Draft Environmental Assessment and Initial Study

Sediment and Wood Augmentation along the Trinity River Restoration Reach

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California State Clearinghouse TBD

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Sediment augmentation near Trinity River Hatchery in Summer 2021 (photo: TRRP)

Young salmon in the Trinity River (photo: Yurok Fisheries Dept)

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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

Acronym	Definition
°F	degrees Fahrenheit
2009 Master EIR	2009 Master EIR for Channel Rehabilitation and Sediment Management for Remaining Phase 1 and Phase 2 Sites
2020 BiOp	2020 Biological Opinion
AB 52	Assembly Bill 52
ac	acre
ACS	Aquatic Conservation Strategy
AEAM	Adaptive Environmental Assessment and Management
af	acre-foot, feet
Alternative 1	No Action alternative
Alternative 2	Proposed Action alternative
APE	area of potential effect
BLM	U.S. Bureau of Land Management
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
cm	centimeters
CNDDB	California Natural Diversity Database
CO_2	carbon dioxide
CRHR	California Register of Historical Resources
cu. yd.	cubic yard
CVP	Central Valley Project
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships
DBH	diameter at breast height
DOI	U.S. Department of the Interior
Draft EA/IS	Draft Environmental Assessment and Initial Study
DWR	Department of Water Resources
EC	environmental commitment
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESL	environmental study limit
ESU	evolutionarily significant unit
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FIS	Flood Insurance Study
FLPMA	Federal Land Policy and Management Act
FONSI	Finding of No Significant Impact
Forest Service	U.S. Forest Service
ft	feet, foot
FUP	Free Use Permit
GHG	greenhouse gas
GIS	Geographical Information System
HVT	Hoopa Valley Tribe
ITA	Indian Trust Asset
m	meters
mi	mile
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRHP	National Register of Historic Places
NSO	northern spotted owl
NTU	Nephelometric Turbidity Unit

NWI	National Wetland Inventory
ORV	Outstandingly Remarkable Values
PM	particulate matter
Program	Trinity River Restoration Program
Reclamation	Bureau of Reclamation
Regional Water Board	North Coast Regional Water Quality Control Board
RWQCB	Regional Water Quality Control Board
RKM	River kilometer
RM	River mile
RMP	Resource Management Plan
ROD	Record of Decision
ROW	right-of-way
SHPO	State Historic Preservation Officer
SMARA	Surface Mining and Reclamation Act
SR	State Route
TCDOT	Trinity County Department of Transportation
TMDL	Total Maximum Daily Load
TRD	Trinity River Division
TRFEFR	Trinity River Flow Evaluation Final Report
TRRP	Trinity River Restoration Program
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
VRM	Visual Resources Management
WQ	Water Quality
WSR	Wild and Scenic River
WSRA	Wild and Scenic Rivers Act

Executive Summary

Introduction and Purpose and Need

This Draft Environmental Assessment and Initial Study (Draft EA/IS) for the proposed Trinity River Sediment and Wood Augmentation Project (Augmentation Project, Project, or Proposed Action) has been prepared by the U.S. Department of the Interior (DOI), Bureau of Reclamation (Reclamation), and Trinity River Restoration Program (TRRP, Program) to meet the requirements of the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). An EA provides coverage for NEPA, and IS provides coverage for CEQA. The North Coast Regional Water Quality Control Board (Regional Water Board) will act as the project CEQA lead. Reclamation's TRRP is the lead agency under NEPA and the Cooperating Agency is Bureau of Land Management's (BLM) Redding Field Office. The primary objective of the Augmentation Project is to enhance river conditions for salmon and steelhead, including federal- and state-listed species and stocks, by creating more spawning and rearing habitat in the mainstem Trinity River. This objective is met through the placement of sediment and wood into the river at strategic locations. 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], Section 1508.9(a)), and CEQA (California Public Resources Code Sections 21000 et seq.).

The 2000 Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) did not address the issue of wood augmentation and no specific recommendations were formulated as the TRRP was developed and initiated. Wood placement was identified and analyzed in the 2009 Master Environmental Impact Report (2009 Master EIR) as a component of channel rehabilitation projects. In 2011, formal Trinity River-specific wood recommendations were established (HVTFD 2011; Cardno Entrix and CH2MHill 2011), and wood placement activities at TRRP projects have been analyzed as part of the site-specific NEPA and CEQA documents. TRRP is currently authorized to place sediment at five sediment augmentation sites upstream of Grass Valley Creek: Trinity River Fish Hatchery, Weir Hole, Cableway, Sawmill and Lowden Ranch, under the 2009 Master EIR.

The Proposed Action would allow for wood placement to occur at the proposed winter-spring augmentation sites and at the existing augmentation sites to enhance the efficacy of sediment augmentation activities and improve aquatic resources, during the winter-spring augmentation period, which would generally occur between December 1 and May 1, to coincide with synchronized flow releases (October 15 – February 15) and winter elevated baseflow releases (February 16 – April 15). Winter-spring augmentation activities may occur as early as November 1 during extremely wet precipitation periods. These four proposed sediment and wood augmentation sites are located within the channel rehabilitation project environmental study limits (ESLs) at Dark Gulch, Trinity House Gulch, Steel Bridge, and Vitzthum Gulch and are referred to as the *proposed winter-spring augmentation sites*.

The proposed project is needed to enhance existing habitat and provide new salmon and steelhead spawning and rearing habitat in the Trinity River below Lewiston Dam. The purpose of the project is to add suitable-sized sediment and wood through manual augmentation at up to four new potential sites. Sediment and wood augmentation would:

- Provide sediment and wood to the river that would help create natural bar, riffle, and pool sequences.
- Promote scour and fill processes that form bars and pools in the river channel.
- Provide juvenile rearing habitat in the active channel, including refugia from predators, as opposed to floodplain rearing habitat that is only available during high flows.
- Create and maintain areas suitable for adult salmon to lay eggs (also known as spawning beds for redd construction).
- Increase the topographic complexity of the river channel.
- Increase habitat for salmon prey, including macroinvertebrates associated with in-channel wood.
- Address the deficit of woody material in the Trinity River, which would increase the availability of organic matter in the channel and floodplain, help to develop and support diverse habitat.
- Increase total natural occurring salmon population within the targe restoration reach.

Figures, including maps of the Proposed Action areas, photos, and graphs, are included in Appendix A, and a glossary of terms is included in Appendix B of the EA/IS.

Description of the Alternatives

Under Alternative 1 (No Action), the sediment augmentation regime currently permitted and implemented under the 2000 Trinity River FEIS and ROD and the 2009 Master EIR would remain in place without modification. Current sediment augmentation involves placing screened and processed sediment at five existing augmentation sites: Trinity Hatchery, Weir Hole, Cableway, Sawmill, and Lowden Ranch. Low-flow augmentation could occur during the in-channel work period at the existing augmentation sites (Trinity Hatchery, Weir Hole, Cableway, Sawmill, and Lowden Ranch), where site-specific permitting for channel rehabilitation activities has occurred. Low-flow augmentation at these sites is authorized under TRRP's General Water Quality Certification R1-2020-0025 (North Coast RWQCB 2020), USACE Nationwide Permit #27, and under the 2020 BiOp (Atta 2020). Low-flow augmentation is included in the 2009 Master EIR and in subsequent site-specific NEPA and CEQA analysis as part of the permitted long-term maintenance activities at these sites. The low-flow augmentation would continue to be covered under the existing and periodically renewed channel rehabilitation permits from the Regional Water Board and the USACE. Under the No Action alternative, the TRRP would be required to apply to BLM for a new FUP under 43 CFR 3604.1 through 3604.27 and for excavation and processing of materials on BLM-managed lands at Sawmill.

Under Alternative 2, the TRRP proposes the continuation of sediment processing and excavation at the Sawmill site and sediment augmentation that is synchronized with high flows at the existing sites and at four new sites (Dark Gulch, Trinity House Gulch, Steel Bridge, and Vitzthum Gulch) in the Trinity River upstream of the Indian Creek confluence. Wood placement concurrent with sediment placement would be permitted at a total of nine sites: the four proposed new sediment augmentation sites (Dark Gulch, Trinity House Gulch, Steel Bridge and Vitzthum Gulch) and at the five existing sediment augmentation sites (Hatchery, Weir Hole, Cableway, Sawmill, and Lowden Ranch). Section 2.2 of the EA/IS provides a full description of all proposed augmentation project activities.

Sediment for sites that lack sufficient tailings piles or other material sources (e.g., Steel Bridge and Vitzthum Gulch) for processing would be excavated, processed and sorted at the Sawmill site or at channel rehabilitation sites where excavation and processing is permitted. The sorted sediment would be hauled to the sites lacking sediments for augmentation and stockpiled or directly placed into the river (Section 2.2.2). Excavation, processing, and sorting would occur on-site where tailings piles and material sources are available for use (e.g., Dark Gulch and Trinity House Gulch). Sediment processing generally entails open pit excavation (or mining) using front end loaders and excavators. After excavation, the materials are transported to the processing location by truck, belt conveyors, or other means. Heavy machinery associated with sediment processing includes mobile screening plants, excavators, front-end loaders, and/or conveyor machines. Material would be processed to achieve the desired grain size for augmentation based on the site conditions and prescription developed for that site. Processing can remove fine sediment to reduce turbidity and allows for compliance with CWA Section 401 Water Quality Certification requirements, and for use during fine sediment management activities at the sites. Processed unused sediment would be stockpiled upslope for use during future sediment augmentation activities or at channel rehabilitation projects within the channel rehabilitation ESLs identified in the 2009 Master EIR. Rock that is not useable for sediment augmentation activities ("waste rock") would be stored outside of the floodplain and may potentially be used for channel rehabilitation activities at future projects.

The Dark Gulch site is between the Sawmill and Lowden Ranch rehabilitation sites; the remaining three proposed winter-spring augmentation sites are downstream of Lowden Ranch in subreach 4 - Indian Creek. Activities at the four new sites would include improving or constructing access roads, heavy equipment hauling and staging, hauling and stockpiling sediment, and placing sediment in the river. Sediment augmentation is an ongoing need downstream of Lewiston Dam and would be conducted for as long as Trinity and Lewiston dams are in place.

Affected Environment and Environmental Consequences

The EA/IS analyzed the following topics for effects and significance under NEPA and CEQA: air quality (Section 3.2 water quality (Section 3.2), hydrology and flooding (Section 3.4), visual resources and aesthetics (Section 3.5), land use (Section 3.6), mineral resources, geology, and geologic hazards (Section 3.7), cultural resources (Section 3.8), traffic and circulation (Section 3.9), noise (Section 3.10), wild and scenic rivers (Section 3.11), vegetation, wildlife, and wetlands (Section 3.12), fisheries resources (Section 3.13), and recreation (Section 3.14).

Effects from the alternatives are described and analyzed, and environmental commitments under NEPA and mitigation measures under CEQA are outlined and disclosed for each resource, in Appendix G and Appendix H, and Table 3-9. Based on

the analysis and with the incorporation of the environmental commitments and mitigation measures, the effects to all resources analyzed in the EA/IS would be considered below significant.

1. Introduction and Background

This Draft Environmental Assessment and Initial Study (Draft EA/IS) for the proposed Trinity River Sediment and Wood Augmentation Project (Augmentation Project, Project, or Proposed Action) has been prepared by the U.S. Department of the Interior (DOI), Bureau of Reclamation (Reclamation), and Trinity River Restoration Program (TRRP, Program) to meet the requirements of the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). An EA provides coverage for NEPA, and IS provides coverage for CEQA. The North Coast Regional Water Quality Control Board (Regional Water Board) will act as the project CEQA lead. Reclamation's TRRP is the lead agency under NEPA and the Cooperating Agency is Bureau of Land Management's (BLM) Redding Field Office. The primary objective of the Augmentation Project is to enhance river conditions for salmon and steelhead, including federal- and state-listed species and stocks, by creating more spawning and rearing habitat in the mainstem Trinity River. This objective is met through the placement of sediment and wood into the river at strategic locations.[1] 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], Section 1508.9(a)), and CEQA (California Public Resources Code Sections 21000 et seq.).

Sediment augmentation and wood placement is currently authorized during the in-channel work period (July 15 through October 15) at channel rehabilitation sites that have been identified in TRRP foundational documents, which have been previously permitted under site-specific NEPA and CEQA documents,[2] and comply with the requirements of the TRRP's General Water Quality Certification R1-2020-0025 (Regional Water Quality Control Board [RWQCB 2020) and the 2020 Biological Opinion (2020 BiOp; Atta 2020). The in-channel work period is also referred to as the "low-flow period."

In addition to the low-flow period sediment augmentations at the channel rehabilitation sites, TRRP is currently authorized to place sediment at five sediment augmentation sites upstream of Grass Valley Creek: Trinity River Fish Hatchery, Weir Hole, Cableway, Sawmill and Lowden Ranch (Figure 1-1)[3] These sites are herein referred to as the *existing augmentation sites*. Sediment placement at these sites may occur during the low-flow period and/or shortly before high-flow periods, which include synchronized winter flow releases and winter elevated baseflow releases.

The Proposed Action analyzed in this document, if adopted, would authorize the TRRP to place sediment in the Trinity River channel and wood in the channel and on sand and gravel bars at four additional augmentation sites located between the Sawmill channel rehabilitation site and Indian Creek during the high-flow periods, which are referred to as the *winter-spring augmentation period* throughout this EA/IS. The winter-spring augmentation period would generally occur between December 1 and May 1, to coincide with synchronized flow releases (October 15 – February 15) and winter elevated baseflow releases (February 16 – April 15).[4] Winter-spring augmentation activities may occur as early as November 1 during extremely wet precipitation periods. These four proposed sediment and wood augmentation sites are located within the channel rehabilitation

[1] Sediment augmentation typically consists of adding natural river rock from 0.25- to 4-inch diameter. In some cases, addition of smaller diameter fines (<0.25-inch diameter) or larger material (>4-inch diameter) may be appropriate. Augmentation replenishes spawning areas for salmon and provides other habitat benefits.

[2] Sediment augmentation at previously permitted channel rehabilitation sites include the placement of gravel during the in-channel work period and as part of ongoing channel rehabilitation work. As of 2023, permitted channel augmentation sites between the Trinity River Fish Hatchery and Indian Creek include: Sawmill, Lewiston 4, Dark Gulch, Bucktail, Trinity House Gulch, Lowden Ranch, Limekiln Gulch, and Indian Creek. Volume III of the Master EIR provided site-specific NEPA and CEQA analysis for the Sawmill, Trinity House Gulch, Lowden Ranch, and Steel Bridge sites. Future in-channel work period placement would occur under site-specific permitting for channel rehabilitation projects identified in the 2009 Master EIR.

[3] The 2009 Master EIR describes sediment augmentation activities at the five existing sites in Section 2.3.4. Sediment augmentation as a rehabilitation activity is described in Section 2.3.2 as "Activity I."

[4] Placement of gravel in the channel during the winter-spring augmentation period would be contingent on review by NMFS and would comply with the conditions stipulated in the 2020 BiOp.

project environmental study limits (ESLs)[5] at Dark Gulch, Trinity House Gulch, Steel Bridge, and Vitzthum Gulch (Figure 1-1) and are referred to herein as the *proposed winter-spring augmentation sites*. The Proposed Action would also extend the downstream reach where sediment augmentation occurs to Indian Creek. Figures referenced throughout this document are included in Appendix A, and a glossary of terms is included in Appendix B.

The Proposed Action would extend the window for augmentation at the proposed winter-spring augmentation sites to coincide with spring and winter high-flow events and prior to the authorized in-channel work period.

The 2000 Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) did not address the issue of wood augmentation and no specific recommendations were formulated as the TRRP was developed and initiated. Wood placement was identified and analyzed in the 2009 Master Environmental Impact Report (2009 Master EIR) as a component of channel rehabilitation projects. In 2011, formal Trinity River-specific wood recommendations were established (HVTFD 2011; Cardno Entrix and CH2MHill 2011), and wood placement activities at TRRP projects have been analyzed as part of the site-specific NEPA and CEQA documents. The Proposed Action would allow for wood placement to occur at the proposed winter-spring augmentation sites and at the existing augmentation sites to enhance the efficacy of sediment augmentation activities and improve aquatic resources.

In addition to sediment and wood placement at proposed winter-spring augmentation sites and existing augmentation sites, the Proposed Action would authorize the BLM to issue a Free Use Permit (FUP) pursuant to 43 Code of Federal Regulations (CFR) 3604.10 through 3604.27 that would authorize Reclamation to use mineral materials from BLM-administered project lands for restoration activities at sediment augmentation and channel rehabilitation sites. Excavation and processing of materials on BLM-managed lands would occur at the Sawmill and Trinity House Gulch ESLs. The Sawmill site is one of the existing augmentation sites where high- and low-flow placement is permitted and is included in this Draft EA/IS to analyze the effects of continued sediment excavation and processing activities.

If adopted, the Proposed Action would require an amendment to the TRRP Individual Permit under Section 404 of the Clean Water Act (CWA) for sediment augmentation with the U.S. Army Corps of Engineers (USACE) and an amendment of the TRRP Water Quality (WQ) certification under Section 401 of the CWA with the Regional Water Board (WDID No. 1A09154WNTR). TRRP has collaborated on the technical aspects of the proposed Augmentation Project with its partner entities: the Hoopa Valley Tribe (HVT), Yurok Tribe, the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and the California Department of Fish and Wildlife (CDFW). The TRRP partner entities have assisted in development of the proposed activities through their participation in the TRRP Physical Working Group, the Aquatic Ecology and Riparian Working Group and the TRRP Fish Work Group, and through scientific review of the Draft EA/IS.

1.1 Purpose of This Document

This Draft EA/IS focuses on the potential effects of activities specific to the four proposed winter-spring augmentation sites and the addition of wood at the five existing augmentation sites and serves as a joint document to support federal and state agency decision-making and satisfy both NEPA and CEQA requirements for public involvement and disclosure within a single document. Included in this Draft EA/IS is a site-specific project description for the Proposed Action and other information required to amend the TRRP Water Quality Certification Water Discharge Identification No. 1A09154WNTR (North Coast RWQCB 2020) or a subsequent reissued certification for Trinity River sediment management. The Regional Water Board will consider this information when making its determination and decision regarding water quality certification.

Both NEPA (42 United States Code [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

[5] 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 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.

environmental review process. This Draft EA/IS evaluates the environmental impacts of the Proposed Action and proposes environmental commitments and mitigation measures to minimize environmental effects and is designed to facilitate implementation of the project under all applicable laws. The Augmentation Project tiers off the Master EIR, which provides programmatic CEQA level review. Both the 2000 FEIS and the Final Master EIR are meant to support and facilitate implementation of the Secretary of Interior's December 2000 Record of Decision (ROD) for Trinity River Restoration.

1.1.1 NEPA Compliance

Reclamation has prepared the EA portions of this Draft EA/IS pursuant to 43 CFR Section 1501.5(b), which provides that "an agency may prepare an environmental assessment on any action in order to assist agency planning and decision making." This Draft EA/IS has been prepared to comply with NEPA (42 USC 4321 et seq.), the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508), and the DOI Regulations for the Implementation of NEPA (43 CFR Part 46).

The 2000 *Trinity River Mainstem Fishery Restoration Environmental Impact Statement* and ROD, referred to hereafter as the *Trinity River FEIS and ROD* (USFWS et al. 2000), is incorporated by reference.[6] The Trinity River FEIS and ROD function as program-level NEPA documents that support policy decisions associated with managing the TRRP and as programmatic NEPA documents providing a "first-tier" review of restoration actions, including the Proposed Action.[7] The ROD directed agencies to implement the Flow Evaluation Alternative, which was identified as the Preferred Alternative in the Trinity River FEIS and includes sediment augmentation at locations downstream of Lewiston Dam at channel rehabilitation sites. The coarse and fine sediment augmentation and management program, including activities at permitted rehabilitation sites, is described in Section C of the ROD and in Section 3 of Appendix C Implementation Plan for the Preferred Alternative of the Trinity River FEIS.

Sediment augmentation has been authorized as a component of the subsequent site-specific analyses for channel rehabilitation projects under the Trinity River FEIS and ROD. Sediment augmentation at channel rehabilitation sites may occur during construction of the project as well as in subsequent years to help maintain a site's form and function. Section 2 of Appendix C Implementation Plan for the Preferred Alternative of the Trinity River FEIS outlines general guidelines for sediment augmentation at permitted rehabilitation sites.

The ROD recognized that restoration of fluvial processes requires continued input of coarse sediment as gravels are moved and redeposited from increased flows creating necessary dynamic habitats. Required coarse sediment introductions would average 10,300 cubic yards (cu. yd.) annually but could range from zero to 67,000 cu. yd. in any 1 year depending upon the water year type, which ranges from extremely wet to critically dry. The Trinity River Flow Evaluation Final Report (TRFEFR) identifies the reach between Lewiston Dam and Indian Creek as impaired from insufficient sediment to support anadromous fish populations, and recommends actions to address the deficit at sites upstream of Rush Creek.[8]

Additional environmental details and impacts associated with sediment augmentation are incorporated by reference from the *2009 Master EIR for Channel Rehabilitation and Sediment Management for Remaining Phase 1 and Phase 2 Sites*, referred to herein as the *2009 Master EIR*.[9] The BLM did not participate in the preparation of the 2009 FEIS/EIR; therefore, the analysis in that document is incorporated into this Draft EA/IS to cover BLM participation in the Proposed Action. Sediment augmentation activities, which include high-flow period augmentation as well as on-going augmentation at channel rehabilitation sites, are described in Section 2.3 and analyzed in Chapter 4 of the 2009 Master EIR.

This document evaluates the environmental impacts of the No Action alternative (Alternative 1) and the Proposed Action alternative (Alternative 2) and is intended to facilitate implementation of the Proposed Action under all applicable federal laws. If there are no significant environmental impacts under NEPA identified because of the analysis, and Reclamation and the

[6] The 2000 Trinity River FEIS/ Environmental Impact Report (EIR) and ROD are available at https://www.trrp.net/program-structure/foundational-documents/.

[7] See Chapter 2. : Description of Alternatives for more information on the Proposed Action, which is Alternative 2.

[8] The TRFEFR can be accessed here: https://www.trrp.net/library/document/?id=226. Section 8.2.2. and Table 8.10 identify activities to address sediment shortage between Lewiston and Rush Creek.

[9] The *2009 Master EIR for Channel Rehabilitation and Sediment Management for Remaining Phase 1 and Phase 2 Sites* is available at https://www.trrp.net/library/document/?id=476.

BLM decide to select the Proposed Action, a Finding of No Significant Impact (also known as a *FONSI*) may be signed to complete the NEPA compliance process.

1.1.2 CEQA Compliance

Between 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 the 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 2009 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 and provides programmatic CEQA level review for the Augmentation Project. The environmental checklist for CEQA resources is included in Appendix C.

The Regional Water Board acted as the lead agency for the 2009 Master EIR (California State Clearinghouse #2008032110) and for the IS portions of subsequent site-specific Draft EA/IS analyses. The 2009 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 2009 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 2009 Master EIR on August 25, 2009. 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).

Under 14 CCR 15177, after a Master EIR has been prepared and certified, subsequent projects that the lead agency determines are within the scope of the Master EIR will be subject to a limited CEQA environmental review.[10] CCR, Title 14, Division 6, Chapter 3, Section 15177, subd. (b)(3), 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, that no new additional mitigation measures or alternatives are required, and that the project is within the scope of the Master EIR. Whether a subsequent project is within the scope of the Master EIR will 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. For this project, this document will serve as the IS for review by the Regional Water Board.

1.1.3 Other Regulatory Compliance Requirements

In addition to CEQA and NEPA, the Augmentation Project is 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, California Surface Mining and Reclamation Act (SMARA), National Historic Preservation Act (NHPA)[11], 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[12] for the Augmentation Project are the USACE, USFWS, NMFS, CDFW, Regional Water Board, and Trinity County. The 2009 Master EIR and its *Chapter 3: Regulatory Framework* includes descriptions of the actions required of the agencies as well as the applicable environmental statutes and permits required for TRRP's work on the Trinity River.

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

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

[11] 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.

[12] A trustee agency is a public agency that has jurisdiction by law over natural resources affected by a project and which are held in trust for the people of the State of California.

appropriate land use management for BLM-administered lands. According to the RMP, BLM-administered lands along the Trinity River are managed principally for sustained yield forestry, deer winter range habitat, special status species protection and dispersed recreation. However, the RMP was amended in 1995 by the Northwest Forest Plan (USDA and FS 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 northern spotted owls (*Strix occidentalis caurina*). A key component of the amendment to the RMP was the establishment of Riparian Reserves along rivers and streams to protect aquatic resources. All the augmentation sites on BLM-administered lands are also 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; recreational designation) for its fisheries and recreational values. BLM is the federal river manager from the Lewiston Dam to the North Fork Trinity River. The ACS analysis for the project is provided in Appendix D, and a WSR determination for the project is included in Appendix E.

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 BLM-administered public lands within the plan's jurisdiction, which includes all or portions of Trinity House Gulch, Steel Bridge, Dark Gulch, and Vitzthum Gulch. Section 4.2.2 of the 2009 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.

BLM would issue a right-of-way (ROW) to Reclamation pursuant to Title V of the Federal Land Policy and Management Act (43 USC 1761 et seq.) to authorize rehabilitation activities and access on BLM-administered lands, as described in this document. BLM would also issue a FUP pursuant to 43 CFR 3604 that would authorize Reclamation to use mineral materials from BLM-administered project lands for restoration activities at sediment augmentation and channel rehabilitation sites. The FUP would authorize Reclamation to process, use, and/or remove approximately 200,000 cu. yd. of mineral materials from BLM-administered lands at the Sawmill ESL, and up to 37,000 cy of material at the Trinity House Gulch ESL.

Trees used for wood augmentation may be sourced from BLM-managed lands, Trinity National Forest, private or state lands, and may be harvested from augmentation sites or brought in from other locations. Wood that is brought in from other locations, such as fuels reduction projects or other permitted rehabilitation sites, would be permitted under site-specific NEPA and CEQA for those projects, if applicable, and is therefore not included in this analysis.

Trees and vegetation removed from BLM and private lands at the existing and proposed winter-spring augmentation sites would comply with all applicable county, state, and federal laws, including the Migratory Bird Treaty Act, which prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the USFWS. All ECs, project design features, mitigation measures, and best practices will be applicable to tree and vegetation removal at augmentation sites; and for harvest of wood used for wood placement activities. Trees removal from private lands will be done so under agreement with the TRRP and the landowner(s).

BLM would authorize site-specific use of vegetation and trees from its managed lands to enhance habitat complexity (wood placement) at the proposed winter-spring augmentation sites and the existing augmentation sites. 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), project design features, mitigation measures, and best management practices developed for this Draft EA/IS would be considered for incorporation into the BLM authorization.

Because of uncertainties about the availability, types, shapes, and sizes of the wood and the planned construction methods, the exact amounts and locations of wood placement are not known at this time. Trees, treetops, and branches for use in constructing large wood structures would be obtained onsite and/or opportunistically from other lawful sources (e.g., public or private lands where vegetation management activities have occurred) and delivered to the project site. The specific locations of wood placement at the augmentation sites would be determined as part of TRRP's project design. This Draft EA/IS analyzes the potential effects of wood placement at each site on resources. Specific wood placement activities at the proposed winter-spring augmentation sites are subject to site-specific environmental review by BLM and Reclamation, to ensure that the site conditions and future wood placement is adequately analyzed, and effects are accounted for in this Draft EA/IS. Additional compliance documentation may include the completion of a Determination of NEPA Adequacy, to ensure that the analysis in this Draft EA/IS thoroughly identifies effects of site-specific wood placement.

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, that 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.[13] 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. This exemption would apply to the Augmentation Project.

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 Augmentation Project 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 would be subject to the terms and conditions of the encroachment permit and the biological assessment and amendments (TCDOT 2021a; TCDOT 2021b).

The California Department of Transportation (Caltrans) would require a Caltrans Encroachment Permit for all work within the State right-of-way 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 Augmentation Project 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.

1.2 State Historic Preservation Office Consultation

Federal agencies are required to consider the effects of their actions on 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 National Historic Preservation Act.[14] 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 to be 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 by 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), as defined by 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 apply, including 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 that are traditionally and culturally affiliated with the geographic area of a project when a tribe requests to be informed of such projects and requests the consultation to ensure that impacts on 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. The consultation requirements of AB 52 do not apply to the proposed augmentation project because the Regional Water Board adopted the Master EIR in 2009, before the effective date of AB 52. The Regional Water Board's requirements for mitigation, monitoring, and reporting 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.

[13] The full SMARA regulatory text can be found at https://www.conservation.ca.gov/dmr/lawsandregulations.

[14] For more info on the Section 106 of the National Historic Preservation Act, see https://www.gsa.gov/real-estate/historic-preservation/historic-preservation-policy-tools/legislation-policy-and-reports/section-106-national-historic-preservation-act-of-1966.

1.3 Purpose and Need

The proposed project is needed to enhance existing habitat and provide new salmon and steelhead spawning and rearing habitat in the Trinity River below Lewiston Dam. The purpose of the project is to add suitable-sized sediment and wood through manual augmentation at up to four new potential sites. Sediment and wood augmentation would:

- Provide sediment and wood to the river that would help create natural bar, riffle, and pool sequences.
- Promote scour and fill processes that form bars and pools in the river channel.
- Provide juvenile rearing habitat in the active channel, including refugia from predators, as opposed to floodplain rearing habitat that is only available during high flows.
- Create and maintain areas suitable for adult salmon to lay eggs (also known as spawning beds for redd construction).
- Increase the topographic complexity of the river channel.
- Increase habitat for salmon prey, including macroinvertebrates associated with in-channel wood.
- Address the deficit of woody material in the Trinity River, which would increase the availability of organic matter in the channel and floodplain, help to develop and support diverse habitat.
- Increase total natural occurring salmon population within the targe restoration reach.

1.4 Location of Project

The TRRP's target restoration reach is the 40-mile (mi) length of the Trinity River downstream of Lewiston Dam to the confluence of the North Fork Trinity River (also referred to as the *North Fork*) in Trinity County, California. The sediment augmentation reach identified in the TRFEFR is between the Lewiston Dam and Rush Creek. The four proposed winter-spring augmentation sites are between the Sawmill site[15] (about 2.5 mi downstream of the Lewiston Dam) and the confluence of Indian Creek and the Trinity River. These sites would extend the existing augmentation reach downstream, approximately 10 river miles (RMs) from Rush Creek, to address sediment impairment identified in the TRFEFR between the Lewiston Dam and Indian Creek and to address the wood deficit (Cardno Entrix and CH2MHill 2011; Figure 1-1).

From upstream to downstream, the proposed winter-spring augmentation sites are Dark Gulch, Trinity House Gulch, Steel Bridge, and Vitzthum Gulch. Throughout this document, the terms *river left* and *river right* are used to refer to the banks of the Trinity River when looking downstream. The RM and river kilometers (RKM) refers to the distance from the confluence of the Trinity River and the Klamath River, which occurs downstream of the restoration reach.[16] Each augmentation site falls within a rehabilitation project ESL. The existing sediment augmentation sites are found in the Weir Hole and Hatchery reaches, within the upstream portion of the TRFEFR-delineated reach above Grass Valley Creek, while the proposed winter-spring augmentation sites extend into the downstream portion of the reach to just above Indian Creek (Vitzthum Gulch). Wood placement would occur both at the four proposed winter-spring augmentation sites and the existing five augmentation sites that were identified and permitted in the FEIR (Hatchery, Weir Hole, Cableway, Sawmill, and Lowden Ranch; see Figure 1-1). The ESLs were not determined specifically for augmentation activities but for the larger channel rehabilitation activities authorized by the 2009 Master EIR, FEIS, and ROD and are subject to site-specific NEPA and CEQA review. The ESLs include a buffer applied for the purposes of resource identification and associated impact analyses and is the area where pre-project resource assessments would be concentrated. Augmentation activities would occur within areas identified as contractor use areas (C) and access areas (A).

1.5 Project Background

1.6 TRRP Background

Congress authorized construction of the Trinity River Division (TRD) of the Central Valley Project (CVP) in 1955 (Public Law 386, 84th Congress, First Session). Authorized water uses from the TRD include irrigation and beneficial uses in the Central Valley, power production, and the preservation of fish and wildlife. The TRD began operations in 1960, blocking 109 mi of

[15] The Sawmill site is a channel rehabilitation site, a currently permitted high flow sediment augmentation site, and a gravel/sediment processing site (Figure 1-1).

[16] River mile (RM) is the distance from the confluence of the Trinity and Klamath rivers, with 0 RM being at the confluence and increasing upstream along the Trinity River.

important salmonid habitat above Lewiston Dam and exporting as much as 90% of the Trinity River's inflows into Trinity Lake to the Sacramento River Basin. Fisheries resource managers observed an almost instantaneous decline in the numbers of naturally produced adult salmonids returning to the Trinity River basin to spawn. Returning salmonid numbers declined 53 to 96%, depending on species (USFWS and HVT 1999).

To address these precipitous declines, numerous pieces of legislation and a decades-long study led to the completion of the TRFEFR by the USFWS and the HVT (1999)[17] and the subsequent Trinity River FEIS and ROD. The ROD recognized that salmon recovery required "rehabilitating the river itself" by "restoring the attributes that produce a healthy, functioning alluvial river system" and selected a course of action that included variable annual instream flows, physical channel rehabilitation, sediment management, watershed restoration, and infrastructure improvements guided by an Adaptive Environmental Assessment and Management (AEAM) program.[18]

Following the signing of the ROD, the DOI established the TRRP and opened Reclamation's TRRP office in 2002 to coordinate and oversee the restoration of fish and wildlife populations of the Trinity River affected by dam construction and related diversions. Administered by Reclamation, TRRP is a partnership of federal and state resource agencies, Hoopa Valley and Yurok Tribes, and Trinity County. The purpose of TRRP is to mitigate impacts of the TRD on anadromous fish populations in the Trinity River by implementing the ROD and achieving congressionally mandated restoration goals.[19] The long-term goals of the TRRP are to (1) restore the form and function of the Trinity River; (2) restore and sustain natural production of anadromous fish populations in the Trinity River to pre-dam levels; and (3) facilitate full participation by dependent tribal, commercial, and sport fisheries through enhanced harvest opportunities.[20]

In practice, the TRRP undertakes river rehabilitation projects and manages sediment (fine and coarse) and flows to improve habitat and river function for all life stages of native Trinity River anadromous fish, thereby increasing naturally spawning anadromous fish populations. Accordingly, other factors influence returning adult salmon and steelhead populations, including ocean and river salmonid harvests and the habitat conditions (e.g., water quality) of the Klamath River and the Pacific Ocean. For that reason, TRRP's efforts are focused on the recovery of juvenile salmon and steelhead in the Trinity River; the most immediate metric of TRRP success is the number and size of juvenile salmon and steelhead that out-migrate from the Trinity River each year.[21]

TRRP's strategy is to restore the Trinity River's ecological processes to increase habitat quality and quantity for native anadromous fish. The four primary components of TRRP's river restoration work include:

1. **Variable Annual Instream Flows** – releasing water from Lewiston Dam, based on the water year type, to mimic natural Trinity River flows and interact with downstream areas to enhance conditions for all life stages of fish and wildlife. These variable annual instream flows are also called *restoration releases* or *restoration flows* and have generally occurred starting in April.
2. **Channel Rehabilitation** – restoring the functional floodplain of the river, which has been channelized and simplified by managed river flows and mining. To date, TRRP has constructed 34 of the rehabilitation projects identified in the 1999 TRFEFR and Trinity River FEIS (USFWS et al. 2000).[22]
3. **Sediment Management** – introducing sediment to the river and providing flows to ensure its movement in the river. Sediment entering the river system upstream of Trinity Dam is blocked from the Trinity River below Lewiston Dam, which creates a downstream sediment deficit. TRRP resupplies the river with sediment downstream of the dams to

[17] TRFEFR is available at http://northtrinitylake.com/water/pdf/Trinity_River_Flow_Evaluation_Final_Report.pdf.

[18] A description of the TRRP AEAM program is available at https://www.trrp.net/program-structure/adaptive-management/.

[19] A full description of the Trinity River Restoration Program is available at www.trrp.net

[20] TRRP foundational documents are available at https://www.trrp.net/program-structure/foundational-documents/.

[21] Summary of the TRRP fish outmigration are statistics available at: https://www.trrp.net/restoration/adaptive-management/fish-biology/fisheries-monitoring-and-escapement/.

[22] The 2009 Master EIR authorizes the TRRP to complete rehabilitation projects and sediment augmentation, after NEPA and California Environmental Quality Act (CEQA) review for individual projects at the project site level. It is available at: https://www.trrp.net/library/document/?id=365.

offset the loss of sediment from upstream sources. Typically, coarse sediment additions are used to provide gravels (0.375 to 5 inches in diameter) downstream of Lewiston Dam, where the supply has been curtailed. Fine sediment control reduces silt and sand inputs from watershed sources (e.g., Grass Valley Creek, where sediment retention ponds have been periodically dredged to control impacts on redds). Recent studies indicate that the Trinity River reach near the dam is lacking fine sediment inputs, which is an objective addressed by the Proposed Action (Buxton 2021).

4. **Watershed Restoration** – addressing negative impacts resulting from land management in the Trinity River basin. Watershed restoration activities include ensuring fish passage to tributary habitat and creating better aquatic conditions in watershed areas to support stream life.
5. **Adaptive Environmental Assessment and Management** – monitoring, evaluating, and improving the effectiveness of river restoration actions.

1.6.1 Addressing Sediment Deficit

The Trinity River has a deficit of sediment compared to pre-dam conditions (USFWSUSFW and HVT 1999). The completion of Trinity and Lewiston dams in the early 1960s altered sediment loads in the Trinity River by completely blocking the delivery of sediment from the upper Trinity River, which led to a depletion of coarse bed material in the reaches downstream from the dams as infrequent floods flushed those materials downstream (Wilcock et al. 1996; USFW and HVT 1999; GMA 2001; Wilcock 2004 as cited in Gaeuman and Stewart 2017).

Since 2003, sediment augmentation has occurred at existing augmentation sites on the Trinity River (Figure 1-1; USFW and HVT 1999; GMA 2001; Wilcock 2004, Gaeuman and Stewart 2017). In water year 2004, TRRP began an intensive sediment transport monitoring program designed to quantify annual bedload and suspended load sediment fluxes throughout the Trinity River (Gaeuman and Stewart 2017). Sediment monitoring has shown that gravel, cobble, and fine sediment is supplemented to some degree in downstream reaches by the Trinity River's tributaries including Deadwood Creek, Rush Creek, Indian Creek, Weaver Creek, and Reading Creek. In the Trinity River just downstream of the Lewiston Dam (near RM 112; Figure 1-1) to Indian Creek (RM 94), sediment is transported downstream more quickly than it is replenished by creeks. The 1999 TRFEFR noted that this reach is sediment-impaired, and recommended between Lewiston and Rush Creek to address the impairment. Sediment augmentation has and continues to occur along the Trinity River at Trinity Hatchery, Weir Hole, Cableway, Sawmill, and Lowden Ranch (a.k.a. the existing augmentation sites; Figure 1-1) to remedy this impairment.

A 2014 study of the Trinity River's geomorphic environment assessed the extent of the sediment deficiency and identified stream reaches with the potential for coarse sediment storage, where sediment augmentation would be most beneficial (HVTFD and McBain Associates 2015). This study assessed active bar areas exposed above the water surface during a 450 cubic feet per second (cfs) release from Lewiston Dam along nine geomorphic subreaches between Deadwood Creek and Carver Creek (Figure 1-2), which are all upstream of the North Fork Trinity River confluence. The cumulative longitudinal gravel bar area by each of the nine subreaches is shown in Figure 1-2.

The 2014 study revealed several things about the substrate condition and sediment transport within the nine subreaches below the dams (McBain et al. 2021):

- Subreach 1 (Deadwood Creek), subreach 3 (Grass Valley Creek), and subreach 9 (Canyon Creek) were shown to have the highest bar areas.
- Subreach 2 (Rush Creek) and subreach 4 (Indian Creek), where the proposed action would focus, have the lowest active bar area. Subreach 2 (Rush Creek) is less than 1 mi long and is a straight segment of channel without obstructions that subsequently provides little opportunity for sediment storage.
- Subreach 4 (Indian Creek) is 8.35 mi in length; no sediment augmentation has occurred in this reach. Since 1994, virtually all bedload and sand produced in the Grass Valley Creek watershed has been captured in sediment retention ponds near the creek's mouth to address historic water quality impairment (Trso 2004; Gaeuman 2010, Buxton 2021). The retention of coarse sediment has resulted in a deficit of sediment throughout the restoration reach, and, therefore, reduction of spawning habitat.
- Subreach 4 (Indian Creek) has half of the gravel bar area that subreach 6 (Weaver Creek and Reading Creek) and subreach 7 (Brown's Creek) have in a similar geomorphic setting.

- Subreach 9 (Canyon Creek) has a high bar area likely due to sediment inputs from Canyon Creek and residual effects of the 1997 flood.
- The existing sediment augmentation sites are located too far upstream to ameliorate the sediment deficiency in reaches below subreach 3 (Grass Valley Creek). Tributaries downstream of Indian Creek (Reading Creek, Weaver Creek, and Browns Creek) supply enough sediment to generally balance the sediment budget in subreaches below subreach 4 (Indian Creek).

The results of the study indicate that subreach 4 (Indian Creek) has been identified as having the greatest potential for coarse sediment storage, where sediment augmentation would be most beneficial for the riverine environment. The four proposed new winter-spring augmentation sites are located just upstream of and within Subreach 4, from approximately RM 106.7 (Dark Gulch site) downstream to RM 96.6 (Vitzthum site). They would address this lack of sediment and support juvenile and adult salmon populations.

The TRRP goal is to address and restore anadromous fish habitat, which is achieved in part by promoting the fluvial processes that create and maintain physical habitat in the river. The fluvial processes include vertical scour and fill, bank erosion, lateral accretion, planform change, and reach-scale incision or aggradation. The rates at which these processes operate depend on the mobilization and transport of coarse sediments that compose the bed and banks of the channel and are essential to supporting fish habitat throughout the river system (Gaeuman and Stewart 2017).

The concept for the Proposed Action was first discussed by the TRRP Physical Workgroup in 2017.[23] Because gravel travels only a short distance after it is mobilized in the channel, the Physical Workgroup concluded that additional sediment augmentation sites would enhance sediment transport and delivery within the Trinity River below the dams in the reaches above Indian Creek. Sediment augmentation would increase the availability and quality of physical habitat for juvenile and adult salmonids in the river channel by promoting gravel deposition and scour and fill processes that promote channel complexity. Sediment augmentation and wood augmentation (discussed in greater detail below) would occur contemporaneously.

1.6.2 Addressing Wood Deficit

Wood is a naturally occurring component of stream and river systems where little or no anthropogenic alteration has occurred, wherein vegetation within the floodplain is recruited into the channel through flooding, erosion, wind throw, disease, beaver activity, or other natural mortality. The presence of wood within the river system also increases channel-floodplain connectivity, which aids in recruitment of wood that has been placed through augmentation or is naturally occurring within the floodplain (Cardno Entrix and CH2MHill 2011).

Wood is an essential component of river ecological systems that enables retention of organic matter and enhances nutrient dynamics that support macroinvertebrate populations that are the primary food source for salmon and steelhead. In the Trinity and Klamath rivers, juvenile salmonids prefer habitat that includes wood as escape cover (e.g., Goodman et al. 2015). Wood also supports instream habitat complexity that may offer flow refugia to juvenile salmonids and protection from predators. In addition, in-channel wood helps create and maintain alluvial reaches in channels that lack sufficient natural sediment input by increasing sediment storage and supporting pool formation that promotes aquatic and terrestrial habitats (Boyce et al. 2018; Naiman et al. 2002; USBR and ERDC 2016; Bilby 1981; Flores et al. 2011; Benke et al. 1985, Coe et al. 2009; Lester et al. 2009; Bilby and Ward 1989; Abbe and Montgomery 1996; Beechie and Sibley 1997; Roni et al. 2015). It should be noted that wood that is dispersed in the channel, from the Proposed Action, generally provides greater ecological benefits when compared to structural wood placements (e.g., log jams; Cardno Entrix and CH2MHill 2011). Wood placements may also create a positive feedback system whereby large diameter trees with root balls or rootwads help create naturally forming wood jams that cause sediment accretion and build-up of alluvial patches. These patches in turn support re-generation of tree species that can eventually be recruited as new wood pieces (Collins et al. 2012).

Though the geomorphic benefits of dispersed wood are often minor, such instream wood often provide shelter from flow allowing sediment to deposit and be exchanged with mobile grains during high flows. Instream wood often also creates scour

[23] Information on the project concept from the Physical Workgroup can be found at https://www.trrp.net/gravel-physical-workgroups/

holes in the river channel that help dissipate the energy of flows, which can benefit aquatic habitat by providing hydraulic diversity for benthic organisms. The hydraulic roughness from instream wood can also increase flow access to floodplains, where salmonids can exploit food resources and grow to larger sizes in shorter timeframes to aide in their survival to adulthood (Sommer et al. 2001).

The Trinity River has undergone more than a century of anthropogenic manipulation, including the extirpation of beavers, historic mining and logging, establishment of roads, farms, and houses, and the construction of two dams. These activities and infrastructures have reduced the amount of wood in the river valley that would have provided essential ecological functions, including slowing water and sediment transport and causing floodplain expansion that would increase the diversity of plant communities in the riparian zone.(Boyce and Goodman 2018) summarize the geomorphic effects of anthropomorphic activities as they relate to the decrease in wood in the Trinity River system:

Trapping of beaver drastically changed the hydrology of the mainstem Trinity and its tributaries by eliminating the benefits associated with beaver dam construction such as slowing water and sediment transport, floodplain expansion and enhancement of the diversity of plant communities in the riparian zone. Mining activities resulted in the removal of forest canopy on the hillsides and floodplains but also led to direct removal of live and dead trees (wood) from the active river channel. Mining also introduced large amounts of sediment both in the riparian zone and directly into the river channel (Krause 2010). The resultant dredge piles of gravel-boulder in the riparian zone have restricted production of many tree species that are critical to maintaining equilibrium between recruitment and depletion of wood. By the middle of the 20th century construction of the TRD of the Central Valley Project (CVP) completely interrupted sediment and wood contributions from upstream. Additionally, the dams eliminated peak geomorphic flows and reduced flow variability which drastically altered the morphology of the river channel (Evans 1979; Frederiksen, Kamine, and Associates 1980) and reduced hydraulic recruitment of wood. More recently timber extraction, floodplain development and riparian firewood collection have contributed to the lack of natural wood inputs along the Trinity River corridor (Cardno Entrix and CH2MHill 2011).

Construction of the Trinity and Lewiston dams further impacted the system by dramatically reducing the river's peak flows and erosive power that once drove channel migration that would have recruited wood debris from the floodplain and adjacent hillslopes. The dams also completely eliminated delivery of wood from the upper watershed to the project reach. Wood from tributaries entering the river downstream of Lewiston Dam was historically impacted by forest removal and fires, and the watershed wood supply is impacted today roads, fire, and powerline vegetation removal.

The major tributaries entering the project reach with potential for delivering wood debris include Rush Creek (RM 107.9), Weaver Creek (RM 95.5), Browns Creek (RM 88), and Canyon Creek (RM 79.3). Flows in the tributaries are small relative to the Trinity River and are unlikely to deliver substantial quantities of large wood except in large flood events. Low flow releases downstream of Lewiston Dam also reduced the regeneration of floodplain forests (Cardno Entrix and CH2MHill 2011).

A 2011 study conducted for the TRRP recommended that 500 to 600 large wood pieces per RKM (805 to 966 pieces per RM) be present throughout the 40-mi restoration reach (Cardno Entrix and CH2MHill 2011). During the study, large wood was characterized as having a minimum size of 20 centimeters (cm) diameter at breast height (DBH) and 2 meters (m) in length and was divided further into the following size classes:

a) Size 1 – 20 to 30 cm DBH or 4 m in length
b) Size 2 – 30 to 70 cm DBH and 4 to 10 m in length
c) Size 3 – key pieces, larger than 70 cm DBH or 10 m in length

In 2015, an estimated 32 to 40 wood pieces per RKM (52 to 64 pieces per RM) were present in the Trinity River mainstem within the reaches where no rehabilitation activities had taken place, which suggests that there is a reach-wide deficit of wood. The reaches closer to the dams, where sediment and wood augmentation is included in the Proposed Action, were determined to have lower volume of wood than areas further downstream (HVTFD and McBain Associates 2015). The Proposed Action would help address the lack of wood within the augmentation reach and further downstream and enhance ecological and geomorphic complexity objectives that are targeted for the winter-spring augmentations. Wood placement would occur at each of the proposed winter-spring augmentation sites as well as at the five existing augmentation sites. Further details on implementation are included in Section 2.2.2

1.7 Scoping and Public Involvement to Date

Since the 2000 and 2009 RODs were signed, TRRP and other agencies have held several public meetings and open houses to obtain public input and provide the public with information on TRRP activities. As part of ongoing TRRP outreach activities, TRRP staff members met with local groups (e.g., fishing guides, whitewater rafters, and local residents) to obtain stakeholder input and advice and to address general concerns related to river restoration and functioning. Many of these meetings and interactions were not specific to the Augmentation Project.

Notice of all public meetings and other pertinent project information are announced in the local Trinity Journal weekly newspaper and posted on TRRP's website at https://www.trrp.net/.

Public scoping specific to this Augmentation Project began on March 17, 2022, and ended on April 17, 2022. At the beginning of the public scoping period, notices informing the public of the intent to begin the environmental review process were posted on TRRP and Reclamation websites, and at the TRRP Weaverville office and BLM Redding Field Office. Scoping notices were also emailed to individuals and listservs interested in the Trinity River, and notices were mailed and emailed to local landowners along the river corridor and to interest groups. During public scoping for this project, 10 individuals or groups of individuals provided comments in response to the public scoping notice. The scoping notice and summarized scoping input are included in Appendix F.

The Yurok and Hoopa Valley tribes were formally briefed on the development of the gravel EA on June 16, 2022, for the first time at the quarterly Trinity Management Council meetings and at several subsequent meetings. Hoopa Valley and Yurok tribal staff participated in the identification and proposal of new augmentation locations starting in 2021.

2. Description of Alternatives

2.1 Alternative 1 – No Action

Under Alternative 1 (No Action), the sediment augmentation regime currently permitted and implemented under the 2000 Trinity River FEIS and ROD and the 2009 Master EIR would remain in place without modification. Current sediment augmentation involves placing screened and processed sediment at five existing augmentation sites: Trinity Hatchery, Weir Hole, Cableway, Sawmill, and Lowden Ranch (see Figure 1-1).

In addition, low-flow augmentation could occur during the in-channel work period at the existing augmentation sites (Trinity Hatchery, Weir Hole, Cableway, Sawmill, and Lowden Ranch), where site-specific permitting for channel rehabilitation activities has occurred. Low-flow augmentation at these sites is authorized under TRRP's General Water Quality Certification R1-2020-0025 (North Coast RWQCB 2020), USACE Nationwide Permit #27, and under the 2020 BiOp (Atta 2020). Low-flow augmentation is included in the 2009 Master EIR and in subsequent site-specific NEPA and CEQA analysis as part of the permitted long-term maintenance activities at these sites. The low-flow augmentation would continue to be covered under the existing and periodically renewed channel rehabilitation permits from the Regional Water Board and the USACE. The channel rehabilitation site ESLs within the sediment augmentation reach and the current sediment augmentation sites are shown in Figure 1-1.

Most sediment for augmentation at the existing augmentation sites or at low-flow augmentation sites has been processed at the Sawmill site and stockpiled on-site or transported to the other permitted sites to be stockpiled for future in-river placement. Under the No Action alternative, the TRRP would be required to apply to BLM for a new FUP under 43 CFR 3604.1 through 3604.27 and for excavation and processing of materials on BLM-managed lands at Sawmill.

Stockpiled sediments are placed in the channel using appropriate equipment (e.g., a conveyor belt, front-end loaders, and/or excavators), so that the introduced material is available for spawning and later mobilized and dispersed downstream. The volume of sediment placed in the river would continue to be based on the sediment deficit and hydrology at each site; and would be calculated with sediment transport relationships to river flow measured near Douglas City, where the availability of sediment is considered natural for the post-dammed river (Alternative 2; Proposed Action).

2.2 Alternative 2 – Proposed Sediment and Wood Augmentation Project

Under Alternative 2, the TRRP proposes the continuation of sediment processing and excavation at the Sawmill site and sediment augmentation that is synchronized with high flows at the existing sites and at four new sites (Dark Gulch, Trinity

House Gulch, Steel Bridge, and Vitzthum Gulch) in the Trinity River upstream of the Indian Creek confluence. Wood placement concurrent with sediment placement would be permitted at a total of nine sites: the four proposed new sediment augmentation sites (Dark Gulch, Trinity House Gulch, Steel Bridge and Vitzthum Gulch) and at the five existing sediment augmentation sites (Hatchery, Weir Hole, Cableway, Sawmill, and Lowden Ranch).

2.2.1 Sediment Excavation, Processing and Sorting

TRRP has excavated and processed sediment from BLM-administered lands for use in restoration activities at channel rehabilitation projects and sediment augmentation sites, and it proposes to continue to do so under the Proposed Action. The Proposed Action, if adopted, would authorize TRRP to excavate and process sediment materials on BLM-administered lands at the Sawmill ESL and the Trinity House Gulch ESL and on private lands at the Dark Gulch ESL. Excavated materials from BLM-managed lands would be subject to the terms and conditions of an FUP under 43 CFR 3600 subpart 3604[24], as described in Section 1.1.3 of this Draft EA/IS.

Sediment for sites that lack sufficient tailings piles or other material sources (e.g., Steel Bridge and Vitzthum Gulch) for processing would instead be excavated, processed and sorted at the Sawmill site or at channel rehabilitation sites where excavation and processing is permitted. The sorted sediment would be hauled to the sites lacking sediments for augmentation and stockpiled or directly placed into the river (see Section 2.2.2 below). Excavation, processing, and sorting would occur on-site where tailings piles and material sources are available for use (e.g., Dark Gulch and Trinity House Gulch). Descriptions of the amounts and locations of excavation and processing at Sawmill, Trinity House Gulch, and Dark Gulch are included in Section 2.2.4.

2.2.1.1 General Description of Excavation and Processing Activities

Sediment that is used for augmentation would require processing to achieve the desired size and composition for augmentation. Excavated materials would include alluvial rock that has been deposited as mine tailings from hydraulic mining operations that occurred along the Trinity River.

Sediment processing generally entails open pit excavation (or mining) using front end loaders and excavators. After excavation, the materials are transported to the processing location by truck, belt conveyors, or other means. Heavy machinery associated with sediment processing includes mobile screening plants, excavators, front-end loaders, and/or conveyor machines (Figure 2-1). In the processing area, the wet sand and gravel are stockpiled or emptied directly into a hopper, which typically is covered with a "grizzly" of parallel bars to screen out large cobbles and boulders. From the hopper, the material is transported to fixed or vibrating scalping screens by gravity, belt conveyors, hydraulic pump, or bucket elevators. The scalping screens separate the oversize material from the smaller, marketable sizes. Oversize material may be used for erosion control, reclamation, or other uses.

The material that passes through the scalping screen would feed into a battery of sizing screens, which generally consist of either horizontal or sloped, single or multideck or vibrating screens. Rotating trommel screens with water sprays may be used to process and wash wet sand and gravel. Screening separates the sand and gravel into different size ranges. Water would be sprayed onto the material throughout the screening process to reduce dust. After screening, the sized gravel would be transported to stockpiles or to crushers by belt conveyors or bucket elevators. In general, sediment would be sorted and stockpiled into four categories by size: fines (under 0.375 inch in diameter), fish rock (0.375 to 5 inches in diameter), large rocks (>5 to 14 inches in diameter), and boulders (>14 inches in diameter).

Material would be processed to achieve the desired grain size for augmentation based on the site conditions and prescription developed for that site. Processing can remove fine sediment to reduce turbidity and allows for compliance with CWA Section 401 Water Quality Certification requirements, and for use during fine sediment management activities at the sites. Processed unused sediment would be stockpiled upslope for use during future sediment augmentation activities or at channel rehabilitation projects within the channel rehabilitation ESLs identified in the 2009 Master EIR. Rock that is not useable for sediment augmentation activities ("waste rock") would be stored outside of the floodplain and may potentially be used for channel rehabilitation activities at future projects.

[24] The full description terms and conditions under which an FUP would be administered under 43 CFR 3600 subpart 3604 can be found here: https://www.ecfr.gov/current/title-43/subtitle-B/chapter-II/subchapter-C/part-3600/subpart-3604.

2.2.2 Proposed Sediment Augmentation Activities

Figure 1-1 shows the locations of the proposed winter-spring augmentation sites. All four sites are within the reach defined as sediment-impaired by the 1999 TRFEFR (USFWS and HVT 1999). The Dark Gulch site is between the Sawmill and Lowden Ranch rehabilitation sites; the remaining three proposed winter-spring augmentation sites are downstream of Lowden Ranch in subreach 4 - Indian Creek (McBain Associates 2021; see Figure 1-2 and Section 1.6 Activities at the four new sites would include improving or constructing access roads, heavy equipment hauling and staging, hauling and stockpiling sediment, and placing sediment in the river. Sediment augmentation is an ongoing need downstream of Lewiston Dam and would be conducted for as long as Trinity and Lewiston dams are in place.

Augmentation at the four winter-spring augmentation sites would generally occur between December 1 and May 1, to coincide with synchronized flow releases (October 15 – February 15) and winter elevated baseflow releases (February 16 – April 15). Winter-spring augmentation activities may occur as early as November 1 during extremely wet precipitation periods. In addition to winter-spring placement, augmentation could take place during the authorized summer in-channel work period (July 15 through October 15) at sites where a channel rehabilitation project has been permitted.

Sediment augmentation during the low-flow period (in-channel work period) would continue to occur at the existing augmentation sites (Trinity River Hatchery, Weir Hole, Cableway, Sawmill, and Lowden Ranch), as well as rehabilitation sites where site-specific permitting has occurred, as described under the No Action alternative.

TRRP sediment augmentation volumes would depend on the water year, water release schedule, location, and site-specific needs. Generally, the desired sediment diameter for augmentation is approximately 0.375 to 5 inches; however, a wider range of sediment size may be required to achieve desired ecological outcomes. Sediment ranging from 0.04 to 14 inches in diameter may be used for augmentation, depending on the restoration objectives and augmentation prescriptions determined by TRRP. During spring releases or summer low-flow, the proposed activities would involve in-channel placement of sediment that is primarily up to 5 inches in diameter. The 0.375- to 5-inch diameter sediment may be placed at all proposed winter-spring augmentation sites. Larger sediment (5 to 14 inches) would primarily be placed at Vitzthum Gulch to help meet the augmentation objectives at that site. The smaller sized sediment (or fine sediment) would be placed at sites closer to Lewiston Dam to help remedy the extreme and detrimental deficit in fine sediment there (see Buxton, 2021). Sediment augmentation may also include larger sediment (cobbles and/or small boulders) to support long-term gravel bar and instream habitat development in the placement area.

Fine sediment placement would address the lack of sediment input just downstream of the Lewiston Dam at Deep Gulch (see Section 1.5 Buxton 2021). Fine sediment placement would be permitted by the Regional Water Board under an amended TRRP CWA Section 401 Water Quality Certification.

The four proposed winter-spring augmentation sites include private property owned by Sierra Pacific Industries (SPI) and other private landowners as well as public lands managed by BLM and Caltrans. Augmentation sites on BLM lands would be authorized through a ROW as needed. Access to augmentation sites on private land would be coordinated with landowners, through formal access and work agreements between the landowner and TRRP. Appropriate encroachment permits from Caltrans would be obtained for use of roads and ROWs under Caltrans jurisdiction. TCDOT has issued a blanket encroachment permit (B-EN-21-21) until February 2026 for TRRP's restoration projects that affect county roads.

2.2.2.1 Access Road Improvement and Construction

Some roads would need to be improved for trucks carrying material to access the river or the designated stockpile area. In other areas, roads would need to be constructed to access the river or processing location. All access road disturbances would not exceed a width of 30 ft. Activities may include grading, vegetation removal, reinforcement of slopes, and improvements to existing road conditions. Construction of new access roads would take up to 2 weeks to complete at a given site. Repairs to and maintenance of existing roads may occur to accommodate haul trucks and movement of heavy machinery, and roads would be repaired to original or to a better state following damage that occurs during operations or from excessive wear on county roads due to heavy machinery. Repairs and maintenance of existing access road would occur ahead of augmentation activities at a given site and would take up to a week to complete. Specific locations and size of road improvements and construction are described for each proposed winter-spring augmentation site in Section 2.2.4 and outlined in Table 2-1.

2.2.2.2 Heavy Equipment Hauling and Staging

Heavy equipment, including mobile screening plants, excavators, conveyor machines, front-end loaders, and other sediment processing machinery, would be required at all sites for processing and/or placing sediment into the river. Heavy equipment would be hauled or driven to sites using existing, improved, or constructed roads and would be staged on-site during the duration of the augmentation activities. All appropriate Caltrans and TCDOT permits, including encroachment and hauling permits, would be obtained.

2.2.2.3 Sediment Hauling and Stockpiling

At most sites, sediment would be hauled from off-site processing locations and stockpiled at the winter-spring augmentation sites. Transportation of sediment to the winter-spring augmentation sites would typically occur between the hours of 8 a.m. and 5 p.m., Monday through Friday, excluding holidays. A standard 10-wheel dump truck can transport about 8 to10 cy or 12 to 20 tons of material. Based on the estimate of 500 cy to 2,000 cy of sediment placed at a site in a given year, between 63 and 250 trucks of material may be required to augment each site. The maximum allowable volume allowed under the 2020 BiOp at a site in a given year is 8,000 cy. This would result in up to 1,000 truckloads of sediment; however, it is not likely that the maximum allowable volume of sediment would be placed in the river at any given site in 1 year.

TRRP would minimize the impact of 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 hauling 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. Hauling and sediment augmentation for a single site would take place during a period that ranges between one and four weeks, depending on the location of the site and the amount of sediment needed to meet the project objectives at the site in a given year. Trucking would comply with all applicable traffic laws. County or private roads would be maintained to the same or better pre-project condition and public safety would be supported by signage and other safeguards. The following roads would be used for each site:

- Sawmill
  - Trinity Dam Boulevard;
  - Lewiston Road (Rd.)
  - Rush Creek Rd.
- Dark Gulch
  - Lewiston Rd.
  - Goose Ranch/Salt Flat Rd.
- Trinity House Gulch
  - Lewiston Rd.
  - Browns Creek Road
- Steel Bridge
  - All roads from Sawmill ESL
  - Steelbridge Rd.
- Vitzthum
  - All roads from Sawmill ESL
  - SR 299

Sediment that is processed off-site may be stockpiled at winter-spring augmentation sites. Stockpiles of material would be located outside of the active channel in elevated locations that are not prone to inundation during a 2 to 10 year high-flow event. The material would also be placed to be hydrologically disconnected from other sources of surface water. Material would be staged so that it can be transported and placed in the river or floodplain during augmentation periods (see Section 2.2.2.4).The stockpiles may be covered with tarps to lessen dust impacts and to prevent invasive weeds from colonizing.

2.2.2.4 Sediment Placement

Placement of sediment into and near the active channel of the Trinity River at all proposed winter-spring augmentation sites would occur during spring restoration flow releases (between April 15 to June 15) or during summer base flows (between July 15 and October 15). Within the active channel, sediment placement would occur outside of areas where salmon are actively spawning or where redds are located. In areas outside of the active channel but within the floodplain, sediment would be placed so that it would be entrained by the river during high-flow events and would consequently be integrated into the active channel.

The prescribed amount of sediment added at each location would depend on the water release schedule, location, site-specific needs, and on the volume and magnitude of expected river flows during spring restoration releases and could vary between the general guideline of no additions in a critically dry year to additions of up to around 8,000 cy in an extremely wet year. Placement could also occur during summer base flow conditions based on augmentation prescriptions to address sediment deficits. At each of the proposed winter-spring augmentation sites, the volume of material would generally range from 500 to 2,000 cy per year but may be up to 8,000 cy, which is the amount that the 2020 BiOp authorizes at a single location within a single water year. The 2020 BiOp specifies that gravel augmentation may occur at up to six sites each year.

Processed sediment would be added to the river using heavy equipment (e.g., front-end loader, excavator, or shore-based conveyor belt system). Machinery would deliver sediment to the river during high or low flows as needed to meet sediment transport and ecological objectives in the river.

2.2.3 Wood Placement

Wood placement at the four proposed winter-spring augmentation sites and the five existing augmentation sites (Figure 1-1) would occur at the same time as sediment augmentation activities. In many cases, wood would be partially buried with the placed sediment to slightly delay the downstream transport of the wood. Because the logs would not be secured with cables or boulders, some wood would dislodge and be transported downstream before peak flows on the river. This would enable the wood to become lodged in lower marginal areas of the channel where it could provide the greatest ecological benefits. Wood that is not racked on the channel banks would deposit on bars and floodplains downstream. Figure 2-2 is an example of the accumulation of woody debris along the Trinity River. Wood lost from a particular placement location would likely be replaced by wood from upstream, so the size of log accumulations may fluctuate through time.

The size of the wood placements would vary based on the channel characteristics and objectives of each placement. The 2011 wood availability study (Cardno Entrix and CH2MHill 2011) estimated that for the Trinity River to reach the desired wood density of 40 to 60 pieces per 109-yd (100-m) length of river, approximately 40,000 wood pieces would need to be present over the whole 40-mi restoration reach. The augmentation reach is approximately half of this reach (about 20 miles), which means there is an approximate deficit of 20,000 wood pieces. The Proposed Action would entail placing wood throughout the augmentation reach in perpetuity for as long as the dams are in place, in order to maintain the supply as wood deteriorates and is transported down river. While the rate of augmentation required to maintain persistence of wood at that density is currently unknown, the number of pieces of wood under the Proposed Action would be limited to 700 pieces of varying sizes per site per augmentation year. This would amount to up to three haul truckloads of wood material delivered to a site in a given year. How much wood is placed at a site would be recommended by the Flow, Physical, and Riparian and Aquatic Ecology Workgroups on an annual basis. In addition, further analysis on wood within the Trinity River Basin is currently in development and this guidance would be applied to the proposed wood augmentation as it becomes available.

Wood placement activities would involve trucking various sized trees with or without rootwads to the construction area and then placing them with an excavator in the channel. Wood would be placed loosely and/or mixed with augmented sediments to mimic fluvial processes and enhance floodplain development. A combination of slash, logs, whole trees, and root wads (based on availability) from both onsite and offsite staging areas would be used for wood placements at the proposed winter-spring augmentation sites and the existing augmentation sites, as determined necessary to meet the project objectives. The size of each wood piece would generally fit into one of the three sizes discussed in Section 1.6.2.

Wood placement may occur on federal, state, and private lands. TRRP would consult with the BLM, the State of California, and/or private landowners before wood placement at a site occurs. Generally, trees would be sourced from Reclamation's existing wood construction suppliers as well as from independently permitted projects related to wildfire fuel reduction, hazard tree removal, and other similar projects. Wood augmentation would occur at the same sites where sediment augmentation is proposed and would utilize the same access and contractor use areas.

2.2.4 Site-Specific Augmentation Project Activity Descriptions

From upstream to downstream, the proposed winter-spring augmentation sites include Dark Gulch, Trinity House Gulch, Steel Bridge, and Vitzthum Gulch (Figure 1-1). These sites were identified because of their potential to meet TRRP's environmental needs while minimizing adverse environmental impacts based on their locations and access options. The activities proposed to occur at the winter-spring augmentation sites would vary depending on each site's access, existing conditions, and presence of materials suitable

for processing (e.g., tailings piles, terraces, spoils). Table 2-1 outlines the Augmentation Project activity areas, their acreages, and the volume of material, if any, that would be excavated and processed from the sites.

Table 2-1. Augmentation Project activity area details.

Activity Area [a]	Augmentation Site	Map Symbol	Description of Activities	Area [b] (ac)	Excavation Volume (CY) [c]
C1-SM	Sawmill		Sediment placement [e, g]	0.4	
C2-SM	Sawmill		Sorting and stockpiling [e]	0.7	
C3-SM	Sawmill		Sorting and stockpiling [f]	0.9	
C4-SM	Sawmill		Sediment placement [f]	1.2	
C5-SM	Sawmill		Sediment placement [e]	2.5	
C6-SM	Sawmill		Excavation, processing, sorting, and stockpiling [e]	4.1	200,000
A1-SM	Sawmill		Access road from Rush Creek Rd to C2-SM, C3-SM, and C4-SM (1,800 linear ft) [d, e]	0.6	
A2-SM	Sawmill		Access road from C5-SM to C1-SM (970 linear ft) [e]	0.2	
A3-SM	Sawmill		Access road from Goose Ranch Rd to A4-SM (510 linear ft) [e]	0.1	
A4-SM	Sawmill		Access road from A3-SM to C6-SM (215 linear ft) [e]	0.1	
			Sawmill Subtotal	10.8	200,000
C1-DG	Dark Gulch		Excavation, processing, and stockpiling [d]	8.8	50,000
C2a-DG	Dark Gulch		Sediment placement [d]	0.2	
C2b-DG	Dark Gulch		Sediment placement [d]	0.1	
C3-DG	Dark Gulch		Sediment placement [d]	0.2	
C4-DG	Dark Gulch		Sediment placement [d]	0.2	
A1-DG	Dark Gulch		Access road from Salt Flat neighborhood private roads to C1-DG (75 linear ft) [e]	0.5	
A2a-DG	Dark Gulch		Access road from C1-DG to C2a-DG (375 linear ft) [d]	0.3	
A2b-DG	Dark Gulch		Access road from C1-DG to C2b-DG (360 linear ft) [d]	0.3	
A3-DG	Dark Gulch		Access road from C1-DG to C3-DG (445 linear ft) [d, e]	0.3	
A4-DG	Dark Gulch		Access road from C1-DG to C4-DG (1,420 linear ft) [d, e]	1.0	
			Dark Gulch Subtotal	11.8	50,000
C1-THG	Trinity House Gulch		Staging and parking area [d]	0.1	
C2-THG	Trinity House Gulch		Excavation, processing and stockpiling of material [e]	2.1	37,000
C3-THG	Trinity House Gulch		Sediment placement [e]	0.1	
A1-THG	Trinity House Gulch		Access road from Brown's Mnt Rd to C2-THG (880 linear ft) [d]	0.6	
A2-THG	Trinity House Gulch		Access road from C2-THG to C3-THG (155 linear ft) [d]	0.7	
			Trinity House Gulch Subtotal	3.0	37,000
C1-SB	Steel Bridge		Heavy machinery staging and use area [e]	1.2	
C2-SB	Steel Bridge		Sediment placement [e]	<0.1	
C3-SB	Steel Bridge		Sediment placement [e]	0.1	
			Steel Bridge Subtotal [d]	1.3	0
C1-VG	Vitzthum Gulch		Heavy machinery staging and use; sediment stockpiling [f]	0.4	
C2-VG	Vitzthum Gulch		Sediment placement and stockpiling [e, f]	0.3	

Activity Area [a]	Augmentation Site	Map Symbol	Description of Activities	Area [b] (ac)	Excavation Volume (CY) [c]
C3-VG	Vitzthum Gulch		Sediment placement and stockpiling [f]	0.1	
A1-VG	Vitzthum Gulch		Access road from C1-VG to C3-VG (195 linear ft) [f]	0.1	
			Vitzthum Gulch Subtotal	0.9	0
			Total =	27.8	287,000

[a] C = construction staging/contractor use areas; A = access roads.
[b] Area calculated from geographical information system (GIS) data.
[c] Estimated volume to be excavated and processed on-site; cy = cubic yard.
[d.] Located on private lands.
[e.] Located and fully or partially on BLM-managed lands.
[f] Located fully or partially on State of California lands.
[g] Previously permitted sediment placement area.

2.2.4.1 Sawmill Processing Site

The 103-ac Sawmill ESL is located at RM 109 and has been used as an excavation and processing site for sediment augmentation and channel rehabilitation sites since 2009 under an FUP issued by BLM (43 CFR 3600; see Section 1.1.3). The Sawmill site is primarily comprised of BLM-managed land, State of California land, and a few private parcels that are used for residences at the downstream end of the ESL on both sides of the river. No structures or buildings are present within the ESL boundary. Land use zoning districts at this site include Rural Residential and Open Space. Portions of the site in the 100-year floodplain have been designated as "Zone AE" and "Zone X" Flood Hazard Area by Federal Emergency Management Agency (FEMA). The areas in the 100-year floodplain of the Trinity River have been designated by Trinity County as Scenic Conservation Zones, thereby restricting development.

Site-specific rehabilitation activities that have taken place at Sawmill site were analyzed in Volume III 2009 Master EIR. High-flow and low-flow sediment augmentation at the site is currently permitted (see Section 2.1 and would continue under prescription by TRRP. Future rehabilitation activities that occur apart from sediment excavation, processing, and stockpiling will include site-specific analysis.

The area where ongoing disturbances would continue is approximately 10.8 ac (Table 2-1). Of this area, 8.1 ac are located on BLM-managed lands; 2.3 ac are on State of California lands; and 0.4 ac are on private lands.

Activities at the site would occur up to eight weeks in a given year. Types of activities that would be required at the Sawmill site include:

- Continued heavy equipment staging (all activity areas)
- Continued use of existing access roads (A1-SM, A2-SM, A3-SM and A4-SM)
- Continued sediment excavation, processing and sorting, and stockpiling (C6-SM)
- Sediment hauling from site to other augmentation and rehabilitation sites (A1-SM)
- Continued sediment stockpiling (C2-SM, C3-SM and C4-SM)
- Previously permitted sediment placement (C1-SM, C5-SM)
- Potential wood placement (C1-SM and C5-SM)

Excavation, processing, and sorting activities would be those described in Section 2.2.1 and would primarily use large mine tailing piles that are present in the ESL. The mine tailings deposits within the C6-SM activity area are located on BLM-administered lands. The Proposed Action would authorize BLM to issue a new FUP for up to 200,000 cy of additional material for sediment augmentation and rehabilitation uses, from the 4.1-ac C6-SM activity area.

Extraction and processing would occur at C6-SM, which comprises 4.1 ac on river left. Stockpiling is currently and would continue to be in the C2-SM and C3-SM areas, which comprise approximately 1.6 ac. Roads for access roads to and between the excavation, processing, and stockpiling areas account for approximately 1.0 ac. Three areas, C1-SM, C4-SM and C5-SM have been and would continue to be used for sediment placement, and account for approximately 4.1 ac.

Sediment excavation, processing, sorting, and stockpiling at the Sawmill site would occur year-round as needed. Hauling of sediment for winter-spring augmentation at the existing or proposed winter-spring augmentation sites would occur prior

to April 15 of each year. Hauling for sediment augmentation during the low-flow period or for use at channel rehabilitation sites would occur prior or during July 15 and October 15.

Dark Gulch

Sediment and wood augmentation at Dark Gulch would take place within the Dark Gulch ESL (Figure 2-3). The Dark Gulch ESL is approximately 74 ac and located in Lewiston, California near RM 106.7, on both private and BLM land. The river creates a bend at Gold Bar and another one downstream around Bucktail Bar. Residential homes are located north (on river right) and east (on river left) of Gold Bar. The Dark Gulch site is most easily accessed from Salt Flat Road via Goose Ranch Road. Access from Salt Flat Road and the bridge through private property would require approval from a willing private landowner who is a member of the local road association. Equipment would either be hauled in or possibly off-loaded and walked into the project site.

Augmentation activities would take place on approximately 11.8 ac of the Dark Gulch and Bucktail ESLs (Table 2-1). Of this area, approximately 0.3 ac are on BLM-managed lands and 11.5 ac are on private lands. Most Augmentation Project activities would occur on private property within the Dark Gulch ESL, but sediment and wood placement may also occur on BLM land within the Bucktail ESL (Figure 2-3). Chanel rehabilitation activities, including processing of gravel and low-flow sediment placement at Dark Gulch and Bucktail were analyzed in 2008.[25]

Two methods for supplying sediment to the Dark Gulch site are:

- **Dark Gulch Method 1:** Sediment would be transported to the site from another location such as the Sawmill site. The Sawmill site, located 2.2 mi from Dark Gulch site, is the closest existing processing site available to TRRP and would be used to first process sediment before it is transported to Dark Gulch for use in augmentation (see Section 2.2.4.1 and Section 2.2.1). Trucks would access the site across Salt Flat Road bridge and would stockpile sediment near the existing Gold Bar tailings pile within C1-DG.
- **Dark Gulch Method 2:** Existing Gold Bar tailings located within C1-DG would be processed on-site to obtain suitable sized material for stockpiling and augmentation at the site (see Section 2.2.1). Processing equipment would be transported to the site across the Salt Flat Road bridge and kept on-site for the duration of processing, which would occur near the existing tailings pile.

Activities at the site would occur on up to 8 weeks in a given year. Types of activities that would be required at the Dark Gulch site include:

- Dark Gulch Method 1
  - Access road improvement (A1-DG, A2a-DG, A2b-DG, A3-DG, and A4-DG)
  - Heavy equipment hauling and staging (A1-DG, C1-DG)
  - Sediment processing and sorting (Sawmill site or other off-site location)
  - Sediment stockpiling (C1-DG)
  - Sediment hauling (A1-DG to stockpiles at C1-DG; A2a-DG, A2b-DG, A3-DG, and A4-DG to sediment placement areas)
  - Sediment placement (C2a-DB, C2b-DG, C3-DG, and C4-DG)
  - Potential wood placement (C2a-DG, C2b-DG, C3-DG, or C4-DG)
- Dark Gulch Method 2
  - Improving access roads (A1-DG, A2a-DG, A2b-DG, A3-DG, and A4-DG)
  - Heavy equipment hauling and staging (A1-DG, C1-DG for 1 to 2 weeks annually)
  - Sediment excavation, processing and sorting (on-site at C1-DG for four to eight weeks annually)
  - Sediment stockpiling (C1-DG)
  - Sediment placement, including addition of Section (C2a-DB, C2b-DG, C3-DG, and C4-DG for 3 days to multiple weeks)
  - Potential wood placement (C2a-DG, C2b-DG, C3-DG, or C4-DG)

[25] The Dark Gulch project was included in the Lewiston-Dark Gulch Rehabilitation Project: Trinity River Mile 105.4 – 111.7 EA/EIR and FONSI, which can be accessed at https://www.trrp.net/library/document/?id=2148.

The access routes and contractor use areas are shown in Figure 2-3 and are described in Table 2-1. Access road improvements through the private parcels (depicted as A1-DG, A2a-DG, A2b-DG, A3-DG and A4-DG) would be needed for equipment to access the tailings pile and the river. Access roads would be approximately 30 ft wide, affecting approximately 2.4 ac.

Under both Dark Gulch methods, processed sediment would be added to the river from either C2a-DG, C2b-DG, C3-DG, or C4-DG (Figure 2-3). Sediment placement at C4-DG and part of access road A4-DG are located on BLM-managed lands. BLM-managed land within the A4-DG area accounts for approximately 0.1 ac. BLM-managed lands within the C4-DG area account for approximately 0.2 ac. All other activity areas are on private lands.

The Dark Gulch site has a large tailings pile from previous mining activities (referred to as the Gold Bar tailings) on a terrace above the riparian corridor of the Trinity River (located at C1-DG in Figure 2-3). This tailings pile was also used for stockpiling material during the Dark Gulch and Bucktail channel rehabilitation projects in 2008 and 2016, respectively. Excavation, processing, and sorting activities at Dark Gulch would be those described in Section 2.2.1, and would primarily use these large mine tailing piles. Excavation activities at the Dark Gulch site would be subject to provisions under SMARA Section 2796.5 (see Section 1.1.3). Sediment excavation, processing, and sorting would occur as needed so sufficient material is available for winter-spring augmentation prior to April 15.

Equipment and sediment stockpiles would be staged in C1-DG. Prior to April 1, stockpiled material would be transported from C1-DG to the sediment placement areas. Gravel placement would occur downstream of a private parcel on BLM land (C4-DG) and/or on adjacent private land (C2a-DG, C2b-DG, or C3-DG; see Figure 2-3). The sediment would be placed in the river at the onset of the spring release hydrograph and would extend as much as 30 feet (ft) into the mainstem Trinity River channel. Sediment placed at Dark Gulch would primarily range from 0.04 to 5 inches in diameter. As described in Section 1.5 the addition of fine sediment at sites close to the Lewiston Dam would help to address the Trinity River's fine sediment deficit above Grass Valley Creek.

Wood would be transported to the site and added to the river from C2a-DG, C2b-DG, C3-DG, or C4-DG. Placement of wood would coincide with sediment placement into the river, and the same access routes would be used. The quantity of wood placed at Dark Gulch would be recommended by the Flow, Physical, and Aquatic Ecology and Riparian Working Groups on an annual basis.

The Trinity House Gulch ESL, located near RM 104, is downstream and across the river from the Grass Valley Creek confluence with the Trinity River. Access to the site would be via Browns Mountain Road on the north side of the river (river right). Access areas and contractor use areas are shown in Figure 2-4 and described in Table 2-1. Access to the site would be from Browns Mountain Road through private land.

Augmentation Project activities would take place within approximately 3 ac of the Trinity House Gulch ESL (Table 2-1). In this area, approximately 2.3 ac are on BLM-managed lands and 0.7 ac are on private lands. Rehabilitation activities, including the excavation and processing of materials from BLM-administered lands, were analyzed at Trinity House Gulch ESL in Volume III of the 2009 Master EIR. As part of its 2010 Trinity House Gulch channel rehabilitation project, TRRP constructed a side channel, lowered the floodplain, realigned the mainstem Trinity River channel, constructed point bars, and added 3,500 cy of gravel. About 37,000 cy of unsorted material was excavated during the rehabilitation project and stockpiled at the C2-THG activity area (Figure 2-4).

Activities at the site would occur up to eight weeks in a given year. The types of activities that would be required at the Trinity House Gulch site include:

- Access road construction (A1-THG, A2-THG)
- Heavy equipment hauling and staging (C1-THG, A1-THG, C2-THG)
- Sediment processing and sorting (C1-THG for four to 8 weeks annually)
- Sediment hauling (A2-THG; potentially from the Sawmill site if required)
- Sediment stockpiling (C1-THG)
- Sediment placement (C3-THG for 3 days to multiple weeks)
- Riparian area reclamation and enhancement (C1-THG, C3-THG)
- Potential wood placement (C3-THG)

Access to the site would require improvements to the A1-THG access road, which was constructed during the Trinity House Gulch channel rehabilitation project in 2010. Contractor use area C1-THG would be used as an equipment staging area for access road improvements at A1-THG. Processed sediment would be stockpiled within C2-THG. Prior to April 15, sediment would be hauled from the C2-THG area via A2-THG and placed downstream of the Trinity House Gulch constructed-side channel at C3-THG. The sediment would be placed in the river at the onset of the spring release hydrograph and would extend as much as 30 ft into the mainstem Trinity River channel.

Wood would be transported to the site and added to the river from C3-THG. Placement of wood would coincide with sediment placement into the river. The same access routes used for the sediment augmentation would be used for delivery of the wood. The quantity of wood placed at Trinity House Gulch would be determined by the Flow, Physical, and Aquatic Ecology and Riparian Workgroups on an annual basis.

The Proposed Action would authorize the BLM to issue an FUP (43 CFR 3600; see Section 1.1.3) for up to 37,000 cy of material on BLM-administered lands within the C2-THG activity area for sediment augmentation and rehabilitation uses. Excavation, processing, and sorting activities would be those described in Section 2.2.1, and would occur as needed so that sufficient material is available for winter-spring augmentation prior to April 15. After the on-site material is used, site reclamation and enhancement of the riparian area at C3-THG would occur. Additional material may be brought in from the Sawmill site (see Section 2.2.4.1) to continue sediment augmentation after material from the C2-THG area has been exhausted. Sediment placed at Trinity House Gulch would primarily range from 0.04 to 5 inches in diameter.

2.2.4.2 Steel Bridge

The Steel Bridge ESL is approximately 22 ac and is located about 0.5 mi downstream of the Steel Bridge Pier at RM 98.6. Access to the ESL is directly from Steel Bridge Road. It is located entirely on BLM-managed land (see Table 2-1; Figure 2-5). Residential structures are located downstream of the Steel Bridge site, river left along Steel Bridge Road.

Approximately 1.3 ac of the ESL would be used for sediment augmentation activities. The entirety of the Steel Bridge augmentation activities would occur on BLM-managed lands (Table 2-1). No new access roads would be constructed. No prior rehabilitation activities have occurred at Steel Bridge, although the site is identified as a channel rehabilitation ESL in the 2009 Master EIR.

Activities at the site would occur up to 3 weeks in a given year. The types of activities that would be required at the Steel Bridge site include:

- Heavy equipment hauling and staging (C1-SB for one to 4 weeks)
- Sediment excavation, processing and sorting (Sawmill site or other off-site location for 4 to 8 weeks)
- Sediment hauling
- Sediment stockpiling (C1-SB for 2 to 4 weeks)
- Sediment placement (C2-SB, C3-SB, and C1-SB along the river for a few days to multiple weeks)
- Potential wood placement (C2-SB, C3-SB, and C1-SB)

Contractor use areas are shown in Figure 2-5. Processed material would be hauled from the Sawmill site (see 2.2.4.1) and stockpiled at the C1-SB area or placed directly into the Trinity River at C2-SB and C3-SB. Equipment staging, including the movement of haul trucks, front loaders, and other heavy machinery, would occur within C1-SB. Prior to the restoration release period (around April 15), the sediment would be transported and placed along 200 ft of the channel's left bank at C2-SB or C3-SB, using a front-end loader or other equipment. Some vegetation, including trees and native and non-native riparian vegetation, may be removed in the C2-SB and C3-SB area, which together account for approximately 0.14 ac of area.

Sediment placed at Steel Bridge would primarily range from 0.375 to 5 inches in diameter. The sediment would be placed in the river at the onset of the spring release hydrograph and would extend as much as 30 ft into the mainstem Trinity River channel.

Wood would be transported to the site and placed either along a portion of the bank (C1-SB) or added to the river from C2-SB or C3-SB. Placement of wood would coincide with sediment placement into the river. The quantity of wood placed at Steel Bridge would be determined by the Flow, Physical, and Aquatic Ecology and Riparian Working Groups on an annual basis.

2.2.4.3 Vitzthum Gulch

The Vitzthum Gulch site is the most downstream site proposed for sediment and wood augmentation (RM 96.6) and is at a gravel turn-out on the west-bound lane of California State Route (SR) 299 about 2.5 mi east of the junction of SR 299 with SR 3 (Figure 2-6). The Vitzthum Gulch site is located near the center of a nearly 180° bend in the river valley where the river is confined by a reinforced embankment for Highway 299 on river left.

The proposed augmentation point is within the Vitzthum Gulch portion of the 2007 Indian Creek channel rehabilitation project (Table 2-1). Approximately 1.0 ac of the ESL would be used for sediment augmentation activities. Of this area, approximately 0.9 ac is on State of California land (managed by CalTrans); and approximately 0.1 ac is on BLM-managed lands.

After construction of the access roads, activities at the site would occur up to 3 weeks per year. The types of activities that would be required at the Vitzthum Gulch site include:

- Access construction (A1-VG)
- Heavy equipment hauling and staging (C1-VG)
- Sediment processing and sorting (Sawmill site or other off-site location)
- Sediment hauling (C1-VG)
- Sediment stockpiling (C1-VG)
- Sediment placement (C2-VG and C3-VG)
- Wood placement (C2-VG and C3-VG)

The objective of the Vitzthum Gulch site differs from the other winter-spring augmentation sites in the project would be used to introduce an obstruction (e.g., oversized material of cobbles, 6 to 14 inches in diameter) that would destabilize a heavily vegetated berm on river right to initiate erosion of the berm. Conceptually, the addition of cobbles would emulate a natural landslide that delivers coarse sediment to the river in an area with steep topography adjacent to the channel. In addition, mobile gravel (<4-inch diameter) would be added to aid with the vegetated berm destabilization.

Such a localized disturbance would improve local habitat conditions by introducing topographic complexity within what is currently a long and largely featureless and homogenous bend in the river. Future winter-spring augmentations at the site could also include the more conventional approach of placing 0.375- to 5-inch diameter material at the onset of high flow to maximize downstream transport.

Wood would be placed in the river at the same time as the sediment. Whole trees and rootwads along with larger sediment (14-inch diameter) and boulders would be added on river left. The quantity of wood placed at Vitzthum Gulch would be determined by the Flow, Physical, and Riparian and Aquatic Ecology Workgroups on an annual basis.

Access and contractor use areas are shown in Figure 2-6. C1-VG is the existing gravel turn-out and would be used to stage equipment and stockpile sediment. To accommodate stockpiling material and efficient delivery, an excavator or dozer would construct about a 150 ft long and 30 ft wide new access area (A1-VG) to reach an existing river terrace (Figure 2-6). The alignment of the road would be subject to CalTrans specifications and would require design and engineering plans. The A1-VG area is represented as wider than what would be required for the actual road to provide TRRP flexibility for staging and equipment.

About 2,000 cy of coarse sediment could be added to the river in a given year. The augmentation would be implemented either by placing material in the channel during low-flow conditions, probably from C2-VG where floodplain access is available, or by having equipment in the river add it when discharge is moderately high, preferably as the flow is increasing during the flow release. For equipment to access the river, some vegetation would be removed (Section 3.12.3.2).

2.2.5 Environmental Commitments

Reclamation, as the implementing agency for the proposed augmentation activities, has committed to implementing the mitigation measures identified in the 2009 Master EIR. A number of design features have been developed and incorporated into Alternative 2 to reduce or eliminate adverse effects as defined under NEPA; these are considered ECs for purposes of the NEPA analysis. They also serve as CEQA mitigation measures that would be implemented in accordance with a project-specific mitigation monitoring and reporting program (Table 2-2; Appendix G).

The ECs listed in Table 2-2 are fully described in Appendix H. In most cases, these commitments are equivalent to the CEQA mitigation measures described in Appendix G. This approach is consistent with guidance issued by the CEQ for federal agencies in implementing, monitoring, and evaluating ECs identified in EAs completed for compliance with NEPA. Throughout this document, these ECs are identified with a unique label (e.g., EC-CU-1).

Table 2-2. Environmental commitments.

Resource	Commitments
Mineral Resources	EC-MR-1
Fluvial Geomorphology and Soils	EC-GS-1, EC-GS-2
Water Quality	EC-WQ-1, EC-WQ-2, EC-WQ-3, EC-WQ-4, EC- WQ-5
Fishery Resources	EC-FR-1, EC-FR-2, EC-FR-3, EC-FR-4, EC-FR-5
Vegetation, Wildlife, and Wetlands	EC-VW-1, EC-VW-2, EC-VW-3, EC-VW-4, EC-VW-5, EC-VW-6, EC-VW-7, EC-VW-8, EC-VW-9, EC-VW-10
Recreation	EC-RE-1, EC-RE-2
Cultural Resources	EC-CU-1, EC-CU-2
Transportation and Circulation	EC-TC-1, EC-TC-2, EC-TC-3, EC-TC-4
Air Quality	EC-AQ-1, EC-AQ-2, EC-AQ-3, EC-AQ-4
Noise	EC-NO-1, EC-NO-2
Public Services	EC-PS-1, EC-PS-2

2.2.6 Adaptive Environmental Assessment and Management

The 2000 ROD and the 2009 Master EIR require TRRP to carry out its mandate through an adaptive AEAM approach that utilizes the best available science to guide restoration activities. TRRP is authorized to "recommend possible adjustments…in order to ensure that the restoration and maintenance of the Trinity River anadromous fishery continues based on the best available scientific information and analysis." Ongoing monitoring at rehabilitation and sediment augmentation sites has and would continue to inform the TRRP restoration efforts, including the methods and locations of fine and course sediment management at the winter-spring augmentation sites.

The Proposed Action is based on the concept of adaptive management and the requirement in the ROD that TRRP implement an AEAM to guide future management of the Trinity River within the parameters established by the ROD. The implementation of the sediment augmentation project would likewise be guided by AEAM and a monitoring program to gauge effectiveness toward reaching the ROD mandates of restoring the Trinity River's salmon fisheries to pre-dam levels. The TRRP has incorporated adaptive management into its Science Plan, which would be used as a guide for the Proposed Action (Alvarez et al. 2022).

3. Affected Environment and Environmental Consequences

3.1 Introduction to the Analysis

This chapter describes the affected environment at the Sawmill processing site and at the proposed winter-spring augmentation sites along the 16-mi Trinity River "augmentation reach," between Lewiston Dam and the confluence of Indian Creek and analyzes the potential direct and indirect environmental effects that are associated with implementing No Action (Alternative 1) and the Proposed Action (Alternative 2). 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 contractor use areas or access areas within the augmentation ESLs where vegetation would be removed, 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 winter-spring augmentation sites. Potential direct and indirect effects of the action would occur at the Sawmill processing site, the proposed winter-spring augmentation sites, or the existing augmentation sites, and extend through and beyond the augmentation reach; therefore, the assessment of each resource includes discussions of the existing environmental setting (affected environment), which is used as a baseline to determine project effects.

Methods for assessing and analyzing the effects of the proposed action are described at the beginning of each resource section. The effects analysis for the No Action alternative (or existing conditions) and the Proposed Action for each resource topic is based on the application of the best available science and employs the use of surveys, models and analysis of existing data to determine potential effects of both alternatives. Reclamation determined that the Proposed Action and the No Action alternatives do not have the potential to cause adverse effects to the resources listed in Table 3-1.

Table 3-1. Resource topics eliminated from further consideration in this Draft EA/IS.

Resource Topic	Comments
Agricultural and Forestry Resources	Neither the Proposed Action nor the No Action alternative would involve activities that would impact forestry and agricultural resources, including large scale removal of trees, ground disturbance that would affect agricultural or forest productivity, or changes in land use. Therefore, there would be no forestry or agricultural-related impacts.
Environmental Justice	Neither the Proposed Action nor the No Action alternative would involve activities that would cause displacement, changes in employment or increase flood, drought, or disease; or disproportionately impact economically disadvantaged or minority populations. There would be no impacts to tribal ceremonial releases resulting from the Proposed Action. Therefore, there would be no environmental justice-related impacts.
Hazardous Materials	Neither the Proposed Action nor the No Action alternative would result in any activities that would include hazardous materials. Therefore, there would be no hazardous materials-related impacts.
Indian Trust Assets	Impacts on Indian Trust Assets (ITAs) associated with uses of the river and its resources (e.g., fisheries) are incorporated by reference from Section 5.1.1 of the FEIS (USFWS, Reclamation, and HVT 2000) and Section 7.17 of the 2009 Master EIR (North Coast RWQCB and USBR 2009). Neither the Proposed Action nor the No Action alternative would impact ITAs.
Indian Sacred Sites	Neither the Proposed Action nor the No Action alternative would limit access to ceremonial use of Indian sacred sites on federal lands by Indian religious practitioners or adversely affect the physical integrity of such sacred sites. Therefore, there would be no impact to Indian Sacred Sites.
Public Health and Safety	Hazards to the public were addressed in the Trinity River FEIS and 2009 Master EIR, and no issues were identified. No further analysis is required, as the Proposed Action or the No Action alternative would be consistent with the Trinity River FEIS and ROD.
Socioeconomics, Population, and Housing	Neither the Proposed Action nor the No Action alternative would result in effects to employment, income, tax revenue, housing, existing populations or population growth within Trinity County or the surrounding area. There would be no socioeconomic impacts.

3.2 Water Quality

3.2.1 Methods

The analysis for the effects of sediment augmentation 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 and mitigation measures for CEQA (see Appendix G and Appendix H). The effects analysis addresses the potential for sediment augmentation 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.

3.2.2 Affected Environment

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

The sediment augmentation activities described in Chapter 2 of this Draft EA/IS are subject to compliance with the Water Quality Control Plan for the North Coast Region (North Coast RWQCB 2011). The beneficial uses for the Trinity River defined in the Basin Plan are listed in Table 4.5-1 within the 2009 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 2009 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 2009 Master EIR also provides a comprehensive discussion of water quality parameters that influence water quality in the 40-mi 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). Current TRRP reports indicate that sediment impairment by fines has diminished due to scouring by annual restoration flow releases. Buxton (2021) recommends addition of fine sediment near Trinity River hatchery to remedy the shortage of fines in that reach. By nature of dam releases of impounded water, the Trinity River is typically noticeably clear, with natural background turbidity levels in the range of 0 to 1 Nephelometric Turbidity Unit (NTU) during low-flow conditions (300 to 450 cfs).

3.2.3 Environmental Consequences

3.2.3.1 Alternative 1 – No Action

Under the No Action alternative, 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.

3.2.3.2 Alternative 2 – Proposed Action

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

Turbidity

On June 8, 2020, the Regional Water Board issued a General Water Quality Certification (Order R1-2020-0025; North Coast 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% above naturally occurring background levels, whichever is greater. During in-river sediment and wood augmentation, the TRRP would monitor turbidity levels within 50 ft upstream (to serve as the natural background level) and 500 ft downstream of the in-river sediment and wood placement (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.

Due to the extremely low background turbidity during low-flow conditions, reducing turbidity levels to within 20%above background is generally not feasible, even with the ECs listed in Table 2-2 and Appendix G and mitigation measures in Appendix H. Turbidity levels immediately downstream of the well-planned and implemented in-channel Augmentation Project would likely be increased by more than 20%above background levels, and plumes extending downstream of augmentation 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 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.

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:

- Processing – Gravel and cobbles excavated from alluvial deposits (e.g., floodplain, dredge tailings) are processed to remove the fine sediment to help maintain low turbidity levels associated with placement of gravel and cobbles in or adjacent to the channel.
- Pace and location of construction – Controlling the pace and location of in-channel placement of alluvial material ensures that sediment input into the water column is within authorized limits. This method requires direct field observations and real-time turbidity data obtained by onsite construction monitoring personnel.

During in-channel sediment placement, increases in turbidity levels could occur due to the amount and size of sediment being added, and disturbance to existing alluvial material. Fine sediments may be suspended in the river for several hours following augmentation and wood placement. 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 effect on beneficial uses.

The incorporation of the ECs listed in Table 2-2 and Appendix G and Appendix H (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]) are intended to limit turbidity in the Trinity River.

Suspended Sediment

The effects of this alternative on water quality associated with in-channel activities would change the location and nature of sediment in the channel. During natural high-flow events, the relative addition of fine sediment augmentation 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, and Monument Fire in 2021), it is expected that water quality in the augmentation reach would be most 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 contributions from burned watersheds.

The distance that augmented sediment moves downstream from its location of placement is a function of the instream flow velocity, the size of the sediment, and the shape of the river channel. 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 settle out of the water column within several hundred feet of the augmentation site.

The activities described in Chapter 2 would temporarily increase total suspended solids in the Trinity River; however, water quality impacts are not likely to be of duration or extent to have significant impact to water quality. The incorporation of the ECs listed in Table 2-2, in Appendix G, Section 4.5, and Appendix H (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]) are intended to limit suspended sediments in the Trinity River.

3.3 Air Quality

3.3.1 Methods

The air quality affected environment was described qualitatively based on known sources of pollutants. Ambient air quality data are available from the Weaverville air monitoring station, which is located approximately 6 to 10 mi north-northwest from the winter-spring augmentation sites. Air quality data from this station may not be a precise representation of ambient air quality at the winter-spring augmentation sites, 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 roads (if applicable) and sediment augmentation activities (CAPCOA 2022). The calculation is based on a cumulative 88 days of construction and 24 months of hauling materials off site and includes diesel fuel combustion and loss of vegetation.

3.3.2 Affected Environment

The amount of pollution emitted and how much dispersion (air movement and mixing) occurs in an area are the primary determinants of air quality in an area. Typical pollution sources include stationary sources (e.g., factories, power plants), mobile sources (e.g., cars, planes), area sources (home heating, yard equipment, consumer products), and naturally occurring sources (e.g., windblown dust, volcanic eruptions). The way pollutants are transported is affected by how air moves in a region,

topography, and climate. Trinity County has a climate characterized by hot, dry summers and cold, moderately wet winters. 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 within the project reach occurs predominantly as rainfall, with occasional snowstorms in the winter. Trinity County has an average summer high temperature of 93.9 degrees Fahrenheit (°F) and winter low of 27.3°F.

Low population densities, limited industrial and agricultural operations, and minimal traffic congestion contribute to generally good air quality in Trinity County (NCUAQMD 1995). Locally, air quality and contributions of 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/fireplaces during cold weather (i.e., particulate matter [PM] 10 microns or less [PM10] and particulate matter 2.5 microns or less [PM2.5]).

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 winter-spring augmentation sites are not located near a school, hospital, senior housing, or other facilities where concentrations of sensitive receptors may be located. There are, however, a number of residential properties adjacent to the winter-spring augmentation sites.

Most residences in and adjacent to the winter-spring augmentation ESLs and the Sawmill processing site use wood as a source of heat as well as burn piles to reduce fuels on private parcels. Operation of heavy equipment on private parcels within and adjacent to the winter-spring augmentation sites or the Sawmill processing site occurs periodically and is a source of vehicle emissions. 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 winter-spring augmentation sites. 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.

3.3.3 Environmental Consequences

3.3.3.1 Alternative 1 – No Action

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

3.3.3.2 Alternative 2 – Proposed Action

Sediment augmentation activities would require excavation of materials (locally or at the Sawmill processing site or other rehabilitation or augmentation ESLs), processing and sorting of material, and the use of vehicles and heavy equipment on unpaved roads and access routes. Sediment and wood would generally be delivered between 9 a.m. and 5 p.m., but on occasion, project activities may begin as early as 7 a.m. and end at 7 p.m. Air quality effects associated with hauling and augmentation would take place during a period that ranges between one and four weeks, depending on the location of the site and the amount of sediment and/or wood needed to meet the project objectives at the site in a given year. This alternative would include permanent vegetation removal for access road construction and at stockpiling sites and disturbance of soils at stockpiling, processing, and excavation locations. These activities would generate fugitive dust in the project ESLs. Residential properties within or adjacent to the augmentation ESLs such as those near Steel Bridge would be exposed to temporal changes in air quality. Processing at the Sawmill site has been a periodic activity through the years to provide material for other TRRP projects. The frequency of processing at this site would be similar to what currently occurs but the amount of material processed would increase up to 4,000 cy annually to provide material for Steel Bridge and Vitzthum Gulch. As the existing stockpiled material at Trinity House Gulch is depleted, up
to 2,000 cy of additional material would be processed and used from the Sawmill processing site.

Increases in fugitive dust resulting from project activities would occur during the summer and early fall when PM levels may be elevated by wood stove use, brush burning, or wildland fires. This alternative would increase the PM levels to varying degrees, depending on the type and extent of construction activity. Dust control measures would be used to reduce project-related impacts. Sediment processing at the Sawmill site would extend for up to 8 weeks to generate material for Steel Bridge and Vitzthum, which would generate fugitive dust. Hauling on gravel roads and sediment placement would generate fugitive dust for a few days to

multiple weeks each year. Once augmentation activities are completed at an augmentation site for the year (hauling, stockpiling, and placement), project impacts on air quality from fugitive dust would cease for that augmentation period.

Hauling and transporting sediment and wood to the augmentation sites would generate GHG emissions from diesel- and gasoline-powered vehicles and equipment. An EC listed in Table 2-2 and described in Appendix G and Appendix H (EC-AQ-1 [4.11-a-1a], [4.11-2a]) is incorporated into this alternative to reduce the impacts on air quality and GHGs. Additionally, the following measures would be used to enhance the awareness of climate change in conjunction with this alternative:

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

To determine the effect of this alternative, a "carbon footprint" was developed for the Proposed Action based on the project's potential generation of GHGs (primarily carbon dioxide [CO_2]) from project activities. Project activities that would offset potential impacts were weighed into the equation. This analysis indicates that the Proposed Action would produce approximately 7,400 pounds of CO_2 per day, assuming up to three sites are being augmented with the allowable volume (approximately 2,000 cu. yd. of sediment and between 400 and 700 pieces of wood at each site). The annual GHG emissions resulting from the Proposed Action are estimated to be approximately 60 metric tons of CO_2, assuming up to 40 days (8 weeks) of augmentation activities in a year.

Based on these calculations, GHG emissions associated with the use of heavy equipment would be measurable over the course of the project under this alternative; however, GHG emissions and any effects on 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, this alternative represents a much smaller action than that analyzed in the 2009 Master EIR.

Diesel- and gasoline-powered equipment and vehicles used in augmentation activities could also contribute to air pollution. Diesel particulate is an identified hazardous air pollutant and toxic air contaminant. As with PM, measures would be implemented to reduce project-related impacts from the use of diesel- and gasoline-powered equipment and vehicles. Once sediment augmentation activities are completed at a site for the year, project impacts on air quality from vehicle emissions would cease for that augmentation period.

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

With the inclusion of CEQA mitigation measures (see Appendix G, Section 4.11 and Appendix H, 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).

3.4 Hydrology and Flooding

3.4.1 Methods

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

3.4.2 Affected Environment

The TRD regulates flow in the 40-mi reach of the river downstream of Lewiston Dam in accordance with the 2000 ROD for the Trinity River Mainstem Fishery Restoration EIS. Since 2005, the flow schedule has been adjusted annually based on water year type determined by California Department of Water Resources (DWR) estimates of the full natural flow volume at Lewiston. Releases to the Trinity River range from 369,000 acre-feet (af) in critically dry years to 815,000 af in extremely wet years. The minimum summer baseflow is approximately 450 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. The 1% annual exceedance probability of flood, often referred to as the "100-year flood"[26] is calculated as 31,460 cfs at Indian Creek in Trinity County's FIS (FEMA 2014).

Streamflow in the augmentation reach exhibits seasonal patterns that reflect a combination of flow releases from Lewiston Dam and inputs of flow from tributary streams. During the late summer and fall, Lewiston Dam releases to the Trinity River range from 300 cfs to 450 cfs; flow contributions from each of the Trinity's tributaries upstream of the project ESLs are comparatively minor. Reclamation has periodically increased releases in late summer–early fall for short periods of time to respond to temperature and disease concerns for migrating adult salmon downstream in the Klamath River. Between November and May, flow releases from Lewiston Dam are supplemented by increased tributary flows and surface runoff. Some of the tributaries also contribute to relatively high streamflow causing floods in the project ESLs. In May, peak flows originating from dam releases are typically followed by receding flows in the summer.

The river's 1% annual floodway was delineated from a floodplain encroachment analysis performed by DWR for the TRRP using methods consistent with FEMA's NFIP requirements. The floodway is defined as the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.[27]

Apart from some portions of access routes and staging areas, much of the project ESLs are within the 100-year floodplain, as defined in the 2016 FIS (made effective by Trinity County in July 2016) and may be 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 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."

3.4.3 Environmental Consequences

3.4.3.1 Alternative 1 – No Action

Under the No Action alternative, 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.

3.4.3.2 Alternative 2 – Proposed Action

Under the Proposed Action alternative, the elevation and extent of the Trinity River floodplain would not be significantly modified through sediment augmentation activities described in Chapter 2. 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. Sediment or wood placed into the river at each augmentation site would be transported downstream during spring high flows and would promote dynamic riverine processes. Newly added wood in the river could accumulate at bridges causing jams, which could be a flood hazard for the associated road. This hazard exists with a natural wood regime as well.

Sediment placed at Vitzthum Gulch specifically would result in a localized alteration of the river's shape at the sharp meander but would not increase risk of flooding nor would it alter the overall floodplain elevation or hydrology in the area. Downstream of sediment placement at Vitzthum Gulch, sediment may be moved by river processes and deposited on river left near the base

[26] A description of the 100 year flood zone can be found at https://pubs.usgs.gov/gip/106/pdf/100-year-flood_041210web.pdf#:~:text=The%201-percent%20AEP%20flood%20was%20thought%20to%20be,often%20is%20referred%20to%20as%20the%20%E2%80%9C100-year%20flood%E2%80%9D.

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

of SR 299 where the river abuts the highway berm. This is not expected to result in a change to the floodplain or the hydrology, nor would it alter the structure or the flooding potential of SR 299.

The fundamental objectives of the activities associated with this alternative are to improve the diversity of aquatic habitat, including salmonid rearing habitat; and geomorphic form that provides the diversity of aquatic habitat. Riffles are riverine features that can be sensitive to increases in sediment supply; however, streamflow events of a sufficient magnitude to mobilize the augmented sediment and wood would determine the rate at which sediment and wood are transported through the system.

The ECs outlined in Table 2-2, in Appendix G, Section 4.3, and Appendix H are an integral component of this alternative. Under this alternative, no people or structures would be exposed to an increased risk of injury, death, or loss involving flooding and/or erosional processes. The Proposed Action 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).

3.5 Visual Resources and Aesthetics

3.5.1 Methods

The visual resources within the augmentation ESLs and the Sawmill processing site 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 exiting 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 augmentation 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.*

3.5.2 Affected Environment

This section describes the scenic values and visual resources that are known to occur in the project ESLs. The Trinity River is considered an important aesthetic and visual resource for residents of Trinity County and visitors to the area. The river is an integral component of the communities and residential areas throughout the county. Residents and visitors actively use the river for recreation, both on and adjacent to the river. The river also offers a variety of landscapes, many of which are incorporated into the rural residential lifestyle of Trinity County.

The 2009 Master EIR (Table 4.12-1) analysis concluded the TRRP rehabilitation projects, including sediment augmentation, would have a less than significant impact on scenic views along the river and no impact on the character and existing land uses along the Trinity River.

Existing tailings piles occur at the Dark Gulch (river right) augmentation ESL and the Sawmill processing site, which boaters on the river likely see. Processing at Sawmill occurs periodically and is visible from the river as well. A tailings and sandy dredge pile that has been partially revegetated during a previous rehabilitation project is present at Trinity House Gulch (river left). Riparian vegetation may partially obscure the tailings from view. Steel Bridge has a narrow band of riparian vegetation along the riverbank (river left) with an existing grassland between the river and Steel Bridge Road. Vitzthum Gulch has a narrow but dense riparian corridor as observed from the river.

Because of the rural nature of the river corridor, the primary sources of artificial light within or adjacent to the winter-spring augmentation sites are limited to vehicle headlights on adjacent roads or homes outside of the ESLs. Glare may occur during the daylight hours as the sun is reflected off the water or light-colored alluvium associated with floodplain and terrace features.

3.5.3 Environmental Consequences

3.5.3.1 Alternative 1 – No Action

Under the No Action alternative, there would be no degradation to scenic values and visual resources or obstruction of a scenic view because no construction would occur. The level of artificial light or glare would be similar to the existing condition. Therefore, there would be no impacts on visual resources as defined in the CCR, Title 14, Division 6, Chapter 3, Section 15382.

3.5.3.2 Alternative 2 – Proposed Action

Under the Proposed Action, temporary and permanent changes in the visual character of the Trinity River corridor at the augmentation sites would occur. These changes would be less than significant or have no impact on the visual character of the Trinity River using the significance criteria outlined in the 2009 Master EIR.

The potential effects of this alternative on visual resources or BLM VRM Class II areas at or adjacent to the winter-spring augmentation sites would include changes from the removal of vegetation at the Trinity House Gulch site, creation and use of staging and sediment processing areas, staging and use of heavy machinery such as mobile screening plants, front-end loaders and conveyors for sediment placement, construction of or improvement to access routes, use of trucks and heavy machinery, and use of upland and floodplain areas for sediment stockpiling. Removal of vegetation for road construction would be a permanent loss of a visual component of the Trinity River corridor at the Trinity House Gulch and Vitzthum Gulch site; however, the area of vegetation removal would be small, targeted toward invasive species where appropriate, typically concealed from viewpoints on both the river and uplands by other vegetation, and consistent with existing disturbances along the Trinity River. A well-constructed access road that descends the slope in the direction of the river's flow may only be visible to vehicles on the road or from a downstream perspective, and thus would not result in an impact to the visual resource quality for most recreational river users.

Views of equipment during access road construction would be a temporary effect since the activity would cease with completion of the road. Temporal effects on visual resources would occur where new processing areas are established at Dark Gulch and Trinity House Gulch sites because processing equipment would likely remain in place for many weeks or months. Stockpiles of material would result in loss of vegetation and would cause a permanent change in the character of the site. Use of heavy machinery for hauling and placing sediment would have a temporary effect on visual quality that would occur annually or less frequently. The augmentation activities would not result in degradation or obstruction of a scenic view. While some increase in the level of artificial light would occur during the augmentation activities from vehicles and equipment parked or working in the area, this impact would be negligible in both time and intensity.

Heavy equipment, which may be seen from boaters on the river, would be used for the placement of wood. Views of equipment would create a temporary effect on visual resources. Because wood is a natural part of a healthy riverine system, the newly added wood seen by boaters or other people along the river would more closely simulate a natural river system and create more visual interest, a benefit to visual resources.

The BLM VRM class II would be maintained because the existing character of the landscape would be retained and the level of changes to landscape is low. Many impacts on the visual resources would be infrequent and not observed by many visitors along the river. Project activities include the design measures in Appendix G, Section 4.2, and ECs in Appendix H and Table 2-2 and Table 3-9. Because effects to visual resources would be intermittent and/or temporary in nature, 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.

3.6 Land Use

3.6.1 Methods

This section provides information on land ownership and management, management plans, and existing land uses for the Sawmill processing site and the four proposed winter-spring augmentation sites. Land ownership was obtained from Trinity County and information on the 100-year floodplain was obtained from the Trinity County FIS. The Trinity County General Plan was reviewed to review land use on private lands. The Northwest Forest Plan and the BLM's Redding RMP are applicable to all BLM-administered lands in the winter-spring augmentation sites and were reviewed for pertinent information.

3.6.2 Affected Environment

The 100-year flood zone spans the entire valley bottom of the Trinity River. No houses are in the 100-year flood zone. Table 3-2 outlines the land ownership acreage in each ESL.

Table 3-2. Land ownership within the Sawmill Processing site and each augmentation ESL.

ESL	Private: Timber Production (ac)	Private: Residential, Open Space (ac)	BLM (ac)	Reclamation (ac)	State (ac)	Municipal (ac)	Total (ac)
Sawmill Processing Site	-	14.1	77.4		11.8	0.1	103.4
Dark Gulch	-	65.8	8.1	-	-	-	74.0
Steel Bridge	-	0.2	21.8	-	-	-	22.0
Trinity House Gulch	1.2	13.5	28.6	-	-	-	43.4
Vitzthum Gulch	17.5	81.6	170.3	4.8	52.6	3.2	330.0
Total	18.8	175.3	306.2	4.8	64.4	3.3	572.7

BLM-managed 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 augmentation reach. Historic use of the land included mining, which left dredge tailings along the river corridor.

Many private parcels occur adjacent to the augmentation ESLs and within 0.5 mi. A total of 475 private parcels occurs within 0.5 mi of the ESLs. Within 0.5 mi, the highest number of private parcels occur surrounding the Dark Gulch ESL with 141 parcels, followed by 74 at Trinity House Gulch, 68 at Vitzthum Gulch, and 24 at Steel Bridge. Parcels adjacent to the ESLs include 20 at Dark Gulch, 1 at Steel Bridge, 6 at Trinity House Gulch, and 46 at Vitzthum Gulch.

Land uses on private lands are guided by the Trinity County General Plan. The ACS and other elements of the Northwest Forest Plan and the BLM's Redding RMP are applicable to all BLM-administered lands in the winter-spring augmentation sites.

3.6.3 Environmental Consequences

3.6.3.1 Alternative 1 – No Action

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.

3.6.3.2 Alternative 2 – Proposed Action

Recreation-related impacts are discussed in Section 3.14 , Recreation, and access-related impacts are discussed in Section 3.9 , Transportation and Circulation.

The proposed augmentation activities would not change the uses of lands in the Sawmill processing site or the augmentation ESLs nor require changes to land use allocations or zoning designations. New temporal disruptions to nearby property owners and recreationists using the river and adjacent land near the winter-spring augmentation sites could occur during the sediment processing, hauling, stockpiling, and placement (i.e., about 8 weeks per year depending on the site) and use of the land in the project ESLs would be the same as under current conditions.

The Proposed Action would be consistent with current uses and zoning at the Sawmill processing site and the winter-spring augmentation sites, as defined by BLM and Trinity County. BLM's Redding RMP describes various objectives for resource conditions applicable to federal lands along the Trinity River, and the sediment augmentation activities would help BLM

achieve these objectives for the Trinity River. Additional details concerning the consistency of the TRRP activities with BLM's Redding RMP are presented in Appendix D (ACS), Appendix E (WSR), and Appendix J (Survey and Manage Species).

The Proposed Action alternative was developed to be consistent with the BLM RMP and the Trinity County General Plan. Project activities include the design measures in Appendix G, Section 4.2, and ECs in Appendix H and Table 2-2 and Table 3-9. Therefore, CEQA-specific impacts considered under this resource topic would be less than significant (CCR, Title 14, Division 6, Chapter 3, Section 15382).

3.7 Mineral Resources, Geology, and Geologic Hazards

3.7.1 Methods

The 2009 Master EIR was reviewed for known geologic hazards that may occur within the Sawmill processing site and other augmentation ESLs. BLM and Trinity County records were reviewed for approved mining activities or a county SMARA permit within or near the winter-spring augmentation sites. Soils were obtained from the Web Soil Survey created by the National Resources Conservation Service (NRCS 2018).

3.7.2 Affected Environment

This section discusses the existing conditions of mineral resources, geology, geologic hazards, including river morphology. Unique geological resources are not present within the augmentation reach. Geologic hazards addressed in the 2009 Master EIR were not identified as being present in the augmentation ESLs.

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 cubic yards of mining debris were discharged from hydraulic mining over a 60-year period ending in the 1930s. Mineral resources at the winter-spring augmentation sites consist primarily of gravel and cobble. 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 1950s. The channel and associated alluvial features of the Trinity River were dredged extensively. Placer gold mining of alluvial gravel has left tailings deposits of different types that are apparent throughout the winter-spring augmentation sites. These deposits continue to influence the form and function of the Trinity River. The river has low sinuosity, with river curvature driven largely by valley confinement by mountains.

Other than for mining activities authorized under SMARA, information on private mining activities in Trinity County is limited. According to BLM and Trinity County records, there are currently no approved mining activities operating under the provisions of the 1872 mining law or a county SMARA permit within or near the winter-spring augmentation sites.

Six soil map units (i.e., types) occur in the winter-spring augmentation sites and 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). All soils in the winter-spring augmentation sites are considered well-drained. An overview of each soil type is presented in Table 3-3.

Table 3-3. Soil map units at the Sawmill processing site and the winter-spring augmentation sites.

Map Unit Name Taxonomy	Map Unit Reference Code	Augmentation Site	Drainage Class	Depth to Restrictive Layer	Hydric Soils
Atter-Dumps, Dredge Tailings – Xerofluvents complex, 2 to 9% slopes Typic Xerorthents	102	Dark Gulch	Well-drained, somewhat excessively drained	More than 80 inches	No, except stream terraces, alluvial fans, and channels
Browns Creek Gravelly Loam, 50 to 75%slopes	114	Trinity House Gulch	Well-drained	34 inches	No

Map Unit Name Taxonomy	Map Unit Reference Code	Augmentation Site	Drainage Class	Depth to Restrictive Layer	Hydric Soils
Browns Creek-Douglas City Complex, 50 to 75%slopes	117	Steel Bridge, Vitzthum Gulch	Well-drained	34 inches	No
Tallow box-Minersville Complex, 50 to 75%slopes	199	Dark Gulch	Somewhat excessively drained	23 inches	No
Xerofluvents-Riverwash complex, 0% to 5%slopes Xerofluvents	217	All Sites	Well-drained	More than 80 inches	Yes
Water	220	All Sites	N/A	N/A	N/A

3.7.3 Environmental Consequences

3.7.3.1 Alternative 1 – No Action

Under the No Action alternative, effects on mineral resources, geology, geologic hazards as well as geomorphic processes and soil 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.

3.7.3.2 Alternative 2 – Proposed Action

Under the Proposed Action, most augmentation activities would take place in the active channel or on the existing floodplains and terraces 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 at the winter-spring augmentation sites where material is excavated and processed on-site, increasing the potential for erosion due to decreased soil cohesion and armoring. The Sawmill processing site has been previously disturbed and no new disturbance is expected. Sediment exposed to flowing water has an increased potential to mobilize and be transported downstream, resulting in other indirect effects such as short-term increases in surficial and channel erosional processes; increases in turbidity levels (at varying distances) downstream; and changes to the type, volume, and character of deposition downstream.

Soil compaction from heavy equipment used for transporting, processing, stockpiling, and placing sediment can increase runoff and subsequently increase the potential for erosion in disturbed areas. Disturbance areas would be minimized through the establishment of activity areas and clear markers (e.g., fencing, flagging) to designate the work limits in accordance with EC-GS-1[4.3-2a] (Appendix H). Erosion control measures would be implemented during augmentation 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 3.2 Water Quality.

Augmented sediment and wood would be transported downstream to be deposited on downstream alluvial features as part of the natural riverine process. Wood that may settle in the river or on banks or sand/gravel bars would also help trap additional sediment. The overall effects on river morphology 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 3.13 , Fishery Resources.

Some of the cobble, gravel, and other mineral materials associated with alluvial and dredge tailings deposits at the Dark Gulch and Trinity House Gulch sites would be processed for placement. The processing and reuse of alluvial material excavated from tailings piles in the floodplain would reduce the amount of material needed from off-site sources, such as the Sawmill site.

Implementation of ECs specific to erosion would minimize the potential for soil erosion and adverse effects on the river and its floodplain during the augmentation activities. Sediment augmentation activities are intended to modify the geomorphology of the river downstream of winter-spring augmentation sites to benefit aquatic resources and fluvial processes. Overall, augmentation would have no effect on geology or geologic hazards and a negligible effect on mineral resources with implementation of mitigation measures and would be a beneficial effect on the geomorphology of the river.

With the inclusion of CEQA mitigation measures in Appendix G, Section 4.3, and ECs in Appendix H and Table 2-2 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).

3.8 Cultural Resources

Cultural resources include prehistoric, historic, archaeological, and tribal properties. The NHPA of 1966 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 the NHPA, requires the federal government to take into consideration the effects of an undertaking on any historic property, i.e., 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 (FLPMA) of 1976, is charged with managing public lands located in the states of 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), the FLPMA (Pub. L. 91-579), the Archaeological Resources Protection Act (ARPA, 16 USC 470), the Native American Graves Protection and Repatriation Act (NAGPRA, 25 USC 3001), the Historic Sites Act of 1935 (Pub. L. 73-292), the Antiquities Act of 1906 (16 USC 431-433), the American Indian Religious Freedom Act (AIRFA, Pub. L. 95-341), Executive Order 13007 ("Sacred Sites," 61 FR 105), and the 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 is involved in an undertaking, the agencies may designate a lead federal agency to act on their behalf to fulfill their collective responsibilities under Section 106. The BLM has designated Reclamation as the lead federal agency for the Section 106 process of this Proposed Action.

As described above in Section 1.2 AB 52 was approved by the Governor of California in September 2014. 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. 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 2009 Master EIR, which is incorporated by reference into this Draft EA/IS. Moreover, the MMRP for the 2009 Master EIR adopted by the Regional Water Board 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.

3.8.1 Methods

Background research used to develop this section of the Draft EA/IS included a review of the files at the Northeast Center of the California Historical Resources Information System, Trinity County Historical Society/J.J. 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. The current list of contacts from the Native American Heritage Commission was consulted, and contacts to 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 comments received are included in Appendix F. Other local individuals representing tribes collaborated in the investigation.

3.8.2 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 received study 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 2009 Master EIR and in Rich 2023.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).

The APE for cultural resources includes the four proposed augmentation ESL (Dark Gulch, Trinity House Gulch, Steel Bridge, and Vitzthum Gulch), comprising a total of 469.4 ac. All of the ESLs (Dark Gulch,28 Steel Bridge, Trinity House Gulch,[29] and Vitzthum Gulch,[30] which is part of the Indian Creek ESL) have been reviewed for cultural resources during past TRRP channel rehabilitation projects (Barnes 2007; Barnes 2008; Carper 2015). A field survey of all four winter-spring augmentation sites, including the Vitzthum Gulch portion of the Indian Creek ESL was surveyed in 2022 and 2023 (Rich 2023). No previously unrecorded cultural resources were identified in the winter-spring augmentation sites during this investigation. Two previously recorded dredge-tailings fields were surveyed and recorded, one at Trinity House Gulch and the other at Dark Gulch. Both sites were recommended to be ineligible for the NRHP (Rich 2023), and BLM Redding Field Office archaeologists concurred with the recommendation. All other cultural resources were outside of the current augmentation ESLs.

3.8.3 Environmental Consequences

3.8.3.1 Alternative 1 – No Action

Under the No Action alternative, 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 to cultural resources as defined in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.8.3.2 Alternative 2 – Proposed Action

Pursuant to 36 CFR Section 800, Reclamation, as lead federal agency for Section 106 of the NHPA, has completed the identification and evaluation process through consultation with federally recognized tribes and interested parties, evaluated resources for their eligibility for the NRHP, and assessed adverse effects and made a determination regarding effects on cultural resources. Reclamation, in collaboration with BLM, has determined, through the efforts of William Rich and Associates, that there would be no adverse effect to historic properties by the Proposed Action.

Implementing the Proposed Action would result in no adverse effect to historic properties pursuant to Section 106 of the NHPA. All known cultural resources have been recorded and documented, as described in Section 3.8.2. The avoidance of cultural resource sites, in conjunction with the inclusion of mitigation measures outlined in Appendix G, Section 4.10, and ECs in Appendix H and Table 2-2.ECs described in Table 2-2 and Table 3-9, would ensure that implementation of the Proposed Action would have no significant effect to cultural resources, as implemented through the TRRP.

3.9 Traffic and Circulation

3.9.1 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 2011) 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 that would be used for hauling sediment and wood and heavy equipment, were obtained from the Trinity County GIS Portal (Trintiy County 2023). Average daily traffic counts for SR299 between Douglas City and Lewiston Rd. were obtained from Caltrans (2020). Traffic counts for most Trinity County roads were obtained from the County. For roads where traffic counts are not available, traffic volume was estimated by tallying the number of residential structures within the communities accessed by roads that would be used for sediment and wood augmentation activities and 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

[28] The Dark Gulch Rehabilitation project EIR was completed in 2008 and can be found at https://www.trrp.net/library/document/?id=2148

[29] The Trinity House Gulch and Steel Bridge Rehabilitation EA/IS was completed in 2011 and can be found at https://www.trrp.net/library/document/?id=1238

[30] The Indian Creek Rehabilitation project EIR was completed in 2007 and can be found at https://www.trrp.net/library/document/?id=2118

is only residential or mixed commercial and residential; if the road provides access to recreation areas; if the road dead ends or provides connection between other roads).

The estimated number of trucks needed for hauling sediment, wood and equipment to and from sites, as described in Section 2.2 were used to determine the impacts on local traffic and circulation.

3.9.2 Affected Environment

The transportation infrastructure in the vicinity of the winter-spring augmentation sites 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 is generally south of the Trinity River and provides access to county roads that provide access to the winter-spring augmentation sites. Access to most of the winter-spring augmentation sites is on county and residential roads off SR 299 and Lewiston Rd. Other roads that would be utilized by the project include Steel Bridge Rd., Brown's Mountain Rd., Goose Ranch Rd., Salt Flat Rd., Lewiston School House Rd., Rush Creek Rd. and Trinity Dam Blvd. 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/or not sufficient to allow for trucks to pass in opposite directions. The roads that are used to access and deliver materials to the winter-spring augmentation sites generally are curvy, with some tight turns and stretches where traffic speeds are reduced to ensure public safety.

Table 3-4 provides the roads that would be utilized by the project, along with the road ownership/maintenance jurisdiction, road type, estimated traffic counts, and distances and passenger vehicle commute times for segments that would be utilized by the project. Figure 3-1 shows the existing road conditions in the vicinity of the winter-spring augmentation ESL.

Table 3-4. Project-utilized roads for hauling sediment, wood, heavy machinery, and accessing sediment and wood augmentation ESLs.

Site and Transportation Description	Project-Utilized Roads	Road Ownership/ Type	Project Activity	Traffic Count (vehicles per day)	Distance (miles)	Commute Time (minutes)
Vitzthum Gulch ESL						
Description ▪ Sediment would be hauled from Sawmill ESL ▪ Wood would be hauled to the site ▪ Heavy machinery would be hauled to/from and used on-site Considerations ▪ Narrow bridge at Rush Creek Rd. and Lewiston School House Road ▪ Winding roads and sharp turns along SR299, Lewiston Rd., and Trinity Dam Rd.	SR299	Caltrans paved	Sediment and wood hauling Heavy equipment hauling	5,300 – 5,700[a]	3.0 to Lewiston Rd. 6.9 to Trinity Dam Blvd 2.4 to Douglas City/Hwy 3	4 9 4
	Lewiston Rd.	TCDOT paved	Sediment hauling	472 – 614b	5.3 to Lewiston School House Rd.	9
	Lewiston School House Rd.	TCDOT paved	Sediment hauling	200 – 500c	0.3 to Rush Creek Rd.	1
	Trinity Dam Blvd.	TCDOT paved	Sediment hauling	1,436 – 1,527b	4.6 to Rush Creek Rd.	6
	Rush Creek Rd.	TCDOT paved	Sediment hauling	584 – 674b	0.6 between Lewiston School House Rd. and Sawmill ESL 1.0 between Trinity Dam Blvd and Sawmill ESL	1 1
Steel Bridge ESL						
Description ▪ Sediment would be hauled from Sawmill ESL ▪ Wood would be hauled to the site ▪ Heavy machinery would be hauled to/from and used on-site Considerations ▪ Recreation and campground past the Steel Bridge ESL ▪ Winding roads and sharp turns along SR299, Lewiston Rd., and Trinity Dam Rd. ▪ Narrow residential road to Steel Bridge ESL	SR 299	Caltrans paved	Sediment and wood hauling Heavy equipment hauling	5,300 – 5,700a	2.5 to Lewiston Rd. 6.4 to Trinity Dam Blvd. 2.8 to Douglas City/Hwy 3	3 9 3
	Steel Bridge Rd.	TCDOT paved	Sediment and wood hauling Heavy equipment hauling	550 – 1,100c	6.2 to Steel Bridge ESL	12
	Lewiston Rd.	TCDOT paved	Sediment hauling	472 – 614b	5.3 to Lewiston School House Rd.	9
	Trinity Dam Blvd.	TCDOT paved	Sediment hauling	1,436 – 1,527b	4.6 to Rush Creek Rd.	6
	Rush Creek Rd.	TCDOT paved	Sediment hauling	584 – 674b	0.6 between Lewiston School House Rd. and Sawmill ESL 1.0 between Trinity Dam Blvd and Sawmill ESL	1 1

Site and Transportation Description	Project-Utilized Roads	Road Ownership/ Type	Project Activity	Traffic Count (vehicles per day)	Distance (miles)	Commute Time (minutes)
Trinity House Gulch ESL						
▪ Wood would be hauled to the site ▪ Heavy machinery would be hauled to/from and used on-site	SR299	TCDOT paved	Heavy equipment and wood hauling	5,300 – 5,700a	5.7 to Douglas City / Hwy 3	7
Considerations ▪ Bucktail Bridge and narrow, unpaved, winding Brown's Mtn Rd.	Lewiston Rd.	TCDOT paved	Heavy equipment and wood hauling	472 – 614b	3 to Brown's Mtn Rd. 1.2 to Lewiston	5 2
▪ Winding roads and sharp turns along SR299, Lewiston Rd., and Trinity Dam Rd.	Brown's Mountain Rd.	TCDOT paved and gravel	Heavy equipment and wood hauling	252 - 604c	1.6 to Trinity House Gulch ESL	6
Dark Gulch ESL						
Dark Gulch ESL ▪ Wood would be hauled to the site ▪ Heavy machinery would be hauled to/from and used on-site	SR299	TCDOT paved	Heavy equipment and wood hauling	5,300 – 5,700a	5.7 to Douglas City / Hwy 3	7
Considerations ▪ Narrow Salt Flat Bridge	Lewiston Rd.	TCDOT paved	Heavy equipment and wood hauling	472 – 614b	4 to Goose Ranch Rd.	6
▪ Narrow, unpaved Salt Flat Rd. with sharp and tight curves	Goose Ranch Rd.	TCDOT paved	Heavy equipment and wood hauling	648 – 1,298c	1 to Salt Flat Rd.	2
▪ Winding roads and sharp turns along SR299, Lewiston Rd., and Trinity Dam Rd.	Salt Flat Rd.	TCDOT unpaved	Heavy equipment and wood hauling	78 – 164c	0.7 to Dark Gulch ESL	4

[a]Traffic counts are from Caltrans 2020.

[b]Traffic counts are from TCDOT 2021a.

[c]Traffic counts are derived using the assumptions described in Section 3.9.1.

3.9.3 Environmental Consequences

3.9.3.1 Alternative 1 – No Action

Under the No Action alternative, 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. There would be no change to traffic numbers, delays in commute times, or project-related additional wear on roads. Therefore, there would be no traffic and circulation related impacts from this alternative.

3.9.3.2 Alternative 2 – Proposed Action

As described in Section 2.2.2.1, some roads would need to be improved for trucks carrying material to access the river or the designated stockpile area. In other areas, roads would need to be constructed to access the river or processing location. All access road disturbances would not exceed a width of 30 ft. Activities may include grading, vegetation removal, reinforcement of slopes, and improvements to existing road conditions. Construction of new access roads would take up to 2 weeks to complete at a given site. Repairs to and maintenance of existing roads may occur to accommodate haul trucks and movement of heavy machinery, and roads would be repaired to original or to a better state following damage that occurs during operations or from excessive wear on county roads due to heavy machinery. Repairs and maintenance of existing access road would occur ahead of augmentation activities at a given site and would take up to a week to complete. Specific locations and size of road improvements and construction are described for each proposed winter-spring augmentation site in Section 2.2.4 and outlined in Table 2-1. Figure 3-2 shows the roads that would be used for winter-spring augmentation activities.

The duration of proposed winter-spring augmentation activities on roads would be up to 12 weeks, including improvement and construction of roads and hauling of sediment and/or heavy machinery for on-site processing (see Section 2.2.4 for site-specific durations for use of roads and overall winter-spring augmentation activities). Based on the estimate of 500 cy to 2,000 cy of sediment placed at a site in a given year, approximately 63 haul truck trips for sediment and up to approximately 20 haul truck trips of wood material may be required to augment each site. Trips would be completed over several days (see Section 2.2.2 for a detailed discussion of hauling).

TRRP would minimize the impact of 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 hauling 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. Hauling and sediment augmentation for a single site would take place during a period that ranges between one and four weeks, depending on the location of the site and the amount of sediment needed to meet the project objectives at the site in a given year. Trucking would comply with all applicable traffic laws. County or private roads would be maintained to the same or better pre-project condition and public safety would be supported by signage and other safeguards, including notifying the communities and residents that would be affected by haul truck traffic and developing a traffic plan. TRRP would comply with all mitigation measures and ECs outlined in Appendix G, Section 4.16 and in Appendix H (EC-TC-1, EC-TC-2, EC-TC-3, and EC-TC-4; see also Table 2-2 and Table 3-9).

SR 299 and Lewiston Rd. would be used as needed to mobilize heavy machinery associated with sediment processing or sediment and/or wood delivery. Effects on local and commercial traffic would include slow-moving transports for heavy machinery would have temporary effects on traffic on both roads, including potential increase in commute times for residents and area workers. New and existing access routes would provide entry into both private and public parcels for augmentation activities. For sites without existing material to be processed (Steel Bridge and Vitzthum), processed sediment would be imported from the Sawmill ESL, which is located off the Rush Creek Rd. (river right) and Goose Ranch Rd. (river left). From river right, gravel would be hauled from the Sawmill ESL via Rush Creek Rd., Lewiston School House Road, Lewiston Rd., Trinity Dam Blvd., and SR 299 to county roads such used to access the Steel Bridge and Vitzthum ESLs. From river left, gravel would be hauled from the Sawmill ESL via Goose Ranch Rd, Lewiston Rd. and SR299 to access the sites.

Haul trucks would use one of two routes to travel between the Sawmill ESL and SR 299. The Lewiston Rd. route would utilize Rush Creek, Lewiston School House Rd., and Lewiston Rd. to reach SR299. This route would pass through the community of Lewiston, and the rural residential corridor along Lewiston Rd. Approximately 150 residences that are near to roads that would be utilized along this route. Effects that may result are increased commute times along residents and workers using Lewiston Rd. from slow haul trucks and damage to roads from increased truck traffic. The Trinity Dam Route would use Rush Creek Rd.

and Trinity Dam Blvd. to reach SR 299. This route is longer in distance, but avoids the community of Lewiston. There are approximately 88 residences along Trinity Dam Blvd. and Rush Creek Rd. Effects that may result are similar to those along the Lewiston Rd. route: increased commute times along residents and workers using Trinity Dam Blvd. from slow haul trucks and damage to roads from increased truck traffic.

Heavy machinery and haul trucks on the county roads would create slow moving traffic that would affect other drivers and residents along these roads. Damage to roads may occur from the increase in truck traffic. In addition, the geometry along the stretches of road where winter-spring augmentation sites are located is curvy and would require haul trucks to drive at speeds well below the speed limit to ensure the safety of the community and integrity of the infrastructure. Access to all residences, businesses, and recreation sites will remain open during winter-spring augmentation project activities.

Access to the Steel Bridge ESL is by Steel Bridge Rd., which is a narrow residential road that winds through a small community with an estimated 55 homes, a Forest Service campground, and a recreation area used by as a boat ramp/launch located beyond the ESL. Heavy machinery and haul trucks on Steel Bridge Rd. would create slow moving traffic that would affect residents, recreationists, and visitors to the area, including increasing commute time. When sediment and/or wood is being delivered to the site, about 60 to 100 truckloads per day would be delivered. To minimize effects to commuters, sediment would generally be delivered between 9 a.m. and 5 p.m., but on occasion, project activities may begin as early as 7 a.m. and end at 7 p.m. Access to Vitzthum Gulch would be directly from SR 299, and some impact on drivers on SR299 would occur as sediment and wood are being transported to the site. The Steel Bridge Rd. is narrow along some stretches, with some residences abutting up to the road. Haul trucks moving along Steel Bridge Rd. may not be able to pass each other in when moving in opposite directions without stopping and yielding. Speed limits in the community are posted at 10 miles per hour, and would be observed by all project-related traffic to ensure public safety and integrity of roads. All damage to roads that results from project activities will be documented and repaired by TRRP, as outlined in Appendix G, Section 4.16 and Appendix H, EC-TC-3.

At sites where sediment would be processed on-site (Trinity House Gulch and Dark Gulch), the number of trucks that would be required for winter-spring augmentation activities would be limited to what is required for the delivery and retrieval of heavy machinery for processing gravel and haul trucks delivering woody material. The number of trucks for hauling machinery would not exceed 5 per year. Machinery would be staged at these sites, and would be removed when processing is complete for that season.

Access to Trinity House Gulch would be via Browns Mountain Rd. off Lewiston Rd., on the north side of the river (river right). Access would require crossing the Bucktail Bridge and travelling up the Brown's Mountain Rd., which is unpaved and has sharp turns and narrow sections. There are approximately 31 residences that are accessed from Brown's Mountain Rd. between the intersection with Lewiston Rd. and the Trinity House Gulch ESL. A new access road across private property would be constructed to reach the areas where winter-spring augmentation would occur, which are located on BLM lands. The new access road would comply with TRRP's encroachment permit with the TCDOT. Speed limits in the community are posted at 10 miles per hour, and would be observed by all project-related traffic to ensure public safety and integrity of roads. All damage to roads that results from project activities will be documented and repaired by TRRP, as outlined in Appendix G, Section 4.16 and Appendix H, EC-TC-3.

Dark Gulch would be accessed from Salt Flat Rd. and across the Salt Flat Bridge, which is a narrow, one-way bridge over the Trinity River. Winding, narrow, residential roads through private property would provide access to the Dark Gulch ESL on river right. Heavy machinery that would be transported on the county roads would slow the moving traffic and affect other drivers and residents along these roads. The Salt Flat Rd. is narrow along some stretches, with some residences abutting up to the road. Trucks moving heavy machinery along Salt Flat Rd. may not be able to pass each other when moving in opposite directions without stopping and yielding and may require extra caution when navigating sharp turns. Posted speed limits would be observed by all project-related traffic to ensure public safety and integrity of roads. All damage to roads that results from project activities would be documented and repaired by TRRP, as outlined in Appendix G, Section 4.16 and Appendix H, EC-TC-3.

With the inclusion of CEQA mitigation measures provided in Appendix G (Section 4.16), Appendix H, Table 2-2, and Table 3-9, impacts under CEQA on traffic and transportation would be less than significant (CCR, Title 14, Division 6, Chapter 3, Section 15382).

3.10 Noise

3.10.1 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 that have been identified in or near the winter-spring augmentation sites 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.

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 winter-spring augmentation sites were in the town of Lewiston, at Lewiston Road. This survey was used to determine the range and source of existing noise.

3.10.2 Affected Environment

Noise in the vicinity of the Sawmill processing site and the augmentation sites comes primarily from vehicle traffic along SR 299, Steel Bridge Road, Poker Bar Road, Browns Gulch Road, and other residential and public access roads adjacent to the river; 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 is no known existing ground vibration within or near the augmentation ESLs.

There are approximately 459 private parcels within 0.5 mi of the Sawmill processing site and the winter-spring augmentation sites, 80 of which are directly adjacent to the ESLs. In addition, recreational use of the river corridor by boaters (i.e., anglers and rafters) occurs throughout the year, and boaters are likely sensitive to noise levels along the river.

The Trinity County community noise survey results indicate that noise levels at the two noise-sensitive areas in Lewiston at Lewiston Road range from 26 to 71 dB Len. These are low noise levels 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 noise. Background noise levels in the absence of these noise-generating causes are largely attributable to distant traffic, wind, birds, and insects.

3.10.3 Environmental Consequences

3.10.3.1 Alternative 1 – No Action

Under the No Action alternative, noise impacts to 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.

3.10.3.2 Alternative 2 – Proposed Action

Under the Proposed Action, noise from sediment processing, hauling and placement (sediment and wood) would temporarily dominate the noise environment in and adjacent to augmentation ESLs for varying periods and up to 8 weeks each year. Augmentation activities would generate average noise levels ranging from 65 to 84 dBA at a distance of 50 ft, although intervening terrain and vegetation could reduce these noise levels. Project generated noise from the placement of sediment and wood would occur primarily before or during spring restoration releases (around April 15) or during the in-channel work period between July and September; however, transportation and stockpiling of sediment could occur at any time during the year.

Recreational users may be close to one or more augmentation site during the processing and placement periods as they float through the augmentation reach, but the duration of their exposure to augmentation activity noise would depend on the type of recreational activity. For instance, a fishing raft may take as long as 3 hours to float through the augmentation reach; whereas a kayaker could take half that time.

The highest number of private landowners occur adjacent to Vitzthum Gulch ESL with 46 parcels, followed by 20 at Dark Gulch ESL, 7 at the Sawmill processing site, 6 at Trinity House Gulch, and 1 at Steel Bridge ESL. Not all the private parcels have existing residences. Adjacent landowners would be notified by letter prior to project construction. The ECs outlined in Appendix G (EC-NO-1 [4.14- 1a] and 2 [4.14-1b]) would ensure that noise impacts from heavy machinery (e.g. front-end loaders) would be minimized so that sensitive receptors (residences and recreational users) would not be negatively affected for extended periods of time. Sediment would generally be delivered 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. Noise associated with hauling and augmentation

activities would take place during a period that ranges between one and 4 weeks, depending on the location of the site and the amount of sediment and wood needed to meet the project objectives at the site in a given year. 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 project traffic entering and exiting the winter-spring augmentation sites during the authorized work periods. It is not anticipated that ground vibration created by project activities would be detectable at any sensitive receptor location, nor would the activities result in structural damage. Recreational users in the general vicinity of the site could encounter localized increased ambient noise levels during augmentation activities that would be minimized with the implementation of environmental commitments EC-NO-1 [4.14-1a] and 2 [4.14-1b] (Appendix G).

With the inclusion of CEQA mitigation measures outlined in Appendix G, Section 4.14, and ECs in Appendix H and Table 2-2 and Table 3-9, impacts under CEQA related to noise would be less than significant (CCR, Title 14, Division 6, Chapter 3, Section 15382).

3.11 Wild and Scenic Rivers

3.11.1 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 Values (ORVs). The ORV that was identified on the date of designation was the anadromous and resident fisheries (Federal Register Vol. 46, No. 14, January 23, 1981). Under an interagency agreement between the National Park Service, BLM, and the U.S. Forest Service (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 E provides a comprehensive analysis of and determination for this alternative consistent with the requirements of Section 7 of the WSRA.

3.11.2 Affected Environment

The Trinity River was designated by the Secretary of the Interior as a federal Wild and Scenic River in 1981 under the 1968 Federal WSRA. In addition to the mainstem Trinity River from the confluence with the Klamath River to 100 yards below Lewiston Dam, three other local tributaries to the Trinity mainstem 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 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.

3.11.3 Environmental Consequences

3.11.3.1 Alternative 1 – No Action

Under the No Action alternative, no degradation or obstruction of a scenic view or impact on the scenic quality of the Wild and Scenic River would occur. Therefore, there would be no impacts as defined in the CCR, Title 14, Division 6, Chapter 3, Section 15382.

3.11.3.2 Alternative 2 – Proposed Action

Implementation of Proposed Action would have a short-term effect on the scenic and recreational components of the Trinity River's Wild and Scenic River values. However, the sediment and wood augmentation activities, which are components of a natural river system, would ultimately enhance the overall form and function of the Trinity River, thereby enhancing the ORVs for which it was designated a federal Wild and Scenic River.

Implementation of this alternative would increase the potential for increases in turbidity levels during and, to a lesser degree, after sediment and wood placement. Increased turbidity and suspended solids levels would adversely affect water quality (refer to discussion in Section 4.8, Recreation, of the Trinity River 2009 Master EIR) and could adversely affect visual resources, however, this impact would occur primarily during augmentation or wood placement and would be short-lived. Four specific ECs developed to reduce water quality impacts have been integrated into this alternative to minimize the impacts of increased turbidity levels that could be visible to recreational users (see Table 2-2).

Under Section 7 of the federal WSRA, direct and adverse effects to the values for which the Trinity River was recognized as a Wild and Scenic River are prohibited. Based on the analysis and determination presented in Appendix E, this alternative would enhance the fishery ORV as well as maintain the water quality and 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 outlined in Appendix G, Section 4.8-3, and ECs in Appendix H and Table 2-2 and Table 3-9, the impacts under CEQA considered under this resource topic would be less than significant (CCR, Title 14, Division 6, Chapter 3, Section 15382).

3.12 Vegetation, Wildlife, and Wetlands

3.12.1 Methods

Vegetation communities (habitat types) were obtained from the California Wildlife Habitat Relationships (CWHR) System. In this document, 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 2015 and 2020). The data were originally delineated manually, but more recently developed using data algorithms, however field-based accuracy assessment continues.[31] The data within the ESLs were further refined by Ironwood staff directly in the field during habitat assessments in June 2022 and wetland delineations and vegetation surveys in May 2023.

Wetlands with the augmentation 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 et al. (1979). Wetland delineations within the ESLs at the Sawmill, Dark Gulch, Trinity House Gulch, and Vitzthum Gulch (Indian Creek ESL) sites were completed within 5 years after the construction of previous channel rehabilitation activities. No prior delineations had occurred at Steel Bridge. Wetland delineations following the USACE guidance were complete at each winter-spring augmentation site and at the Sawmill ESL in May and June 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 sediment augmentation activities.

The areal extent of the impact on habitat types is estimated by overlaying a project map (including contractor use areas and access roads) on current vegetation map (HVT and McBain Associates 2015; HVT and McBain Associates 2020). The habitat types and impact areas are 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 site visits in May 2022, and May and June 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 I). 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 resources (USFWS 2023a). Surveys for sensitive plant species and wildlife were completed concurrently with wetland delineations in 2023.

3.12.2 Affected Environment

Completion of the Trinity and Lewiston dams in the early 1960s altered sediment loads in the Trinity River by completely blocking the delivery of coarse sediment from the upper Trinity River, eventually leading to a depletion of coarse bed material in the reaches downstream from the dams, as infrequent floods flushed those materials downstream (Wilcock et al. 1996; USFWS and HVT 1999; GMA 2001; Wilcock 2004 cited in Gaeuman and Stewart 2017). Limiting sediment transport and flood flows within the river alters habitat in and around the river. With flows rarely overtopping streambanks, river channel morphology becomes simplified, which limits hydrologic connection between the primary channel and side channels, including riverine wetlands. This simplified channel system limits the variety of wildlife habitat types available across the floodplain,

[31] 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.

which ultimately limits biodiversity within plant and wildlife communities. The project ESLs support 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.

The affected environment described for vegetative communities, wildlife species and associated habitats, and wetlands includes the 100-year floodplain of the Trinity River within the augmentation ESLs as well as the riparian corridor along the river. Considering these resources through the entire augmentation reach allows for a discussion of indirect effects downstream of the winter-spring augmentation sites.

3.12.2.1 Vegetation and Special Status Plants

This section describes vegetation communities and special status plant species that may be present at the augmentation ESLs. The dominant vegetation types within the augmentation reach include montane riparian, montane hardwood, ponderosa pine, blue oak-foothill pine, urban, and non-native and invasive annual grassland (CDFW 2014). Barren, lacustrine, riverine, and urban are unvegetated habitat types. Dominant plant species in the 15 habitats present are listed in Table 3-5.

The augmentation reach may support several special status plant species, including ESA- and CESA-listed species, BLM sensitive species (Appendix I), and species considered rare, threatened, or endangered in California based on the Rare Plant Ranks (see Table 4.7-1 in the 2009 Master EIR for a complete list of species and their status). The CNDDB (CDFW 2023) shows the potential for Dudley's rush (*Juncus dudleyi*), a species with a CNPS state ranking of S1 and a CA rare plant ranking of 2B.3, and Heckner's lewisia (*Lewisia cotyledon* var. *heckneri*), a species with a CNPS CA rare plant ranking of 1B.2, to occur within the augmentation reach, particularly near the Steel Bridge and Vitzthum Gulch sites (CNPS 2023).

Ironwood biologists did not observe special status plant species habitat at the winter-spring augmentation sites during habitat assessments in June 2022 and sensitive plant surveys in May 2023, or during previous vegetation surveys at Trinity House Gulch. No special status species have been documented at the Sawmill, Dark Gulch, Trinity House Gulch, or Vitzthum Gulch (Indian Creek ESL) during surveys for past channel rehabilitation site projects. Because the sediment augmentation sites are already disturbed from historic mining activities, habitat for special status plant species is not present and sensitive plant species are not likely to be present.

Table 3-5. Augmentation ESL habitat types and associated plant communities and common wildlife species.

Habitat Type[1]	Common Plant Species	Common Wildlife Species[2]	ESL Occurrence	Acreage
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*)	Sawmill Processing Site Dark Gulch Steel Bridge Trinity House Gulch Vitzthum Gulch Total	17.0 19.3 2.5 5.4 53.5 97.6
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)	Sawmill Processing Site Dark Gulch Steel Bridge Trinity House Gulch Vitzthum Gulch Total	6.5 13.5 2.3 1.0 10.4 33.8
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*), and band-tailed pigeon (*Patagioenas fasciata*), western gray squirrel (*Sciurus griseus*), black-tailed deer (*Odocoileus hemionus columbianus*)	Sawmill Processing Site Dark Gulch Trinity House Gulch Steel Bridget Vitzthum Gulch Total	5.8 3.6 3.5 - 0.5 13.4
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*), and pallid bat (*Antrozous pallidus*), California quail, black-tailed deer, western gray squirrel, western rattlesnake, sharp-tailed snake (*Contia tenuis*)	Sawmill Processing Site Dark Gulch Steel Bridge Trinity House Gulch Vitzthum Gulch Total	0.4 0.8 0.7 0.6 30.5 33.0
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*)	Sawmill Processing Site Dark Gulch Trinity House Gulch Vitzthum Gulch Total	0.9 1.7 0.1 0.6 3.3
Lacustrine	Open water (lakes and ponds)	Mallard, Canada goose (*Branta canadensis*), black phoebe, tree swallow, western toad, Sierra chorus frog, common garter snake (*Thamnophis sirtalis*)	Sawmill Processing Site Dark Gulch Trinity House Gulch Vitzthum Gulch Total	0.1 0.5 0.2 0.3 1.0

Habitat Type[1]	Common Plant Species	Common Wildlife Species[2]	ESL Occurrence	Acreage
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, southern alligator lizard (*Elgaria multicarinata*).	Sawmill Processing Site Dark Gulch Trinity House Gulch Vitzthum Gulch Total	0.8 0.3 0.9 1.1 3.1
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*), bushy tailed woodrat (*Neotoma cinerea*)	Sawmill Processing Site Dark Gulch Steel Bridge Trinity House Gulch Vitzthum Gulch Total	1.2 2.5 0.4 8.4 19.7 32.2
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, Steller's jay	Sawmill Processing Site Dark Gulch Trinity House Gulch Steel Bridge Vitzthum Gulch Total	8.3 0.2 - - 43.1 51.5
Montane and Valley Foothill Riparian	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*)	Sawmill Processing Site Dark Gulch Steel Bridge Trinity House Gulch Vitzthum Gulch Total	27.3 18.6 7.8 13.4 81.2 148.3
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	Sawmill Processing Site Dark Gulch Trinity House Gulch Steel Bridge Vitzthum Gulch Total	0.5 0.1 <0.1 -- 1.2 1.8
Ponderosa Pine	Ponderosa pine (*Pinus ponderosa*)	Mountain quail, western gray squirrel, black-tailed deer, Allen's chipmunk, sooty grouse (*Dendragapus fuliginosus*) sharp-shinned hawk and red-tailed hawk, Virginia opossum, and western spotted skunk (*Spilogale gracilis*)	Sawmill Processing Site Dark Gulch Steel Bridge Trinity House Gulch Vitzthum Gulch Total	15.9 3.2 1.3 4.2 12.8 37.3

Habitat Type[1]	Common Plant Species	Common Wildlife Species[2]	ESL Occurrence	Acreage
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*)	Sawmill Processing Site Dark Gulch Steel Bridge Trinity House Gulch Vitzthum Gulch Total	11.4 9.9 6.7 4.5 34.8 67.4
Urban	Human disturbances and roads	Deer mouse, house mouse, Virginia opossum, western spotted skunk, coyote, and great-horned owl	Sawmill Processing Site Dark Gulch Steel Bridge Trinity House. Gulch Vitzthum Gulch Total	7.2 5.1 0.2 1.2 40.0 53.7

[1] CWHR System (CDFW 2014; Bair et al. 2021)

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

3.12.2.2 Wildlife and Special Status Wildlife Species

The riparian habitat 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 roads. Common wildlife species that use the Trinity River riparian corridor include deer, river otter, raccoon, beaver, cliff swallow *(Hirundo pyrrhonota)*, American dipper (*Cinclus mexicanus*), as well as many other migratory birds. Table 3-5 presents wildlife species associated with the various habitat along the Trinity River and within the ESLs.

No wildlife species listed under the ESA or CESA as threatened, endangered, or candidates for listing are known to occur within the winter-spring augmentation sites (CDFW 2023). Although the augmentation reach is not within designated northern spotted owl (NSO) critical habitat, CNDDB data documents NSO occurrences (nests and activity centers) near Trinity House Gulch and Vitzthum Gulch. The closest documented occurrence of NSOs is approximately a 0.5 mi from Trinity House Gulch ESL.

Other special status wildlife species that may use habitats within the augmentation reach include:

- Pacific fisher North Coast/Southern Oregon Distinct Population Segment *(Pekania pennanti)*[32] is a California species of special concern and a BLM sensitive species.
- Ring-tailed cat *(Bassariscus astutus)* is a California fully protected species.
- Bald eagle *(Haliaeetus leucocephalus)* is an endangered species under the California ESA, a BLM Sensitive species, and a California fully protected species.
- Foothill yellow-legged frog *(Rana boylii)* is a BLM 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)* is a California species of special concern and a BLM sensitive species.
- California mountain kingsnake (*Lampropeitis zonata)* is a BLM sensitive species.
- Several bird species that are BLM sensitive species or California species of special concern, including golden eagle (*Aquila chrysaetos*) and bald eagle (*Haliaetus leucocephalus*). Bald and golden eagles also receive protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d).
- 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, 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*) are both BLM sensitive species.
- The freshwater western pearlshell mussel (*Margaritifera falcata*) is a BLM sensitive species.

Most special status species are riparian species and may be found within the montane riparian habitats or freshwater wetlands near or within the augmentation ESLs. Appendix I provides two tables that list the BLM sensitive species considered in this Draft EA/IS as required under the National Forest Management Act and the BLM Redding RMP. Several other BLM sensitive species are not likely to occur within or near the winter-spring augmentation sites. Additional details on these federal and state special status species can be found in the 2009 Master EIR Section 4.7, Table 4.7-1, and Appendix C.

3.12.2.3 Waters and Wetlands

Table 3-6 summarizes the types of wetlands and other waters that occur within the augmentation reach according to wetland types developed by the TRRP. This table also shows the associated Cowardin classification (Cowardin et al. 1979) of these wetland types. The Cowardin classification system is used in the USFWS NWI (USFWS 2023b) for describing and categorizing wetlands and deepwater habitats based on a variety of characteristics.

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

- Freshwater Forested wetlands are classified as palustrine forested (PFO) wetlands and are typically dominated by woody riparian species such as cottonwood *(Populus* spp.), big-leaf maple, black walnut, and blue elderberry.
- Freshwater scrub-shrub wetlands are classified as palustrine scrub-shrub (PSS) wetlands and are typically dominated by woody riparian and herbaceous species, such as willows (*Salix* spp.), white alder (*Alnus rhombifolia*), Oregon ash (*Fraxinus latifolia*), and Himalayan blackberry (*Rubus armeniacus).*
- Freshwater emergent wetlands are classified as palustrine emergent (PEM) wetlands and are dominated by pale spikerush (*Eleocharis macrostachya*), annual rabbitsfoot grass (*Polypogon monspeliensis*), annual hairgrass (*Deschampsia danthonioides*), reed canarygrass (*Phalaris arundinacea*), and mugwort (*Artemesia douglasiana*), are present within and near the winter-spring augmentation sites. These typically occur in shallow depressions and in low-lying areas within the floodplain.
- Open water including rivers, ponds and lakes is classified as riverine streambed (RSB), riverine unconsolidated bottom (RUB), palustrine unconsolidated bottom (PUB) and lacustrine unconsolidated bottom (LUB) wetland types and include vegetation (such as those listed above) along their edges but are typically not dominated by vegetation because of inundation.

Table 3-6. Summary of wetland and water types within the ESLs.

Wetlands and Other Waters	NWI Wetland Type*	Total acreage in ESLs
Freshwater Forested and Scrub-shrub (includes Montane and Valley Foothill Riparian)	PFO, PSS	148.3
Freshwater Emergent Wetland	PEM	3.3
Riverine	RSB, RUB	67.4
Freshwater Pond (Lacustrine, Palustrine)	PUB, LUB	1.0

* PFO = palustrine forested wetland; PSS = palustrine scrub-shrub; RSB = riverine streambed; RUB = riverine unconsolidated bottom; PEM = palustrine emergent; PUB = palustrine unconsolidated bottom; LUB = lacustrine unconsolidated bottom.

The Trinity River, a perennial stream, is the primary drainage within the augmentation reach. It is considered a Water of the U.S. that is subject to the jurisdiction of the USACE. Other perennial streams located at or near the winter-spring augmentation sites include Indian, Grass Valley, and Rush creeks as well as several unnamed streams. These streams, as well as numerous intermittent streams, convey water from upland areas into riparian and wetland areas along the Trinity River. Most of these would be considered Waters of the U.S. and/or Waters of the State of California because of their surface hydrologic connection with the Trinity River. Wetlands within the augmentation ESLs would also likely be subject to USACE jurisdiction because of the continuous hydrologic connection with the Trinity River.

3.12.3 Environmental Consequences

3.12.3.1 Alternative 1 – No Action

Under the No Action alternative, the condition of vegetative communities, wildlife and associated habitats, and wetlands would remain similar to existing conditions. Therefore, there would be no impacts to vegetation, wildlife, and wetland resources as defined in the CCR, Title 14, Division 6, Chapter 3, Section 15382.

3.12.3.2 Alternative 2 – Proposed Action

The primary objective of the Proposed Action is to improve geomorphic processes (i.e., sediment transport) and aquatic habitat, including salmonid rearing and spawning habitat. In addition to improving instream salmonid habitat, restoring sediment transport processes within the Trinity River would improve hydrologic connections across the floodplain, which overtime would improve wetland and riparian habitat throughout the floodplain providing more wildlife habitat. Adding wood to the system would enable some logs to become deposited in the floodplain, to settle on banks or gravel/sand bars, or to get waterlogged and sink to the bottom of the channel, resulting in an increase in aquatic and terrestrial microhabitats. Effects on the specific resources are described more completely in the below sections.

Vegetation and Special Status Plants

Augmentation activities would improve geomorphic processes and floodplain hydrology over time, which would improve aquatic and terrestrial habitat within the Augmentation Reach with a greater diversity of plant communities, a long-term

beneficial effect on riparian vegetation and plant communities. During high flows, wood can mechanically remove living plants but also create new germination sites. Wood that settles in the floodplain provides many functions for vegetation, including providing organic matter for soil development and can serve as a nurse plant that encourages new recruitment of plants.

Although adverse effects to vegetation would be avoided or minimized by using previously disturbed sites to stockpile material or deploy the sediment and existing roads to access the sites, direct effects on vegetation would occur from construction of new access roads, temporary stockpiling of material, and placement of sediment along the bank of the river. Removal of native plant species would be avoided to the extent possible, and disturbance would be targeted toward areas dominated by invasive species where appropriate. The contractor use, access areas, and habitat types are shown for the Sawmill processing site and each augmentation site in Figure 3-3 through Figure 3-7, and the direct impacts on habitat types are presented in Table 3-7.

Annual, mostly non-native grassland would experience the greatest impacts across all sites with a total direct effect on about 11 ac. Restoration of grasslands is considerably easier and requires less time than restoration of woody habitat types. About 4 ac of montane and valley foothill riparian habitat would be directly affected, but impact areas would be adjusted in the field to minimize the loss of riparian vegetation, and revegetation where feasible would be completed. About 0.6 ac of ponderosa pine habitat and about 4.6 ac of urban habitat mostly at the Sawmill processing site would be directly affected. Urban habitat is unvegetated low quality habitat that is already disturbed. Less than half an ac of blue oak-foothill pine would be directly affected. Less than 0.2 ac of Douglas-fir, freshwater emergent wetland, lacustrine, mixed chaparral, montane hardwood, montane hardwood-conifer, perennial grassland, and riverine habitat types would be directly affected.

Areas disturbed by construction would be restored with native seed and plantings following implementation of project activities. Three ECs have been integrated into this alternative to minimize adverse effects on vegetation (see Appendix G, EC-VW-1, EC-VW-2, EC-VW-9, and EC-FR-4). Special status plant species individuals or populations would not be affected by the Proposed Action because suitable habitat does not occur at the Sawmill processing site or the winter-spring augmentation sites and no special status species have been observed in the project disturbance areas during past habitat assessments and surveys.

Table 3-7. Effects on habitat types within the access route and contractor use areas at the augmentation ESLs and Sawmill processing site.

Habitat Types[1]	Access Route and Contractor Use Areas (acres)										
Sawmill Processing Site											
	A1-SM	A2-SM	A3-SM	A4-SM	C1-SM	C2-SM	C3-SM	C4-SM	C5-SM	C6-SM	Total
Annual Grassland / non-native	0.18	0.18	0.01	<0.01	<0.01	0.69	0.80	0.90	0.22	0.74	3.72
Barren	--	0.05	--	--	0.36	--	--	--	1.43	0.04	1.87
Blue Oak-Foothill Pine	0.01	--	--	--	--	0.03	0.03	0.05	<0.01	0.01	0.13
Douglas Fir	--	--	--	--	--	--	--	--	--	<0.01	<0.01
Freshwater Emergent	--	0.02	--	--	--	--	--	--	0.01	--	0.03
Lacustrine	--	--	--	--	--	--	--	--	0.03	--	0.03
Mixed Chaparral	0.02	--	--	--	--	--	--	0.13	--	--	0.14
Montane Hardwood	0.01	--	--	--	--	--	--	--	--	--	0.01
Montane and Valley Foothill Riparian	--	037	0.01	0.04	<0.01	--	0.01	0.05	0.69	0.23	1.41
Perennial Grassland	--	--	0.18	<0.01		--	--	--	--	--	0.18
Ponderosa Pine	0.15	0.06	0.06	0.09	--	<0.01	0.01	--	0.01	0.04	0.42
Riverine	--	<0.01--	--	--	0.09	--	--	--	0.04	--	0.13
Urban	0.50	--	0.05	<0.01	--	<0.01	--	0.03	--	3.08	3.67
Total	0.86	0.67	0.35	0.14	0.44	0.72	0.86	1.16	2.49	4.14	11.84
Dark Gulch (ac)											
	A1-DG	A2a-DG	A2b-DG	A3-DG	A4-DG	C1-DG	C2a-DG	C2b-DG	C3-DG	C4-DG	Total
Annual Grassland / non-native	0.11	0.06	0.04	0.11	0.68	3.45	0.14		0.11	--	4.70
Barren	0.02	0.03	0.11	0.09	0.18	4.15	0.20	<0.01	0.04	0.01	4.76
Blue Oak-Foothill Pine	0.01	--	--	0.02	0.05	0.10	--	--	0.03	--	0.22
Freshwater Emergent Wetland	--	--	--	--	0.01	--	--	--	--	--	0.01
Mixed Chaparral	--	--	--	--	0.01	--	--	--	--	--	0.01
Montane Hardwood	--	--	--	--	0.02	--	--	--	--	--	0.02
Montane Hardwood-Conifer	--	--	--	--	--	--	--	--	--	--	0.00
Montane and Valley Foothill Riparian	0.01	0.17	0.10	<0.01	0.02	0.75	<0.01	0.11	<0.01	0.05	1.22
Perennial Grassland	--	--	--	--	--	--	--	--	--	<0.01	<0.01
Ponderosa Pine	--	--	--	--	0.03	0.08	--	--	--	--	0.11
Riverine	--	0.02	--	--	--	--	--	<0.01	0.01	<0.01	0.03
Urban	0.35	--	--	0.09	--	0.25	--	--	--	--	0.68
Total	0.51	0.28	0.25	0.32	1.00	8.77	0.17	0.12	0.18	0.16	11.76
Steel Bridge											
	C1-SB	C2-SB	C3-SB								Total
Annual Grassland / non-native	1.06	0.01	0.04								1.11
Douglas Fir	<0.01	--	--								<0.01
Montane and Valley Foothill Riparian	<0.01	<0.01	<0.01								<0.01

Habitat Types[1]	Access Route and Contractor Use Areas (acres)											
Ponderosa Pine	0.04	--	0.03									0.07
Riverine	--	0.01	--									0.01
Total	1.16	0.04	0.08									1.28
Trinity House Gulch												
	A1-THG	A2-THG	C1-THG	C2-THG	C3-THG							Total
Annual Grassland / non-native	0.06	0.06	0.04	1.62	0.09							1.87
Barren	--	--	--	0.07	--							0.07
Blue Oak-Foothill Pine	0.05	--	0.01	0.06	--							0.12
Freshwater Emergent Wetland	--	--	--	<0.01	--							<0.01
Lacustrine	0.01	--	--	--	--							0.01
Montane Hardwood	0.08	--	0.07	--	--							0.14
Montane and Valley Foothill Riparian	0.40	0.04	0.02	0.30	0.03							0.79
Riverine	--	--	--	--	<0.01							<0.01
Total	0.60	0.11	0.14	2.06	0.11							3.02
Vitzthum Gulch												
	A1-VG	C1-VG	C2-VG	C3-VG								Total
Annual Grassland / non-native	<0.01	<0.01	<0.01	--								<0.01
Montane Hardwood	--	<0.01	--	--								<0.01
Montane and Valley Foothill Riparian	0.13	0.03	0.19	0.13								0.39
Ponderosa Pine	--	0.05	--	--								0.05
Riverine	--	--	<0.01	<0.01								<0.01
Urban	--	0.29	0.01	--								0.30
Total	0.14	0.37	0.34	0.13								0.97

[1] CWHR System (CDFW 2014; Bair et al. 2021)

Wildlife and Special Status Wildlife

Beneficial effects for wildlife would occur from the addition of wood and long-term improvements to the river morphologic processes along the Trinity River. As the floodplain conditions improve overtime allowing wetland and riparian vegetation to increase, wildlife habitat would increase as well. Wood, especially in the floodplain, creates habitat for invertebrates, amphibians, reptiles, and small mammals, thus providing prey for birds, raptors and larger mammals.

Improving conditions for salmonids would provide minor long-term benefits to wildlife species that depend on salmonids for foraging opportunities (e.g., river otters, bald eagle, osprey). Adverse effects on wildlife would occur from direct loss of vegetation at the Sawmill processing site and the winter-spring augmentation sites. The loss of habitat used by wildlife species is shown in Table 3-7. The project would have the greatest effect on annual grassland, barren, and montane and valley foothill riparian habitats. Montane and valley foothill riparian are high-quality wildlife habitats, and species that depend on riparian habitat would be affected by the loss of about 4 ac across the Sawmill processing site and the winter-spring augmentation sites (Table 3-7).

Noise from access road construction, trucks hauling and dumping, as well as sediment processing and placement would indirectly affect wildlife in and near the Sawmill processing site and the augmentation ESLs. Many species may temporarily abandon the area while activities are being completed. Preconstruction surveys would be performed to identify active migratory bird nests and to determine specific activity areas where noise-related impacts would be deferred until after the nesting season is complete or until a qualified biologist has determined the young have fledged their nest.. Noise effects on wildlife (e.g., raptors, migratory birds, bat roosts, and ring-tailed cat dens) would be localized and minimized with the implementation of EC-VW-6 [4.14-1a] and 7 [4.14-1b] (Appendix G).

Vegetation removal would occur outside the nesting season for birds (before March 15 and after August 1). If this is not practicable, preconstruction surveys would be conducted to identify active bird nest sites within and adjacent to the Sawmill processing site and the augmentation ESLs. No-disturbance buffers would be established around the active nests until they are no longer occupied, in accordance with ECs EC-VW-6 [4.7-7 a-d], EC-VW-7 [4.7-8a-d], and EC- VW-8 [4.7-9a-c] (see Table 2-2 and Table 3-9). With these ECs, no take of migratory bird or special-status avian species would occur.

Pacific fisher may use the habitats adjacent to the Trinity River for foraging but are not expected to breed or den within the augmentation activity areas. Transitory individuals of this species would likely avoid areas where augmentation activities are proposed, and project impacts would not jeopardize the continued existence of the species.

Both foothill yellow-legged frog and western pond turtle are known to use the Trinity River downstream of the augmentation reach as well as the adjacent habitats. Under current management, the mainstem Trinity River upstream of Douglas City is minimally used by these native species. Instead, these species are primarily located in adjacent ponds and in the tributaries (e.g., along Indian Creek or Rush Creek) where warmer water temperatures are found. Though extremely rare at these upstream locations, precautionary measures would be taken during the augmentation activities if the foothill yellow-legged frog or western pond turtle is encountered in an activity area, and the individual(s) would be relocated to outside the activity areas in accordance with EC-VW-4 and EC-VW-5. With these ECs, no take of foothill yellow-legged frog would occur and direct impacts on western pond turtle would be minimized or avoided.

Native freshwater mussel populations are known to occur along the Trinity River corridor and are likely present within the augmentation ESLs. Mussel beds observed within the boundaries of in-channel activity areas (where the sediment would be added to the river) 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; Table 2-2 and Table 3-9). Some mussels may inadvertently be physically displaced during construction. This effect would be minimal due to the large populations known to occur at other locations along the Trinity River mainstem that would not be disturbed (Felbeck and Hauser 2020).

There is no habitat for protected terrestrial snails along the Trinity River within the augmentation 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.

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 extent of non-native and invasive plants. If invasive plants recolonize the restored areas, Reclamation would implement targeted control methods to remove the plants and reestablish native plants in accordance with EC-VW-9 [4.7-13a-g]. Long-term monitoring of the winter-spring augmentation 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 the TRRP 2022 Riparian Revegetation and Monitoring Plan (TRRP 2022). The corridor would continue to function as a movement corridor for many wildlife species.

Effects on wildlife from the Proposed Action would be minimized and avoided by completing the appropriate ECs (see Appendix G, EC-VW-3, EC-VW-4, EC-VW-5, EC-VW-6, EC-VW-7, EC-VW-8, and EC-VW-10) and implementing conservation measures during implementation. Although suitable habitat for NSO does not occur within the winter-spring augmentation sites, habitat occurs near Trinity House Gulch and Vitzthum Gulch. Therefore, conservation measures would be employed to reduce direct and indirect disturbance to individual NSOs and habitat effects to an insignificant and discountable level. These conservation measures entail specific timing, survey, and construction guidance (refer to Appendix G for details). Ultimately, with the implementation of the conservation measures outlined in the ECs, construction-related adverse effects to wildlife species would be similar to existing conditions or barely measurable.

Water and Wetlands

Construction-related effects on wetlands would occur with the implementation of the Proposed Action at the Sawmill processing site and the winter-spring augmentation sites (Table 3-8). Less than half of an acre of freshwater forested wetland occurring at Sawmill processing site, Dark Gulch, and Trinity House Gulch. Generally, direct adverse effects on wetlands would be avoided or minimized by using previously disturbed sites for construction activities and access. Removal of wetland vegetation would be avoided to the extent possible. Any wetlands disturbed during construction activities would be restored with native wetland plantings following implementation. In the long-term, processing of material from the Trinity House Gulch spoils site would clear the location so that native plant communities could be established in C2-THG area. Three ECs have been integrated into this alternative to reduce adverse effects to vegetation and wetlands (see Appendix G, EC-VW-1, EC-VW-2, EC-VW-9, and EC-FR-4).

Throughout the augmentation reach, indirect effects to wetlands would occur downstream of sediment and wood placement. Sediment would be transported downstream and could fill in low-lying areas associated with wetlands connected to the Trinity River channel. Conversely, sediment could fill in areas that then become shallow enough for wetland development. Wood that is transported downstream could become lodged on a bank or create areas of slower moving water making conditions more conducive for wetland establishment. However, these types of effects would likely not be measurable or attributable to the Proposed Action and would occur as part of natural fluvial processes without the current sediment retention scenario presented by the upstream dams. Ultimately, the sediment and wood placement would have a long-term beneficial effect to the hydrologic connectivity within the Trinity River floodplain, which would benefit wetlands along the river overall.

Table 3-8. Potential effects on wetlands and other waters within the Sawmill processing site and augmentation ESLs (ac).

Wetlands and Other Waters	NWI Wetland Types	Sawmill	Dark Gulch	Trinity House Gulch	Steel Bridge	Vitzthum Gulch	Total
Freshwater forested, scrub-shrub (montane and valley foothill riparian)	PFO, PSS	1.4	1.2	0.8	0.1	0.6	4.1
Freshwater emergent wetland	PEM	0.03	0.01	<0.01	0.0	0.0	0.04
Riverine	RSB, RUB	0.1	<0.1	<0.1	<0.1	<0.1	0.2

With the inclusion of CEQA mitigation measures outlined in Appendix G, Section 4.3 and 4.7, and ECs in Appendix H and Table 2-2 and Table 3-9, 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 Fishery Resources

3.13.1 Methods

Information from a focused literature review, project-specific modelling, and informal consultation with resource specialists and TRRP partner agencies is incorporated into the analysis of effects. The methods and analysis results are included in Appendix D (BLM ACS).

3.13.2 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*), and Pacific lamprey (*Entosphenus tridentatus*). There are two spawning races of Chinook, spring- and fall-run, and two spawning races of steelhead, winter- and fall-run. Federal and state special status fish species with the potential to occur in the project area include:

- Southern Oregon/Northern California Coast evolutionarily significant unit (ESU) of coho salmon (federal- and California state-listed threatened).
- Upper Klamath-Trinity Rivers ESU Chinook salmon – spring-run (federal candidate species; California state-listed threatened).

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*), 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 fish species and the factors affecting their abundance within the basin are not well understood; however, these species evolved and existed in the Trinity River prior to the Trinity River dam system and are presumably adapted to conditions that would be present when a greater amount of gravel is present.

3.13.3 Environmental Consequences

3.13.3.1 Alternative 1 – No Action

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. As described in Chapter 1, the TRRP and other entities have been using sediment augmentation to enhance spawning habitat since 2005. Sediment placement at the current permitted sites continues to benefit the Trinity River's availability of spawning gravel. There would be no improvement to anadromous fish habitat as a result of this alternative.

Under this alternative, sediment augmentation would continue at the previously permitted sites during the in-channel work period, but no augmentation would occur at the four newly proposed winter-spring augmentation sites. Effects on fishery resources would remain similar to existing conditions. Therefore, there would be no impacts on fishery resources as defined in CCR, Title 14, Division 6, Chapter 3, Section 15382.

3.13.3.2 Alternative 2 – Proposed Action

Equipment would work from the streambank during sediment augmentations and wood placement, and in some cases, would enter the river channel. This may result in sediment placements entombing or crushing juvenile salmonids. The probability of injury to fish is low because winter-spring augmentation sites during synchronized releases and winter elevated base flow releases exhibit high velocities where salmon fry cannot hold. At locations where augmentation is occurring during periods when velocities may be low (e.g., before April 15 at the Steel Bridge site before spring restoration releases), fish would be herded from the area using seine nets prior to sediment or wood placement. This would deter fish from holding in the area and would reduce impacts to SONCC coho salmon, as described in the 2020 TRRP BiOp. Five ECs have been integrated into this alternative to reduce adverse effects to fishery resources during implementation (see Appendix G, EC-FR-1, EC-FR-2, EC-FR-3, EC-FR-4, and EC-FR-5).

Sediment augmentations during high-flow events occur when sediment transport, scour, and turbidity levels are likely to be within the natural range of variation experienced by all fish within the Trinity River. If fish are holding near the augmentation site, they will be displaced downstream by increasing flows or biologists with seines. The timing of sediment augmentation would not coincide with salmonid spawning or migration activity, and washed alluvium injected at high flow would not affect the permeability of redds constructed months later. Other native and non-native fish species would experience similar effects during construction activities. However, overall, sediment augmentation and wood placement are expected to improve instream habitat for fish and other inhabitants of the stream biome, including macroinvertebrates that are food for fish. Similarly, fine sediment augmentation and wood placement would not exceed natural conditions expected during high-flow conditions and would enhance habitat quality and physical and ecological function by replenishing a pronounced deficit of fines immediately downstream of the dam. Wood within the channel is a known benefit to fisheries by creating jams and scoured habitat areas, providing high surface

area for periphyton development and consequential food for larger fish, and providing cover for young fish to avoid predators. Wood on gravel bars is anecdotally known to provide habitat for ants, which is a food source for salmonids. Therefore, long-term beneficial effects to instream fish habitat and food sources are anticipated under the Proposed Action.

With the inclusion of CEQA mitigation measures outlined in Appendix G, Section 4.6 and 4.7, and ECs in Appendix H and Table 2-2 and Table 3-9, impacts under CEQA related to fisheries considered under this resource topic would be less than significant (CCR, Title 14, Division 6, Chapter 3, Section 15382).

3.14 Recreation

3.14.1 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.

3.14.2 Affected Environment

The augmentation ESLs encompass both federally managed and privately owned land. BLM-managed land at the Sawmill processing site is not used for any type of recreation, except for boaters on the river passing through the site. The primary use of BLM-administered lands at the winter-spring augmentation sites is associated with various types of recreational activities. Private lands within or near the winter-spring augmentation sites are used seasonally for various recreational purposes (e.g., fishing). 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. 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 augmentation reach of the Trinity River. The Forest Service issues 13 rafting permits for the river downstream at Pigeon Point. Visitor use in the winter-spring augmentation sites 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. Access to Dark Gulch is through privately owned lands. Steel Bridge is downstream of the BLM Steel Bridge Day Use area that has higher visitor use with people fishing, picnicking, or accessing the river with rafts or other boats. The Steel Bridge campground is about 0.6 mi upstream from the Steel Bridge augmentation site, and the Steel Bridge Day Use area, approximately 0.5 mi upstream, is a BLM-managed boat ramp and parking area for river access. Public access to BLM-administered lands is present via the river or walking at Trinity House Gulch and Vitzthum Gulch.

3.14.3 Environmental Consequences

3.14.3.1 Alternative 1 – No Action

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

3.14.3.2 Alternative 2 – Proposed Action

The Proposed Action would involve placement of sediment in the active river channel, the floodplain, and adjacent upland areas and the placement of wood in the active channel and floodplain along with the sediment, as described in Chapter 2. None of the augmentation sites have designated recreational areas, and augmentation activities would not result in prohibiting access to the river at any of the augmentation sites. River access and recreational opportunities would continue to be available at other locations along the river, including at the Steel Bridge Pier and parking area and the Steel Bridge Campground. Augmentation activities at the Steel Bridge augmentation site would not displace recreationists from these nearby designated recreation sites. If disruption to recreational activities at winter-spring augmentation sites occurs, it would be for 5 days up to several weeks each year during the hauling and sediment and wood placement activities described in Section 2.2 Temporary, localized increases in turbidity from winter-spring augmentation activities may affect the locations that anglers and recreationists choose to use. Because other sites are available nearby that would allow recreationists river access, there would not be measurable impacts on boating access.

Water quality objectives for the Trinity River specifically prohibit the discharge of any materials into the river that could cause a nuisance or adversely affect beneficial uses such as recreation (see Section 3.2 Increases in turbidity as a result of this alternative may affect the recreational experience of anglers and the aesthetic values held by other recreationists (refer to discussion in Section 4.8, Recreation, of the 2009 Master EIR). Four ECs have been integrated into this alternative in order to reduce the impacts of increased turbidity levels on recreational users (see Appendix G, EC-WQ-1 [4.5-1a-1e], EC-WQ-2 [4.5-2a-2c], EC-WQ-3 [4.5-3a-3c], and EC-WQ-4 [4.5-1e]).

Augmentation activities and wood placement associated with this alternative could pose a temporal physical hazard to recreational users of the river and cause short-term resource damage to lands used for recreational activities in and adjacent to winter-spring augmentation sites. Potential physical hazards to recreationists include the operation of heavy machinery and vehicles in and around the winter-spring augmentation sites, changes in the river's subsurface movement as a result of the in-channel sediment placement, obstacles created from wood becoming jammed at bridges or along the banks, and an increased potential for a hazardous materials spill (e.g., diesel and hydraulic fluid) from heavy machinery and vehicles operating in and adjacent to the river.

Reclamation would prepare and post precautionary signage and public notifications warning of hazards to recreational users that would be associated with in-channel augmentation activities (see Appendix G, EC-RE-1 [4.8-1a]). This approach has worked well for previous TRRP projects and has been particularly effective in reducing impacts to in-water recreational activities such as boating and fishing.[33] The addition of wood may seem like a new hazard, but wood is part of a functioning riverine system. The risks of boating and rafting on large rivers with these natural hazards exist with and without the addition of wood. With the inclusion of CEQA mitigation measures outlined in Appendix G, Section 4.8, and ECs in Appendix H and Table 2-2 and Table 3-9, impacts under CEQA considered under this resource topic would be less than significant (CCR, Title 14, Division 6, Chapter 3, Section 15382).

3.15 CEQA Significance

Table 3-9 provides a summary of the CEQA mitigation developed for each resource topic discussed in this chapter (see Appendix G and Appendix G), and identifies the level of significance as defined in the CCR, Title 14, Division 6, Chapter 3, Section 15382.

Table 3-9. Summary of resource topics considered in this Draft EA/IS, mitigation measures/environmental commitments, and CEQA significance with mitigation measures incorporated.

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
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

[33] Section 3.11 (Wild and Scenic Rivers) and Appendix E provide additional information on potential impacts on fishing and other water-based recreation.

Resource Topic	CEQA Mitigation	CEQA Significance
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.

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

4.1 Climate Change

In accordance with the NEPA and the CEQ Regulations (42 U.S.C. 4321 et seq.; 40 CFR Parts 1500-1508), 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 climate change impacts with that concept in mind.

The Trinity River basin has been experiencing extreme drought and record high temperatures in recent years as a result of baseline climate change effects. Figure 4-1 shows drought conditions within California as of November 2022. The Trinity River watershed is shown as being in a state of moderate to extreme drought. 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 (COEHHA 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 to 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 3.3 the annual GHG emissions resulting from the Proposed Action are estimated to be approximately 1,575 metric tons of CO_2, assuming up to 35 days of augmentation activities in a year. 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 sediment augmentation and wood placement 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 Sections 1.5 and 1.6 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 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 3.7 millions of cubic yards of mining debris were discharged from hydraulic mining over a 60-year period ending in the 1930s. Massive aggradation during the period dominated by hydraulic mining was followed by large-scale dredge mining of 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 winter-spring augmentation 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 sediment and Wood to the floodplain, restoring natural alluvial processes. This would increase the size, amount, and complexity of alluvial features, which (in combination with Wood) 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 in the sediment augmentation (such as at Dark Gulch and Trinity House Gulch). 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 EIS and ROD and the 2009 Master EIR (see https://www.trrp.net/program-structure/foundational-documents/ for more information) 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.[34] 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 located at: http://www.trrp.net.

Based on input from the lead and cooperating agencies, the cumulative impacts Section provided in Chapter 5 of the 2009 Master EIR listed foreseeable channel rehabilitation projects. The geographic scope of the area examined for cumulative effects

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

in this assessment was 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
- 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 the Phase B site was constructed in 2021. The Oregon Gulch project is ongoing and will be completed in 2024, and Sky Ranch, Upper Conner Creek, 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, 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.

4.3.3 Sediment Augmentation Projects

TRRP currently adds between 500 cy and 2,000 cy of coarse sediment (gravel) at five permitted locations downstream of Lewiston Dam, although the maximum allowable volume of sediment under the 2020 BiOp at a site in a given 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 proposed winter-spring augmentation sites (Dark Gulch, Trinity House Gulch, Steel Bridge, and Vitzthum Gulch) are not anticipated between the Lewiston Dam and Indian Creek because of a paucity of possible new sites with adequate access within the augmentation reach.

Cumulative effects to resources including recreation, vegetation and wetlands traffic, and visual resources and aesthetics may result from the combined sediment augmentation activities at the existing and proposed winter-spring sites, if sediment augmentation were to occur at multiple sites in a given year. With the inclusion of environmental commitments (Appendix H) and mitigation measures (Appendix G) 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 FEIS ROD and the Mitigation Monitoring and Reporting Program requirements outlined in Appendix A of the 2009 FEIR, 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: Figures

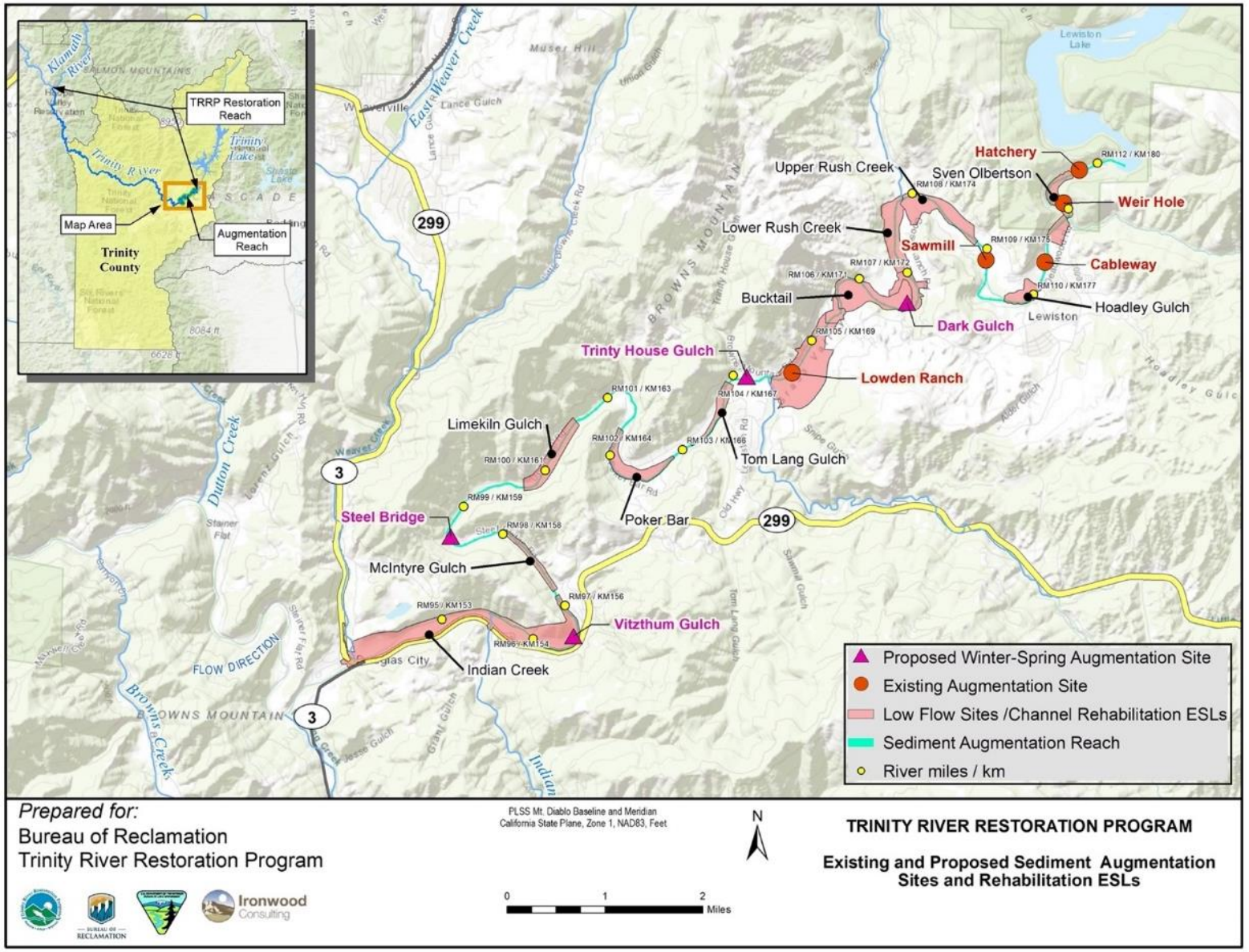

Figure 1-1. TRFEFR sediment augmentation reach with existing augmentation sites, proposed winter-spring augmentation sites, and ESLs.

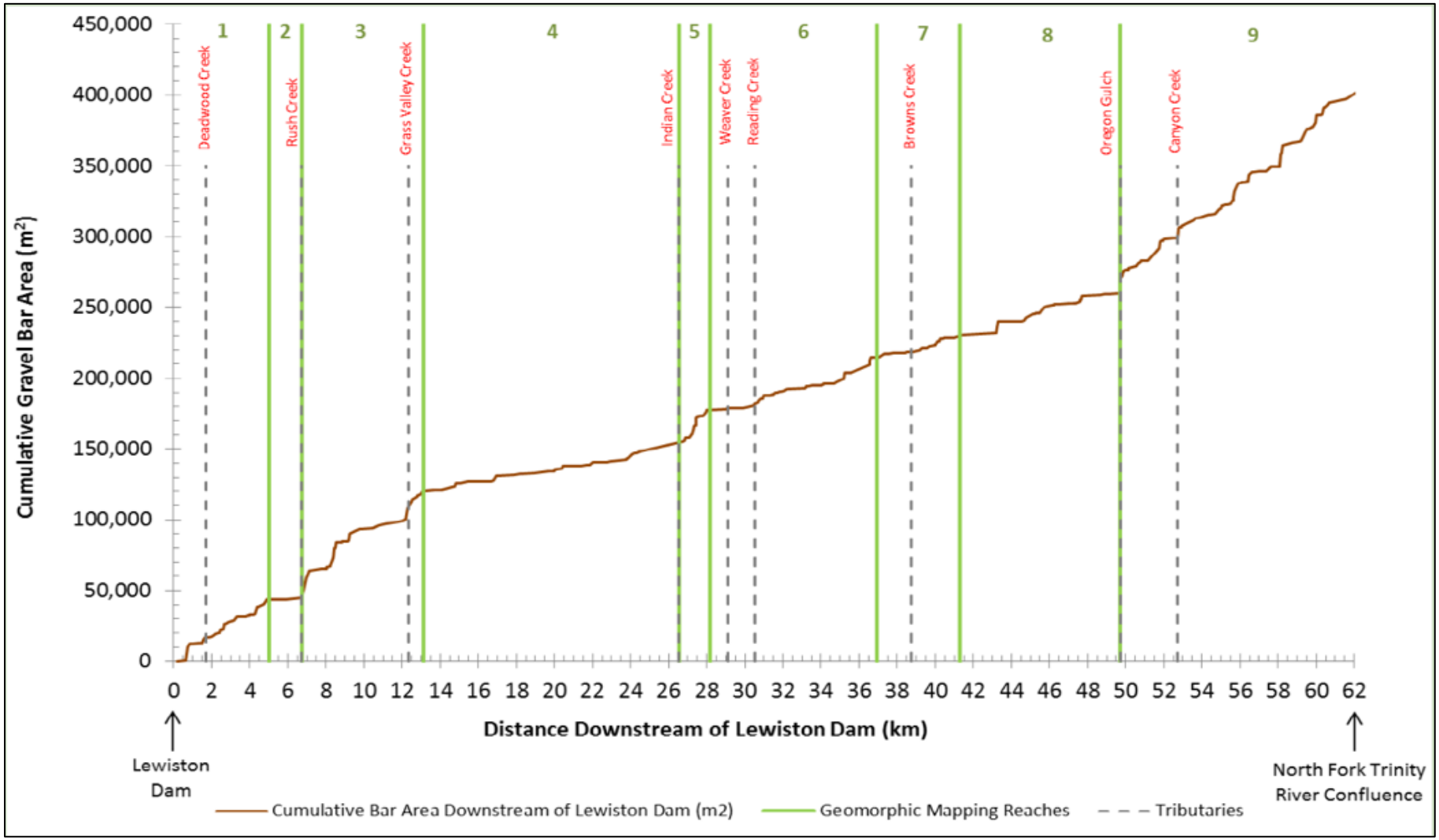

Figure 1-2. Cumulative exposed bar area at the 450 cfs summer baseflow release from Lewiston Dam to the North Fork Trinity River confluence.[35]

[35] Major tributaries are shown as labeled gray dashed vertical lines and geomorphic subreach boundaries are numbered and shown as green vertical lines (McBain 2015).

Figure 2-1. Sediment processing equipment at a restoration site, including a belt conveyor, front loader, excavator, and screening plant to sort materials by size class.

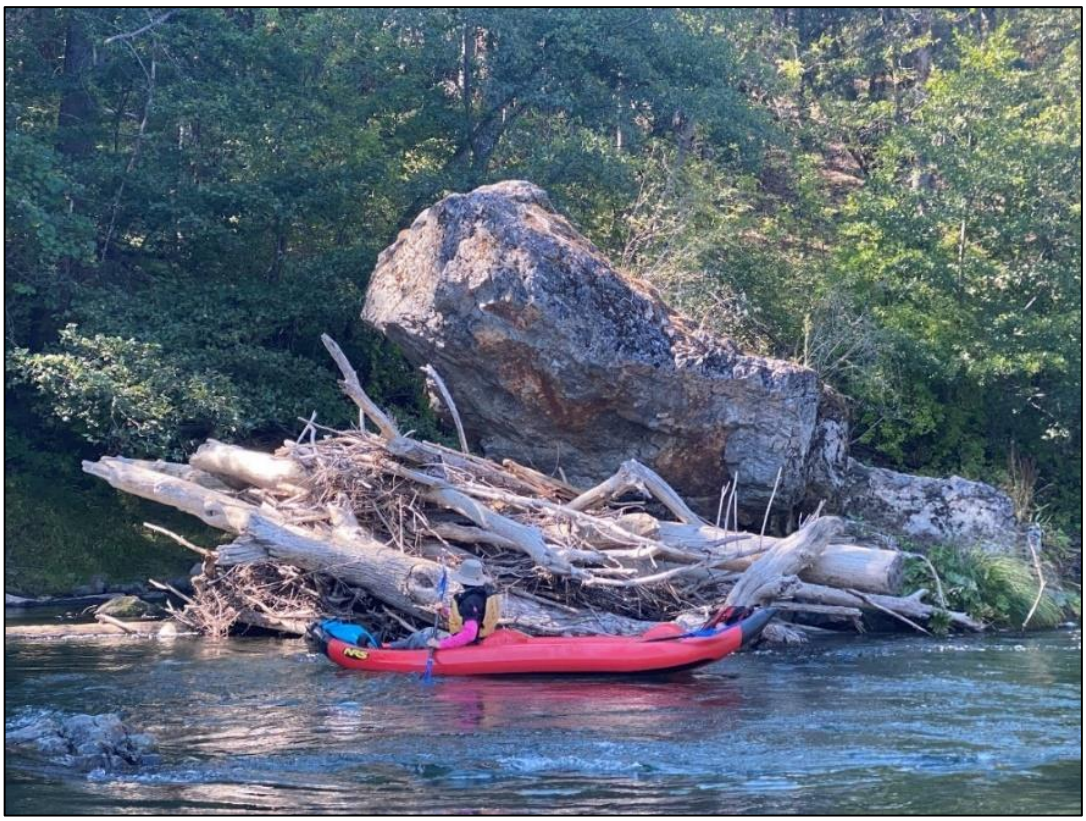

Figure 2-2. Example of wood accumulation on sand and gravel bars and along the banks of the Trinity River that occurs naturally.

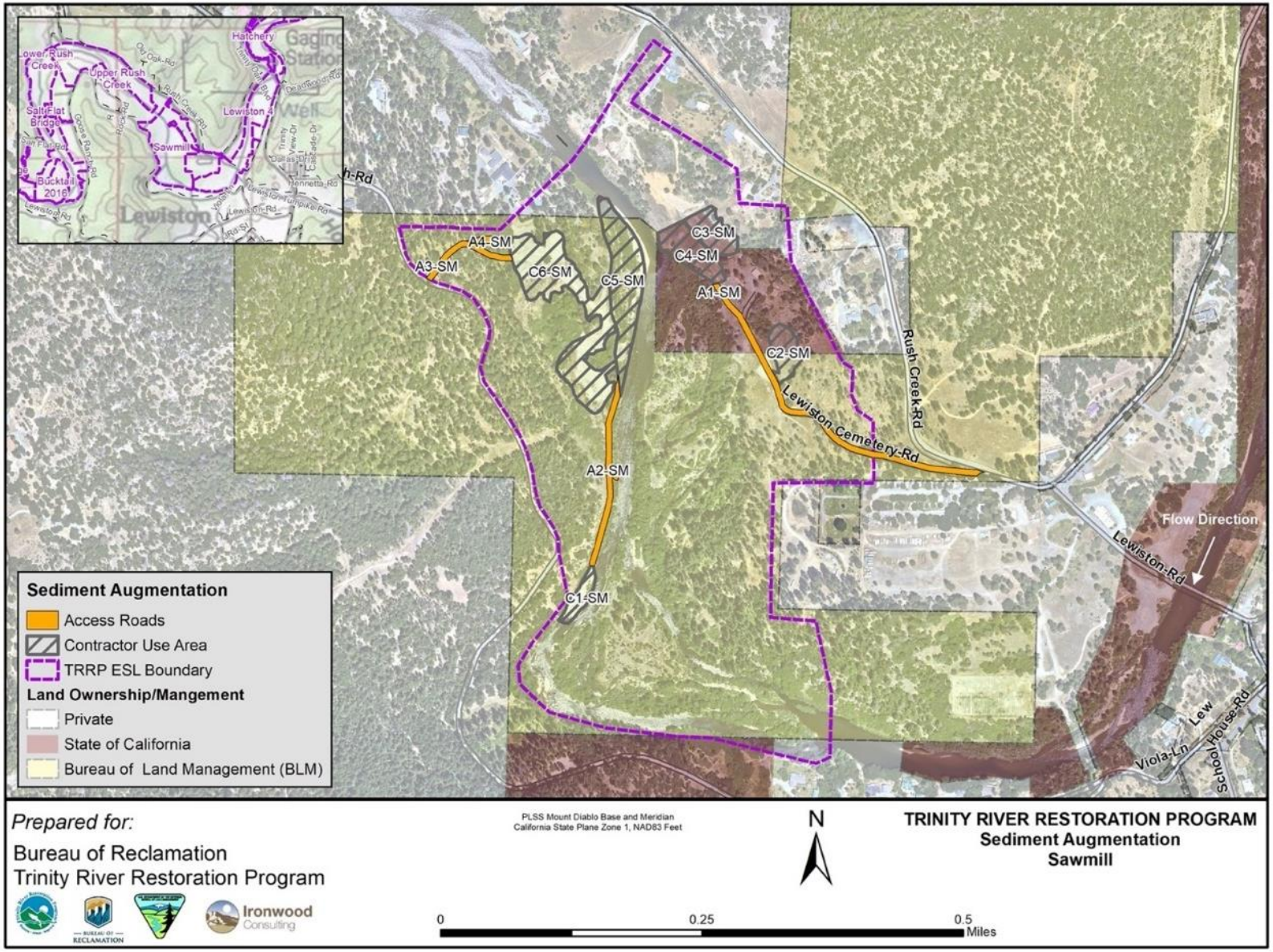

Figure 2-3. Sawmill ESL with Augmentation Project proposed activity areas.

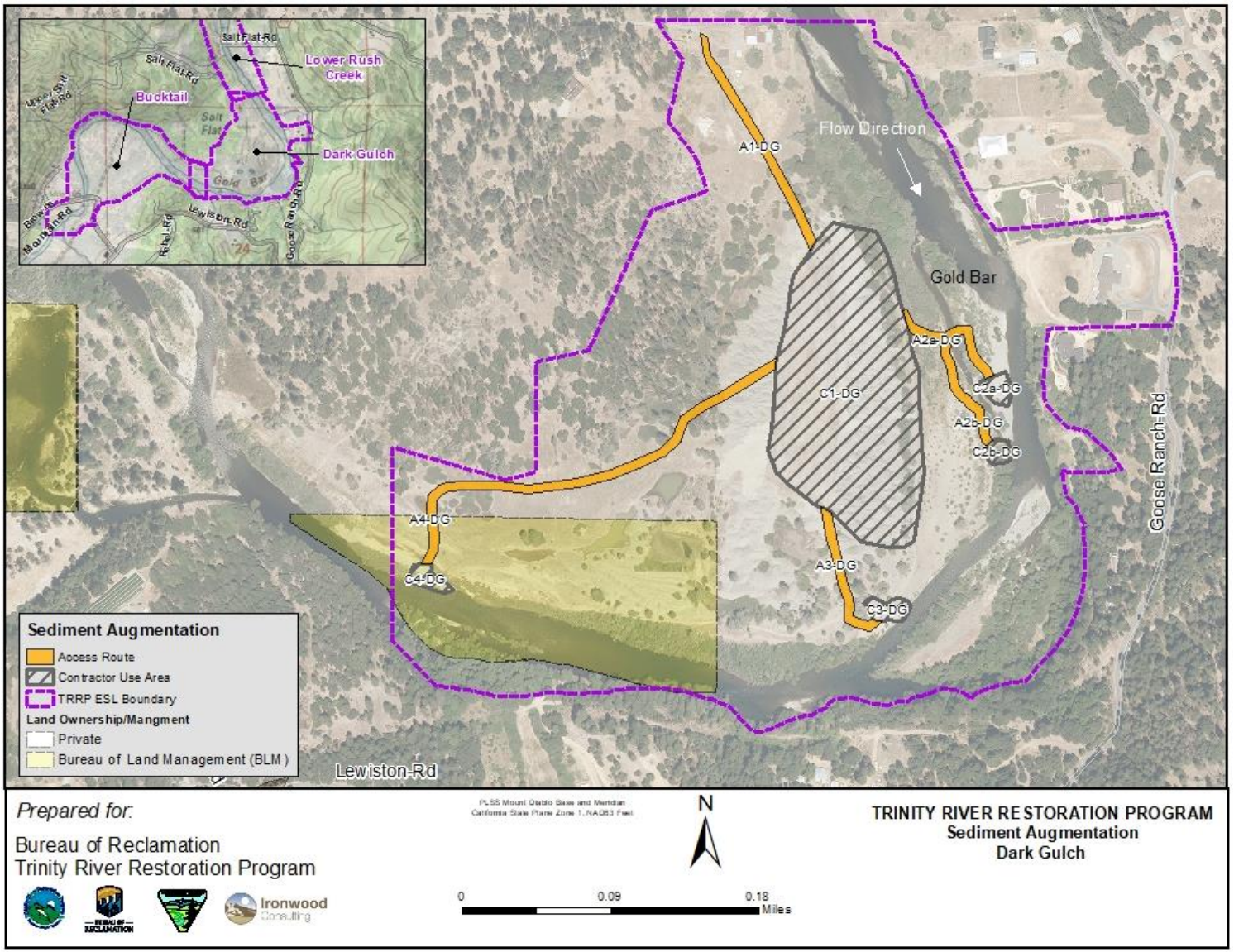

Figure 2-4. Dark Gulch Sediment ESL with Augmentation Project proposed activity areas at Trinity House Gulch

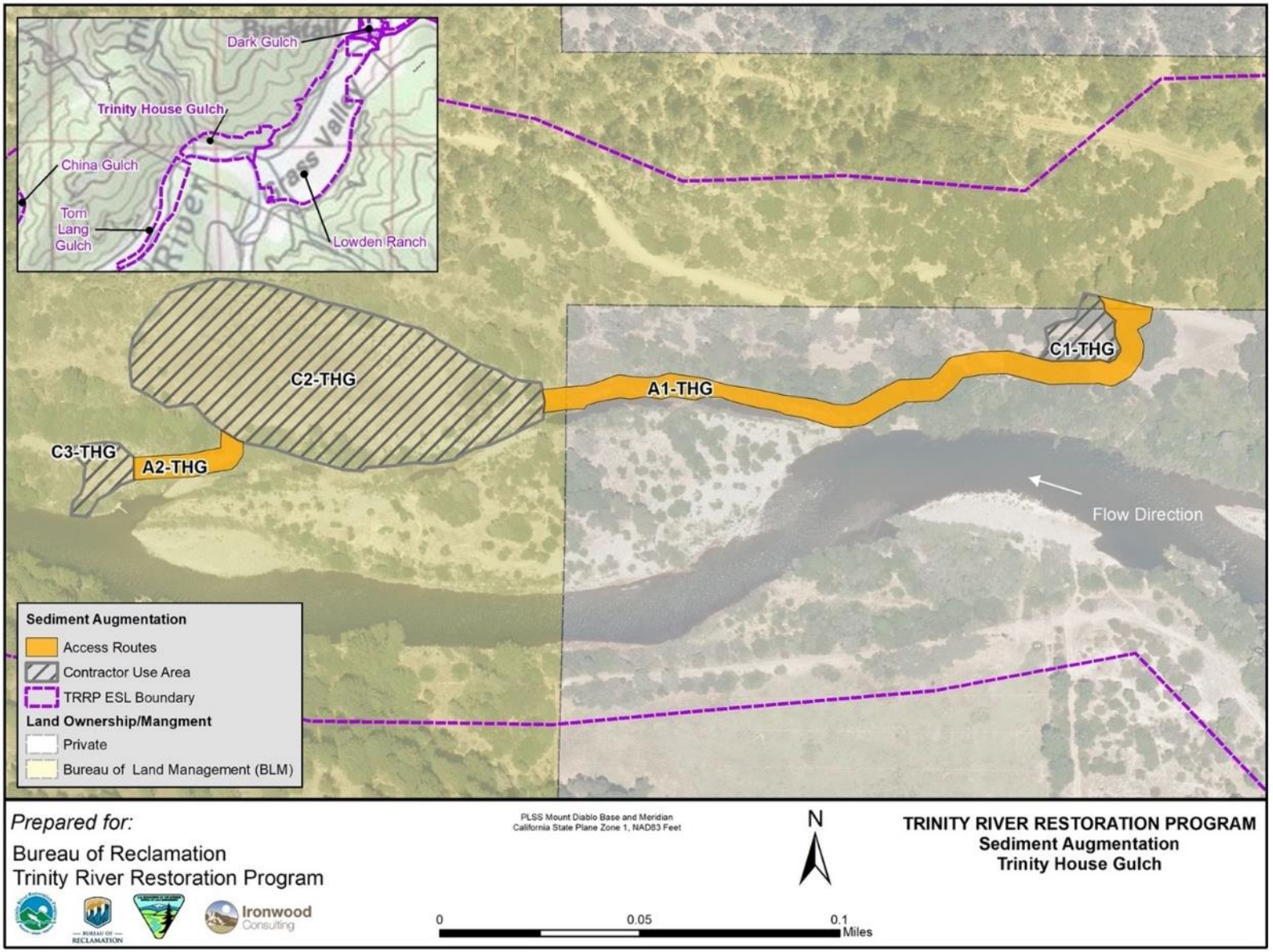

Figure 2-5. Trinity House Gulch ESL with Augmentation Project proposed activity areas.

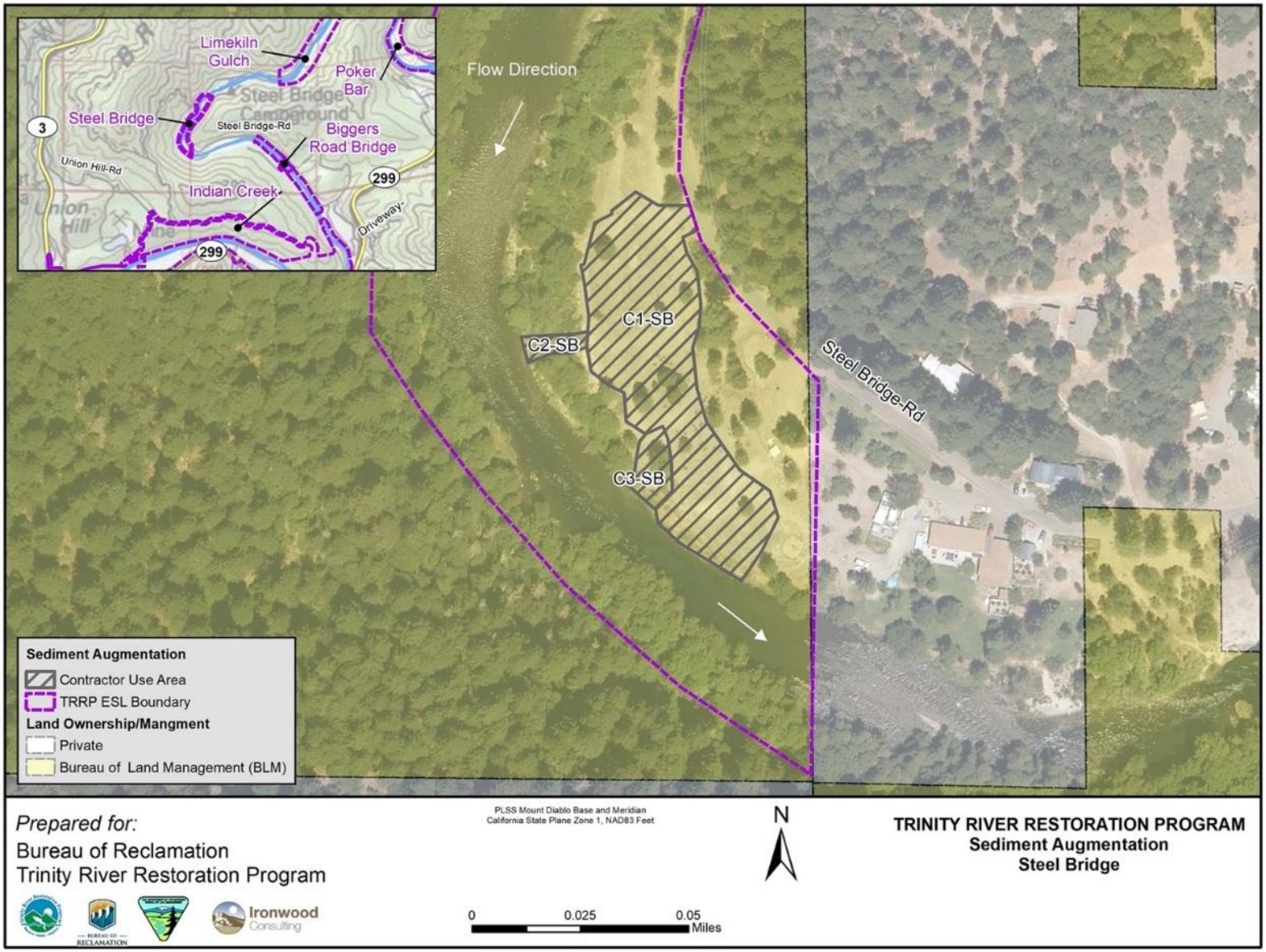

Figure 2-6. Steel Bridge ESL with Augmentation Project proposed activity areas.

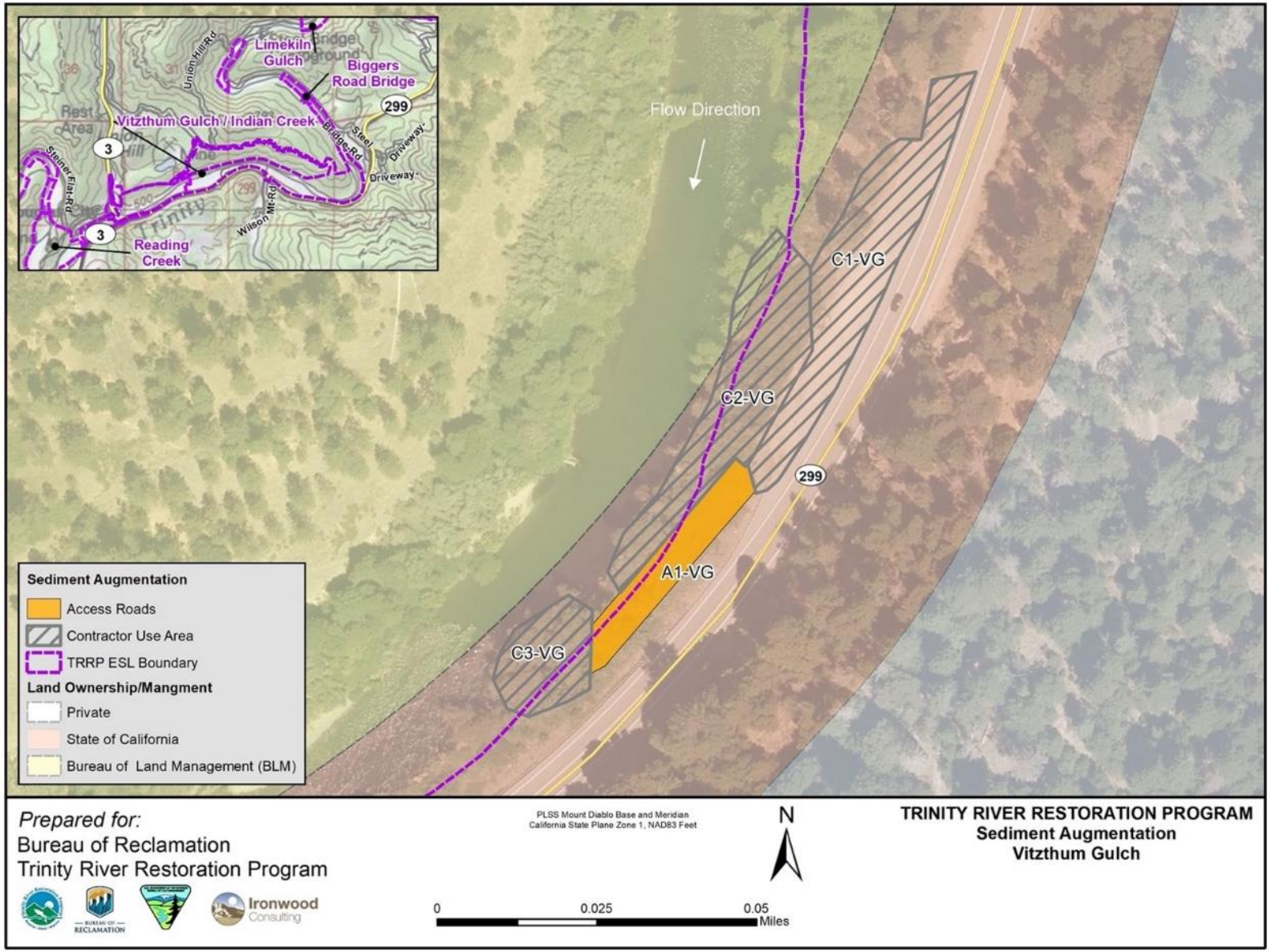

Figure 2-7. Vitzthum Gulch ESL with Augmentation Project proposed activity areas.

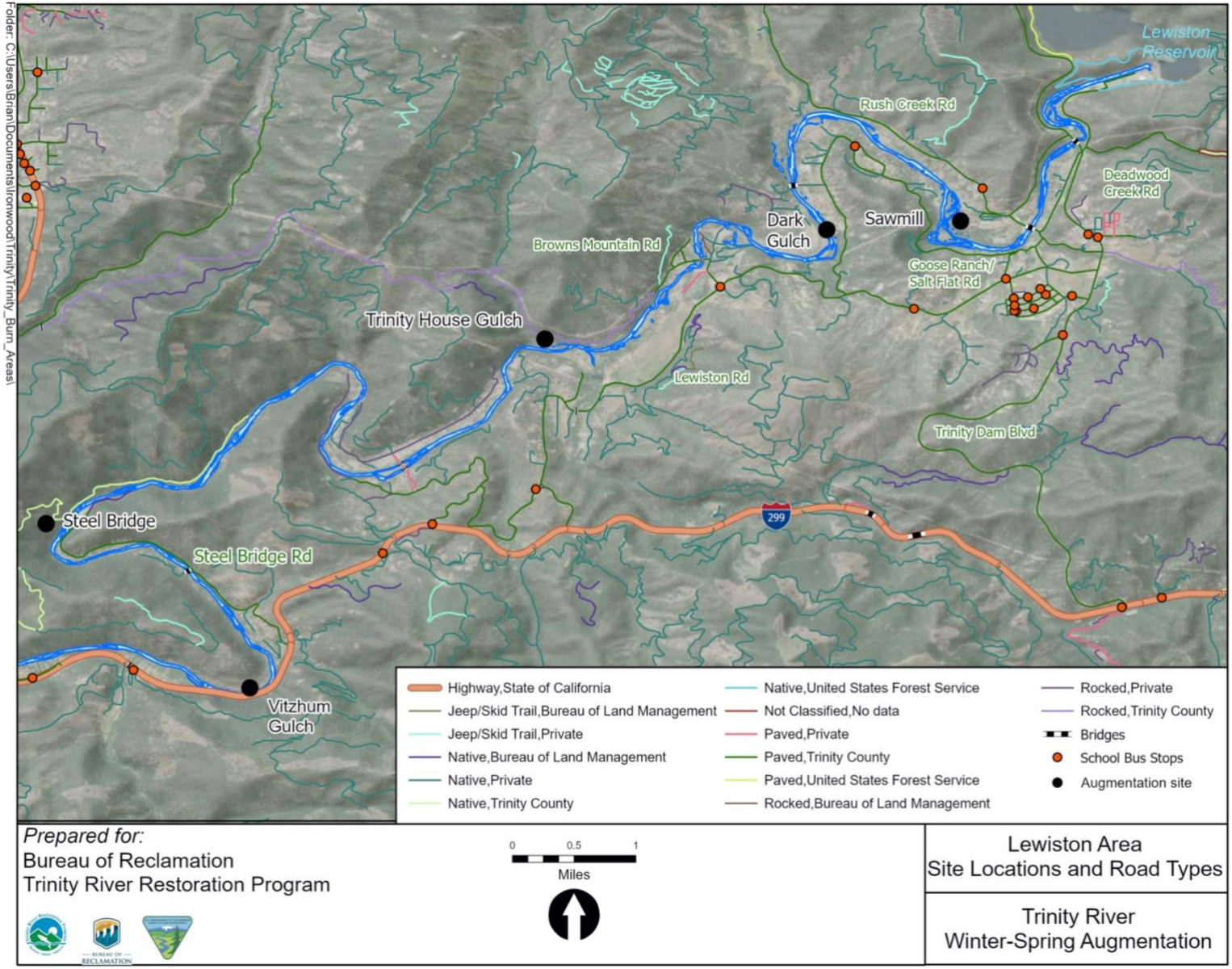

Figure 3-1. Existing road conditions in the vicinity of the winter-spring augmentation ESLs.

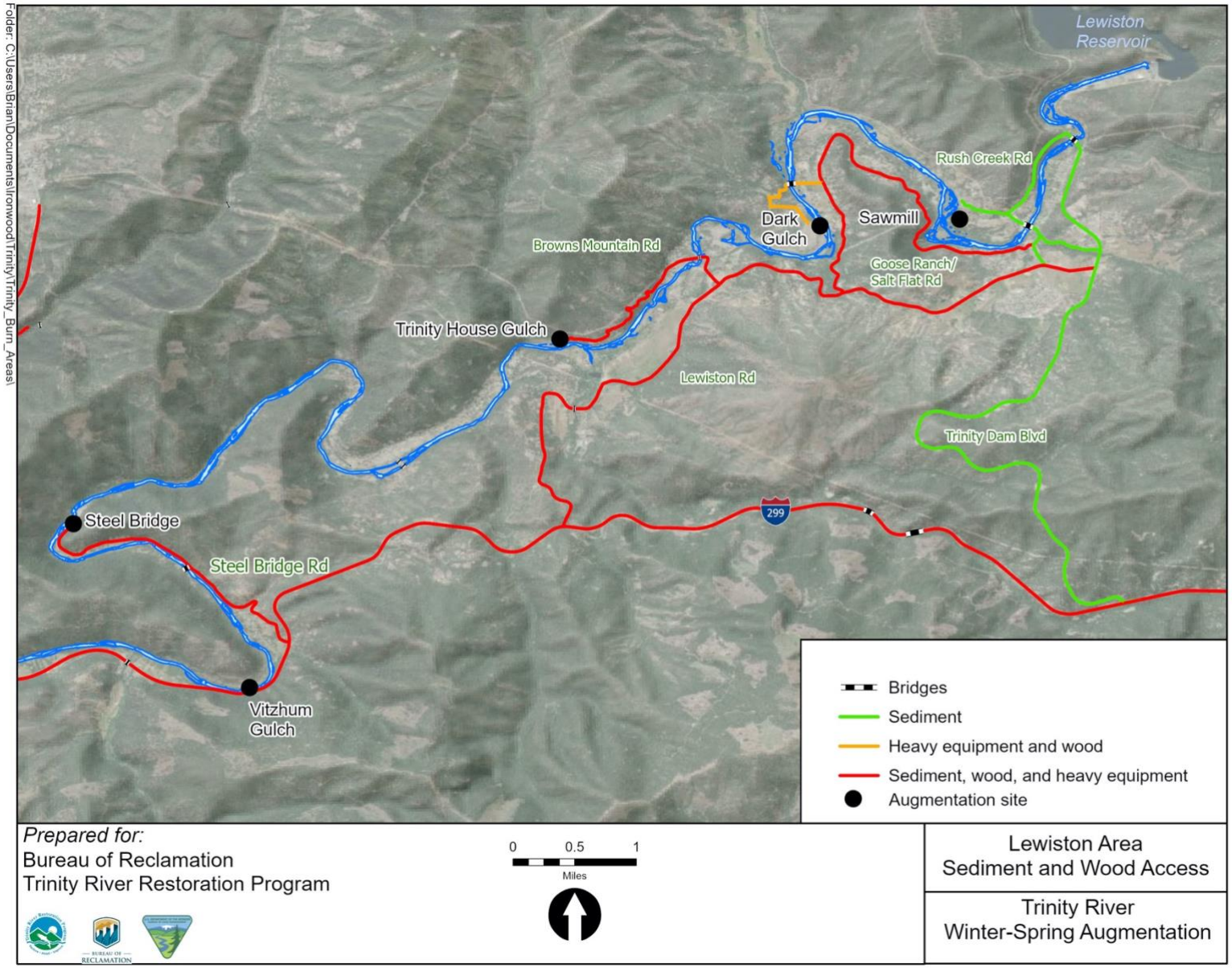

Figure 3-2. Roads that would be used for winter-spring augmentation activities.

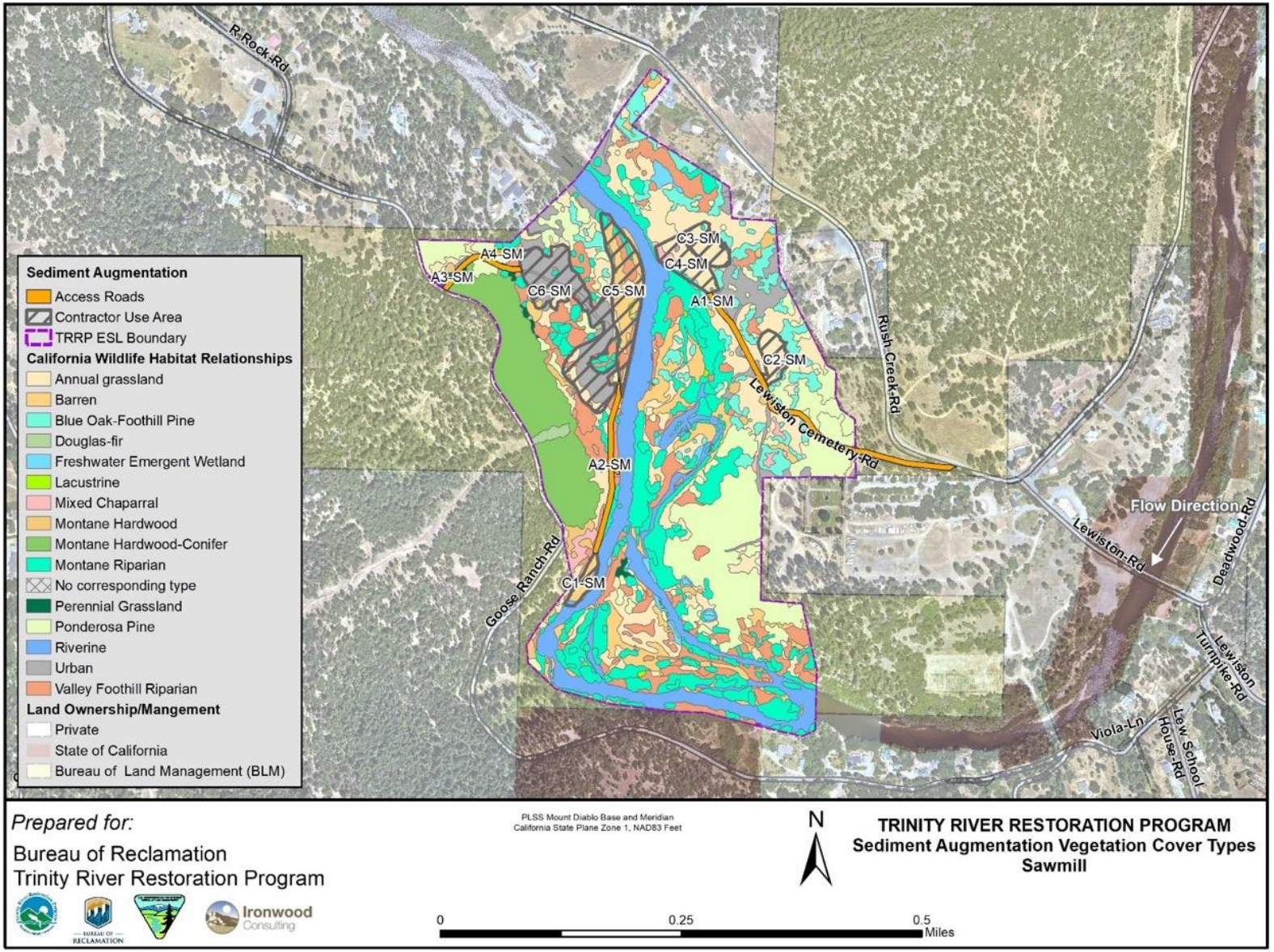

Figure 3-3. Vegetation Cover Types Sawmill.

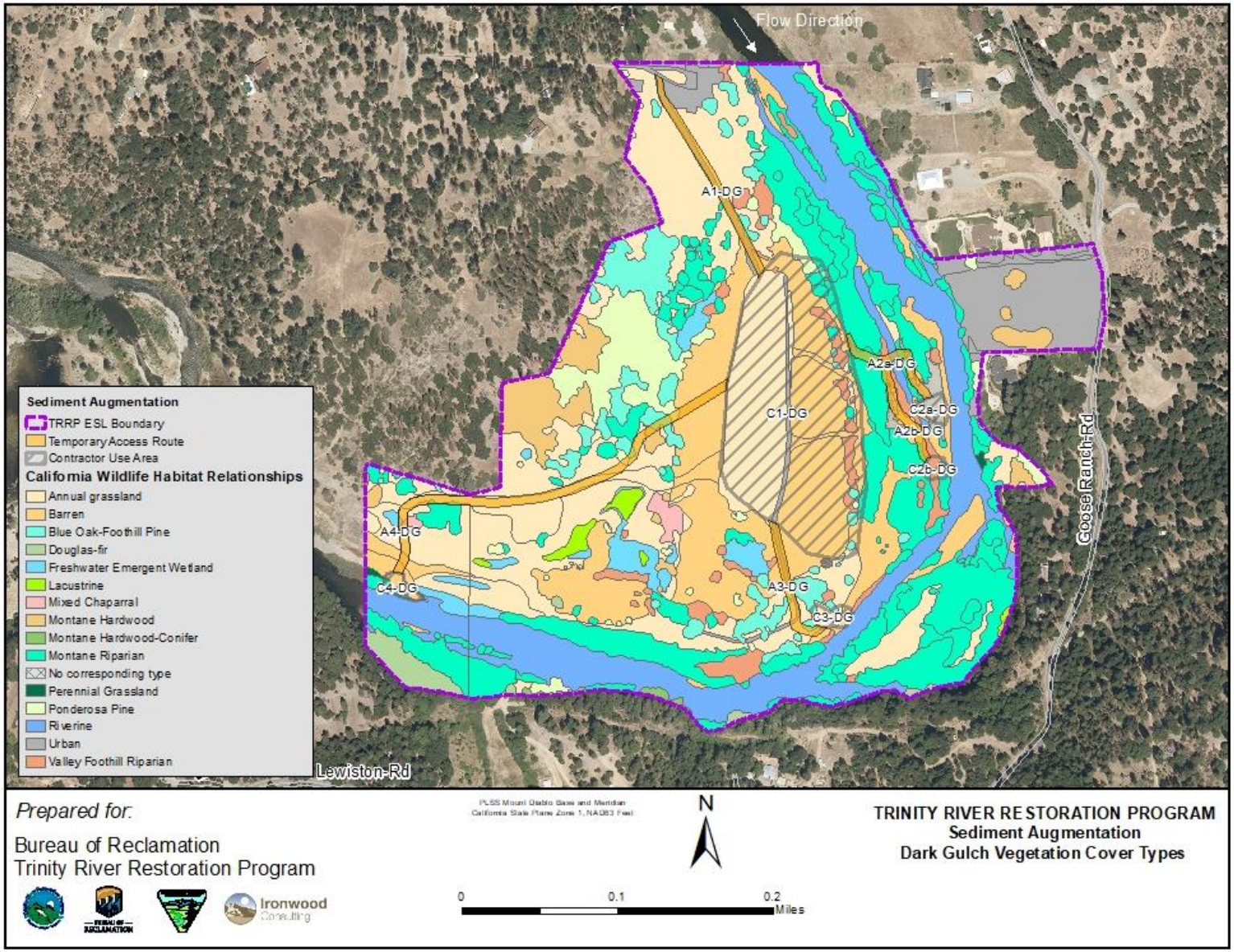

Figure 3-4. Vegetation Cover Types Dark Gulch.

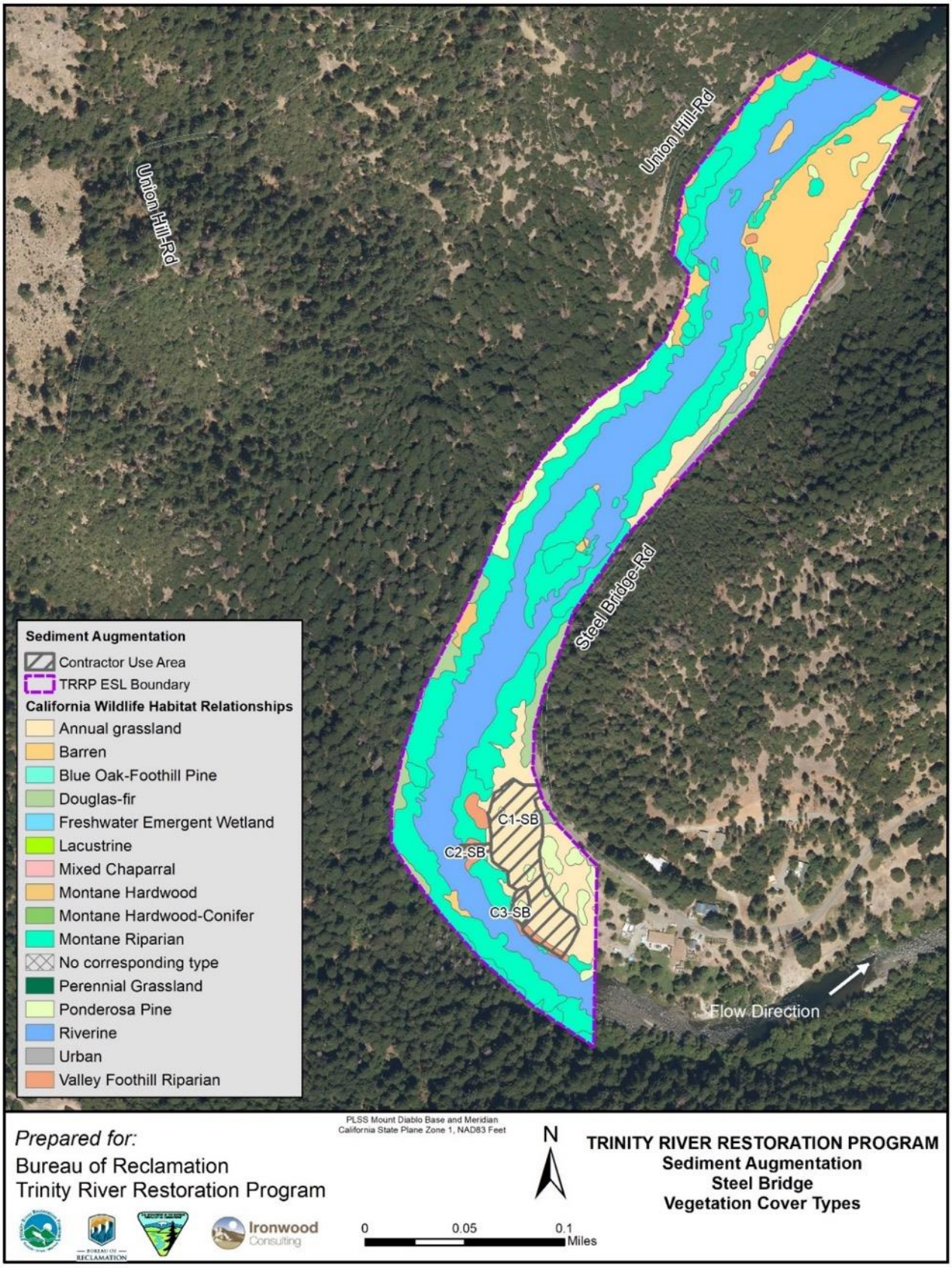

Figure 3-5. Vegetation Cover Types Steel Bridge

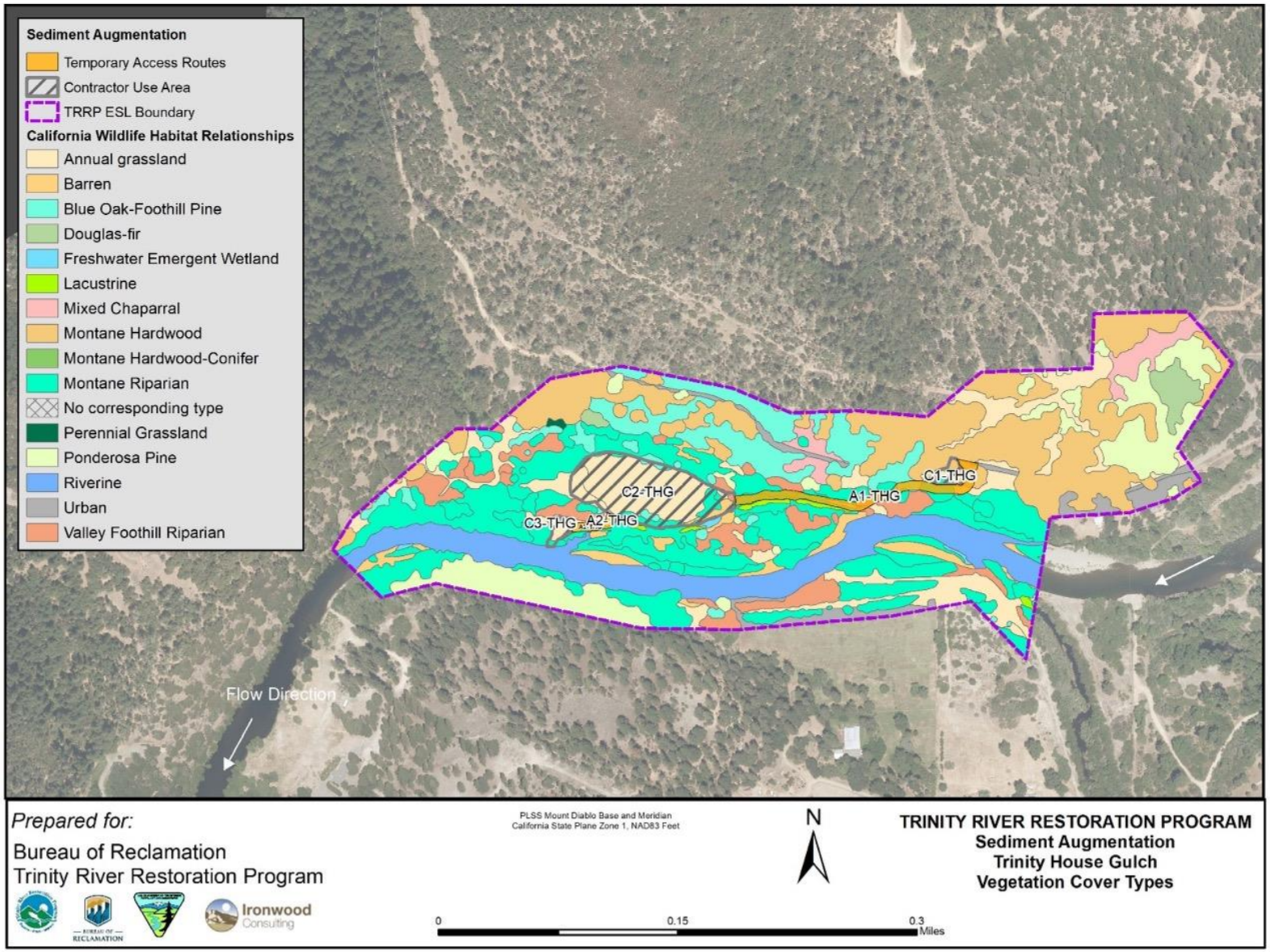

Figure 3-6.Vegetation Cover Types Trinity House Gulch.

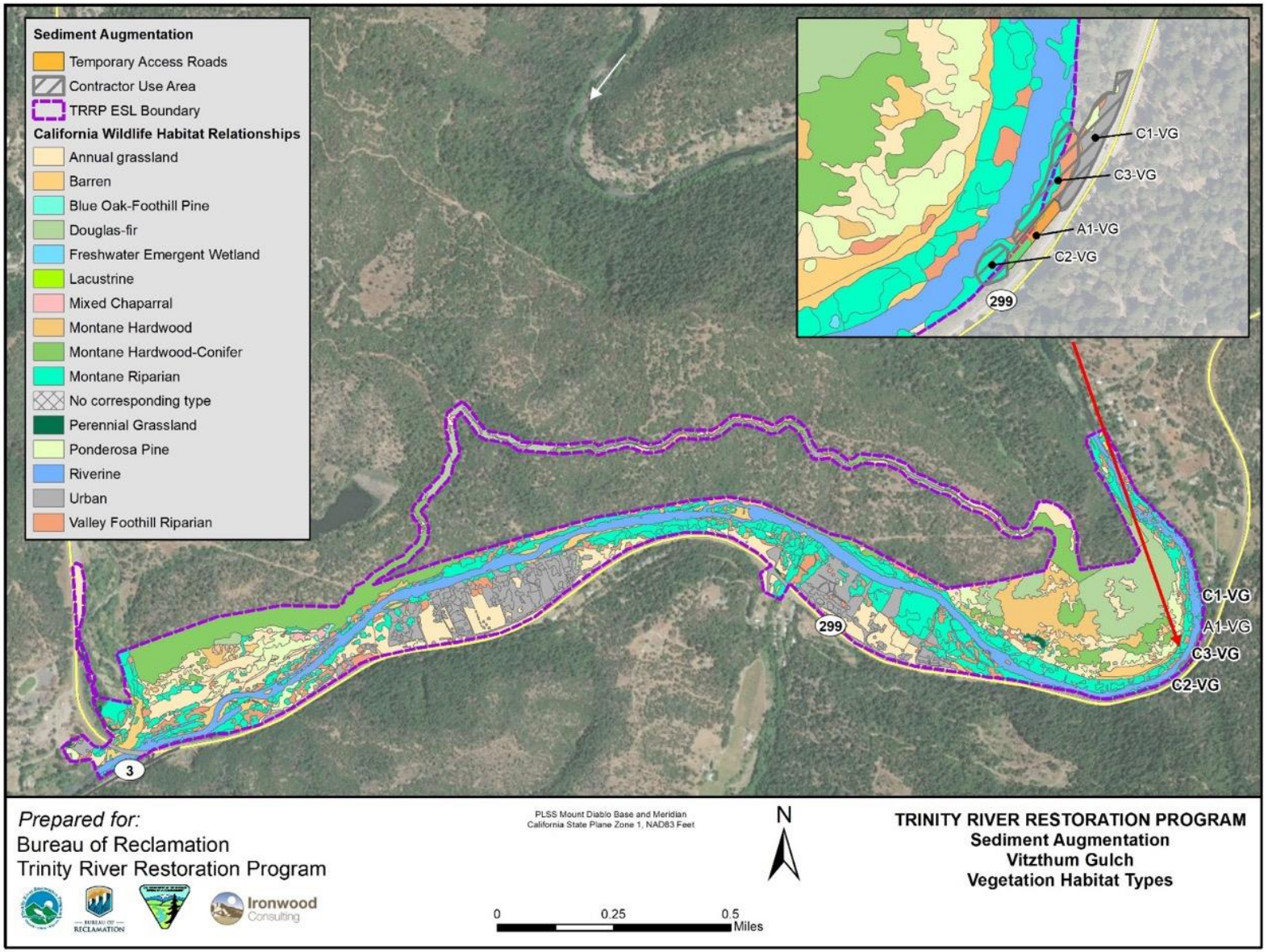

Figure 3-7. Vegetation Cover Types Vitzthum

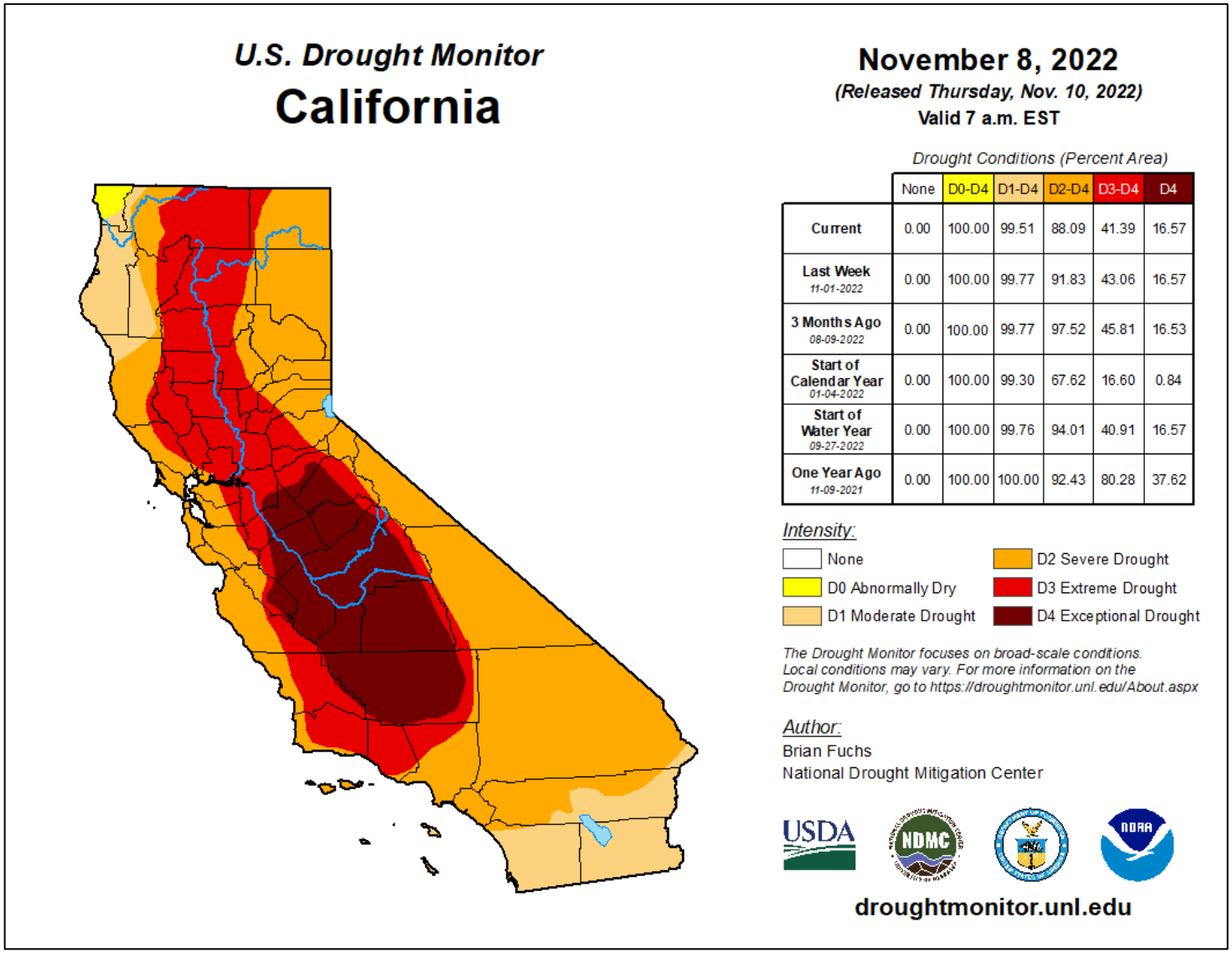

Figure 4-1. California Drought Map (USDA 2023)

Appendix B: Glossary

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).

Active bar. Unvegetated deposits of sediment in the river channel.

Affected environment. Existing biological, physical, social, and economic conditions of an area subject to change, both directly and indirectly, as a result 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 5–24 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.

Existing sediment augmentation sites. Five sites identified in the 2009 Master EIR and included in the 2020 BiOp for long-term winter-spring augmentation. The five sites are Trinity River Hatchery, Sawmill, Weir Hole, Cableway, and Lowden Ranch.

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.

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 cubic feet per second. 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. 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.

Proposed winter-spring augmentation sites. The four sites located at Dark Gulch, Trinity House Gulch, Steel Bridge, and Vitzthum Gulch where new long-term winter-spring augmentation is proposed.

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.

Reach-scale incision. Downcutting of a channel within its bed in a section of 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.

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

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

Subreach. A designated area within a river reach.

Temporal. An effect that lasts for a short period and within a small spatial scale and occurs at various and sometimes repeated periods throughout the duration of a project.

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.

Trinity River Flow Evaluation Final Report (TRFEFR) sediment augmentation reach. The reach identified in the TRFEFR between Lewiston Dam and Rush Creek where sediment augmentation activities were recommended. The Proposed Action would extend the reach where sediment augmentation activities are permitted to Indian Creek.

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.

Winter-spring augmentation period. Under the Proposed Action, the sediment and wood augmentation period that would generally occur between December 1 and May 1, to coincide with synchronized flow releases (October 15 – February 15) and winter elevated baseflow releases (February 16 – April 15). Winter-spring augmentation activities may occur as early as November 1 during extremely wet precipitation periods.

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.

Winter elevated baseflow releases. Increased flow from Lewiston Dam during the period between February 16 – April 15, so support and promote salmon migration, spawning, and rearing conditions

Appendix C: CEQA Environmental Checklist

CEQA ENVIRONMENTAL CHECKLIST FORM

Project Title:	Trinity River Winter-spring augmentation project
Lead Agency Name and Address:	North Coast Regional Water Quality Control Board 550 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 Winter-spring augmentation project.
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)

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 21080.3.1?	**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.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

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

- **No Impact:** No impact to 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 and U.S. Bureau of Reclamation. 2009. Channel rehabilitation and sediment management for remaining Phase 1 and Phase 2 sites. Master Environmental Impact Report, Environmental Assessment/ Environmental Impact Report. Trinity River Restoration Program. August 2009. SCH#2008032110

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

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

Discussion of Impacts

Refer to section 3.5.2 of the EA/IS

Mitigation Measures

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

AGRICULTURE AND FOREST RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, 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
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	No Impact

Question	CEQA Determination
defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	
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

Discussion of Impacts

Not applicable

Mitigation Measures

Not applicable

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

Discussion of Impacts

Refer to section 3.2.2 of EA/IS

Mitigation Measures

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

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, 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

Discussion of Impacts

Refer to sections 3.12.2 and 3.13.2 of the EA/IS

Mitigation Measures

See CEQA mitigation measures for fisheries described in Appendix E 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 E 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].

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

Discussion of Impacts

Refer to section 3.8.2 of the EA/IS

Mitigation Measures

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

ENERGY

Would the project:

Question	CEQA Determination
a) Result in potentially significant environmental impact 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

Discussion of Impacts

Not applicable

Mitigation Measures

Not applicable

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 waste water disposal systems where sewers are not available for the disposal of waste water?	No Impact
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	Less Than Significant with Mitigation Incorporated

Discussion of Impacts

Refer to section 3.7.2 of the EA/IS

Mitigation Measures

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

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

Discussion of Impacts

Refer to section 3.2.2 of the EA/IS

Mitigation Measures

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

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

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.

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 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

Discussion of Impacts

Refer to sections 3.3.2 and 3.4.2 of EA/IS

Mitigation Measures

See CEQA mitigation measures for water quality in Appendix E 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.

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

Discussion of Impacts

Refer to section 3.6.2 of the EA/IS

Mitigation Measures

Not applicable

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

Discussion of Impacts

Refer to section 3.7.2 of the EA/IS

Mitigation Measures

Not applicable

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 groundborne vibration or groundborne noise levels?	Less Than Significant Impact

Question	CEQA Determination
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

Discussion of Impacts

Refer to section 3.10.2 of the EA/IS

Mitigation Measures

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

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

Discussion of Impacts

Not applicable

Mitigation Measures

Not applicable

PUBLIC SERVICES

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

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

Question	CEQA Determination
e) Other public facilities?	No Impact

Discussion of Impacts

Not applicable

Mitigation Measures

Not applicable

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

Discussion of Impacts

Refer to section 3.14.2 of the EA/IS

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 E of the EA/IS: [4.14-1a] and [4.14-1b].

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) Would the project 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

Discussion of Impacts

Refer to section 3.9.2 of the EA/IS

Mitigation Measures

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

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), or	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

Discussion of Impacts

Refer to section 3.8.2 of the EA/IS

Mitigation Measures

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

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 or 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

Question	CEQA Determination
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?	No Impact

Discussion of Impacts

Not applicable

Mitigation Measures

Not applicable

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

Discussion of Impacts

Not applicable

Mitigation Measures

Not applicable

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
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 effects which will cause substantial adverse effects on human beings, either directly or indirectly?	No Impact

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: Aquatic Conservation Strategy

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 Lewiston Dam. This evaluation is for four winter-spring augmentation sites and one sediment processing site between the Lewiston dam and Indian Creek, as described in Chapter 2 of the Environmental Assessment/Initial Study (EA/IS) for the Winter-spring augmentation project.

This document evaluates and determines the consistency of the TRRP activities at the augmentation sites with the Aquatic Conservation Strategy (ACS) in the 1994 Record of Decision (1994 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 Land and Resource Management Plan (STNF LRMP).

The intent of this evaluation is to ensure that decision makers have the information necessary to determine whether the TRRP activities at the winter-spring augmentation sites are consistent with the ACS objectives. This evaluation incorporates information provided in the Mainstem Trinity River Watershed Analysis (U.S. Bureau of Land Management 1993), 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. In order to make the finding that a project or management activity "meets" or "does not prevent attainment" of the ACS objectives, the decision maker must ensure that management actions that do not maintain the existing condition or lead to improved conditions in the long term would not be implemented.

The ACS 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 of its objectives.

The ACS contains four components: riparian reserves, key watersheds, watershed analysis, and watershed restoration. Each component is integral to improving the health of the aquatic ecosystems encompassed by the 1994 ROD. A detailed discussion of these components is provided in the ROD.

[1] The Northwest Forest Plan and ROD can be found at https://www.fs.fed.us/r6/reo/library/.

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.

At some locations on BLM managed lands, land allocations overlap. Standards and Guidelines 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 (LSR), 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 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.

The following sections of this evaluation address the consistency of the TRRP's Proposed Action (Alternative 2) at the Winter-spring augmentation 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 the BLM's Redding RMP. Watershed analyses have been completed by BLM and the Forest Service 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 Winter-spring augmentation sites. Table B-1 at 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 Lewiston Dam, although the Forest Service 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 Winter-spring augmentation project EA/IS.

2.3 Watershed Analysis

The 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 the BLM within the range of the northern spotted owl will be managed to:

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

The project by its nature is intended to restore the landscape processes, specifically the alluvial and riparian functions, that have been impaired by construction of the Trinity River Division of the Central Valley Project. The activities that are proposed on federal lands subject to the ACS are an integral part of the larger project and are intended to assist the 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, many of which include sediment and wood augmentation to address the deficits within the Trinity River system, for a number of years. This project has been designed to help replicate dynamic watershed conditions, wherein wood and sediment within the watershed would be transported naturally, in order to improve the conditions for native fish throuought the watershed. The intent of this project is to assist the 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 address sediment and wood deficits in the Trinity River. The addition of sediment and wood would contribute to the restoration of the aquatic system, including adding surface area and roughness to the shoreline, facilitating the creation of gravel bars and other

features that are natural to, but inhibited in, a dynamic river system; and promoting river substrate conditions to support native fish rearing and spawning.The intent of this project is to assist the 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 at locations where sediment and wood augmentation would take place, along access roads, and where excavation and processing occur.. 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 U.S. 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; 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 Lewiston Dam. The Winter-spring augmentation project would ensure that the coarse sediment fraction of the sediment regime will be replenished on an ongoing basis, consistent with the timing, volume, and rates appropriate for the scaled-down channel. The 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.*

Sediment and wood augmentation would result in increased roughness along the margins and in-channel bars, and would promote the creation and retention of dynamic wetlands along the margins of these features. Placement of large wood will enhance channel complexity and edge habitat. 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.

The introduction of sediment and wood into the Trinity River would help to mimic a more dynamic river system, with diverse wetland establishment along the margins of bars. Woody material of various size classes removed as part of the augmentation activities will be incorporated into the project as appropriate. Placement of large wood will enhance channel complexity and edge habitat. Overall, the placement of wood and sediment 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 Lewiston Dam. The project activities emphasize creation and/or rehabilitation of aquatic and riparian habitat within the boundaries of the Winter-spring augmentation 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 the BLM in attaining this ACS objective.

2.6 Conclusion

Based on this evaluation, BLM finds that the project described in the NEPA decision document has been designed and would be constructed in a manner that does not prevent future attainment of the 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 D-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 Winter-spring augmentation project EA/IS).
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.

Resource	S&G #	Standard and Guideline
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 sidecasting 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.
	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.

Resource	S&G #	Standard and Guideline
	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 to not prevent 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 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 located 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.
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, and other toxicants, and other chemicals shall be applied only in a manner that avoids impacts that retard or prevent attainment of ACS objectives.

3. References

Shasta-Trinity National Forest. 2005. Upper Trinity River Watershed Analysis. USDA Forest Service, Shasta-Trinity National Forest.

U.S. Bureau of Land Management. 1995. Mainstem Trinity River Watershed Analysis.

U.S. Bureau of Land Management. 1993. Redding Resource Management Plan and Record of Decision.

Appendix E: Wild and Scenic River Section 7 Analysis

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS

BLM	U.S. Bureau of Land Management
BMP	best management practices
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CVP	Central Valley Project
CWA	Clean Water Act
EA	Environmental Assessment
EA/IS	Environmental Assessment/Initial Study
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESL	environmental study limit
ESU	evolutionarily significant unit
HVT	Hoopa Valley Tribe
MDB&M	Mount Diablo Base and Meridian
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPS	National Park Service
NTU	nephelometric turbidity unit
ORV	outstandingly remarkable value
Project	Winter-Spring Augmentation project
Reclamation	Bureau of Reclamation
ROD	Record of Decision
ROW	right-of-way
SONCC	Southern Oregon/Northern California Coast
SR	State Route
TMDL	total maximum daily load
TRD	Trinity River Division
TRH	Trinity River Hatchery
TRRP	Trinity River Restoration Program
UKTR	Upper Klamath/Trinity River
USACE	U.S. Army Corps of Engineers
USFS	U.S. Forest Service
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 Winter-Spring Augmentation project (Project; Augmentation project) on the Trinity River between the Lewiston Dam and Indian Creek. The target reach for the five new proposed augmentation sites is between the Sawmill site[1] (about 2.5 miles downstream of the Lewiston Dam) and the confluence of Indian Creek and the Trinity River (augmentation reach).

The Winter-Spring Augmentation project is designed to benefit anadromous fish. Because the Trinity River intersects Bureau of Land Management (BLM) administered lands at the augmentation project sites, the 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 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 fisheries. Under an interagency agreement between the National Park Service (NPS) and the U.S. Forest Service (USFS, the BLM generally has 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.

The proponent for the proposed action at the Winter-spring augmentation sites 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 (NEPA) 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 fisheries 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

[1] The Sawmill site is a channel rehabilitation site, an existing Winter-spring augmentation site, and a gravel/sediment processing site (Figure 1-1 in the EA/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, 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 Winter-spring augmentation sites by implementing the augmentation activities described in detail in Chapter 2 of the EA/IS. All figures and appendices referenced in this document are from the Winter-Spring Augmentation project EA/IS.

The proposed project is needed to enhance existing habitat and to provide conditions that promote salmon and steelhead spawning and rearing in the Trinity River below Lewiston Dam. The purpose of the project is to address the lack of suitable sized sediment through manual augmentation at up to five new potential sites. Sediment augmentation would:

- Provide material to the river that would help create more natural bar, riffle, pool sequences.
- Create bars and pools in the river channel by encouraging the scour and fill processes that form them.
- Provide additional juvenile rearing habitat in the active channel as opposed to floodplain rearing habitat that is only available during high flows.
- Create and maintain spawning beds for redd formation by adult salmon.
- Improve the overall elements of channel complexity.

Implementation of the proposed action would incorporate environmental commitments and project design features to ensure that it is consistent with the BLM's management goals and objectives for the Trinity River under its Redding Resource Management Plan to support management actions intended to enhance the fisheries ORV of the Trinity River. The Project is consistent with the Aquatic Conservation Strategy objectives established by the Northwest Forest Plan.[2]

TRRP has collaborated on the technical aspects of the proposed Augmentation Project with its partner entities: the Hoopa Valley Tribe (HVT), Yurok Tribe, the U.S. Fish and Wildlife Service (USFWS), NMFS, and the California Department of Fish and Wildlife (CDFW). The TRRP partner entities have assisted in development of

[2] 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.

the proposed activities through their participation in the TRRP Physical Work Group and the TRRP Fish Work Group, and through scientific review of the Draft EA/IS. It is intended to improve the conveyance of sediment to mimic natural fluvial processes.

2.3 Geographic Location of the Project

The target reach for the five new proposed augmentation sites is between the Sawmill site[3] (about 2.5 miles downstream of the Lewiston Dam) and the confluence of Indian Creek and the Trinity River (augmentation reach). From upstream to downstream, the proposed augmentation sites are Dark Gulch, Trinity House Gulch, China Gulch, Steelbridge Day Use, and Vitzthum Gulch. Each augmentation site has an environmental study limit (ESL or augmentation site)[4]. The ESLs encompass approximately 499 acres, including 243 acres of BLM land, 5 acres of Reclamation-managed land, 52 acres of State land, 3 acres of municipal services land and 196 acres of private land. 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.

2.4 Duration of the Activities

Activities at the augmentation sites would include improving or constructing access roads; heavy equipment hauling and staging, including heavy machinery associated with sediment processing (e.g., excavators, loaders, conveyor machines, etc.); sediment processing and sorting, hauling and stockpiling sediment; and placing sediment into the river. Sediment augmentation is an ongoing need in the river and would be conducted in perpetuity. The duration of each activity would vary each year.

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 (Chapter 2. of the EA/IS) provides an in-depth description of each activity area's design objectives. Contractor use and access areas for each augmentation ESL have been assigned a unique alphabetic and numeric identification and descriptive label that corresponds to the activity area's type and location illustrated in Figure 2-2 through Figure 2-6.

2.6 Proposed Sediment Augmentation Activities

Sediment augmentation is proposed at up to five new sites on the Trinity River between the existing Sawmill site and the confluence with Indian Creek. The Dark Gulch site is between the Sawmill and Lowden Ranch rehabilitation sites, and the remaining proposed augmentation sites are downstream of Lowden Ranch. Activities

[3] The Sawmill site is a channel rehabilitation site, an existing Winter-spring augmentation site, and a gravel/sediment processing site (Figure 1-1).

[4]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.

at the augmentation sites would include improving or constructing access roads; heavy equipment hauling and staging, including heavy machinery associated with sediment processing (e.g., excavators, loaders, conveyor machines, etc.); sediment processing and sorting, hauling and stockpiling sediment; and placing sediment into the river. Sediment augmentation is an ongoing need in the river and would be conducted in perpetuity.

2.6.1 Access Road Improvement and Construction

Some roads would need to be improved for trucks carrying material to access the river or the designated stockpile area. In other areas, roads would need to be constructed to access the river. Activities may include grading, vegetation removal, reinforcement of slopes, and improvements to existing road conditions. Paving or repairs to existing paved roads may occur to accommodate haul trucks and movement of heavy machinery, and roads would be repaired to original or to a better state following damage that occurs during operations or from excessive wear on county roads due to heavy machinery.

2.6.2 Heavy Equipment Hauling and Staging

Heavy equipment, including excavators, conveyor machines, front-end loaders, and other sediment processing machinery, would be required at all sites for processing and/or placing sediment into the river. Heavy equipment would be hauled or driven to sites using existing, improved, or constructed roads and would be staged on-site during the duration of the augmentation activities.

2.6.3 Sediment Processing and Sorting

Sediment would be processed to achieve the desired size and composition for augmentation. Processing and sorting for sites that lack sufficient tailings piles (e.g., China Gulch, Steelbridge Day Use, and Vitzthum Gulch) would occur off-site at the Sawmill site. Sediment would be hauled to these sites. Processing would occur on-site at augmentation sites where tailings piles and material sources are available for use (e.g., Dark Gulch and Trinity House Gulch, see Section 2.2 of the EA/IS).

Material would be processed to achieve the desired grain size for augmentation based on the site conditions and prescription developed for that site. Processing can remove fine sediment to reduce turbidity during low flows and allows for compliance with CWA Section 401 Water Quality Certification requirements. Processed fine sediment would be stockpiled upslope or used as soil amendments for TRRP revegetation efforts. Generally, the desired sediment diameter for augmentation is approximately 3/8- to 5-in; however, a wider range of sediment size may be required to achieve desired ecological outcomes. Sediment ranging from 1/25-in to 14-in-diameter may be used for augmentation, depending on the restoration objectives and augmentation prescriptions determined by the TRRP (see Section 2.2.1.6 of the EA/IS). The TRRP would use its adaptive environmental assessment and management (AEAM) program, outlined in the Master EIS/EIR, to guide the range of sediment size needed to achieve desired ecological outcomes.

2.6.4 Sediment Hauling and Stockpiling

At most sites, sediment would be hauled from off-site processing locations and stockpiled at the augmentation sites. Transportation of sediment to the augmentation sites would typically occur between the hours of 8 a.m. and 5 p.m., Monday through Friday, excluding holidays. A standard 10-wheel dump truck can transport about 8-10 cy or 12-20 tons of material. TRRP would minimize the impact of trucking to local residents, roads, and neighborhoods. Trucking speeds would be kept slow and hauling schedules would be timed to minimize

residential impacts. If used, county or private roads would be maintained, and public safety would be supported by signage and other safeguards.

Sediment that is processed off-site may be stockpiled at augmentation sites. Stockpiles of material would be located outside of the active channel in locations that are not prone to inundation during high flow events. Material would be staged so that it can be transported and placed in the river or floodplain during augmentation periods (see Section 2.6.5.).

2.6.5 Sediment Placement

Placement of sediment into the active channel of the Trinity River at all proposed augmentation sites would be timed with spring restoration releases (around April 15) or during summer base flow conditions (between July 15 and October 15). Placement of sediment would occur within the floodplain, both within and outside of the active channel. Within the active channel, sediment placement would occur in areas where there are no redds (known locations where salmonids spawn) or spawning salmonids present. In areas outside of the active channel, sediment would be placed in these locations for recruitment during high flow events and would consequently be integrated into the active channel.

The prescribed amount of sediment added at each location would depend on the volume and magnitude of expected river flows during spring restoration releases and could vary between the general guidelines of 50 cy (critically dry year) and 6,000 cy (extremely wet year). Placement could also occur during summer base flow conditions based on augmentation prescriptions by the Physical Workgroup to address sediment deficits. Sediment augmentation would generally range from 500 to 2,000 cy of sediment per year for any of the proposed high flow augmentation sites and/or up to the upper limit authorized by the 2021 BiOp at a given location that does not receive augmented sediments annually.

Processed sediment would be added to the river using a conveyor system or by placing sediment directly into the channel using heavy equipment (e.g., front-end loader or excavator). Machinery would deliver sediment to the river during high or low flows as needed to meet sediment transport and ecological objectives in the river.

Sediment size under the Proposed Action would be between 3/8-in and 14-in diameter with finer sediments placed in the Augmentation Reach of the river just downstream of the Lewiston Dam, and coarser sediment placed at all proposed sites. Fine sediment placement would be to address the lack of sediment input just downstream of the Lewiston Dam (see Section 1.5 of the EA/IS; Buxton 2021) and would be permitted by the Regional Water Board under a CWA Section 401 Water Quality Certification specific to these sites for the input of fine sediments and for all sediment sizes during the spring restoration release period.

3. Baseline Conditions

3.1 Free Flowing Condition

Existing conditions at the Winter-spring augmentation sites have been influenced by historic mining and subsequent flood flow reductions on the Trinity River. The large volume of dredge tailing deposits essentially channelized this reach of the Trinity River and simplified the available habitat for aquatic, riparian, and upland species.

A variety of natural and management disturbance mechanisms have occurred at the site 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 (CVP) 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

Water quality downstream of Lewiston Dam is notably of high quality, and 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. Water releases from the TRD influence flow volumes and velocities, water quality, and channel geometry downstream of 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 (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 rivers under the provisions of Section 303(d) of the Clean Water Act (CWA) 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 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 Lewiston Dam. Additional information on this topic is available for review in Section 3.11.

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 ESL is located between two water temperature monitoring sites, Douglas City and the Trinity River above North Fork Trinity.

Water temperatures in the Trinity River through the ESL are primarily influenced by flows, topography, and aspect. Flows in this reach 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 will 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 reach.

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 nephelometric turbidity units (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 percent above naturally occurring background levels whichever is greater. During in-river construction activities, the TRRP will monitor turbidity levels within 50 feet upstream of project activities (i.e., to serve as the natural background level) and 500 feet 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.

3.3 Outstandingly Remarkable Value: Fisheries

The outstandingly remarkable value identified for this segment of the Trinity Wild and Scenic River is fisheries. The Trinity River is known for fishing opportunities for salmon and steelhead as well as non-native brown trout that were stocked until the late 1970s. Of particular concern, the Trinity River supports the Southern Oregon/North California Coast (SONCC) Coho salmon evolutionarily significant unit (ESU), which was federally listed as threatened under the Endangered Species Act (ESA) in 1997. The Trinity River also supports Klamath Mountain Province steelhead, 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 2018-2019 Season (Kier et al. 2019 available at: https://www.trrp.net/library/document/?id=2450).

3.3.1 Spring-run Chinook Salmon 2019 Status Summary

Spawning escapement above the Junction City Weir was an estimated 8,032 fish, including the 2.488 spring-run Chinook that entered Trinity River Hatchery (TRH) and 4,352 estimated natural area spawners. The escapement of 1,938 natural-origin adults spring-run Chinook was 32.3 percent of the TRRP goal of 6,000. The 2019 run-size estimate is approximately 51 percent of the 39-year average of 15,882. 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 2019 Status Summary

An estimated 26,848 fall-run Chinook migrated upstream of the Willow Creek Weir (WCW) in 2017. The run-size of 4,446 jacks (precocious fish) and 22,402 adult fall Chinook adults comprised an estimated 8,650 natural origin adults, 4,087 natural-origin jacks, 13,752 hatchery-origin adults, and 359 hatchery-origin jacks. An estimated 961 (200 jack and 761 adults) fall Chinook Salmon were harvested, yielding an escapement of 25,887, including the 7,313 fall Chinook that entered TRH and the 18,574 estimated natural area spawners. Escapement of 8,357 natural-origin adult fall Chinook is 13.0 percent of the 62,000 fish TRRP goal.

3.3.3 Coho Salmon 2019 Status Summary

An estimated run-size of 1,486 Coho comprised of 18 natural origin jacks, 42 natural origin adults, 409 hatchery jacks, and 1,017 hatchery adults migrated into the Trinity River basin upstream of the WCW in 2019. A count of 742 entered the TRH, and 744 were identified as natural area spawners. The estimated escapement of 42 natural origin Coho salmon adults was 3.0 percent of the TRRP goal of 1,400 fish. 2019's run-size estimate of 1,486 is approximately 9.5 percent of the 42-year average of 15,633 since 1977. Estimated Coho salmon run size had ranged from 655 in 2017 to 59,079 in 1987.

3.3.4 Fall Steelhead 2019 Status Summary

An estimated 5,885 adult fall steelhead migrated upstream of WCW in 2018. Of those, 157 were estimated to have been harvested by anglers. An estimated 5,728 potential spawners, (2,326 natural-origin and 3,402 hatchery-origin) escaped. In the 34 years for which CDFW has data (since 1980), run-size estimates had ranged from 2,972 in 1998 to 53,885 in 2007. Mean estimated run size for fall adult steelhead in the Trinity River above WCW across the period of record is 14,225 fish. This year's run-size is 41.4 percent of the average. Escapement of 2,326 natural origin adult steelhead is 5.8 percent of the 40,000 fish TRRP goal.

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 the River's ORV, its fisheries. 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 fisheries ORV.

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 off-site changes including:

- Changes that influence other parts of the river system including:
    - Range of circumstance under which off-site 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: Fisheries

To maintain/retore the fisheries, the TRRP is charged with restoring ecosystem function and diverse conditions to support juvenile salmonids. The evaluation criteria for the 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 fisheries 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 Flowing Condition

5.1 How the Activity Will Directly Alter Within-Channel Conditions

5.1.1 Position of the Activity Relative to the Streambed and Streambanks

Consistent with the purpose and need described in Section 2.1 (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 will 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 not result in changes to the river's form and function within of downstream of the ESLs.

5.1.2 Potential Project-Related Changes to Free Flow

5.1.2.1 Active Channel Location

The active channel of the Trinity River within each ESL 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 Lewiston Dam. The project would not impact free-flowing conditions of the Trinity River. Sediment placed into the channel would be transported during high flow conditions and deposited downstream of the augmentation sites.

5.1.2.2 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 addition of sediment into the channel would encourage the development of a more dynamic channel geometry that would increase the amount and quality of instream habitat, especially for juvenile salmonids.

5.1.2.3 Channel Slope

The existing river is low gradient (~0.0009 ft/mile). Sediment that is added to the channel would not measurably impact the channel slope or river gradient. Sediment added to the channel would be transported by river flows downgradient and deposited along the channel, but would not be sufficient in volume to result in an alteration of channel slope or gradient.

5.1.2.4 Channel Form

The fundamental objective of the activities associated with the project is to increase the availability of salmon spawning and rearing habitat. Isolated instances of sedimentation and impacts to downstream wetlands and riparian vegetation may result. The environmental commitments outlined in Table 2-2 and 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.

5.1.2.5 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 issues up to 100 permits for commercial fishing guides along this reach of the river. The Forest Service also issues 13 rafting permits for the river, although most rafting occurs downstream of the ESLs. Visitor use in the ESL is generally light throughout the year, with bank fishermen, drift boats, and rafts occasionally transiting the area.

Temporary augmentation 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 points where sediment will be placed in the river, operation of heavy 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, 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 F, Environmental Commitments, requires Reclamation to post precautionary signage and other public notification warning of in-river sediment placement 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, increased availability of salmonid rearing and spawning habitat 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 will 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

The riparian vegetation along the Trinity River lacks complexity with respect to composition, age structure, and quality. The sand berm that has developed since the TRD was constructed is occupied by homogeneous stands of willow in narrow stringers along the margins of the floodplain. 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 may result in small amounts of riparian vegetation to be removed from the ESLs where augmentation takes place, particularly within contractor use areas and access roads adjacent to the river. The revegetation efforts will be developed in conjunction with BLM botanists and fish biologists to ensure that a complex riparian community becomes reestablished within 5 to 10 years after construction is completed.

5.2.2.2 Relevant Soil Properties Such as Compaction or Percent Bare Ground

The majority of the project reach has 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, several of the ESLs where TRRP rehabilitation projects have been completed (Dark Gulch, Trinity House Gulch, Vitzthum/Indian Creek) constructed design features. 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, enhancing habitat for 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. The project would result in increased volume of sediment in the

river, which may have temporary and localized effects on the width of the channel at and near the augmentation locations, and there may be downgradient effects after high flow events have transported the sediments to other locations along the river. These effects are not likely to be long-term and would mimic the natural pre-dam geomorphic processes, contributing to the natural floodplain properties of the river.

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 1.6 of the EA/IS, much of the augmentation reach has been subjected to some disturbance associated with historic mining activities. The Project would use the "C" (Contractor Use) areas for processing, sorting and stockpiling of sediment that would be used for augmentation, for periods of a few months to a year. "A" (Access Road) areas would be located in uplands and used primarily to transport sediment and heavy machinery, as described in Section 2 of the EA/IS. 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

The composition, age structure, and quantity of vegetation is impacted by boat line dredge piles from the 1930s and 1940s. A small amount of upland vegetation may be removed within C and A areas during project activities. Much of the C areas are open areas where previous disturbances are present or are dominated by non-native species or mine tailing piles. A areas would follow access roads that were established during TRRP rehabilitation project activities (Dark Gulch, Trinity House Gulch) and along existing or previously established road or trail alignments where possible.

5.3.2.2 Relevant Soil Properties Such as Compaction or Percent Bare Ground

The Project would result in some compaction of soils where stockpiling and processing of sediment occurs, and where heavy machinery is operated.

5.3.2.3 Relevant Hydrologic Properties Such as Drainage Patterns or the Character of Surface and Subsurface Flows

The project would not result in changes to drainage patterns, surface flows, or subsurface flows. Stockpiling will occur within the C areas, which may be located within the floodplain, but would not alter the hydrologic properties of the site.

5.3.2.4 Archaeological, Cultural, or Other Identified Significant Resource Values

As described in Section 3.8 (Cultural Resources), 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 On-Site 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. Post-project conditions will promote site-specific morphological responses to changes in the flow within the ESLs 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, provides positive outcomes for long-term river function. Placement of sediment into the channel will mimic the pre-TRD conditions in that it will provide sediment for transport downstream that would have been present before dam construction.

5.4.2.2 The Amount or Timing of Flow in the Channel

The flow regime of this section of the Trinity River is highly influenced by the TRD and releases from Lewiston Dam which provide variable annual instream flows to mimic natural Trinity River flows. The addition of sediment as part of the Project would not have an impact on the timing of flow in the channel and would occur primarily before or during spring restoration releases (around April 15; Primary TRRP Component #3 in ROD) or during the in-channel work period between July and September. (

5.4.2.3 Existing Flow Patterns, Surface and Subsurface Flow Characteristics

The Trinity River is highly regulated through the 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. Where sediment augmentation occurs, flow complexity will increase and provide immediate refuge habitat for many fish species. Within the vicinity of sediment augmentation, long-term gravel bar and instream habitat development will occur and flow variability will increase through all river depths to support long-term habitat.

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 will be increased in the area, it is expected that native riparian plants will quickly recruit to the area.

5.4.2.4 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 sediment augmentation 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. Increased turbidity levels could occur due to the size of sediment being added, and disturbance to existing alluvial material. Fine sediments may be suspended in the river for several hours following augmentation; 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 effect on beneficial uses. 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 in-river sediment augmentation activities, turbidity could occur. The TRRP would monitor turbidity levels within 50 feet upstream (to serve as the natural background level) and 500 feet downstream of the in-river sediment placement (point of compliance). If naturally occurring background levels are greater than 20 NTUs, turbidity levels at the point of compliance would not be allowed to exceed 20 percent above the naturally occurring background level. The off-site effects related to turbidity would only be short-term in duration. 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 salmonid 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 anticipates that floodplain conditions will be created and maintained in the long-term by Trinity River flows.

5.4.3.3 Specify Processes Involved, Such as Water and Sediment, and the Movement of Nutrients

The Project will have effects on how water, sediment (including organic sediment), and nutrient cycling processes occur. Augmented sediment exposed to flowing water would be transported downstream to be deposited on downstream alluvial features as part of the natural riverine processes. As the floodplain improves in terms of form and function, aquatic organisms will move into newly formed in-stream habitats and with the input of organic sediment, there will be more nutrient inputs across the floodplain.

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 sediment augmentation activities will likely be increased by more

than 20 percent above background levels, and short-term plumes extending downstream of restoration activities will be visible. However, turbidity levels will not exceed 20 NTUs at 500 ft downstream of the Project (point of compliance), as permitted by the Water Quality Control Board. If naturally occurring background levels are greater than 20 NTUs, turbidity levels at the point of compliance would not be allowed to exceed 20 percent above the naturally occurring background level. Consequently, turbidity will 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 will 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 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: Fisheries

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. Fisheries 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 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 will 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 this reach, 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 the augmentation of sediments and clearing and grading activities, the improved geomorphic processes of the main channel are expected to help establish and recruit riparian vegetation. Revegetation efforts following construction activities within the ESLs 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 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.

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 short (several hours), and fish can move away from the activity areas. Monitoring turbidity increases during the implementation of previous TRRP projects has shown that periods of increased turbidity are brief (generally less than 24 hours) at monitoring points located 500 feet downstream and that beneficial uses continued to be protected. Furthermore, because the sediment augmentation activities are proposed to occur in five different locations at different points in time, augmentation activities can be managed to minimize turbidity levels for the Project as a whole.

The effects of the Project 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 augmentation 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, and Monument Fire in 2021), it is expected that water quality in the augmentation 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 construction zones, while larger-sized sediments such as coarse sands and gravels tend to drop out of the water column within several feet of the construction zone. The Project's activities could collectively result in short-term increases in turbidity and suspended solids concentrations in the water column yet the incorporation of the environmental commitments listed in Appendix F are intended to limit suspended sediments in the Trinity River.

Channel crossings, if required, at A areas 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 F, Environmental Commitments, 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 Winter-Spring Augmentation project are intended to enhance existing habitat which in turn will provide new salmonid spawning and rearing habitat in the Trinity River below Lewiston Dam. Water temperature in the Trinity River below Lewiston Dam is heavily influenced by flow releases from the dam as well as input from tributaries downstream.

The proposed project activities would temporarily increase turbidity and total suspended solids in the Trinity River. Incorporating the environmental commitments listed in Appendix F, 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 enhance salmonid spawning habitat in the Trinity River above the North Fork Trinity River. 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 within the ESLs and increase sediment delivery potential to the Trinity River.

The Project's rehabilitation activities are intended to improve geomorphic processes and floodplain hydrology over time, which would improve aquatic and terrestrial habitat within the Augmentation Reach with a greater diversity of plant communities, a long-term beneficial effect on riparian vegetation and plant communities. The Project will improve instream salmonid habitat, restoring sediment transport processes within the Trinity River and would improve hydrologic connections across the floodplain, which overtime would improve wetland and riparian habitat throughout the floodplain providing more wildlife habitat. Temporary disturbance of these habitats in the ESLs during project implementation would occur in conjunction with vegetation removal, grading, and other construction activities though adverse effects to vegetation will be minimized.

The Project will minimize adverse effects on vegetation by using previously disturbed sites to stockpile material or deploy the sediment and use existing roads to access the sites. Populations of noxious weeds and invasive plant species will be targeted for new disturbance where needed. During the rehabilitation activities, control measures for invasive plants (e.g., star thistle and Himalayan blackberry), including using weed-free erosion control materials and washing equipment, will be implemented per environmental commitment EC-VW-9 (see Table H-1 in Environmental Commitments) to prevent the spread of noxious weeds in the ESL.

Riparian and wetland habitats would be protected outside the activity areas and would be clearly marked for avoidance in accordance with EC-VW-1 outlined in Appendix F, Environmental Commitments. Special-status plants have not been found in the ESL 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

contractor use 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 U.S. Army Corps of Engineers (USACE) (jurisdictional waters), which include the Trinity River and the wetlands and streams within the ESLs. These potential impacts would not be permanent. However, because of the nature of the Project, it is anticipated that there will 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 within the Project ESLs. These revegetation efforts would follow TRRP's 2016 Draft Riparian Mitigation and Monitoring Plan and would result in the reestablishment of native vegetation in all areas where project disturbance has occurred.

Construction-related effects to wetlands would occur with the implementation of the Project at the high flow augmentation sites. Most effects to riverine and palustrine wetlands would be negligible but approximately 1.3 acres of palustrine emergent wetlands would be affected at Trinity House Gulch at locations where previous TRRP channel rehabilitation has resulted in wetland development along a constructed side channel. Any wetlands disturbed during construction activities would be restored with native wetland plantings following implementation.

Although adverse effects to vegetation would be avoided or minimized by using previously disturbed sites to stockpile material or deploy the sediment and existing roads to access the sites, direct effects on vegetation would occur from construction of new access roads, temporary stockpiling of material, and placement of sediment along the bank of the river. Removal of native plant species would be avoided to the extent possible and disturbance would be targeted toward areas dominated by invasive species where appropriate. Annual, mostly non-native grassland would have the greatest impact across all sites with a total direct effect on about 7 acres. Restoration of grasslands is considerably easier and requires less time than restoration of woody habitat types. Revegetation would consist of live-stakes of willows, cottonwoods, and red-osier dogwoods. Oregon ash will 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 in deep layers of fill material used to construct the upland plug. In addition to the woody plantings, native herbaceous plants (forbs and graminoids) will be seeded to provide additional native plant diversity, cover, and prevent invasive, exotic species colonization. An upland seed mix and a riparian seed mix for the floodplain will be used. This revegetation design represents the surrounding vegetation communities and provides a buffer to complement and protect remnant riparian vegetation.

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 expected to enhance redd and spawning activities. In-river placement of sediment 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 (BiOp), which describes the

implementation strategies and conservation measures that will be employed during sediment augmentation activities.

NMFS 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 (NMFS 2006).

7.3.1 Geomorphic Condition (Sediment Transport and Substrate Quality)

The augmentation reach is 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. Dredge tailings piles occupy up to 75 percent 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 feet 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 9000 cfs due to confinement by the tailings piles on the right bank.

Millions of cy of mining debris were discharged from hydraulic mining over a 60-year period ending in the 1930s. Mineral resources at the high flow augmentation sites consist primarily of gravel and cobble. 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 1950s. The channel and associated alluvial features of the Trinity River were dredged extensively and Placer gold mining of alluvial gravel has left tailings deposits of different types that are apparent throughout the high flow augmentation sites. 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

The Project will directly amend the floodplain substrate with cobble, gravel, and other mineral materials associated with alluvial and dredge tailings deposits from any of the processing, augmentation, or rehabilitation sites. 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

As the floodplain improves in terms of form and function, aquatic organisms will move into newly formed in-stream habitats and with the input of organic sediment, there will be more nutrient inputs across the floodplain..

7.3.4 Condition of Aquatic Invertebrate, Amphibian, and Mollusk Habitat

Improvement of geomorphic conditions across the floodplain and the addition of sediment will improve conditions for aquatic invertebrates, amphibians, and mollusks.

7.3.5 Species Composition and Diversity

The Project is expected to increase species composition and diversity and in 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 spawning and rearing habitat, 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 salmonids 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

The intent of the Project is to enhance existing instream salmonid spawning and rearing habitat in the Trinity River below Lewiston Dam. The purpose of the project is to address the lack of suitable sized sediment through manual augmentation at up to four new potential sites. Sediment augmentation would:

- Provide material to the river that would help create natural bar, riffle, pool sequences.
- Promote scour and fill processes that form bars and pools in the river channel.
- Provide juvenile salmonid rearing habitat in the active channel as opposed to floodplain rearing habitat that is only available during high flows.
- Create and maintain spawning beds for redd construction by adult salmonids.
- Increase the topographic complexity of the river channel.

7.5 Resident Fish Species

It is assumed that improving instream habitat conditions for salmonids through sediment augmentation would also benefit resident fish species by expanding habitat complexity and reconnecting off-channel habitats across the floodplain.

7.6 Species Traditionally Used By, and Culturally Important To, Native Americans

The need to restore and maintain the natural production of salmonids 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 CVPIA

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.

Salmonids, 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 Yurok and Hoopa Valley tribes' 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 Hoopa Valley and Yurok tribes, 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 Winter-Spring Augmentation project would continue to support tribal trust assets. The short-term impacts described in sections of the EA/IS pertaining to geology, fluvial geomorphology, and soils; water quality; fishery resources; and 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. Time Frame 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, improvements to salmonid instream habitat quality are anticipated. The first significant precipitation event following implementation is when streamflow 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 Record of Decision (RMP) (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 within the ESLs. As part of its decision-making process, BLM must evaluate the consistency of the Project 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 Winter-Spring Augmentation project is a restoration project located in part on lands managed by the Bureau of Land Management (BLM). An Environmental Assessment / Initial Study (EA/IS) was prepared by two federal agency co-leads—Reclamation's Trinity River Restoration Program (TRRP) and the BLM. The California Regional Water Quality Control Board (North Coast Region) serves as state lead for compliance with the California Environmental Quality Act. Included in the EA/IS is an analysis of the Project's consistency with the Wild and Scenic Rivers Act.

Based on the EA/IS findings and considering the direction established by the BLM Resource Management Plan, we have determined that the Winter-Spring Augmentation project would have minimal short-term adverse effects related to turbidity and immediate and long-term benefits to salmonids and their habitat. There will be no direct and adverse effects on free-flowing conditions, water quality, or the Outstandingly Remarkable Value of fisheries.

The scale of the Winter-Spring Augmentation project is small when viewed at the watershed scale. It is an element of the TRRP's program to improve habitat for salmonids and other aquatic and riparian-dependent organisms within the 40-mile section of the Trinity River downstream of Lewiston Dam. Scenic values would not be degraded by the activities associated with the Project; Section 3.5 provides additional information on visual resources and aesthetics.

Implementation of the Winter-Spring Augmentation 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 fisheries Outstandingly Remarkable Value.

Jennifer Mata — Date
Redding Field Manager
Bureau of Land Management

Appendix F: Public Scoping Documents

PUBLIC SCOPING AND MATERIALS

Introduction

Under the current gravel augmentation program (now referred to as sediment augmentation), TRRP augments sediment at five sites below Lewiston Dam on the Trinity River (Figure 1-2 in the EA). On March 17, 2022, TRRP released a public scoping announcement to request input from the public on the proposal to add as many as nine new gravel augmentation sites on the Trinity River that will be analyzed in an Environmental Assessment. From upstream to downstream, the new proposed sites included Dark Gulch, Bucktail Upstream, Bucktail Boat Ramp, Bucktail Hole, Trinity House Gulch, China Gulch, Steelbridge Pier, Steelbridge Day Use, and Vitzthum Gulch (Figure 1 in the Scoping Flyer below). The public scoping period was open from March 17 to April 17, 2022, and the public was invited to provide comments by mail or email to TRRP staff. A public scoping meeting was not held for the gravel augmentation 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 and Reclamation websites and at the TRRP Weaverville office and BLM Redding Field Office. Hardcopy scoping notices were also mailed and emailed 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 on pages D-4 though D-9. This appendix provides the scoping material and results of the public scoping phase of the Environmental Assessment.

New Gravel Augmentation Sites – Proposed for 2023

Project Background

The Trinity River Restoration Program (TRRP or Program) is beginning a 30-day public scoping period to announce and explain the need to develop additional gravel augmentation sites upstream of Indian Creek on the Trinity River mainstem. We now request input from stakeholders and interested parties.

Following the 2000 Record of Decision (ROD), the U.S. Department of Interior (DOI) established TRRP to restore the fisheries of the Trinity River affected by dam construction and related diversions of the Trinity River Division of the Central Valley Project[1].

Administered by the U.S. Bureau of Reclamation (Reclamation), the TRRP is a partnership of federal and state resource agencies, Tribes, and Trinity County. The Program works to restore the processes and attributes of a properly functioning river to support the recovery of diminished salmon and steelhead populations while retaining Trinity and Lewiston dams' deliveries of water and power to California's Central Valley.

Photo 1. Gravel augmentation near Trinity River Hatchery in summer 2021.

There are five primary components of TRRP's river restoration work:

1. **Variable annual instream flows**: releasing water from Lewiston Dam, based on the water year type[2], to mimic natural Trinity River flows and interact with downstream areas to enhance conditions for all life stages of fish and wildlife. These variable annual instream flows are also known as "restoration releases."
2. **Channel rehabilitation**: reconnecting the river to functional and complex floodplains, side channels, and alcoves, and promoting alternate bar sequences and low-velocity habitat for salmonid fry. Channel rehabilitation also increases instream habitat complexity and enables the river to return to a more self-supporting alluvial system in both treated and untreated areas.
3. **Sediment management**: reintroducing gravel (aka coarse sediment) to the river. Gravel augmentation replenishes spawning areas for salmon and provides other habitat benefits. Gravel entering the river system upstream of the dams is blocked from being transported to the Trinity River below Lewiston Dam, creating a gravel deficit over time. TRRP resupplies the river with gravel to counterbalance the

[1] https://www.usbr.gov/mp/cvp/

[2] TRRP uses five water year types to determine how much water will be available to the Trinity River each year. The five water year types are: Critically Dry, Dry, Normal, Wet, and Extremely Wet. A wetter water year means more water is available for restoration flow releases.

Dam's impact on gravel supplies that would otherwise be provided naturally. Current analyses show that gravel augmented by TRRP does not transport as far downstream as originally anticipated. Thus, these additional augmentation sites are under consideration to mitigate the ongoing gravel deficit in parts of the river.¶

4. **Watershed restoration**: reducing the impact of land management activities in tributary basins (i.e., streams) of the Trinity River, primarily by controlling fine sediments that can harm aquatic life and by addressing barriers to fish passage in those tributaries.¶

5. **Adaptive management**: monitoring river restoration actions, evaluating the outcomes from those actions, and informing methods to improve the effectiveness of future management actions.¶

TRRP proposes to expand the number of areas permitted for sediment management (Primary TRRP Component #3) in the Trinity River above the confluence of Indian Creek. A deficit of sediment (gravel and small cobble) occurs because Trinity and Lewiston dams not only trap water but also the supply of gravel and cobble from upstream areas. Gravel, cobble, and fine sediment supplied by the river's tributaries, like Rush Creek, Deadwood Creek, and Indian Creek, for example, help balance the river's ability to transport material to downstream areas. With a substantial portion of the watershed blocked by the dams that would otherwise supply sediment to the Trinity River, the river section closest to Lewiston Dam (near River Mile [RM] 112; Figure 1) transports gravel and cobble quicker than the river can naturally replace it. Trinity River analyses indicate that the deficit of gravel and small cobble extends downstream to Indian Creek[1] (at RM 94), but current TRRP augmentation sites cannot adequately transport gravel throughout that section of river[2]. After the confluence of Indian Creek, other tributaries like Reading Creek, Weaver Creek, and Browns Creek supply enough gravel and small cobble to balance the "sediment budget." For that reason, TRRP proposes new augmentation sites upstream of Indian Creek only.¶

Augmentation helps to restore healthy river attributes to the dammed Trinity River. In a natural river system, a river's channel bed is frequently mobilized during high flows. When the gravel and small cobble of the riverbed is mobilized, gravel and cobble bars are scoured and redeposited. Augmentation is intended to increase the availability and quality of physical habitat in the river channel by promoting scour and fill processes that, through flow, maintain bars, pools, juvenile rearing habitat, spawning beds, and other elements of channel complexity. As long as the dams are in place, there will be a need to add material (e.g., gravel and wood) that would otherwise be provided naturally from the blocked watershed area above the dams.¶

The purpose of this notice is to invite you to provide input, site-specific suggestions, or concerns you may have about the project during a public scoping period, pursuant to 40 CFR § 1501.9[3]. This scoping notice includes a general description of the New Gravel Augmentation Sites (Proposed Action), with options, and the purpose and need of the project to encourage your informed participation.

Page Break¶

[1] Active gravel bar area is especially low in the mainstem Trinity River between Grass Valley Creek and Indian Creek (https://www.trrp.net/library/document/?id=2521).¶

[2] Gaeuman (2020) reported that a large share of the gravel introduced into the river deposited close to the augmentation points. (https://www.trrp.net/library/document/?id=2464).¶

[3] Council on Environmental Quality (CEQ) National Environmental Policy Act Implementation Regulations. 40 CFR Parts 1500–1508 (2020).¶

New Gravel Augmentation Sites Goals and Objectives

Currently, TRRP augments gravel at five permitted sites below Lewiston Dam (Figure 1). For augmentation purposes, we propose to add as many as nine new sites. From upstream to downstream, the new sites being investigated include Dark Gulch, Bucktail, Trinity House Gulch, China Gulch, Steelbridge, and Vitzthum Gulch (Figure 1). The potential benefits of augmenting in new areas of the Trinity River upstream of the confluence of Indian Creek include:

- Providing material to the river that will create a more natural bar, riffle, pool sequence.
- Creating bars and pools in the river channel by encouraging the scour and fill processes that form them.
- Providing additional juvenile rearing habitat in the river channel as opposed to floodplain rearing habitat that is only made available during high flows.
- Creating and maintaining spawning beds for redd formation by adult salmon.
- Improving the overall elements of channel complexity.

Photo 2: Chinook over spawning gravel (photo credit Thomas Dunklin).

General Description of Proposed Action

Gravel would be introduced in proximity to proposed new gravel augmentation sites based on site specific annual recommendations from the TRRP's Physical Workgroup (https://www.trrp.net/gravel-physical-workgroups/). While annual gravel placement recommendations would depend on the water year, location, and site specific needs, in general, gravel from 0.375 inch to 5 inches in diameter would be added during winter or summer placement. Gravel additions would generally range from 500 to 2000 yds (50 to 200 trucks full) at a location.

Depending on access agreements reached with local landowners at proposed locations, gravel would be trucked into sites for winter or summer placement, or processing of local material (e.g., tailings piles) may provide gravel in some proposed locations without trucking. Gravel augmentation might also include larger cobbles to support long term gravel bar development and habitat in the area.

Depending on the source of gravel to be added, TRRP would work with locals to minimize the impact of trucking on their neighborhoods. Trucking speeds would be kept slow and hauling schedules would be timed to minimize residential impacts. If used, County or private roads would be maintained, and public safety would be supported by signage and other safeguards.

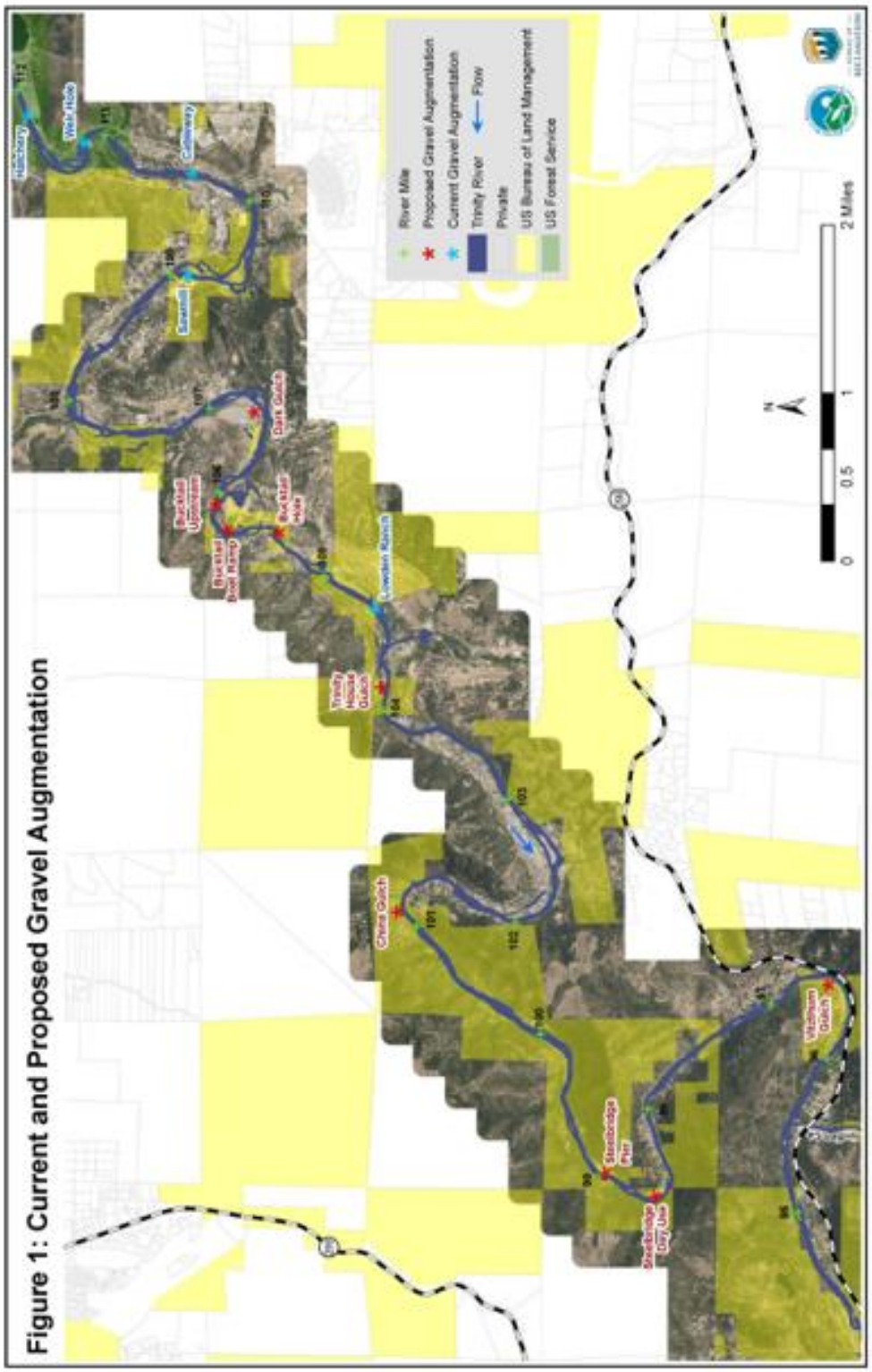

Figure 1. Map of current augmentation sites (in blue) and proposed augmentation sites (in red).

Possible Impacts

The Public Draft EA for this proposed management action will address potential impacts to:

- Water clarity during placement
- County maintained roads and the public during gravel transportation through neighborhoods along the river
- Local communities from noise during rock processing and placement
- Cultural resources and historic properties
- The fishery, wildlife, vegetation, and wetlands
- Other impacts determined during analyses and scoping

Proposed Project Schedule

To Comment on this Gravel Augmentation Scoping Proposal:

- Please provide all comments by April 17, 2022, to be fully considered by TRRP staff.
- Send your comments via **mail** to:

  Gravel Augmentation Sites Scoping
  C/O TRRP
  P.O. Box 1300
  Weaverville, CA 96093

- OR send your comments via email to info@trrp.net. Be sure to include the word GRAVEL in your email's subject line.

Public Scoping:

March 17 – April 17, 2022

Draft EA for public comment:

Fall 2022

Final EA and Decision:

Fall-Winter 2022 – 2023

Proposed implementation:

Use of newly permitted augmentation sites for processing mine tailings or placing rock in the river could begin as early as winter 2022/2023.

Page Break

How to Participate in the Gravel Augmentation Sites Scoping Process

The TRRP is seeking information or analysis related to authorizing additional gravel augmentation sites on the Trinity River upstream of Indian Creek. All comments submitted via mail and email will be considered. Full citation of referenced literature is requested to ensure and expedite its retrieval. After the scoping comment period, TRRP will review the scoping comments and determine key issues.

Project information and updates are available at https://www.trrp.net/restoration/gravel-augmentation/sites/. Send your comments via mail or email to the addresses above. For all submittals, please include "Gravel Augmentation Sites Scoping Comment" in the subject line and the following information:

- Your name and address (telephone and email address are also suggested)
- Project-specific comments about the Proposed Action. Please include supporting information that would help identify issues, develop alternatives to respond to those issues, or predict the environmental effects of the proposal.

Comments received will be considered part of the public project record for this proposal.

Scoping Results

During public scoping for this project, TRRP received 10 comment submissions (eight emails and two letters) from nine different individuals or groups. The comment submissions were read for substantive comments about the proposed project. Nine basic themes were identified across the commenter submissions:

1. Concern about access to the China Gulch Augmentation site along Poker Bar Road
2. Concern about the impact of the project on residents along the river (traffic, noise, dust, costs, etc.)
3. Concern the project will have adverse effects on the fishery and the condition of the river
4. Concern that other impacts on fishery (gill-netting and silt impacts) outweigh the benefits of the gravel augmentation
5. Concern about the impact on existing rehabilitation sites
6. Concern the project will worsen river conditions based on prior restoration projects
7. Proposed another action
8. Proposed construction methods or mitigative measures (for landowner impacts)
9. Requested additional information about the project

Comment themes and corresponding comments for each individual or group of commenters are summarized in Table F-1.

Table F-1. Summary of Scoping Comments by individual or group of commenters

Commenter or Group of Commenters	Comment Theme	Specific Comment or Question	Section of EA where comment is addressed
Breitmun, Molly (Trinity County Resource Conservation District)	Comment theme 9: Requested additional information about the project	I'd like to learn about the quantitative and qualitative benefits of the Trinity and Lewiston Dams. If I knew more about the benefits, I might be more open to gravel augmentation as a band aid to the dams' negative impacts.	1.5
Carmona, Averil	Comment theme 1: Concerned about access to the China Gulch site along Poker Bar Road	How can you get gravel to China Gulch? There are no truck compatible roads to that location. The top part of Poker Bar Road is County; the last mile is private. The private road ends at private property, it does not extend to the river. The private Road is chip sealed and maintained with annual road dues by the property owners. Even with the little amount of wear and tear from the regular owners' vehicles, it is very hard and costly for us to keep the road maintained. It quickly develops potholes. Trucks would demolish it in a hurry, just like the county road was torn up when they built the bridge on Bridge Road and TRRP had to pay for repaving the County Road.	3.9.2
Cole, J. Michael and Cole, Lois	Comment theme 1: Concerned about access to the China Gulch site along Poker Bar Road	Poker Bar Road to access the river from highway 299 is steep and narrow and will create a hazard to residents, not to mention noise and dust. The last half mile of Poker Bar Road is privately owned by the Poker Bar Association, and you would need approval from the majority of the residents to access the construction site.	3.9.2
	Comment theme 4: Concern that other impacts on fishery (gill-netting and silt impacts) outweigh the benefits of the gravel augmentation	There is no sense in building spawning beds when you have the deep holding holes filling with silt. There is no sense in building spawning beds when gill-netting is allowed in the river.	Outside of the scope of the EA/IS

Commenter or Group of Commenters	Comment Theme	Specific Comment or Question	Section of EA where comment is addressed
Greenen, Brian	Comment theme 1: Concerned about access to the China Gulch site along Poker Bar Road	I am concerned about river access for the proposed 50 to 200 truckloads round trips it will take to deposit the gravel at China Gulch. Approaching China Gulch from south of the river requires using Poker Bar Road, which is a private road that in its current condition, simply cannot safely handle the truck traffic. Approaching China Gulch from north of the river seems problematic due to steep terrain and where all the downed wood and brush could easily feed a wildfire resulting from a spark or other ignition source during this activity in a remote and hard to defend area.	2.2.2.1, 3.9.2
	Comment theme 9: Requested additional information about the project	Is it correct that the gravel augmentation is planned for the north side of the river?	2.2.2
Merritt, Terry	Comment theme 1: Concerned about access to the China Gulch site along Poker Bar Road	If you do transport cobble down Poker Bar Road, both county and private portions, you should be aware that these chip seal roads are not designed to take heavy loads, and any excessive water or damage must be compensated for.	3.9.2
	Comment theme 2: Concerned about the impact of the project on residents along the river (traffic, noise, dust, costs, etc.)	In some cases, the river restoration projects have caused harm to people that live along the river.	3.2.2, 3.9.2, 3.10.2
Raneri, Michael	Comment theme 2: Concerned about the impact of the project on residents along the river (traffic, noise, dust, costs, etc.)	My intended use for the property is to support fly fishing recreation through a private camping area and flyfishing club. My concerns are how this project would damage that objective. Clearly improving fisheries are aligned with my plans, however, protracted periods of noise, gravel creation, staging, storage, trucking insertion methods and land scaring in the area would not. Having a site and a boat ramp, just upstream from my property, and the Dark Gulch site, I have some concerns on	3.2.2, 3.9.2, 3.10.2 The Upper Bucktail site was eliminated as a potential augmentation site.

Commenter or Group of Commenters	Comment Theme	Specific Comment or Question	Section of EA where comment is addressed
		the impact given the locations of the gravel augmentation sites that surround me. I have concerns about the Upper Bucktail insertion site and the scaring and vegetation damage it could cause due to trucking and heavy equipment.	
	Comment theme 5: Concerned about the impact on existing rehabilitation sites	I also have concerns about the disruptions to newly created channels to get to the insertion site. The area directly in front of my property is currently an active spawning area, and I assume the science would suggest that the gravel would improve that. However, wanted to be sure it did in the short term as well as the long term. To access the Upper Bucktail site, you need to traverse the rehabilitation site re-vegetation area and channel or cross my property.	The Upper Bucktail site was eliminated as a potential augmentation site.
	Comment theme 8: Proposed construction methods or mitigative measures (for landowner impacts)	1. Gravel should be crushed off site and trucked in to avoid the noise, machinery 2. Gravel should not be staged/stored river side and pushed in via a dozer from the bank, but directly inserted into the main channel via a loader or backhoe to reduce bank scarring. 3. Access the Upper Bucktail point from the north side, crushing and staging the rock to make the gravel at the Gold Bar, Dark Gulch site. Then truck the crush gravel down along the river to the Upper Bucktail site. Insertion vis loader using the direct insertion method into the main channel from the north side of the river. 4. If you access the upper bucktail point on the south side, on BLM land below the pond, parallel to my property line, it is done in such a way that the exit channel of the	Section 3 of the EA/IS discusses minimization, avoidance, and mitigation measures for each resource. Appendix E discusses mitigation measures. The Bucktail sites were eliminated as potential

Commenter or Group of Commenters	Comment Theme	Specific Comment or Question	Section of EA where comment is addressed
		pond is crossed in one place, perpendicular to the channel and repaired to reestablish the channel to its current state. Alternatively, the potential use of a temporary bridge. 5. I am open to discuss access to the "Upper Bucktail through my property and provide an area for the staging of the pre crushed gravel to make tt easier to use a loader to place the gravel in the channel. 6. Limit operations for the effort at the Upper Bucktail access point. to no more than 30 days in the spring no earlier than 3/20 or later than 5/15. 7. Ensure the gravel insertion at the boat ramp does not disrupt the Bucktail boat ramp access for more than 30 days in the spring and no earlier than 3/20 or later than 5/15.	augmentation sites.
	Comment theme 9: Requested additional information about the project	1. Where will the gravel be crushed, stored and transported to on the Upper Bucktail site? 2. Which side of the river will you access the site for the insertion? 3. How will it be inserted? 4. What is the time span of the insertion period? 5. When will they specifically take place in the calendar year? 6. Why is the TRRP proposing gravel up to 5 inches in diameter when the recommendation is for a maximum of 4 inches in the conclusion of the WY2016-17 Trinity River Augmentation Monitoring Report?	2.2
Tamplen, Ken and Branagen, Sue	Comment theme 3: Concerned the project will have adverse effects on the fishery and the condition of the river	We annually observe salmon building their redds and spawning. It would be an environmental disaster for you to do gravel augmentation in this area. The China Gulch tributary is running year-round and is a thriving and healthy environment. By introducing gravel in	3.13.2

Commenter or Group of Commenters	Comment Theme	Specific Comment or Question	Section of EA where comment is addressed
		this area, you could destroy the natural bend in the river causing erosion and destroy the wildlife habitat and fisheries that you say you want to protect.	
Triska, Mark	Comment theme 3: Concerned the project will have adverse effects on the fishery and the condition of the river	We have seen firsthand how the increased gravel dumping actually makes much of the habitat shallower and provides less cover for spawning fish. Much of the gravel washes downstream and fills spawning beds and holes.	3.13.2
	Comment theme 7: Proposed another action	Take down the two dams blocking miles of historic spawning habitat. Stop sending water over the hill to people who used to farm but now simply resell their water to others. Allow the river to flow naturally. Better regulate the Native American take of salmon and steelhead, via netting etc. Before you proceed to further destroy the existing fish habitat by doing more in stream destruction and adding more gravel in to the stream, TRRP needs to look at ways to enhance the river flow during these critically dry years and encourage the fish population to get as far upstream as possible in the existing river configuration.	Outside of the scope of this EA/IS.
White, Jim	Comment theme 2: Concerned about the impact of the project on residents along the river (traffic, noise, dust, costs, etc.)	All this for fish? Go ahead and talk to the guides, talk to those that live on the water. Now more gravel? More noise, dust, traffic, money? It's insane!	3.2.2, 3.9.2, 3.10.2
	Comment theme 6: Concerned the project will worsen river conditions based on prior restoration projects	A few years back, TRRP spent tens of thousands of dollars in order to move some seep wells so a side channel could be constructed. Gravel was introduced upstream prior to releasing water, 10,000 cfs. The flows picked up the cobbles, blew out the bottom of the new channel, created a dam at the mouth of the new channel and moved the river forty yards away. Water went from abundant to choosing to do laundry or taking a shower but not both!	1.5

Appendix G: Mitigation Monitoring and Reporting Program

1. Introduction

The first part of this appendix comprises the Mitigation Monitoring and Reporting Program (MMRP) for the Trinity River Winter-Spring Augmentation Project (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 impacts by limiting the degree or magnitude of the action and its implementation;
- rectifies the impact by repairing, rehabilitating, or restoring the impacted environment;
- reduces or eliminates the impact over time by preservation and maintenance operations during the life of the project; and
- compensates for the impacts 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.

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

3. 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.

4. 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.

5. 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
- Management of the preparation and filing of monitoring compliance reports
- Maintenance of records concerning the status of all approved mitigation measures

6. Summary of Monitoring Requirements

Table G-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 G-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 (tasks):** Documents which agency or entity is responsible for implementing a mitigation measure and what, if any, coordination is required (e.g., approval from Caltrans). If more than one party has responsibility under a given mitigation measure, the tasks of each individual party is identified parenthetically (e.g., "implementation" or "monitoring").
- **Verification:** Provides spaces to be initialed and dated by the individual responsible for verifying compliance with each specific mitigation measure.

7. 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 G-1. Summary of Mitigation Monitoring Requirements

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

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
▪ Discourage noxious weed competition and control noxious weeds. ▪ Clear or remove roots from steep slopes immediately prior to scheduled construction. ▪ Leave drainage gaps in topsoil and spoil piles to accommodate surface water runoff. ▪ To the fullest extent possible, cease excavation activities during significantly wet or windy weather. ▪ Use bales, wattles, and/or silt fencing as appropriate. ▪ Before seeding disturbed soils, work the topsoil to reduce compaction caused by construction vehicle traffic. ▪ Rip feathered edges (and floodplain surfaces where appropriate) to approximately 18 inches deep. The furrowing of the river's edge will remove plant roots to allow mobilization of the bed, but will also intercept sediment before it reaches the waterway. ▪ Spoil sites will be located such that they do not drain directly into a surface water feature, if possible. If a spoil site would drain into a surface water feature, catch basins will be constructed to intercept sediment before it reaches the feature. Spoil sites will be graded and vegetated to reduce the potential for erosion. ▪ Sediment control measures will be in place prior to the onset of the rainy season to ensure that surface water runoff does not occur. Project areas will be monitored and maintained in good working condition until disturbed areas have been revegetated. If work activities take place during the rainy season, erosion control structures must be in place and operational at the end of each construction day.			
Impact 4.3-3: Implementation of the project would interfere with existing, proposed, or potential development of mineral resources.			
4.3-3a Reclamation will implement the following measures during construction: ▪ Areas where ground disturbance would occur will be identified in advance of construction and limited to only those areas that have been approved by Reclamation. ▪ All vehicular construction traffic will be confined to the designated access routes and staging areas. ▪ Disturbance will be limited to the minimum necessary to complete all rehabilitation activities. ▪ 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.			

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

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
zone of dilution shall not be increased by more than 20 percent above the naturally occurring background level.			
4.5-1b To ensure that turbidity levels do not exceed the thresholds described above (4.5-1a) during in-river project construction activities, Reclamation shall monitor turbidity levels upstream within 50 feet of project activities (i.e., natural background) and 500 feet downstream of the in-river construction activities that could increase turbidity. At a minimum, field turbidity measurements shall be collected whenever a visible increase in turbidity is observed. Monitoring frequency shall be a minimum of every two hours during in-river work periods and when activities commence that are likely to increase turbidity levels above any previously monitored levels. If grab sample results indicate that turbidity levels exceed 20 NTU at 500 feet downstream from construction activities, remedial actions will be implemented to reduce and maintain turbidity at or below 20 NTU immediately downstream of the 500 linear foot zone of dilution. Potential remedial actions include halting or slowing construction activities and implementation of additional BMPs until turbidity levels are at or below 20 NTU.			
4.5-1c Fill gravels used on the streambeds, stream banks, and river crossings will be composed of 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.			
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.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
▪ 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.			
Impact 4.5-3: Construction of the project could cause contamination of the Trinity River from hazardous materials spills.			
4.5-3a Reclamation will prepare and implement a spill prevention and containment plan in accordance with applicable federal and state requirements.			
4.5-3b Reclamation will ensure that any construction equipment that would come in contact with the Trinity River be inspected daily for leaks prior to entering the flowing channel. External oil, grease, and mud will be removed from equipment using steam cleaning. Untreated wash and rinse water must be adequately treated prior to discharge if that is the desired disposal option.			
4.5-3c Reclamation will ensure that hazardous materials, including fuels, oils, and solvents, not be stored or transferred within 150 feet of the active Trinity River channel. Areas for fuel storage, refueling, and servicing will be located at least 150 feet from the active river channel or within an adequate secondary fueling containment area. In addition, the construction contractor will be responsible for maintaining spill containment booms onsite at all times during			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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 time period that could affect spawning spring- and fall-run Chinook salmon, coho salmon, and steelhead, or their embryos once in the gravel. As directed by the 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, best management practices (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-inches diameter) from a local Trinity River basin source. Gravel will be processed to remove any silts, sand, clay, and organic matter and will be free of contaminants, such as petroleum products.			
Impact 4.6-2: Implementation of the project could result in increased erosion and sedimentation levels that could adversely affect fishes, including the federally and state listed coho salmon.			
4.6-2a The water quality objective for turbidity levels in the Trinity River, as listed in the Basin Plan for the North Coast Region (North Coast Regional Water Quality Control Board 2007), is summarized below. ▪ Turbidity levels shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof. ▪ Due to the nature of the proposed restoration activities and the clarity of 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-			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
effective manner that fully protects beneficial uses without resulting in a violation of the water quality objective for turbidity. ▪ Project activities that occur in areas outside of the active river channel will not increase turbidity levels by more than 20 percent above naturally occurring background levels. During in-river construction activities and until the first extended period of post-construction high flow (i.e., flows of at least 6,000 cfs inundate the project areas and floodplain for a minimum of 7 days) a zone of turbidity dilution within which higher percentages would be tolerated will be defined in discharge permits as the full width of the river channel within 500 linear feet downstream of any project activity that increases naturally occurring background levels, provided that all other required controls and appropriate BMPs for sediment and turbidity control are in place and downstream beneficial uses are also fully protected. When naturally occurring background levels are less than or equal to 20 NTUs, turbidity levels immediately downstream of the zone of turbidity dilution shall not exceed 20 NTUs. If naturally occurring background levels are greater than 20 NTUs, turbidity levels immediately downstream of the 500 linear foot zone of dilution shall not be increased by more than 20 percent above the naturally occurring background level.			
4.6-2b To ensure that turbidity levels do not exceed the thresholds described above (4.6-2a) during in-river project construction activities, Reclamation shall monitor turbidity levels upstream within 50 feet of project activities (i.e., natural background) and 500 feet downstream of the in-river construction activities that could increase turbidity. At a minimum, field turbidity measurements shall be collected whenever a visible increase in turbidity is observed. Monitoring frequency shall be a minimum of every two hours during in-river work periods and when activities commence that are likely to increase turbidity levels above any previously monitored levels. If grab sample results indicate that turbidity levels exceed 20 NTU at 500 feet downstream from construction activities, remedial actions will be implemented to reduce and maintain turbidity at or below 20 NTU immediately downstream of the 500 linear foot zone of dilution. Potential remedial actions include halting or slowing construction activities and implementation of additional BMPs until turbidity levels are at or below 20 NTU.			
4.6-2c Fill gravels used on the streambeds, stream banks, and river crossings will be composed of 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.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
4.6-2d Reclamation will prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) that describes BMPs for the project, including silt fences, sediment filters, and routine monitoring to verify effectiveness. Proper implementation of erosion and sediment controls will be adequate to minimize sediment inputs into the Trinity River until vegetation regrowth occurs. All required controls and BMPs, including sediment and erosion control devices, will be inspected daily during the construction period to ensure that the devices are properly functioning. Excavated and stored materials will be kept in upland activity areas with erosion control properly installed and maintained. Excavated and stored materials will be staged in stable upland activity areas. All applicable erosion control standards will be required during stockpiling of materials.			
4.6-2e To minimize the potential for increases in turbidity and suspended sediments entering the Trinity River as a result of access routes (e.g., roads), Reclamation will implement the following protocols: ▪ Keep bare soil to the minimum required by designs. Erosion control devices/measures will be applied to areas where vegetation has been removed to reduce short-term erosion prior to the start of the rainy season. ▪ Keep runoff from bare soil areas well dispersed. Dispersing runoff keeps sediment on-site and prevents sediment delivery to streams. Direct any concentrated runoff from bare soil areas into natural buffers of vegetation or areas with more gentle slopes where sediment can settle out. ▪ Disconnect and disperse flow paths, including roadside ditches that might otherwise deliver fine sediment to stream channels. ▪ Decompact or rip floodplain areas so that surfaces are permeable and no surface water runoff occurs.			
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		Reclamation (implementation)	

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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.			
Impact 4.6-4: Construction activities associated with the project could result in the mortality of rearing fishes, including the federally and state listed coho salmon.			
4.6-4a To avoid impacts to spawning and incubating salmonids, instream work will only occur between July 15 and September 15.			
4.6-4b To avoid or minimize potential injury and mortality of fish during riverine activities (e.g. removal of grade control structures, channel crossings, addition and grading of coarse sediment), equipment will be operated slowly and deliberately to alert and scare adult and juvenile salmonids away from the work area.			
4.6-4c Reclamation will minimize potential injury and mortality of fish during the use of low-flow channel crossings. This will be accomplished by minimizing vehicle traffic and by operating equipment and vehicles slowly and deliberately to alert and scare adult and juvenile salmonids away from the crossing area, or by having a person wade ahead of equipment to scare fish away from the crossing area.			
4.6-4d To avoid or minimize potential injury and mortality of fish during excavation and placement of fill materials within the active low-flow channel, equipment will be operated slowly and deliberately to alert and scare adult and juvenile salmonids away from the work area. Reclamation will ensure that before submerging an excavator bucket or laying gravel below the water surface, the excavator bucket will be operated to "tap" the surface of the water, or a person will wade ahead of fill placement equipment to scare fish away from the work area. To avoid impacts to mobile life stages of salmonids that may be present in the water column, the first layers of clean gravel that are being placed into the wetted channel will be added slowly and deliberately to allow fish to move from the work area.			
4.6-4e To avoid impacts to juvenile salmonids during high flow gravel injections, gravel will only be injected in select locations where water velocities are too high, and juvenile salmonids would not be expected to be holding.			
4.6-4f Monitoring of the constructed inundation surfaces for salmon fry stranding will be performed by a qualified fishery biologist immediately after recession of flood flow events		Reclamation (implementation)	

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
designated as a 1.5- year or less frequent event (i.e., Q >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.			
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 Proposed Project implementation. The plan acknowledges that the ultimate goals of the TRRP include enhancement and maintenance of functional riparian habitat and no net-loss of riparian habitat and jurisdictional wetlands within channel rehabilitation site boundaries and generally throughout the 40-mile reach of the Trinity River below the TRD.			
4.6-5c Reclamation will initiate a 10-year mitigation monitoring program after the first growing season following project implementation. After a period of 3 years, the need for additional riparian habitat and wetland enhancement will be evaluated. At that time, Reclamation, in consultation with the USACE, Regional Water Board, and CDFG, will determine whether there is a need to further enhance or create additional areas of riparian habitat or jurisdictional wetlands within the project boundary so that there will be no net loss of riparian habitat after a 10-year monitoring period. In addition, wetlands will be redelineated 5 years post-project implementation to ensure no net loss of wetland habitat. Riparian habitat reporting 3 years after project implementation and wetland delineation 5 years after implementation will provide Reclamation with needed data in a timely fashion to take additional pro-active measures towards meeting the goals of no net loss of riparian and jurisdictional wetland habitat within Project site boundaries after 10 years.		Reclamation (implementation)	

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 silts, 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)	
4.7-1b Reclamation will continue to implement the Riparian Revegetation and Monitoring Plan during Proposed Project implementation. The plan acknowledges that the ultimate goals of the TRRP include enhancement and maintenance of functional riparian habitat and no net-loss of			

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

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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.			
4.7-4b Grading and other construction activities will be scheduled to avoid the nesting season to the extent possible. The nesting season for this species in Trinity County extends from June 1 through July 31. If construction occurs outside of the breeding season, no further mitigation is necessary. If the breeding season cannot be completely avoided, Mitigation Measures 4.7-4c and 4.7-4d will be implemented.			
4.7-4c A qualified biologist will conduct a minimum of one pre-construction survey for the little willow flycatcher within the project site(s) and a 250-foot buffer around the site(s). The survey will be conducted no more than 15 days prior to the initiation of construction in any given area. The pre-construction survey will be used to ensure that no nests of this species within or immediately adjacent to the project site(s) would be disturbed during project implementation. If an active nest is found, CDFG will be contacted prior to the start of construction to determine the appropriate mitigation measures.			
4.7-4d If vegetation is to be removed by the project and all necessary approvals have been obtained, potential nesting substrate (e.g., shrubs and trees) that will be removed by the project will be removed before the onset of the nesting season, if feasible. This will help preclude nesting and substantially decrease the likelihood of direct impacts.			
Impact 4.7-5: Construction activities associated with the project could result in impacts to the foothill yellow-legged frog.			
4.7-5a If any construction in the Trinity River channel will occur prior to August 1 of any construction season, a pre-construction survey for yellow- legged frog larvae and/or eggs will be conducted by a qualified biologist. This survey would need to be conducted within the construction boundary no more than 2 weeks prior to the start of in-stream construction activities. If larvae or eggs are detected, the biologist will relocate them to a suitable location outside of the construction boundary.		Reclamation (implementation)	
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.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
4.7-5c Mitigation measures presented in Section 4.5 (Water Quality) for addressing erosion and sedimentation and accidental spills will be fully implemented to mitigate for potential indirect impacts to dispersal habitat for the yellow-legged frog due to sedimentation and accidental spills.			
4.7-5d The mitigation measure associated with the disturbance to riparian habitat (Mitigation Measures 4.7-1a-c) will be fully implemented.			
Impact 4.7-6: Construction activities associated with the project could result in impacts to the western pond turtle.			
4.7-6a A minimum of one survey for pond turtle nests will be conducted during the nesting season (generally late June-July) prior to construction. A qualified biologist will be retained by Reclamation to conduct the survey. If a pond turtle nest is found, the biologist will flag the site and determine whether construction activities can avoid affecting the nest. If the nest cannot be avoided, the nest will be excavated by the biologist and reburied at a suitable location outside of the construction limits.		Reclamation (implementation)	
4.7-6b Prior to construction in open water habitat, a qualified biologist will trap and move turtles out of the construction area to nearby suitable habitats.			
4.7-6c During construction, in the event that a pond turtle is observed within the construction limits, the contractor will temporarily halt construction activities until the turtle has been moved to a safe location within suitable habitat outside of the construction limits.			
4.7-6d Mitigation measures presented in section 4.5 (Water Quality) for addressing erosion and sedimentation and accidental spills will be fully implemented to mitigate for the potential indirect impacts to potential dispersal habitat due to sedimentation and accidental spills.			
4.7-6e The mitigation measure associated with the disturbance to riparian habitat (Mitigation Measures 4.7-1a-c) will be fully implemented.			
Impact 4.7-7: Construction activities associated with the project could result in impacts to nesting California yellow warblers, yellow-breasted chats, and Vaux's swifts.			
4.7-7a Prior to the start of construction, a qualified biologist will conduct a survey of the project site(s) to determine whether suitable nesting habitat for the species is present. If suitable habitat is present, grading and other construction activities will be scheduled to avoid the nesting season for these species to the extent possible. The nesting season for these species in Trinity County extends from March 15 through 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)	

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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.			
Impact 4.7-8: Construction activities associated with the project could result in impacts to nesting bald eagles and northern goshawk.			
4.7-8a Prior to the start of construction, a qualified biologist will conduct a survey of the project site(s) to determine whether suitable nesting habitat for the species is present. If suitable habitat is present, construction will be scheduled to avoid the nesting season for bald eagles and northern goshawks to the extent feasible. The nesting season for most raptors in Trinity County extends from February 15 through July 31. Thus, if construction can be scheduled to occur between August 1 and February 14, the nesting season will be avoided and no impacts to nesting bald eagles and northern goshawks would be expected. If it is not possible to schedule construction during this time, Mitigation Measures 4.7-8c and 4.7-8d will be implemented.		Reclamation (implementation)	
4.7-8b Construction will be scheduled to avoid the nesting season for bald eagles and northern goshawks to the extent feasible. The nesting season for most raptors in Trinity County extends from February 15 through July 31. Thus, if construction can be scheduled to occur between August 1 and February 14, the nesting season will be avoided and no impacts to nesting bald eagles and northern goshawks would be expected. If it is not possible to schedule construction during this Mitigation Measures 4.7-8c and 4.7-8d will be implemented.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
4.7-8c Pre-construction surveys for nesting northern goshawks will be conducted by a qualified biologist to ensure that no nests will be disturbed during project implementation. These surveys will be conducted no more than 14 days prior to the initiation of construction activities. During this survey, the biologist will inspect all trees immediately adjacent to the impact areas for bald eagle and northern goshawk nests. If an active nest is found close enough (i.e., within 500 feet) to the construction area to be disturbed by these activities, the biologist, in consultation with the CDFG, will determine the extent of a construction-free buffer zone to be established around the nest.			
4.7-8d If vegetation is to be removed by the project and all necessary approvals have been obtained, potential nesting habitat (i.e., trees) that will be removed by the project will be removed before the onset of the nesting season, if feasible. This will help preclude nesting and substantially decrease the likelihood of direct impacts.			
Impact 4.7-9: Construction activities associated with the project could result in impacts to special-status bats and the ring-tailed cat.			
4.7-9a A pre-construction survey for roosting bats and ring-tailed cats will be conducted prior to the start of construction activities. The survey will be conducted by a qualified biologist. No activities that would result in disturbance to active roosts of special-status bats or dens of ring-tailed cats will proceed prior to completion of the surveys. If no active roosts or dens are found, no further action is needed. Because bats are known to abandon young when disturbed, if a maternity roost is located, a qualified bat biologist will determine the extent of a construction-free zone to be implemented around the roost. If a bat maternity roost or hibernaculum is present, or a ring-tailed cat den is present, Mitigation Measures 4.7-9b and/or 4.7-9c will be implemented. CDFG will also be notified of any active bat nurseries within the disturbance zones.		Reclamation (implementation)	
4.7-9b If an active maternity roost or hibernaculum is found, the project will be redesigned to avoid the loss of the tree or structure occupied by the roost, if feasible. If the project cannot be redesigned to avoid removal of the structure, demolition of that structure will commence before bat maternity colonies form (i.e., prior to March 1) or after young are volant (flying) (i.e., after July 31). The disturbance-free buffer zones described above will be observed during the bat maternity roost season (March 1–July 31). If a non-breeding bat hibernaculum is found in a tree or structure to be razed, the individuals will be safely evicted, under the direction of a qualified bat biologist (as determined by a Memorandum of Understanding with CDFG), by opening the roosting area to allow air to flow through the cavity. Demolition will then follow no sooner than the following day (i.e., there will be no less than one night between initial disturbance for air			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
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.			
Impact 4.7-11: Construction activities associated with the project could result in impacts to BLM and USFS sensitive species.			
Mitigation Measures 4.7-4a-c will reduce impacts to the little willow flycatcher to a less-than-significant level. Mitigation Measures 4.7-5a-d will reduce the impacts to the foothill yellow-legged frog to a less-than-significant level. Mitigation Measures 4.7-6a-d will reduce the impacts to the western pond turtle to a less-than-significant level. Mitigation measures 4.7-8a-c will reduce the impacts to the northern goshawk to a less-than-significant level, and Mitigation Measures 4.7-9a-b will reduce the impacts to special-status bat species to a less-than-significant level.		Reclamation (implementation)	
Impact 4.7-13: Implementation of the project could result in the spread of non-native and invasive plant species.			
4.7-13a When using imported erosion control materials (as opposed to rock and dirt berms), use only certified weed-free materials, mulch, and seed.		Reclamation (implementation)	
4.7-13b Preclude the use of rice straw in riparian areas.			
4.7-13c Limit any import or export of fill to materials to those that are known to be weed free.			
4.7-13d Ensure all construction equipment is thoroughly washed prior to entering the worksite. Equipment will be inspected to ensure that it is free of plant parts as well as soils, mud, or other debris that may carry weed seeds.			
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			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
of disturbed sites and increase the likelihood of reestablishing a self-sustaining population of native plant species.			
4.7-13f Within the first 3 to 5 years post-project, if it is determined that the project has caused non-native invasive vegetation to out-compete desired planted or native colonizing riparian vegetation, opportunities to control these non-native species will be considered. When implementing weed control techniques, the approach will consider using all available control methods known for a weed species.			
4.8 Recreation			
Impact 4.8-1: Construction associated with the project could disrupt recreation activities such as boating, fishing, and swimming in the Trinity River.			
4.8-1a Reclamation shall provide precautionary signage to warn recreational users of the potential safety hazards associated with project construction activities. Signs and/or buoys shall be placed within and directly adjacent to the project boundaries along the Trinity River in accordance with the requirements specified in Title 14, Article 6 of the California Code of Regulations. Notification signs shall be posted at public river access areas within the project area managed by BLM, STNF, and DFG (e.g., Bucktail River Access, Steel Bridge Campground, Douglas City Campground, Indian Creek River Access, Junction City Campground). Additionally, public notification of Proposed Project construction activities and associated safety hazards shall be circulated in the local Trinity Journal newspaper prior to the onset of project construction.		Reclamation (implementation)	
4.8-1b Reclamation will repair and/or replace any facilities associated with Remaining Phase 1 or Phase 2 sites that are impacted by project activities. This measure would include installation of interpretive signage consistent with the requirements of the STNF and BLM. Preconstruction meetings between Reclamation and landowners/land managers will identify the amount of 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 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof. ▪ Due to the nature of the proposed restoration activities and the clarity of the Trinity River during low flow conditions, the Regional Water Board has determined that an allowable zone of turbidity dilution is appropriate and necessary in order for Trinity River restoration activities to be accomplished in a meaningful, timely, and cost-effective manner that fully protects beneficial uses without resulting in a violation of the water quality objective for turbidity. ▪ Project activities that occur in areas outside of the active river channel will not increase turbidity levels by more than 20 percent above naturally occurring background levels. During in-river construction activities and until the first extended period of post-construction high flow (i.e., flows of at least 6,000 cfs inundate the project areas and floodplain for a minimum of 7 days) a zone of turbidity dilution within which higher percentages would be tolerated will be defined in discharge permits as the full width of the river channel within 500 linear feet downstream of any project activity that increases naturally occurring background levels, provided that all other required controls and appropriate BMPs for sediment and turbidity control are in place and downstream beneficial uses are also fully protected. When naturally occurring background levels are less than or equal to 20 NTUs, turbidity levels immediately downstream of the zone of turbidity dilution shall not exceed 20 NTUs. If naturally occurring background levels are greater than 20 NTUs, turbidity levels immediately downstream of the ▪ 500 linear foot zone of dilution shall not be increased by more than 20 percent above the naturally occurring background level.			
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			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
of the in-river construction activities that could increase turbidity. At a minimum, field turbidity measurements shall be collected whenever a visible increase in turbidity is observed. Monitoring frequency shall be a minimum of every two hours during in-river work periods and when activities commence that are likely to increase turbidity levels above any previously monitored levels. ▪ If grab sample results indicate that turbidity levels exceed 20 NTU at 500 feet downstream from construction activities, remedial actions will be implemented to reduce and maintain turbidity at or below 20 NTU immediately downstream of the 500 linear foot zone of dilution. Potential remedial actions include halting or slowing construction activities and implementation of additional BMPs until turbidity levels are at or below 20 NTU.			
4.8-3c Fill gravels used on the streambeds, stream banks, and river crossings will be composed of 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.			
4.8-3d Reclamation will prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) that describes BMPs for the project, including silt fences, sediment filters, and routine monitoring to verify effectiveness. Proper implementation of erosion and sediment controls will be adequate to minimize sediment inputs into the Trinity River until vegetation regrowth occurs. All BMPs and sediment and erosion control devices will be inspected daily during the construction period to ensure that the devices are properly functioning. Excavated and stored materials will be kept in upland activity areas with erosion control properly installed and maintained. Excavated and stored materials will be staged in stable upland activity areas. All applicable erosion control standards will be met during stockpiling of materials.			
4.8-3e To minimize the potential for increases in turbidity and suspended sediments entering the Trinity River as a result of access routes (e.g., roads), Reclamation or its contractor will implement the following protocols: ▪ Keep bare soil to the minimum required by designs. Erosion control devices/measures will be applied to areas where vegetation has been removed to reduce short-term erosion prior to the start of the rainy season. ▪ Keep runoff from bare soil areas well dispersed. Dispersing runoff keeps sediment on-site and prevents sediment delivery to streams. Direct any concentrated runoff from bare			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
soil areas into natural buffers of vegetation or areas with more gentle slopes where sediment can settle out. ▪ Disconnect and disperse flow paths, including roadside ditches that might otherwise deliver fine sediment to stream channels. ▪ Decompact or rip floodplain areas so that surfaces are permeable and no surface water runoff occurs.			
4.10 Cultural Resources			
Impact 4.10-2: Implementation of the Proposed Project could potentially result in disturbance of undiscovered prehistoric or historic resources.			
4.10-2a Prior to initiation of construction or ground-disturbing activities, all construction workers shall be alerted to the possibility of discovering cultural resources. This includes prehistoric and/or historic resources. Personnel shall be instructed that upon discovery of buried cultural resources, work within 50 feet of the find shall be halted and Reclamation's designated archaeologist shall be consulted. Once the find has been identified, Reclamation shall be responsible for developing a treatment plan for the cultural resource including an assessment of its historic properties and methods for avoiding any adverse effects, pursuant to the Programmatic Agreement (PA) and in compliance with the National Historic Preservation Act (NHPA).		Reclamation (implementation)	
4.10-2b If human remains are encountered during construction on non- federal lands, work in that area must be halted and the Trinity County 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 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 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 on site during all hours of burning and materials necessary to extinguish fires will be available at all times.		Reclamation (implementation)	
4.11-3b In general, all requirements of a NCUAQMD "NON-Standard" burn permit will be met for burning. Burn management planning will include but not be limited to the following: ▪ Ensure that burning occurs only on approved burn days as defined by the NCUAQMD (determined via calling 1-866-BURN-DAY). ▪ Burning will only occur during suitable conditions to ensure control of ignited fires. For instance, water to wet the litter and duff layer and penetrate the mineral soil layer to 1/4 inch or more will be present, wind speeds will be low (<10 mph), and temperature will be low (<80 ºF). ▪ Piles will be covered with a 5-foot x 5-foot sheet of 4-mil polyethylene plastic to promote drying of the slash. At least 3/4 of each pile surface will 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.			

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
4.11-5d Reclamation will ensure that a notice is posted at/adjacent to the rehabilitation sites, which contains a phone number for the public to contact for concerns related to air quality.			
4.12 Aesthetics			
Impact 4.12-1: Implementation of the project could result in the degradation and/or obstruction of a scenic view from key observation areas.			
Mitigation Measures 4.7-1a-c (Vegetation, Wildlife, and Wetlands), which generally describes the Riparian Revegetation and Monitoring Plan that is required, will be implemented where applicable. The plan acknowledges that the ultimate goals of the TRRP include enhancement and maintenance of 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 AM and 7:00 PM, Monday through Saturday. No construction activities will be scheduled for Sundays or other hours and days established by the local jurisdiction (i.e., Trinity County). The contractor may submit for variances in construction activity hours, as needed.		Reclamation (implementation)	
4.14-1b Reclamation will require that all construction equipment be equipped with manufacturer's specified noise muffling devices.			
4.14-1c Reclamation will require placement of all stationary noise-generating equipment as far away as feasibly possible from sensitive noise receptors or in an orientation minimizing noise impacts (i.e., behind existing barriers, storage piles, unused equipment).			
4.15 Public Services and Utilities/Energy			
Impact 4.15-3: Implementation of the project could result in disruption to emergency services or disruption to school bus routes or student travel routes during construction activities.			
4.15-3a Reclamation will require that staging and construction work, including temporary road or bridge closures, occurs in a manner that allows for access by emergency service providers.		Reclamation (implementation)	

Mitigation Measure	Timing/ Implementation	Responsible Parties (task)	Verification (date and initials)
4.15-3b Reclamation will provide 72-hour notice to the local emergency providers and affected users prior to the start of temporary closures.			
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)	

8. 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.

9. Description of Common Activities and Construction Criteria and Methods

9.1 Common Activities

9.1.1 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 Forest Service, 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, tracks) would remain outside of the wetted portion of the river channel when removing submerged roots.

9.1.2 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 in order 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 fps.

9.1.3 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) program 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 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*

9.2 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.

9.2.1 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 document. 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 G-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 G-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 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 G-1 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 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 in order to minimize potential fish stranding.

9.2.2 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.

9.2.3 Recreation Facilities

As appropriate, federal, state, county or private recreation facilities (e.g., parking areas, access trails, picnic areas) affected by project activities would be returned to the same level of service as those offered prior to project implementation. Reclamation, in consultation with the 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 Forest Service 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.

9.2.4 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.

9.2.5 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.

9.2.6 Utilities

There are a number of utility features located within and/or adjacent to the site boundaries. Water intakes, power and telephone poles, and water supply lines parallel or cross the Trinity River in a number of locations. These utilities are considered in the project design to ensure that service would not be disrupted.

9.3 Construction Criteria and Methods

9.3.1 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) would be used to access the activity areas. New access roads and haul routes (activity M) 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 (adjacent to river) first and at the higher floodplain elevations last.
- In-channel activities, including removal of grade control features and introduction of coarse sediment, would generally take place during low flows (July 15 to October 15 as allowed by the coho salmon in-

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

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 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.

9.3.2 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.

9.3.3 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.

9.3.4 Staging Areas

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

9.3.5 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 on-site 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.

9.3.6 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.

9.3.7 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 run-off, 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 and shall conduct and schedule operations to avoid or minimize muddying and silting of the river. Care shall be exercised to preserve roadside vegetation beyond the limits of construction.
- Construction equipment 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 on-site at all times 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 contract and for all water pollution control measures Reclamation proposes to take in connection with construction of the project to minimize the effects of the operations on adjacent streams and other bodies of water. Reclamation 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, soil, or groundwater.

Appendix H: Environmental Commitments

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

Label	Commitment
Mineral Resources	
EC-MR-1	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 augmentation activities: ▪ Areas where ground disturbance will occur will be identified in advance of augmentation and limited to only those areas that have been approved by Reclamation, as outlined in this EA/IS. (BMP Plan-2) ▪ All vehicular augmentation 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 augmentation activities. (BMP AqEco-3) ▪ Clearly delineate the work zone (BMP AqEco-2). ▪ All supervisory augmentation 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., 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 augmentation. 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 needs for solid waste disposal and worksite sanitation. (BMP AqEco-2). ▪ Restore disturbed areas to pre-augmentation contours to the fullest extent feasible. (BMP Fac-10) ▪ 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 augmentation. ▪ Leave drainage gaps in topsoil and spoil piles to accommodate surface water runoff.

[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).

Label	Commitment
	▪ 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 augmentation 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 augmentation 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 augmentation and the first extended period of high flows, which will comply with the General Permits issued to the 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 percent 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 percent above naturally occurring background levels. During in-river augmentation activities and until the first extended period of post - augmentation 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 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[2]. If naturally occurring background levels are

[2] At the time in-stream augmentation is authorized, the natural background of the Trinity River in the vicinity of the project area typically ranges between 0 and 5 NTU

Label	Commitment
	greater than 20 NTUs, turbidity levels immediately downstream of the 500 linear foot zone of dilution shall not be increased by more than 20 percent above the naturally occurring background level. ▪ To ensure that turbidity levels do not exceed the thresholds described above during in-river project augmentation 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 augmentation 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 augmentation activities, the Applicant shall monitor turbidity levels upstream within 50 feet of project activities (i.e., natural background) and 500 feet downstream of the in-river augmentation activities (point of compliance) that could increase turbidity. The Applicant 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 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 percent above 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 augmentation activities and implementation of additional Best Management Practices (BMPs) until turbidity levels are at or below 20 percent above 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 (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.
EC-WQ-2	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-inches diameter) from a local Trinity River Basin source. Gravel will be washed to remove any silts, sand, clay, and organic matter and will be free of contaminants such as petroleum products. Clean gravel will pass 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)
EC-WQ-3	Reclamation will prepare and implement a SWPPP that describes BMPs for the project, including silt fences, sediment filters, and routine monitoring to verify effectiveness. Proper implementation of erosion and sediment controls will be adequate to minimize sediment inputs into the Trinity River until vegetation regrowth occurs. All required controls and BMPs, including sediment and erosion control devices, will be inspected daily during the augmentation 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.
EC-WQ-4	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 design features, as appropriate:

Label	Commitment
	▪ 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") floodplain areas so that surfaces are permeable, and no surface water runoff occurs. (BMP Fac-10) ▪ To reduce sedimentation to the Trinity River, temporary access routes will be stabilized or decommissioned and revegeteated 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.
EC-WQ-5	Augmentation 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, or within 0.25 mi of the centerline of a Wild and Scenic River or within riparian reserves. Areas for fuel storage, refueling, and servicing of augmentation equipment must be located in an upland location at least 150 feet from the active river channel or within an adequate secondary fueling containment area. ▪ Use vegetable oil or other biodegradable hydraulic oil for heavy equipment hydraulics whenever practicable when operating in or near water. (BMP AqEco-2) ▪ 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. ▪ Augmentation 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 located 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 augmentation 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 augmentation 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

Label	Commitment
	in the gravel. As directed by the 2000 Biological Opinion (National Marine Fisheries Service 2000). Reclamation will ensure that all in-channel augmentation activities are conducted during late-summer, low-flow conditions (e.g., 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 silts, 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.
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 DFG and NMFS criteria to prevent entrainment or impingement of small fish. Prior to dewatering, determine the best means to bypass flow through the work area to minimize disturbance to the channel and avoid direct mortality of fish and other aquatic vertebrates. Coordinate project site dewatering with a fisheries biologist qualified to perform fish and amphibian relocation activities. Minimize the length of the dewatered stream channel and duration of dewatering. If the work area requires periodic pumping of seepage, place pumps 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-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 augmentation site boundaries and generally throughout the 40-mile reach of the Trinity River below the TRD. (BMP AcEco-2) Reclamation will initiate a 10-year mitigation monitoring program after the first growing season following project implementation. After 5 years, the need for additional riparian habitat and wetland enhancement will be evaluated in a written report. At that time, Reclamation, in

Label	Commitment
	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 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 5 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 augmentation site boundaries after 10 years.
Vegetation, Wildlife, and Wetlands	
EC-VW-1	Prior to the start of augmentation activities, Reclamation will retain a qualified biologist to identify potential augmentation 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 augmentation activity within these features. Reclamation will inspect and maintain marked biologically sensitive areas on a regular basis throughout the augmentation phase. (BMP AqEco-2)
EC-VW-2	A qualified botanist will conduct a minimum of two pre-augmentation surveys to determine if special-status plant species occur within the project site. Preliminary desktop preparation will scope CNDDB, CalFlora, iPAC, and any other relevant sources to identify special status populations occurring at or near the project area. Surveys shall be conducted during the blooming periods of the plants potentially occurring at the site to determine (1) if the species occur and (2) the quality, location, and extent of any populations. If a special-status plants species are 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 and any other appropriate avoidance measures will be taken. 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 augmentation and be 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 the landowner and CDFW staff. Popuations on BLM-managed lands will be fully avoided.
EC-VW-3	Prior to the start of augmentation, a qualified biologist will conduct a survey of the augmentation 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 augmentation 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 augmentation occurs outside of the breeding season, no further mitigation is 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-augmentation survey for the little willow flycatcher within the augmentation sites and a 250-foot buffer around the sites. The survey will be

Label	Commitment
	conducted no more than 15 days prior to the initiation of augmentation in any given area. The pre-augmentation survey(s) will be used to ensure that no nests of this species within or immediately adjacent to the augmentation site will be disturbed during project implementation. To the extent possible given timing for augmentation and with the contract award, pre-augmentation surveys will conform to methodologies identified in a 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 augmentation to determine the appropriate mitigation measures. If vegetation is to be removed by the projects and all necessary approvals have been obtained, potential nesting substrate (e.g., shrubs and trees) that will be removed by the projects 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.
EC-VW-4	If any augmentation in the Trinity River channel will occur prior to August 1 of any augmentation season, a pre-augmentation 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 augmentation boundary no more than 2 weeks prior to the start of in-stream augmentation activities. If larvae or eggs are detected, the biologist will relocate them to a suitable location outside of the augmentation boundary. In the event that a foothill yellow-legged frog is observed within the augmentation boundary, the contractor will temporarily halt in-stream augmentation activities until qualified personnel have moved the frog(s) to a safe location within suitable habitat outside of the augmentation limits. Planned locations for placement of transferred animals will be downstream of the augmentation limits and will be reported to the CDFW prior to augmentation.
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 augmentation. 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 augmentation 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 augmentation area to nearby suitable habitats. During augmentation, in the event that a western pond turtle is observed within the augmentation limits, the contractor will temporarily halt augmentation activities until qualified personnel have moved the turtle(s) to a safe location within suitable habitat outside of the augmentation limits. Planned locations for placement of transferred animals will be downstream of the augmentation limits and will be reported to the CDFW prior to augmentation.
EC-VW-6	Prior to the start of augmentation, a qualified biologist will conduct surveys of the augmentation sites to determine whether suitable nesting habitat for California yellow warblers, yellow-breasted chats, yellow rail and Vaux's swifts is present. If suitable habitat is present, the following measures will be implemented. Grading and other augmentation 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 augmentation occurs outside the breeding season, no further mitigation is necessary. If augmentation during the breeding season cannot be completely avoided, the following measures will be implemented. A qualified biologist will conduct a minimum of one pre-augmentation survey for these species within the augmentation sites and a 250-foot buffer around the sites. The survey will be conducted no more than 15 days prior to the initiation of augmentation in any given area. The pre-

Label	Commitment
	augmentation surveys will be used to ensure that no nests of these species within or immediately adjacent to the augmentation sites will be disturbed during project implementation. If an active nest is found, a qualified biologist will determine the extent of a augmentation-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 projects will be removed before the onset of the nesting season (typically March 1 for migratory song birds). This will help preclude nesting and substantially decrease the likelihood of direct impacts.
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 U.S. Fish and Wildlife Service 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 augmentation, a qualified biologist will conduct a survey of the augmentation sites to determine whether potential bald eagle or northern goshawk habitat occurs. If potential habitat occurs, Reclamation will implement the following commitment.: Augmentation 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 augmentation 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 augmentation 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 augmentation.
EC-VW-8	Pre-augmentation surveys for roosting bats and ring-tailed cats will be conducted prior to the start of augmentation 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 augmentation-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 commitment 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 projects will be redesigned to avoid the loss of the tree or structure occupied by the roost, if feasible. If the projects 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 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 projects will be redesigned to avoid the loss of the tree occupied by the nest if feasible. If the projects cannot be redesigned to avoid removal of the occupied tree, the 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, the CDFW will be notified to review and approve proposed procedures to ensure that no take occurs as a result 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	▪ In order 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 augmentation 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 NFS 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, 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. ▪ Within the first 3 to 5 years post-project, if it is determined that the project has caused non-native invasive vegetation to out-compete desired planted or native colonizing riparian vegetation, opportunities to control these non-native species will be considered. When implementing weed control techniques, the approach will consider using all available control methods known for a weed species if those control methods are in conformance with existing agency and landowner policies and consistent with NEPA/CEQA requirements. Within the first 3 to 5 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.
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

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

Label	Commitment
	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 augmentation activities. Notification signs shall be posted at public river access areas located within the project area and managed by 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 augmentation activities and associated safety hazards shall be circulated in the local Trinity Journal newspaper prior to the onset of project augmentation.
EC-RE-2	Reclamation will repair and/or replace any facilities associated with the project that are impacted by project activities. This feature includes installation of interpretive signage consistent with the requirements of the BLM. Pre-augmentation 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 augmentation or ground-disturbing activities, all augmentation 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 PA and in compliance with the NHPA.
EC-CU-2	If human remains are encountered during augmentation on non-federal lands, work in that area will be halted and the Trinity County Coroner's Office will be immediately contacted. If the remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) will be notified within 24 hours of determination, as required by PRC, Section 5097. The NAHC will notify designated Most Likely Descendants, who will provide recommendations for the treatment of the remains within 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 USC 3001) as well as Reclamation's Directives and Standards LND 02-01. If the find is determined to be a historical resource or a unique archaeological resource, as defined by CEQA, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or other appropriate mitigation will be made available. Work may continue on other parts of the project while mitigation for historical or unique archaeological resources takes place.
Air Quality	

Label	Commitment
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 augmentation 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 augmentation site will be covered or will maintain adequate freeboard to ensure retention of materials within the truck's bed (e.g., ensure 1-2 feet vertical distance between top of load and the trailer). ▪ Excavation activities and other soil-disturbing activities will be conducted in phases to reduce the amount of bare soil exposed at any one time. Mulching with weed-free materials will be used to minimize soil erosion. ▪ Watering (using equipment and/or manually) will be conducted on all stockpiles, dirt/gravel roads, and exposed or disturbed soil surfaces, as necessary, to reduce airborne dust. ▪ 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 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).
EC-AQ-4	Reclamation will ensure that a notice is posted at/adjacent to the augmentation site, which contains a phone number for the public to contact for concerns related to air quality.
Noise	
EC-NO-1	Augmentation activities near residential areas will be scheduled between 7:00 a.m. and 7:00 p.m., Monday through Saturday. No augmentation 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 augmentation activity hours from Reclamation, as needed.
EC-NO-2	Reclamation will require that all augmentation 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 augmentation work, including temporary road or bridge closures occurs 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.

Label	Commitment
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 augmentation period for all private residences adjacent to the project boundary and access roads adjacent to the Trinity River. During the augmentation phase of the project, Reclamation will limit the amount of daily augmentation equipment traffic by staging augmentation equipment and vehicles within the project boundary throughout the work period. All large equipment "lowbed" movements will be performed as required by CHP/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-augmentation survey of local federal and state roads to determine the existing roadway conditions of the augmentation access routes and will consult with the relevant agencies/private parties about road conditions prior to augmentation activity and post augmentation activity. An agreement will be entered into prior to augmentation that will detail the pre-augmentation conditions and post-augmentation requirements for potential roadway rehabilitation.
EC-TC-4	Reclamation will prepare and implement a traffic control plan that will include provision and maintenance of temporary access through the augmentation zone, reduction in speed limits though the augmentation zone, signage and appropriate traffic control devices, illumination during hours of darkness or limited visibility, use of safety clothing/vests to ensure visibility of augmentation workers by motorists, and fencing as appropriate to separate bicyclists, pedestrians, and equestrians from augmentation 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), augmentation flagging and/or pilot cars will be used to ensure safe traffic conditions 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 I: BLM Sensitive Species

Bureau of Land Management
Sensitive Species

Table I-1. Sensitive Fish and Wildlife Species, Bureau of Land Management (BLM) Redding Field Office (Updated February 2018)

Scientific Name	Common Name	Status	Assessment[1]
BIRDS			
Accipiter gentilis	Northern goshawk	BLMS	Marginal habitat for this species occurs within the augmentation ESLs[2], but it is very unlikely that it would occur because high-quality habitat is present within 10 miles of the ESLs; environmental commitment EC-VW-7 would ensure that this species would be protected if present.
Agelaius tricolor	Tricolored blackbird	BLMS	Habitat for this species does not occur within the augmentation reach.
Aquila chrysaetos	Golden eagle	BLMS	Foraging habitat for this species occurs within the augmentation reach, but nesting habitat does not. Occurrences are known in the augmentation reach vicinity. Environmental commitment EC-VW-3 would ensure that this species would be protected.
Athene cunicularia	Burrowing owl	BLMS	Habitat for this species does not occur within the augmentation ESLs.
Buteo swainsoni	Swainson's hawk	BLMS	Habitat for this species does not occur within the augmentation ESLs.
Grus canadensis tabida	Greater sandhill crane	BLMS	Habitat for this species does not occur within the augmentation ESLs.
Haliaetus leucocephalus	Bald eagle	BLMS	Habitat for this species occurs within the augmentation reach, and occurrences are known along the Trinity River corridor; environmental commitment EC-VW-7 would ensure that this species would be protected.
Riparia tabiya ssp. riparia	Bank swallow	BLMS	Habitat for this species does not occur within the augmentation ESLs.

[1] All environmental commitments (ECs), incorporated as design features as defined under NEPA, 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 environmental commitments 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 as determined appropriate 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[1]
Strix occidentalis caurina	Northern spotted owl	BLMS	Habitat for this species does not occur within the augmentation ESLs. The closest documented occurrence of NSOs is approximately a half mile from Trinity House Gulch ESL.
Strix occidentalis occidentalis	California spotted owl	BLMS	Habitat for this species does not occur within the augmentation ESLs.
MAMMALS			
Antrozous pallidus	Pallid bat	BLMS	Habitat for this species could occur within the augmentation ESLs; environmental commitment EC-VW-8 would ensure that this species would be protected.
Corynorhinus townsendii	Townsend's big-eared bat	BLMS	Habitat for this species could occur within the augmentation ESLs; environmental commitment EC-VW-8 would ensure that this species would be protected.
Euderma maculatum	Spotted bat	BLMS	Nesting habitat for this species does not occur within the augmentation ESLs but foraging habitat may occur. Environmental commitment EC-VW-8 would ensure that this species would be protected.
Eumops perotis californicus	Western mastiff-bat	BLMS	Habitat for this species does not occur within the augmentation ESLs.
Myotis evotis	Long-eared myotis	BLMS	Habitat for this species could occur within the augmentation ESLs; environmental commitment EC-VW-8 would ensure that this species would be protected.
Myotis thysanodes	Fringed myotis	BLMS	Habitat for this species could occur within the augmentation ESLs; environmental commitment EC-VW-8 would ensure that this species would be protected.
Myotis yumanensis	Yuma myotis	BLMS	Habitat for this species does not occur within the augmentation ESLs.
Pekania pennanti (pacifica)	Pacific fisher	BLMS	Transitory/matrix habitat for this species could occur within the augmentation ESLs. EC-VW-8 would ensure that this species would be protected.
AMPHIBIANS			
Hydromantes shastae	Shasta salamander	BLMS	Habitat for this species does not occur within the augmentation ESLs.
Rana boylii	Foothill yellow-legged frog	BLMS	Habitat for this species could occur within the augmentation ESLs; environmental commitment EC-VW-4 would ensure that this species would be protected.
Spea hammondii	Western spadefoot	BLMS	Habitat for this species does not occur within the augmentation ESLs.
REPTILES			
Emys marmorata	Western pond turtle	BLMS	Habitat for this species could occur within the augmentation ESLs; environmental commitment EC-

Scientific Name	Common Name	Status	Assessment[1]
			VW-5 would ensure that this species would be protected.
Lampropeltis zonata	California mountain kingsnake	BLMS	Habitat for this species could occur within the augmentation ESLs; environmental commitment EC-VW-5 would ensure that this species would be protected.
INVERTEBRATES, TERRESTRIAL			
Ancotrema voyanum	Hooded lancetooth	BLMS	Habitat for this species could occur within the augmentation ESLs; environmental commitment EC-VW-10 would ensure that this species would be protected.
Helminthoglypta hertleini	Oregon shoulderband	BLMS	Habitat for this species does not occur within the augmentation ESLs.
Helminthoglypta talmadgei	Trinity shoulderband	BLMS	Habitat for this species could occur within the augmentation ESLs; environmental commitment EC-VW-10 would ensure that this species would be protected.
Monadenia chaceana	Siskiyou (Chace) shoulderband	BLMS	Habitat for this species does not occur within the augmentation ESLs.
Trilobopsis tehamana	Tehama chaparral snail	BLMS	Habitat for this species does not occur within the augmentation ESLs.
INVERTEBRATES, AQUATIC - MOLLUSKS			
Anodonta californiensis	California floater (freshwater mussel)	BLMS	Surveys indicate that this species does not occur within the project area.
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 augmentation ESLs; environmental commitment EC-VW-10 would ensure that this species is protected
FISHES			
Cottus asperrimus	Rough sculpin	BLMS	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.
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.
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.

Scientific Name	Common Name	Status	Assessment[1]
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.
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.
Oncorhynchus kisutch	Southern Oregon Northern California Coast 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.

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.

ESU = Evolutionarily Significant Unit

SONCC = Southern Oregon/ Northern California Coast

BLMS = Bureau of Land Management Redding Field Office Sensitive Species

BLMP = Bureau of Land Management Redding Field Office Priority Species

Table I-2. Sensitive Plant Species, Bureau of Land Management Redding Field Office (Updated January 2022)

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. Augmentation ESLs contain suitable habitat.
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 EO's in Butte County over 100 km to the east. Augmentation 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 implemented for all sensitive plant species. This environmental commitment 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[3]
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. Augmentation ESLs contain suitable habitat.
Scabrid alpine tarplant *Anisocarpus scabridus*	BLMS/1B.3	Upper montane coniferous forest (metamorphic, rocky). Elevation: 5415 – 7,545 feet. Bloom: Jul-Aug (Sep).	No occurrences within 10-mile project buffer. Augmentation 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 10-mile project buffer. Augmentation 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. Augmentation ESLs contain suitable habitat.
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 county. Augmentation 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. Augmentation 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).	Augmentation ESLs are outside the known distribution of this subspecies. Augmentation ESLs contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment[3]
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 augmentation ESLs, but beyond 10-mile buffer. Augmentation 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.	Not known to occur in Trinity County; known from Siskiyou county. Augmentation 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. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
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 10-mile project buffer. Augmentation 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.	Augmentation ESLs are outside the known distribution of this subspecies. Augmentation 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. Augmentation 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 10-mile project buffer. Augmentation 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[3]
Yellow-twist horsehair *Bryoria tortuosa*	BLMS	On trees in well-lit, open stands, ponderosa pine forests, mixed conifer-Douglas-fir forests and oak woodlands.	Augmentation 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 10-mile project. Augmentation ESLs contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Flagella-like atractylocarpus *Campylopodiella stenocarpa*	None/None/2B.2	Cismontane woodland. Elevation: 325–1,640 feet.	No occurrences within 10-mile project buffer. Augmentation ESLs contain suitable habitat.
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. Augmentation 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. Augmentation 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. Augmentation 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. Augmentation ESLs do not contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment[3]
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. Augmentation ESLs do not contain suitable habitat.
Flagella-like atractylocarpus *Campylopodiella stenocarpa*	None/None/2B.2	Cismontane woodland. Elevation: 325–1,640 feet.	No occurrences within 10-mile project buffer. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
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. Augmentation 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 augmentation ESLs are not mesic enough to support this species. Augmentation ESLs do not contain suitable habitat.
Pink creamsacs *Castilleja rubicundula subsp. rubicundula*	BLMS/1B.2	Chaparral (openings), cismontane woodland, meadows and seeps, valley and foothill grassland. Elevation: 65 – 2,985 feet. Bloom: Apr-Jun.	Not known to occur in Trinity County; known from adjacent Shasta county. Augmentation 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: 4,000 feet. Bloom: Jul.	Limited to serpentine substrate. Augmentation ESLs do not contain suitable habitat.
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. Augmentation 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[3]
Ashland thistle *Cirsium ciliolatum*	SE/BLMS/2B.1	Open dry grassy slopes, open areas within oak woodlands, on thin rocky soil, and also along roadsides. Elevation: 2,625 – 4,595 feet. Bloom: Jun-Aug.	Not known to occur in Trinity County; known from adjacent Siskiyou county. Augmentation ESLs do not contain suitable habitat.
Shasta clarkia *Clarkia borealis subsp. 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. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Northern clarkia *Clarkia borealis* ssp. *borealis*	BLMS/None/4.3	Chaparral, cismontane woodland, lower montane coniferous forest. Elevation: 1,310–5,135 feet. Bloom: Jun–Sep.	Augmentation ESLs are located beyond the western distribution of this species. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
White-stemmed clarkia *Clarkia gracilis subsp. 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. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Mildred's clarkia *Clarkia mildrediae subsp. mildrediae*	BLMS/1B.3	Cismontane woodland, lower montane coniferous forest, usually granitc, sandy. Elevation: 805 – 5,610 feet. Bloom: May-Aug.	Not known to occur in Trinity County; known from Butte county. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
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. Augmentation 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[3]
Pallid bird's-beak *Cordylanthus tenuis subsp. 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. Augmentation 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. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Clustered lady's-slipper *Cypripedium fasciculatum*	BLMS/None/4.2	Lower montane coniferous forest, North Coast coniferous forest. Elevation: 325–7,990 feet. Bloom: Mar–Aug.	Nearby occurrences are probably within 5 miles but exact localities are not known. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Mountain lady's-slipper *Cypripedium montanum*	BLMS/ None/4.2	Broadleafed upland forest, cismontane woodland, lower montane coniferous forest, North Coast coniferous forest. Elevation: 605–7,300 feet. Bloom: Mar–Aug.	Nearby occurrences are probably within 5 miles, but exact localities are not known. Augmentation 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.	Augmentation ESLs do not contain suitable habitat.
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: <3,937 feet.	Augmentation 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[3]
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 5 miles SW of augmentation ESLs. Meadows in augmentation ESLs are not mesic enough to support this species. Augmentation 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 9.7 miles southeast of the Project area at the border of Trinity and Shasta counties. Augmentation 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. Augmentation 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 10-mile project buffer. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
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. Augmentation 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 Augmentation ESLs. Augmentation ESLs do not contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment[3]
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. Augmentation 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).	Limited to serpentine substrate. Augmentation ESLs do not contain suitable habitat.
Hoover's spurge *Euphorbia hooveri* (*Chamaesyce hooveri)*	FT/1B.2	Chamaesyce hooveri grows on the dried mudflats in the deepest portions (often middle) of Vernal Pools. Plant emerges from large cracks which spread as the clay of the pool bottom dries. There is usually very little herbaceous cover growing with C. hooveri, though the plant has been observed to grow in the shade of other low-growing species. Orcuttia pilosa has been frequently associated with C. hooveri. Elevation: 80 - 820 feet. Bloom: Jul-Sep (Oct).	Not known to occur in Trinity County; known from adjacent Tehama county. Augmentation ESLs do not contain suitable habitat.
Stony Creek spurge *Euphorbia ocellata subsp. 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. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Gentner's fritillaria *Fritillaria gentneri*	FE/1B.1	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. Augmentation ESLs do not contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment[3]
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. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Scott Mtn. Bedstraw *Galium serpenticum subsp. scotticum*	BLMS/1B.2	Lower montane coniferous forest (serpentinite). Elevation: 3,280 – 6,810 feet. Bloom: May-Aug.	Occurs in Trinity County north of Augmentation ESLs on ultramafic substrate. Augmentation ESL's 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. Augmentation 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 8.5 miles south of Augmentation ESLs. Augmentation ESLs do not contain suitable habitat.
Stebbins's harmonia *Harmonia stebbinsii*	BLMS/1B.2	Barrens (sparsely vegetated areas with < 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 Augmentation ESLs. Augmentation 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. Augmentation 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[3]
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. Augmentation 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.	Augmentation ESLs are located beyond the eastern distribution of this species. Augmentation ESLs do not contain suitable habitat.
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. Augmentation ESLs do not contain suitable habitat.
Pickering's ivesia *Ivesia pickeringii*	BLMS/1B.2	Mesic to wet, 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 14.5 miles north of Augmentation ESLs. Augmentation 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 NE and SE of augmentation ESLs within 5 miles. Augmentation 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[3]
Red Bluff dwarf rush *Juncus leiospermus var. leiospermus*	BLMS/1B.1	Chaparral, cismontane woodland meadows and seeps, valley and foothill grassland, 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. Augmentation 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. Augmentation 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. It is most commonly found in vernal pools which also contain *Eleocharis macrostachya* and *Lasthenia glaberrima.* These indicator species are generally indicative of pools with long inundation periods. Generally occur on heavy clay soils within the vernal pools. Elevation: 5 – 2,885 feet. Bloom: Apr-Jun.	Not known to occur in Trinity County; known from adjacent Shasta and Tehama counties. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Mt. Tedoc linanthus *Leptosiphon nuttallii subsp. 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 Shasta county. Augmentation 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. Augmentation ESLs do not contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment[3]
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 4 miles to NE of augmentation ESLs. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Bellinger's meadowfoam *Limnanthes floccosa subsp. 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. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Butte County meadowfoam *Limnanthes floccosa subsp. 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. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
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. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Baker's navarretia *Navarretia leucocephala subsp. 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. Augmentation 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. Augmentation 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[3]
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 10-mile project buffer. Augmentation 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 drydown. Elevation: 150 - 655 feet. Bloom: May-Sep.	Not known to occur in Trinity County; known from adjacent Tehama county. Augmentation 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. Augmentation 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. Augmentation 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. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
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. Augmentation ESLs are located beyond the northern distribution of this species. Augmentation ESLs do not contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment[3]
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. Augmentation ESLs are located beyond the known range of this species. Augmentation ESLs do not contain suitable habitat.
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. Augmentation 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. Augmentation ESLs do not contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment[3]
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 Augmentation ESLs. Augmentation 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 higher 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 Augmentation ESLs. Augmentation 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., Van Damme State Park, Fern Canyon trail.*	Augmentation ESLs are outside of the known range of this species. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
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 also members of the *Pinaceae* (it rarely is found in strictly *fagaceous* or coniferous stands). Its precise biological and ecological requirements are unknown. It generally is 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.	Augmentation ESLs are outside of the known range for this species. Augmentation ESLs do not contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment[3]
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).	Augmentation ESLs are outside of the known range for this species. Augmentation ESLs do not contain suitable habitat.
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. Augmentation 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.	Augmentation ESLs are located at the eastern distribution of this species. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
Howell's alkali-grass *Puccinellia howellii*	BLMS/1B.1	Mineralized soils of meadows of seeps and springs. Elevation: 1610 feet. Bloom: Apr-Jun	Not known to occur in Trinity County; known from adjacent Shasta county. Augmentation 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 Augmentation ESLs. Augmentation 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.	Meadows in augmentation ESLs are not mesic enough to support this species. Augmentation ESLs do not contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment[3]
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 augmentation ESLs are not mesic enough to support this species. Augmentation 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 augmentation ESLs are not mesic enough to support this species. Augmentation ESLs does not contain suitable habitat.
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 Butte county. Augmentation 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. Augmentation 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[3]
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. Augmentation 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. Augmentation 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. Augmentation 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 8 miles north of augmentation ESLs. Augmentation 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.	Augmentation ESLs are located beyond the eastern distribution of this species. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
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. Augmentation 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[3]
Long-stiped campion *Silene occidentalis subsp. 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. Augmentation 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 fall outside 10-mile project buffer mostly on serpentine soils. Augmentation ESLs does not contain suitable habitat.
English Peak greenbriar *Smilax jamesii*	BLMS/1B.3	Broad-leafed upland forest, lower montane coniferous forest, marshes and swamps, north coast coniferous forest, upper montane coniferous forest, lake margins, mesic (sometimes), streambanks, sometimes mesic depressions. Elevation: 1,655 – 6,480 feet. Bloom: May-Jul (Aug-Oct).	Occurs in Trinity County 3 miles north of Augmentation ESLs. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
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 to 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 s*p. 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.	Augmentation ESLs are outside of the known range of this species. Augmentation ESLs do not contain suitable habitat.

Common Name Scientific Name	Status[1]	General Habitat Description and Blooming Period	Habitat Suitability Assessment[3]
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 summer and autumn.	Occurs in Trinity County. Augmentation 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. Augmentation 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.	Augmentation ESLs are outside the known distribution of this species. Augmentation ESLs may contain suitable habitat. No habitat or populations were observed during 2023 surveys.
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. Augmentation 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[3]
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 augmentation ESLs are not mesic enough to support this species. Augmentation 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 Trinity County. Augmentation 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 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.

[1]Status Codes: FE = Federally listed as endangered; CE = California listed as endangered; CR = California Rare; BLMS = Bureau of Land Management Sensitive

California Rare Plant Ranks (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 J: Compliance with Standards and Guidelines for Survey and Manage Species

The Trinity River Winter-Spring Augmentation Project 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 U.S. 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 Plaintiffs' motion for partial summary judgment and finding a variety of violations of the National Environmental Policy Act (NEPA) in the BLM and U.S. Forest Service (USFS) 2007 Record of Decision 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 the 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 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. The BLM has reviewed the EA/IS for the sediment augmentation 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 large wood, channel and floodplain reconstruction, or removal of channel diversions, the 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.