–Aug.	Meadows in Project ESLs are not mesic enough to support this species. Project ESLs does not contain suitable habitat.

Common Name **Scientific Name**	**Status[1]**	**General Habitat Description and Blooming Period**	**Habitat Suitability Assessment**
Columbia yellow cress *Rorippa columbiae*	BLMS/1B.2	Forest/woodland, playa/salt flat, woodland-conifer, grassland/herbaceous. Grows in damp to wet soils. Populations have been observed near all types of bodies of water, including the Columbia River, intermittent snow-fed streams, permanent lakes, snow-fed lakes, internally-drained lakes which may be dry for extended periods of time, wet meadows, irrigation ditches, and roadside ditches. A common feature of known sites is inundation for at least part of the year. Individuals are usually found in open, high-light habitats, with low vegetative cover. The species grows on a wide variety of soil types including clay, sand, gravel, sandy silt, cobblestones, and rocks. Elevation: 3,935–5,905 feet. Bloom: May–Sep.	Not known to occur in Trinity County; known from Siskiyou County. Project ESLs do not contain suitable habitat.
Hall's rupertia *Rupertia hallii*	BLMS/1B.2	Openings in cismontane woodland, lower montane coniferous forest. Elevation: 1,790–7,380 feet. Bloom: Jun–Aug (Sep).	Not known to occur in Trinity County; known from Tehama and Butte Counties. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.

Common Name Scientific Name	Status¹	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Howell's sandwort *Sabulina howellii*	BLMS/1B.3	Chaparral, lower montane coniferous forest, xeric, serpentinite. Elevation: 1,805–3,280 feet. Bloom: Apr–Jul.	Not known to occur in Trinity County; known from Siskiyou County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Scott Mtn. Sandwort *Sabulina stolonifera*	BLMS/1B.3	Lower montane coniferous forest (serpentinite). Elevation: 4,100–4,595 feet. Bloom: May–Aug.	Not known to occur in Trinity County; known from Siskiyou County. Project ESLs do not contain suitable habitat.
Feather River stonecrop *Sedum albomarginatum*	BLMS/1B.2	Steep serpentine slopes in chaparral and lower montane coniferous forest. Found on strongly serpentine bedrock, except for a northern population on a metasedimentary substrate. Elevation: 855–6,400 feet. Bloom: May–Jun.	Not known to occur in Trinity County; known from Butte County. Project ESLs do not contain suitable habitat.
Canyon Creek stonecrop *Sedum paradisum* ssp. *paradisum*	BLMS/None/1B.3	Broadleaf upland forest, chaparral, lower montane coniferous forest, subalpine coniferous forest. Elevation: 980–6,235 feet. Bloom: May–Jun.	Occurrence nearby, four miles east of Upper Conner Creek ESL. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Coast checkerbloom *Sidalcea oregana* ssp. *eximia*	None/None/1B.2	Lower montane coniferous forest, meadows and seeps, North Coast coniferous forest. Elevation: 15–4,395 feet. Bloom: Jun–Aug.	Project ESLs are located beyond the eastern distribution of this species. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.

Common Name Scientific Name	Status¹	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Butte County checkerbloom *Sidalcea robusta*	BLMS/1B.2	Rocky and brush-covered slopes and dry banks, often in partial shade, in soils derived from the Tuscan Formation mudflow. Found within chaparral, blue oak savanna, and (oak-dominated) foothill/cismontane woodland communities. Elevation: 295–5,250 feet. Bloom: Apr–Jun.	Not known to occur in Trinity County; known from Butte County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Long-stiped campion *Silene occidentalis* ssp. *longistipitata*	BLMS/1B.2	Chaparral, lower montane coniferous forest, upper montane coniferous forest. Elevation: 3,280–6,560 feet. Bloom: Jun–Aug.	Not known to occur in Trinity County; known from adjacent Tehama and Shasta Counties. Project ESLs do not contain suitable habitat.
Klamath Mtns catchfly *Silene salmonacea*	None/None/1B.2	Serpentine or iron-rich soils in natural or early seral gaps in mid- to late-seral mixed conifer or mixed conifer-oak forest, including road cuts. Elevation: 2,500–3,800 feet. Bloom: June.	Trinity County populations occur six miles north of Sawmill ESL mostly on serpentine soils. Project ESLs does not contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Stalked orange peel fungus *Sowerbyella rhenana*	BLMS	Moist coniferous forests with a variety of mature trees. Diverse mature trees, deep moss beds, with decaying bits of wood in the soil. Fruits in scattered into gregarious or caespitose groups in duff of moist, relatively undisturbed, older coniferous forests. Mostly known from conifer forests; one collection was noted to occur under *Lithocarpus* sp. The habitat of the vegetative mycelium is unknown, but could include duff, litter, mineral soil, woody debris, or roots. Elevation: occurs on accumulated duff and humus in low- to mid-elevation, mixed conifer, or conifer-hardwood forests.	Project ESLs are outside of the known range of this species. Project ESLs do not contain suitable habitat.

Common Name Scientific Name	Status¹	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Fairy fan *Spathularia flavida*	BLMS	In clusters or fairy rings on litter, woody debris, and soil in conifer and hardwood forests. Associated species include white fir, grand fir, lodgepole pine, western white pine, ponderosa pine, Douglas fir, western red cedar, western hemlock, Pacific madrone, tan oak, and canyon live oak. Other woody associates include *Acer circinatum, Berberis aquifolium, Berberis nervosa, Castanopsis chrysophylla, Gaultheria shallon, Holodiscus discolor, Linnaea borealis, Rhododendron macrophyllum, Rubus ursinus, Symphoricarpos albus* and *Whipplea modesta.* Elevation: 33–5,478 feet. Bloom: Fruits in summer and autumn.	Occurs in Trinity County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Trinity River jewelflower *Streptanthus oblanceolatus*	None/None/1B.2	Cliff and rock outcrops in cismontane woodland. Elevation: 65–1,380 feet. Bloom: Apr–Jun.	Trinity County populations are known from cliff and rock outcrops. Project ESLs do not contain suitable habitat.
Beaked tracyina *Tracyina rostrata*	None/None/1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation: 295–2,590 feet. Bloom: May–Jun.	Project ESLs are outside the known distribution of this species. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.

Common Name Scientific Name	Status¹	General Habitat Description and Blooming Period	Habitat Suitability Assessment
Butte County golden clover *Trifolium jokerstii*	BLMS/1B.2	Periodically wet swales, edges of vernal pools, occasionally edges of ephemeral streambanks, ditches, wet pastures. Elevation: 165–1,575 feet. Bloom: Mar–May.	Not known to occur in Trinity County; known from Butte County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Siskiyou clover *Trifolium siskiyouense*	BLMS/1B.1	Wet meadows, grassy hillsides and seeps (mesic). Elevation: 2,885–4,920 feet. Bloom: Jun–Jul.	Not known to occur in Trinity County; known from adjacent Shasta and Siskiyou Counties. Meadows and hillsides in Project ESLs are not mesic enough to support this species. Project ESLs do not contain suitable habitat.
Shasta huckleberry *Vaccinium shastense* subsp. *shastense*	BLMS/1B.3	Chaparral, cismontane woodland, lower montane coniferous forest, riparian forest, subalpine coniferous forest, acidic, disturbed areas, mesic, roadsides, rocky, seeps (sometimes), streambanks (often). Elevation: 1,065–4,005 feet. Bloom: (Jun–Sep) Dec–May.	Occurs in Shasta County. Project ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.

Note: This table includes records of California Native Plant Society (CNPS) special-status species (by habitat and elevation), BLM-listed sensitive species with potential to occur, and California Natural Diversity Database query results if the species has habitat in or near the ESL. Select species are also included from the BLM Suspected/Known Redding Field Office list (Jan 2020) if habitat occurs or if the project area is within the known species distribution.

¹Status Codes: FE = Federally-listed as endangered; CE = California-listed as endangered; CR = California Rare; BLMS = Bureau of Land Management Sensitive

California Rare Plant Rank (CRPR) Codes and Extensions:

1B = Plants rare, threatened, or endangered in California and elsewhere
2B = Plants rare, threatened, or endangered in California but more common elsewhere
3 = Plants about which more information is needed
4 = Plants of limited distribution

xx.1 Seriously threatened in California
xx.2 Moderately threatened in California
xx.3 Not very threatened in California

Appendix M - Summary of Cumulative Impacts

Table L-1. Summary of Cumulative Impacts Considering Past, Present, and Reasonably Foreseeable Actions in the Trinity River Basin

Resource Area	Cumulative Impacts
Land Use	Implementation of the Proposed Action, combined with other related projects, would not have a cumulative impact in terms of planning policies, nor would river rehabilitation activities result in cumulative effects in terms of local or federal land use planning policies.
Geomorphology and Soils	No significant cumulative impacts associated with geologic hazards, geomorphic processes, or erosional processes are expected to occur due to implementing the Proposed Action in combination with other related projects. While previous Trinity River Restoration Program (TRRP) projects (e.g., Lorenz Gulch) and periodic increases in flow regimes continued to increase channel complexity throughout the 40-mile reach, large fires throughout the Trinity River basin continue to influence flow and sediment regimes within the watershed. Appropriate implementation of environmental commitments, project design features, and CEQA-specific mitigation measures would reduce potential impacts to a less-than-significant level.
Hydrology and Flooding	Implementation of the Proposed Action in combination with other river rehabilitation activities would not have cumulatively considerable impacts on beneficial uses of the river, result in changes in the quantities of water available for any of those uses, or cause flooding.
Water Quality	No significant cumulative impacts to water quality are expected to occur as a result of implementing the Proposed Action in combination with other related projects and recent landscape-level changes as a result of recent fires in Trinity County. The TRRP implementation schedule acknowledges the need to stagger the implementation of channel rehabilitation projects along the 40-mile reach of the river to ensure that project sites have the opportunity to stabilize and revegetate. Individually, these activities would result in short-term, temporary effects on water quality. Appropriate implementation of environmental commitments, project design features, and CEQA-specific mitigation measures would reduce potential impacts to a less-than-significant level.
Fishery Resources	No significant adverse cumulative impacts to fisheries resources are expected to occur as a result of implementing the Proposed Action. In conjunction with other projects and programs such as the Five Counties Salmonid Restoration effort, the effect of the Proposed Action is expected to be beneficial in terms of the rehabilitation of habitat and fisheries resources. Implementation of the Proposed Action as designed, in conjunction with CEQA-specific mitigation measures, would benefit rather than adversely affect the Trinity River's fishery resources in the long term.
Vegetation, Wildlife, and Wetlands	No significant cumulative impacts to vegetation, wildlife, and wetlands are expected to occur as a result of implementing the Proposed Action in combination with other related projects. The Proposed Action as designed, in conjunction with CEQA-specific mitigation measures, would benefit rather than adversely affect vegetation, wildlife, and wetlands in the long term, as would most of the other related projects and programs (e.g., Five Counties Salmonid Restoration). Implementation of the Proposed Action would contribute to long-term ecological benefits in terms of vegetation, wildlife, and wetlands.

Resource Area	Cumulative Impacts
Recreation	No significant cumulative impacts to recreational resources are expected to occur as a result of implementing the Proposed Action in combination with other related projects. Benefits to recreational values may be achieved through the implementation of the TRRP over time.
Wild and Scenic Rivers	No significant adverse cumulative impacts to the outstandingly remarkable values (ORVs) of the recreational section of the Trinity River designated by BLM as wild and scenic are expected to occur as a result of implementing the Proposed Action. In conjunction with other projects and programs such as the Five Counties Salmonid Restoration effort, the effects of the Proposed Action are expected to be beneficial to the ORVs that existed on the date of designation (e.g., fisheries resources). Implementation of the Proposed Action as designed, in conjunction with CEQA-specific mitigation measures, would benefit rather than adversely affect the ORVs in this section of the Trinity River protected under both the federal and state Wild and Scenic Rivers Acts in the long term.
Cultural Resources	No significant cumulative impacts to cultural resources are expected to occur as a result of implementing the Proposed Action. The environmental commitments, project design features, and implementation of prescribed CEQA-specific mitigation measures (e.g., surveys of potential impact areas by a professional archaeologist prior to construction, protection of potentially significant cultural sites, and coordination with local tribes) between the Bureau of Reclamation and the California State Historic Preservation Officer would adequately address potential impacts, including cumulative impacts.
Air Quality	No significant cumulative impacts to air quality are expected to occur as a result of implementing the Proposed Action. North Coast Unified Air Quality Management District requirements would be addressed by implementing environmental commitments, project design features, and prescribed CEQA-specific mitigation measures. In conjunction with the other projects and programs occurring within the Trinity River Basin, the Proposed Action would contribute cumulatively to global climate change. Implementing the Proposed Action in conjunction with mitigation measures, however, would reduce the cumulative contribution to global climate change to a less-than-significant level.
Aesthetics	No significant cumulative impacts to visual resources are expected to occur as a result of implementing the Proposed Action. Implementing the Proposed Action would benefit, rather than adversely affect, visual resources in the long term, as would most of the other related projects described in the cumulative effects analysis in the Master EIR.
Noise	No significant cumulative impacts related to noise are anticipated by implementing the Proposed Action in combination with other projects. Reclamation would coordinate implementing other restoration projects to ensure that construction noise is minimized through project scheduling.
Transportation/ Traffic Circulation	No significant cumulative impacts related to transportation/traffic circulation are anticipated by implementing the Proposed Action in combination with other related projects. Traffic increases would be localized and temporary.