

## Appendix F – Wild and Scenic Rivers Section 7 Analysis and Determination

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**ACRONYMS AND ABBREVIATIONS**

<u>Acronym</u>	<u>Definition</u>
BiOp	biological opinion
BLM	U.S. Bureau of Land Management
BMP	best management practices
cfs	cubic feet per second
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CWA	Clean Water Act
DPS	Distinct Population Segment
EA	Environmental Assessment
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESU	evolutionarily significant unit
HVT	Hoopa Valley Tribe
LRMP	land and resource management plan
MDB&M	Mount Diablo Base and Meridian
NCIP	Northwest California Integrated Resource Management Plan

NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPS	National Park Service
NTU	nephelometric turbidity unit
ORV	outstandingly remarkable value
Project	Trinity River Watershed Restoration Project
Reclamation	Bureau of Reclamation
RFO	Redding Field Office
ROD	Record of Decision
ROW	right-of-way
SONCC	Southern Oregon/Northern California Coast
STNF	Shasta-Trinity National Forest
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

## 1 Introduction

The National Wild and Scenic Rivers Act of 1968 (WSRA) establishes the national wild and scenic rivers (WSR) system; Section 7(a) of the WSRA directs the river-administering federal agency to evaluate the effects of a federally-assisted water resources project proposed within a WSR corridor on the river's free-flowing condition, water quality, and outstandingly remarkable values (ORVs). The WSRA prohibits activities that would interfere with the free-flowing condition of a WSR or degrade the values for which the wild and scenic designation was given. Rivers added to the national WSR system are given a classification: wild, scenic, or recreational, which are determined based on the level of development along the river at the time of designation.

The purpose of this analysis is to summarize the impacts of the Trinity River Watershed Restoration Project (Project), in accordance with Section 7(a) of the WSRA, on the mainstem Trinity River, South Fork Trinity River, North Fork Trinity River, and New River (collectively referred to as the Project WSRs in this document). Project activities and potential impacts would typically occur along roads and within areas designated as riparian reserves under the 1994 Northwest Forest Plan (NWFP; USFS and BLM 1994) within the Trinity River basin, including the Project WSRs. The primary objectives of the Project are to enhance aquatic habitat conditions for native anadromous fish species (e.g., salmon, steelhead, and Pacific lamprey) within the Trinity River watershed and to support the objectives of the Aquatic Conservation Strategy (ACS) of the NWFP, adopted by the Bureau of Land Management (BLM) and U.S. Forest Service (USFS).

Because activities would be implemented on BLM-administered and USFS-managed lands, the BLM and USFS serve as the river-administering agency and is required to determine whether the proposed Project would directly and adversely affect the Project WSRs' free-flowing condition, water quality, and/or ORVs. BLM and USFS work reciprocally under an Memorandum of Understanding (MOU) to identify which agency will be responsible for Section 7 analysis based on the project location. This document serves to provide project-level WSRA coverage for site-specific projects that involve BLM-managed WSR resources within the Trinity River Watershed, and additional site-specific WSR determination would not be required. For site-specific projects that involve USFS-managed WSR resources, additional site-specific WSR determinations would be completed for review and approval by the USFS line officer.

The Trinity River was designated as a WSR in 1981 under the WSRA 2(a)(ii) (46 FR 7484 7485, see Table 1). The mainstem Trinity River is designated as recreational from 100 yards below Lewiston Dam downstream to Cedar Flat, just upstream of the Trinity River's Burnt Ranch Gorge and then again below Gray Falls to the Six Rivers National Forest boundary. The Trinity River is designated as scenic from Cedar Flat Creek to Gray Falls. In addition to the mainstem section, three tributaries of the Trinity River were designated: the North Fork from the Trinity River confluence to the southern boundary of the Trinity Alps Wilderness Area (classified as wild); the South Fork Trinity River from the Trinity River confluence to the California State Highway 36 bridge crossing (classified as wild, scenic, and recreational); and the New River from the Trinity River confluence to the Trinity Alps Wilderness Area (classified as wild, scenic, and recreational). The South Fork of the Trinity River Wild and Scenic River Management Plan (USFS 1992) dovetails the Shasta-Trinity River National Forest (STNF) Land and Resources Management Plan (USFS 1995), which provides guidance on allowed uses for the three classifications. Wild river segments provide recreational opportunities that provide solitude with an emphasis on a dispersed

primitive experience. Some opportunities for solitude and isolation as well as opportunities for gregarious activities occur in scenic river segments, and opportunities for highly gregarious activities occur in recreational river segments. Recreation development includes maintenance of existing trails and facilities as well as providing for minimal developments in wild segments. In scenic and recreational river segments, moderate development is allowed. In wild river segments, only use of native materials is allowed in areas proposed for resource improvements and should be installed in such a way to appear natural. In scenic and recreational river segments, use of native and non-native materials is allowed, and both natural- and manmade-appearing improvements are allowed. Bioenhancement and fisheries habitat enhancement activities are allowed in all three river classifications. The USFS- and BLM-managed WSR segments within the Trinity River Watershed are shown in Figure 1.

**Table 1. Definition of wild, scenic, and recreational Wild and Scenic Rivers designations and permitted activities (The Wild & Scenic Rivers Act [16 U.S.C. 1271-1287] 1968, STNF Land and Resource Management Plan 1994).**

Designation	Definition	Permitted Activities
Wild	Those rivers or sections of rivers that are free of impoundments, with watersheds or shorelines essentially primitive, generally inaccessible except by trail, and with unpolluted waters. These represent the vestiges of primitive America.	No roads or other provisions for land motorized travel would be permitted within one-quarter mile of the riverbank. However, one or more inconspicuous roads leading to the river area, for the purpose of providing access, may be permitted. Also, unobtrusive trail bridges could be allowed. The cutting of trees would not be permitted except when needed for a primitive recreation experience or to protect the environment.
Scenic	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.	Roads may occasionally bridge the river area. Short stretches of conspicuous or longer stretches of inconspicuous and well screened roads could be allowed. Consideration would be given to the type of use for which roads are constructed and the type of use that would occur in the river area. A wide range of silvicultural practices could be allowed provided that such practices are carried on in a way that there is no substantial adverse effect on the river and its immediate environment.
Recreational	Those rivers or sections of rivers that are readily accessible by road or railroads, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.	Parallelling roads could be constructed on one or both riverbanks. There could be several bridge crossings and numerous river access points. Timber harvesting would be allowed. However, some restrictions could apply to immediate river environments to preserve scenic and fish and wildlife values.

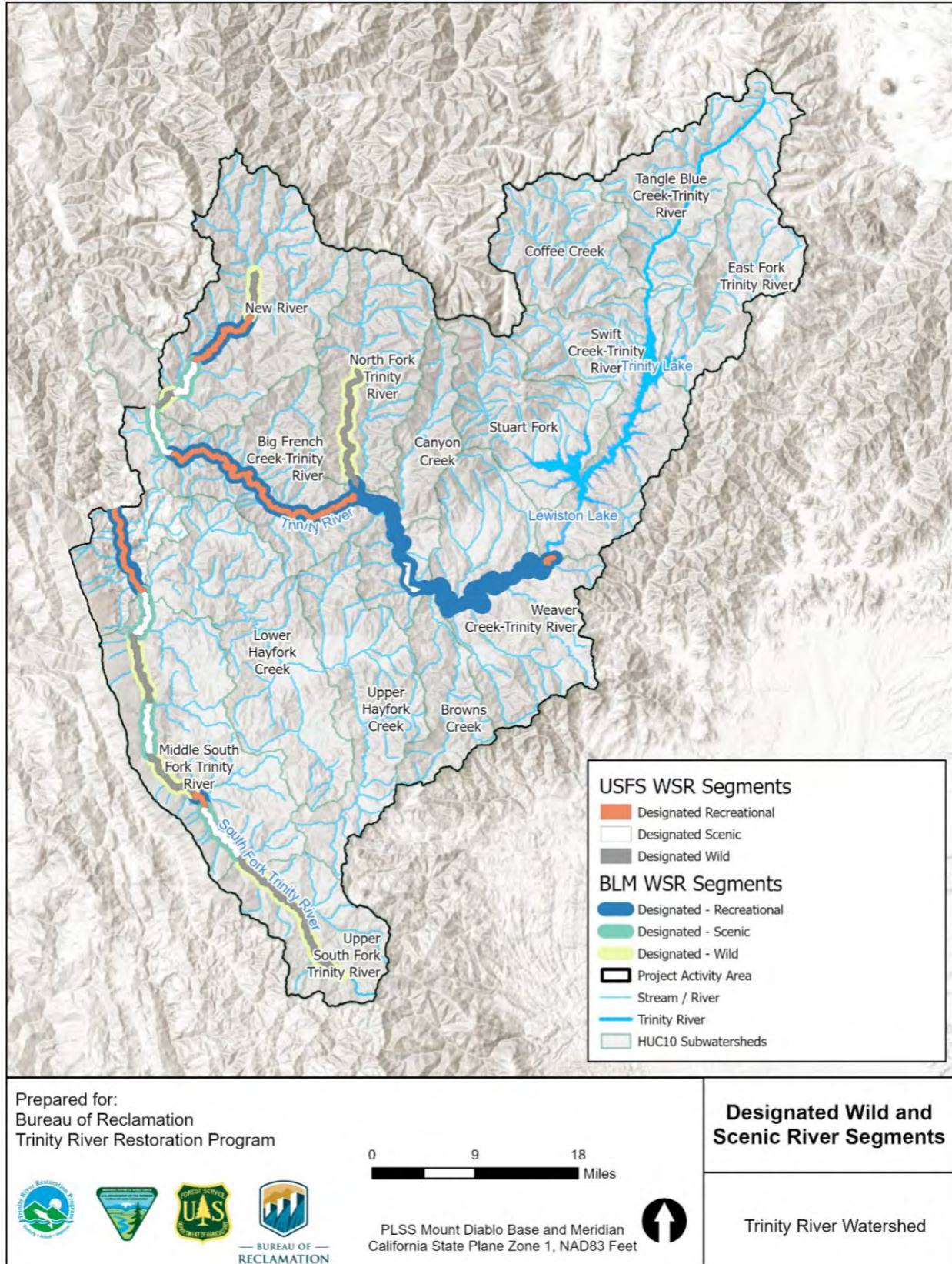


Figure 1. Designated WSR River Segments Managed by BLM and USFS.

The STNF has identified five tributaries that are candidates for WSR which include Canyon Creek, Hayfork Creek, Virgin Creek, and upper watershed segments of the North Fork Trinity River and South Fork Trinity River (see Table 2). Canyon Creek is a candidate for designation for scenic ORV under wild from the outlet of lower Canyon Creek Lake to the Canyon Creek Trailhead and under recreational from Canyon Creek Trailhead to the mainstem of the Trinity River. Hayfork Creek is a candidate for scenic designation for scenic and fisheries ORVs from nine-mile bridge to the confluence with the South Fork Trinity River. Virgin Creek is a candidate for wild designation for scenic and fisheries ORVs from the headwaters to the confluence with the New River. The North Fork Trinity River is a candidate for wild designation for scenic and fisheries ORVs for approximately 11.7 miles into the Trinity Alps Wilderness above its current designated WSR segments. The South Fork Trinity River has five candidate segments (2 wild, 2 scenic, and 1 recreational) identified for scenic and fisheries ORVs that extend from Forest Glen at the current WSR designated segments upstream approximately 24.8 miles to the headwaters as the Yolla Bolly-Middle Eel Wilderness Boundary.

The BLM RFO has similarly identified sections within Canyon Creek as suitable for designation of recreational with ORVs for fish, scenic, and recreation. BLM RFO has identified sections of the headwaters and mainstem of Weaver Creek and Indian Creek as suitable for scenic and one section of wild WSR designation for cultural, fish, and scenic ORVs (Table 2).

**Table 2. Designated, candidate (USFS), and suitable (BLM) Wild and Scenic River (WSR) sections in the Trinity River Basin managed by the Shasta-Trinity National Forest (USFS) or the Redding Field Office (BLM).**

River	Status	Description	Classification	Length (miles)	Management Agency	ORV
Canyon Creek	Candidate WSR	Headwaters at the outlet of lower Canyon Creek Lake to Canyon Creek Trailhead at Ripstein Campground	Wild	6.5	USFS	Scenic
Canyon Creek	Candidate WSR	Canyon Creek Trailhead to the Confluence with the Mainstem Trinity River	Recreational	11	USFS	Scenic
Canyon Creek	Suitable WSR	Canyon Creek is located in Trinity County in the northern Coast Ranges and contributes to the designated Trinity River WSR.	Recreational	2.9	BLM	Fish, Scenic, Recreation
Grub Gulch	Suitable WSR	The segments within the West Weaver Creek Complex are located in Trinity County and contribute to the designated Trinity River WSR.	Scenic	0.5	BLM	Cultural
Hayfork Creek	Candidate WSR	Nine Mile Bridget to the Confluence with the South Fork Trinity River	Scenic	14	USFS	Fish, Scenic

River	Status	Description	Classification	Length (miles)	Management Agency	ORV
Indian Creek 1 Segment A	Suitable WSR	The segments within the Indian Creek (Trinity River) Complex are located in Trinity County in the northern Coast Range and contribute to the designated Trinity River WSR.	Wild	0.8	BLM	Fish
Indian Creek 1 Segment B	Suitable WSR	The segments within the Indian Creek (Trinity River) Complex are located in Trinity County in the northern Coast Range and contribute to the designated Trinity River WSR.	Scenic	2.9	BLM	Fish, Cultural
Indian Creek 1 Segment C	Suitable WSR	The segments within the Indian Creek (Trinity River) Complex are located in Trinity County in the northern Coast Range and contribute to the designated Trinity River WSR.	Scenic	1.7	BLM	Fish
New River	Designated WSR	1000 feet below the confluence of Virgin and Slide Creek to junction with East fork New River in Section 23, T7N, R7E	Wild	5	USFS	Anadromous fish
New River	Designated WSR	Junction with East Fork New River in Section 23, T7N, R7E, to 100 yards below Panther Creek Campground in Section 18, T6N, R7E	Recreational	12.5	USFS	Anadromous fish
New River	Designated WSR	100 yards below Panther Creek Campground in Section 18, T6N, R7E to Dyer Creek in Section 25, T26N, R6E	Scenic	5	USFS	Anadromous fish
New River	Designated WSR	Dyer Creek in Section 25, T26N, R6E to the confluence with Trinity River Mainstem	Wild	3	USFS	Anadromous fish
North Fork Trinity River	Designated WSR	Trinity Alps Wilderness boundary, in the northwest 1/4 of Section 6, T36N, R11W to Trinity Alps Wilderness boundary, Section 20, T34N, R11W	Wild	14.7	USFS	Anadromous fish
North Fork Trinity River	Designated WSR	Trinity Alps Wilderness boundary, Section 20, T34N, R11W to confluences with the Trinity River mainstem, southeast Section 20, T34N, R11W	Recreational	7	USFS	Anadromous fish

River	Status	Description	Classification	Length (miles)	Management Agency	ORV
North Fork Trinity River	Candidate WSR	Headwaters in Southwest 1/4 of Section 24, T8N, R12W to existing WSR at Trinity Alps Wilderness Boundary, in the northwest 1/4 of Section 6, T36N, R11W	Wild	11.7	USFS	Fish, Scenic
North Fork Trinity River	Designated WSR	The North Fork of the Trinity from the intersection of the river with the southern boundary of the Salmon-Trinity Primitive Area downstream to the river mouth at Helena	Recreational	0.8	BLM	Fish, Scenic
South Fork Trinity River	Designated WSR	South Fork Trinity River (SFTR) from Forest Glen to Hidden Valley Ranch	Wild	5.9	USFS	Anadromous fish
South Fork Trinity River	Designated WSR	SFTR from Hidden Valley Ranch to Plummer Creek confluence in Section 8, T1N, R7E	Scenic	3.4	USFS	Anadromous fish
South Fork Trinity River	Designated WSR	SFTR from Plummer Creek confluence in Section 8, T1N, R7E to Johnson Creek confluence near the boundary of Sections 13 and 14, T2N, R6E	Wild	6.1	USFS	Anadromous fish
South Fork Trinity River	Designated WSR	SFTR from Johnson Creek confluence near the boundary of Sections 13 and 14, T2N, R6E to the boundary of Sections 25 and 36, T3N, R6E	Scenic	2	USFS	Anadromous fish
South Fork Trinity River	Designated WSR	SFTR from the boundary of Sections 25 and 36, T3N, R6E, to the footbridge near the mouth of Underwood Creek	Recreational	6.1	USFS	Anadromous fish
South Fork Trinity River	Designated WSR	SFTR from the footbridge near the mouth of Underwood Creek to Todd Ranch in Section 18, T5N, R6E	Wild	7.3	USFS	Anadromous fish
South Fork Trinity River	Designated WSR	SFTR from Todd Ranch to the confluence with the Trinity River	Scenic	6.4	USFS	Anadromous fish
South Fork Trinity River	Candidate WSR	Headwaters of the South Fork Trinity River at the Yolla Bolly-Middle Eel Wilderness Boundary at Section 19, R10W, T27N to the west section line of Section 28, T28N, R11W	Wild	8.1	USFS	Fish, Scenic

River	Status	Description	Classification	Length (miles)	Management Agency	ORV
South Fork Trinity River	Candidate WSR	West section line of Section 28, T28N, R11W to two tenths of a mile west and downstream of the Double Cabins site	Scenic	1	USFS	Fish, Scenic
South Fork Trinity River	Candidate WSR	Two tenths of a mile west and downstream of the Double Cabins site to the confluence with Smoky Creek	Wild	8	USFS	Fish, Scenic
South Fork Trinity River	Candidate WSR	Confluence with Smokey Creek to four tenths of a mile upstream from confluence with Farley Creek	Scenic	4.8	USFS	Fish, Scenic
South Fork Trinity River	Candidate WSR	Four tenths of a mile upstream from confluence with Farley Creek to existing South Fork Trinity River WSR, at Forest Glen	Recreational	2.9	USFS	Fish, Scenic
Trinity River	Designated WSR	100 yards below Lewiston Dam to Shasta-Trinity National Forest Boundary, Section 17, T33N, R8W	Recreational	2	USFS	Anadromous fish
Trinity River	Designated WSR	Shasta-Trinity National Forest boundary in north Section 4, T33N, R10W to Shasta-Trinity National Forest Boundary in north Section 29, T33N, R10W	Recreational	3	USFS	Anadromous fish
Trinity River	Designated WSR	Shasta-Trinity National Forest boundary to the east of Section 29, T34N, R11W near Pigeon Point to Cedar Flat Creek, Section 19, T5N, R6E	Recreational	29.5	USFS	Anadromous fish
Trinity River	Designated WSR	Cedar Flat Creek, Section 19, T5N, R6E to Grays Falls, Section 34, T6N, R6E	Scenic	5.2	USFS	Anadromous fish
Trinity River	Designated WSR	Grays Falls, Section 34, T6N, R6E to Six Rivers National Forest boundary, northwest corner of Section 32, T7N, R5E near Tish Tang	Recreational	17	USFS	Anadromous fish
Trinity River	Designated WSR	The main stem from 100 yards below Lewiston Dam to the river mouth at Weitchpec	Recreational	18.6	BLM	Fish, Scenic
Virgin Creek	Candidate WSR	Headwaters to the confluence with the New River	Wild	11.7	USFS	Fish, Scenic

River	Status	Description	Classification	Length (miles)	Management Agency	ORV
West Weaver Creek	Suitable WSR	The segments within the West Weaver Creek Complex are located in Trinity County and contribute to the designated Trinity River WSR.	Scenic	1.4	BLM	Fish, Cultural
West Weaver Creek Tributary	Suitable WSR	The segments within the West Weaver Creek Complex are located in Trinity County and contribute to the designated Trinity River WSR.	Scenic	0.1	BLM	Fish, Cultural

These river segments in the Trinity River basin 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 Project WSRs is the anadromous fishery. Under an interagency agreement between the BLM, the National Park Service (NPS), U.S. Fish and Wildlife Service (USFWS), and USFS, the BLM generally has the responsibility for conducting WSRA Section 7 determinations for WSRs. In addition, Section 7(a) of the WSRA directs the BLM on behalf of the Secretary of Interior to evaluate proposed water resource projects that have potential to effect a WSR for which the BLM is charged with administration (BLM 2012).

The Bureau of Reclamation (through the Trinity River Restoration Program [TRRP] that is part of Reclamation’s Northern California Area Office [NCAO]) is the Lead Federal Agency for the National Environmental Policy Act (NEPA) process. The cooperating agencies are USFS and BLM. TRRP, USFS, and BLM have collaborated during the preparation of the Project’s Environmental Assessment (EA).

This analysis evaluates the effects of the Project on the Project WSRs’ free-flowing condition, water quality, and the anadromous fishery ORV and provides a determination regarding their protection as required under Section 7 of the WSRA. Because of the length and level of detail provided in the EA and associated technical reports, this WSR analysis is presented in summary form and refers the reader to the specific sections of Chapter 5 of the EA for additional information on water quality and hydrology, geology and soil, vegetation and wetlands, fisheries, wildlife, and temperature and precipitation.

## 2 Definition of the Activity

### 2.1 Project Proponent

The Project proponent is TRRP (administered by Reclamation) with cooperators BLM and USFS.

### 2.2 Purpose and Need for the Project

The purpose of the Project is to improve instream and riparian habitat to accelerate the recovery of north coast salmonid populations (coho salmon, steelhead, and Chinook salmon) and other special status aquatic species,

thereby fulfilling tribal trust responsibilities and obligations to local communities as well as recreational and commercial fishing industries (per the STNF LRMP, BLM's Northwest Integrated Resource Management Plan (NCIP), and state and federal recovery plan goals [NMFS 2014, CDFG 2004]). All figures and appendices referenced in this document are included in the EA.

Specifically, the Project would:

- Restore and improve instream conditions sufficient to support all life stages of salmonids and other aquatic species;
- Restore upstream and downstream fish passage for all life stages of salmonids;
- Restore continuous paths for wood dispersal, nutrient cycling, sediment transport, and movement of other vegetative material essential for productive aquatic habitat;
- Maintain or restore native plant communities and vegetative structure impacted by invasive plants and pathogens, while rehabilitating eroding streambanks to improve water quality, shade conditions, and large wood recruitment;
- Repair, replace, or remove ineffective instream structures;
- Restore and improve riparian and meadow habitat in order to promote healthy conditions for aquatic and terrestrial wildlife populations;
- Improve late summer/fall base flow conditions through process-based restoration, water conservation improvements, and meadow restoration;
- Increase nutrient inputs through salmon carcass placement in tributaries; and
- Stabilize upslope areas around road infrastructure to minimize erosion and sediment discharges within the watershed

Implementation of the Project would incorporate general protection measures (GPMs), design guidelines, and conservation measures (CMs) to ensure that it is consistent with the BLM's management goals and objectives for the Trinity River under its NCIP to support management actions intended to enhance the fishery and recreational ORVs of the Project WSRs. The Project is consistent with the ACS objectives established by the NWFP<sup>1</sup> and was developed through a cooperative effort by the TRRP, BLM, and USFS.

## 2.3 Geographic Location of the Project

The Project restoration activities analyzed in the EA, which are described in more detail in Chapter 4 of the EA would occur within the Trinity River watershed. The proposed Project would be implemented primarily within riparian reserves along the mainstem and tributaries of the Trinity River, both below and above the Lewiston and Trinity dams and in upslope areas (Figure 1-1 of the EA).

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

## 2.4 Magnitude and Extent of the Project Activities

Project restoration activities are described and evaluated at the watershed-level because site-specific project locations and other details have not been determined. The Project consists of a suite of instream, riparian, and other restoration activities that were selected to meet the objectives described above. Detailed descriptions of each of the proposed activities are included in Chapter 4 of the EA. Proposed activities are grouped into three general categories: instream habitat restoration; upslope habitat restoration; and road maintenance, rehabilitation, and decommissioning activities. The activities proposed under each of these categories are summarized below:

### Instream Habitat Restoration

1. Restoration and Enhancement of In-Channel Habitat
2. Floodplain Restoration
3. Removal or Retrofitting of Fish Passage Barriers, Small Dams, Flood Gates, Pilings and Other In-water Structures
4. Water Conservation Projects
5. Salmon Carcass Placement
6. Remote Site Incubators (RSIs)

### Upslope Habitat Restoration

7. Bioengineered Bank Stabilization
8. Aquatic, Wetland, Riparian, and Upslope Habitat Enhancement

### Road Maintenance, Rehabilitation, and Decommissioning Activities

9. Road Maintenance
10. Road Rehabilitation
11. Road Decommissioning

## 2.5 Duration of the Activities

The time required to implement Project activities at a specific restoration site can be as short as a few days for minor projects, or as long as several years or only during certain months of the year for major projects. Major Project construction activities are typically concentrated during the dry season (generally May through October) with mobilization occurring as early as April. In-channel work windows for salmonids and seasonal restrictions for wildlife species may further constrict construction timelines to avoid and minimize impacts on sensitive species. Construction usually occurs only during daylight hours; however, in rare cases, continuous daytime and nighttime work may be necessary for some activities, expedited projects, and projects where the construction schedule is nearing the flood season. Depending on weather and river flow conditions, construction can extend well into November. If a construction phase extends into the following year's construction season, the site would be secured and "winterized" before the start of the flood season (typically November 15).

Site specific project planning would address the timing of the project as it relates to the following areas:

- **Surveys/Progression of Work:** Identify and plan to allow for surveys that may need to occur at certain times of year, or that may take multiple years (see vegetation and wildlife conservation measures in Appendix B).
- **Sediment:** Individual projects with the potential to generate sediment would occur during the dry (typically between June 15 and November 19 in the Trinity River basin) or before first significant rainfall, whichever comes first.
- **Flows:** Instream projects in ESA-listed species occupied habitat should consider flow levels and life history stage when implementing activities that require heavy equipment. Instream projects would occur during low flows, which typically occurs during summer and early fall months.
- **Seasonal Restrictions (SRs):** Based on noise generation, SRs may apply to all or part of the project based on location and surveys completed (see wildlife conservation measures in Appendix B of the EA).
- **Timing and Project Location:** Determine through interagency review if the timing of the project at a specific location may impact cultural practices, recreational uses or other resource areas. Adjust project areas accordingly to avoid sensitive resource impacts (see cultural and wildlife conservation measures in Appendix B of the EA).

## 2.6 Past and Future Activities

The Trinity River Restoration Program and partners have been completing flow modification, restoration and enhancement of in-channel habitat, floodplain restoration, road maintenance, road rehabilitation, and road decommissioning since the Record of Decisions was signed in 2000 and full implementation of actions started in 2005. The efforts to date for major instream projects have concentrated in WSR segments of the mainstem Trinity River between Lewiston Dam and the confluence with the North Fork Trinity River.

Many other local tribal, watershed and fisheries management, and land management organizations have worked to complete many of the actions proposed in this EA throughout the tributaries to the Trinity River. Minimal project modifications have taken place on the New River, Virgin Creek, North Fork or Canyon Creek over the last 10 years. The Bluebird Mine Restoration was an upland recontouring and revegetation project that took place in the Canyon Creek drainage. The South Fork Trinity River and Hayfork Creek have benefitted from water conservation and in-stream habitat improvement projects spearheaded by The Watershed Research and Training Center and Yurok Tribal Fisheries Program within WSR sections on the South Fork Trinity River. Along the South Fork Trinity River large wood was placed to improve channel complexity and juvenile rearing habitat in wild and scenic sections upstream of Hyampom, CA.

This EA supports future restoration activities within designated, candidate, and suitable WSR segments throughout the Trinity River basin.

## 3 Baseline Conditions

### 3.1 Free Flowing Condition

Existing conditions within the Trinity River watershed are influenced by the legacy of 20<sup>th</sup>-century dredge mining, which contributed to disturbances to the channel, floodplain, and flow regimes and simplified the available habitat for aquatic, riparian, and upland species. The channelization of the mainstem 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 mainstem Trinity River was designated as a WSR, anthropogenic riparian berms had been developing for more than 15 years and were further channelizing the river in several locations. Subsequently, studies have demonstrated that the river's alluvial nature had been modified extensively due to changes in the flow regime and sediment flux.

Although changes to flow management made since 2006 have provided some improvements to the form and function of the Trinity River, the Record of Decision (ROD) for the Trinity River Mainstem Fishery Restoration Environmental Impact Statement/Environmental Impact Report (USFS 2000) also required the establishment of the TRRP and stipulated watershed restoration efforts to address negative impacts that resulted from land use practices in the watershed. The ROD also stipulated that mechanical channel rehabilitation, including management of sediment inputs, 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 (i.e., the Lewiston and Trinity dams).

The South Fork Trinity River is the largest un-dammed river within the State of California and is considered a keystone watershed within the Klamath River basin. The South Fork Trinity River Basin is 980 square miles before joining the Trinity River near Salyer in Trinity County, CA. The South Fork Trinity River has no major dams or diversions. Historically, the South Fork Trinity River had a stable anadromous fish population, but these populations are still recovering after major flooding, which was exacerbated by erosion as a result of mining, logging, road construction, and ranching during the mid-1900s.

The North Fork Trinity River flows through the Klamath Mountains, draining roughly 151 square miles, and has no major dams or diversions.

The New River drains about 225 square miles of rugged mountains and forests. About 70 percent of the New River watershed is in the Trinity Alps Wilderness, which has little human disturbance. New River is also free flowing and is 25.5 miles from the headwaters to its confluence with the Trinity River.

Canyon Creek drains 124 square miles which was heavily mined and was previously damned until 1940.

### 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 River during low water conditions in late summer. Water releases from the TRD influence flow volumes and velocities, water quality, and channel geometry of the Trinity River downstream of Lewiston Dam. These releases are particularly important to water

quality parameters such as temperature and suspended sediments. Water 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 (2018 Basin Plan; North Coast Regional Water Quality Control Board (RWQCB) 2018).

Although the South Fork Trinity River and its tributaries support important populations of salmon and steelhead, excessive sediment continues to be a problem and consistently exceeds the existing Water Quality Standards (WQS) necessary to protect the beneficial uses of the basin, particularly the cold-water fishery. Accelerated erosion from land use practices and natural sources impacts the migration, spawning, reproduction, and early development of cold-water fish such as spring- and fall-run chinook salmon and steelhead trout.

Both the mainstem Trinity River and the South Fork Trinity River have been declared as sediment impaired and placed on the Section 303(d) list as impaired waters. The Trinity River was first placed on the Section 303(d) list in 1992 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. The North Fork Trinity River, New River, and Canyon Creek are including in the Trinity River TMDL listing. The upper portions of these watersheds have active mass wasting from the glacial geologic formations and high severity fire areas within the watersheds have contributed to soil erosion. Large portions of these watersheds are within the Trinity Alps Wilderness Area and provide residents within the drainages with a stable source of drinking water.

The South Fork Trinity River has been listed as a sediment impaired waterbody in California's 1995 CWA 303(d) list adopted by the State of California North Coast Regional Water Quality Control Board. In 2001, the EPA established a total maximum daily load (TMDL) for sediment in the river. In 1998, the South Fork Trinity River is listed on the Section 303(d) list for impairment or threat of impairment to water quality associated temperature. Diversions and recent drought compounding on the physical morphology have negatively impacted the South Fork Trinity River leading to warm water temperatures and low flows during the dry season. The warm water temperatures are a concern for returning salmonids but have also contributed to an increase in algae growth in the drainage.

The primary adverse impacts of excessive sediment in the Trinity River pertain to the degradation of habitat for 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 resulted in scoured sediment downstream of the TRD and reduced excess sediment deposition in areas near Lewiston Dam. In general, natural background turbidity levels in the Trinity mainstem range from 0 to 1 NTUs during low-flow conditions (typically 300 to 450 cfs). The Regional Water Board issues Section 401 Water Quality Certifications for construction activities and in light of the Trinity River TMDL, it typically 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.

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, discharges from Lewiston Dam have played an important role in regulating water temperatures in the Trinity River downstream. Depending on the

type of water year (e.g., extremely wet, wet, normal, dry, critically dry) 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 thermal regimes for all salmonid life stages in the Trinity River. 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 (AEAM) process since 2002.

Water temperatures in the Trinity River are primarily influenced by flows, topography, riparian condition, and aspect. Since the construction of the TRD, discharges from Lewiston Dam have had a significant effect on water temperatures in the Trinity River downstream. Reservoir releases from Lewiston Dam have altered the natural temperature regime, making the river warmer in the winter and colder in the summer than under pre-dam conditions. Depending on the water year type and time of year, this effect diminishes to varying degrees with distance from Lewiston Dam.

### 3.3 Outstandingly Remarkable Value: Anadromous Fishery

The ORV identified for the Project WSRs is the anadromous fishery. These rivers support 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. In addition, the WSRs also support the Klamath Mountain Province (KMP) steelhead DPS, the Upper Klamath/Trinity River (UKTR) fall-run Chinook salmon ESU, a remnant population of UKTR spring-run Chinook salmon, and Pacific lamprey.

Per the ACS, the BLM and USFS are tasked with conserving and restoring native anadromous fish habitat, and TRRP exists to re-establish endangered salmonid populations to the Trinity River, in part through restoration activities within the tributaries. Federal and state special-status fish species of particular concern that occur within the Project activity area include:

- SONCC coho salmon ESU (federal and California state ESA-listed as threatened, with designated CH); and
- UKTR spring-run Chinook salmon ESU (federal candidate species, California state ESA-listed as endangered, USFS sensitive).

The UKTR Chinook salmon ESU, while not a federal ESA-listed species and no critical habitat has been designated, is a stock covered under the Pacific Coast Salmon federal fishery management plan. Therefore, its habitat within the Trinity River watershed is considered essential fish habitat (EFH). SONCC coho habitat is also considered EFH. EFH receives federal protection under the Magnuson Stevens Fishery Conservation and Management Act.

Table 3 below identifies all special-status fish and freshwater mussel species with the potential to occur within the Trinity River watershed according to the California Natural Diversity Database (2024), BLM sensitive species Redding Field Office list, USFS sensitive species list for the Shasta-Trinity National Forest, University of California Davis PISCES Database fish distribution maps (CalFish 2024), and consultation with local expertise, namely TRRP. Table 3 includes the species and status, documented HUC 10 watershed presence, and whether designated critical habitat is present within the Project activity area.

**Table 3. Special-status fish and freshwater mussel species with potential to occur within the Project activity area.**

Common Name	Scientific Name	Federal Status <sup>1</sup>	Other Status <sup>2</sup>	Documented HUC 10 Presence	Designated critical habitat in the Project activity area?
<b>Fish Species</b>					
Coho salmon, SONCC ESU	<i>Oncorhynchus kisutch</i>	FT	ST, S2	Big French Creek, East Fork Trinity River, New River, Stuart Fork, Swift Creek-Trinity River, Weaver Creek, Lower Hayfork Creek, Middle South Fork Trinity River	Yes
Spring Chinook salmon, UKTR ESU	<i>Oncorhynchus tshawytscha</i>	FC	SE, SSC, USFS-S, S2	Big French Creek, Browns Creek, Canyon Creek, Coffee Creek, East Fork Trinity River, New River, North Fork Trinity River, Stuart Fork, Swift Creek-Trinity River, Tangle Blue Creek-Trinity River, Weaver Creek, Lower South Fork Trinity River, Lower Hayfork Creek, Upper Hayfork Creek, Middle South Fork Trinity River, Upper South Fork Trinity River	No
Steelhead, Klamath Mountains Province DPS <sup>3</sup>	<i>Oncorhynchus mykiss irideus</i>	NL	SSC, USFS-S, S2	Canyon Creek, Coffee Creek, East Fork Trinity River, New River, North Fork Trinity River, Stuart Fork, Swift Creek-Trinity River, Tangle Blue Creek-Trinity River, Weaver Creek, Lower South Fork Trinity River, Lower Hayfork Creek, Middle South Fork Trinity River, Upper South Fork Trinity River	No
Green sturgeon, Northern DPS <sup>3</sup>	<i>Acipenser medirostris</i>	NL	SSC, S1	Big French Creek <sup>4</sup>	No
Pacific lamprey	<i>Entosphenus tridentatus</i>	NL	SSC, USFS-S, BLM-S, S3	Big French Creek, Browns Creek, Canyon Creek, Coffee Creek, New River, North Fork Trinity River, Tangle Blue Creek-Trinity River, Weaver Creek, Lower South Fork Trinity River, Lower Hayfork Creek, Upper Hayfork Creek, Middle South Fork Trinity River	No
<b>Freshwater Mussel Species</b>					
Western pearlshell	<i>Margaritifera falcata</i>	NL	S1S2	Common in the Trinity River	No
California floater	<i>Anodonta californiensis</i>	NL	USFS-S, S2	Documented in low numbers in the Klamath and Trinity rivers	No

<sup>1</sup> FT = Federally-listed as threatened and species likely to become endangered within the foreseeable future; FC = Federal candidate for listing; NL = Not listed.

<sup>2</sup> SSC = California Species of Special Concern; SE = State-listed as endangered; ST = State-listed as threatened; BLM-S = BLM sensitive species, USFS-S = USFS sensitive species; NatureServe California State Rank S1 = critically imperiled, S2 = imperiled, S3 = vulnerable.

<sup>3</sup> Distinct Population Segment

<sup>4</sup> Green sturgeon is found outside the Project activity area in this HUC 10 watershed.

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 native salmonid species that occur in the Trinity River watershed 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 to the life stages 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 TRRP prioritizes enhancing Trinity River juvenile salmonid rearing conditions through management and restoration actions. Juvenile salmonid habitat availability and quality were determined to be the limiting factors for salmonid production during early Trinity River habitat evaluations (USFWS and HVT 1999). Extant native river salmonid populations have been 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 watershed restoration activities. Consequently, Chinook salmon numbers are targeted for juvenile population assessments in the Trinity River.

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, which is attributed to improved rearing habitats a result of increases in Trinity River spring water release volumes, coupled with enhancement of in-channel habitat. 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 influence fisheries' escapement to the river. Though habitat restoration in the watershed 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 River Hatchery (TRH). In general, salmon and steelhead population estimates are cyclical over time; however, general trends indicate overall population health. Since watershed restoration 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 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 best available data for anadromous fisheries return to the WSR designated and candidate tributaries is the annual summer snorkel surveys hosted by the STNF, CDFW, and The Watershed Research and Training, which are point in time counts of UKTR spring-run Chinook salmon ESU and summer-run KMP steelhead DPS in the major tributaries to the Trinity River. Surveys are completed along sections of Hayfork Creek, South Fork Trinity River, Canyon Creek, North Fork Trinity River, and New River. The tributaries with the strongest returning runs of UKTR spring-run Chinook are the South Fork Trinity River and New River, while the strong returns for summer-run KMP steelhead DPS are found on the North Fork Trinity River and New River.

The following subsections summarize current adult run sizes reported in the *Trinity River Basin Salmon and Steelhead Monitoring Project: Chinook and Coho Salmon and Fall-run Steelhead Run-size Estimates Using Mark-Recapture Methods: 2022-2023 Season* available at: <https://www.trrp.net/library/document/?id=2625>).

### **3.3.1 Spring-run Chinook Salmon 2022 Status Summary**

According to this data, spawning escapement above the Junction City Weir was an estimated 13,262 fish, including the 3,971 spring-run adult Chinook that entered TRH and 8,531 estimated natural area adult spawners. There was insufficient data to estimate the contribution of hatchery adults to the total run or towards the TRRP goal of 6,000. This year's run size estimate of 13,262 is approximately 87.2% of the 15,212 average since 1978. Estimated spring Chinook run-size had ranged from 2,381 fish in 1991 to 62,692 fish in 1988.

### **3.3.2 Fall-run Chinook Salmon 2022 Status Summary**

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

### **3.3.3 Coho Salmon 2022 Status Summary**

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

### **3.3.4 Fall-run Steelhead 2022 Status Summary**

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

## 4 WSRA Section 7(A) Evaluation Standard and Evaluation Criteria

### 4.1 Evaluation Standard

The Project was evaluated to determine if the proposed activities would result in any “direct and adverse” effects on the WSR’s values (free flow, water quality, and the anadromous fishery ORV) pursuant to Section 7(a) of the WSRA. The Redding Field Manager will approve the determination for the BLM. The Regional Forester will approve the determinations for the USFS on site specific projects.

### 4.2 Evaluation Criteria

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

#### 4.2.1 Free Flowing Condition

Alteration of within-channel conditions including:

- Active channel location
- Channel geometry
- Channel slope
- Channel form
- Navigation of river

Alteration of riparian and/or floodplain conditions including:

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

Alteration of upland conditions including:

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

Alteration of hydrological processes including:

- The ability of the channel to change course, reoccupy former segments, or inundate its floodplain
- Streambank erosion potential, sediment routing and depositions, or debris loading
- The amount or timing of flow in the channel

- Existing flow patterns
- Surface and subsurface flow characteristics
- Flood storage (detention storage)
- Aggradation or degradation of the channel

Magnitude and extent of 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**

- Pollutants (i.e., oil and grease)
- Sedimentation/Turbidity
- Water Temperature (discussed in the context of the anadromous fishery ORV)

#### **4.2.3 Outstandingly Remarkable Value: Anadromous Fishery**

To maintain/restore the fishery, the TRRP is charged with restoring ecosystem function and conditions to support salmon and steelhead. Likewise, the Project objectives focus around restoring and enhancing aquatic habitat in support of all salmonid life stages with the Trinity River watershed.

The evaluation criteria for the anadromous fisheries ORV are:

- Water temperature
- Water quality (physical, biological, chemical)
- Aquatic habitat
  - Geomorphic condition
  - Substrate quality
  - Nutrient cycling
  - Condition of aquatic invertebrate, amphibian, and mollusk habitat
  - Species composition and diversity
- Fish species population conditions, specifically:
  - Anadromous salmonid fish species
  - Resident fish species
  - Species traditionally used by and culturally important to Native Americans

This Section 7(a) evaluation addresses the Project's potential to directly and negatively impact the anadromous fishery ORV and other values identified by the WSRA. Chapter 4 of the EA provides additional analysis of the

Project effects on the WSRs, water quality, hydrology, fisheries, wildlife, vegetation, recreation, and aesthetic values.

## 5 Analysis of Effects to Free-Flowing Conditions

### 5.1 How the Project Would Directly Alter Within-Channel Conditions

#### 5.1.1 Position of the Project Relative to the Streambed and Streambanks

Consistent with the purpose and need described in Section 2.2 and as determined by the ROD, the TRRP is directed to reestablish the form and function of the Trinity River in a manner that reestablishes the fishery to pre-dam conditions. The Project activities could occur within and adjacent to the bed and banks of the mainstem Trinity River and other WSRs to improve the aquatic habitat functions of these rivers in support of the anadromous fisheries ORV while ensuring the protection of water quality. The Project activities described in Section 2.4 would change the WSRs' existing form and functions within and, to varying degrees downstream of Project sites by restoring and improving floodplain habitat, increasing channel complexity, reestablishing self-sustaining riparian vegetation, and removing instream structures.

#### 5.1.2 Potential Project-Related Changes to Free-Flowing Conditions

##### 5.1.2.1 Active Channel Location

The active channel of the Trinity River 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.

Project activities implemented on the four WSRs that involve restoration and enhancement of in-channel habitat, floodplain restoration, and removal/retrofitting of fish passage barriers, small dams, flood gates, pilings and other in-water structures within the active channel would provide opportunities for both short- and long-term changes in channel morphology (width, depth, and gradient), therefore increasing the amount and quality of habitat for all life stages of anadromous salmonids. The Project activities resulting in physical modifications within the floodplain would improve the free-flowing conditions at individual project sites by allowing the WSRs and tributaries to more frequently inundate and move within their floodplains.

Portions of the North Fork Trinity River and the South Fork Trinity River and the entire reach of the New River are designated as wild. There would be no proposed heavy equipment use within the wild portions of wild and scenic river designations (WSRA§2 (a)(ii)). The scenic classification applies to those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and largely undeveloped but may be accessible in places by roads. Proposed activities would not affect the free-flowing condition of the rivers and would lead to improvement to the ORV.

### **5.1.2.2 Channel Geometry**

As described in Section 2.2 Purpose and Need for the Project, one of the fundamental objectives 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 stream channels over time in response to ongoing changes in sediment and flow regimes associated with both natural and anthropogenic processes. The Project would encourage the development of a dynamic channel geometry that would increase the amount and quality of habitat for fisheries and other aquatic species.

### **5.1.2.3 Channel Gradient**

Many project activities would improve channel complexity by increasing sinuosity and the number and length of side channels, which would reduce flow velocity and encourage colonization of riparian vegetation. In channelized portions of the WSRs, site improvements that decrease channel gradient could improve channel stability.

### **5.1.2.4 Channel Morphology**

The various Project activities are expected to alter channel morphology by increasing sinuosity, stabilizing banks, reconnecting the channel to the floodplain, and creating side channel habitat. Through implementation of Project activities, the channel morphology would become more diversified resulting in an increase in back channels and riffle-pool complexes. At some locations, eroded banks would be stabilized and upslope erosion would be controlled so that less sediment enters the channel.

### **5.1.2.5 Navigation of the River**

The Project WSRs provide 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 WSRs throughout the year.

The BLM, in agreement with the USFS, issues up to 100 permits for commercial fishing guides along the upper reach of the mainstem Trinity River. The USFS issues 13 raft guide permits for the Trinity River downstream of Pigeon Point River Access. Visitor use of the Project WSRs can vary throughout the year and depending on the season. Temporary construction activities associated with the Project could pose a physical hazard to recreational users and cause short-term disturbance to areas used for recreational activities in and adjacent to project sites. Potential physical hazards to recreationists include the presence of temporary river crossings, operation of construction equipment and vehicles in and adjacent to the river, the addition of wood into the channel, and an increased potential for chemical contamination (e.g., diesel and hydraulic fluid) from construction equipment and vehicles operating in and adjacent to the river.

During site-specific project implementation, public access in the construction areas would be limited. Access to the Project sites would be limited based on individual agreements with landowners; however, river access to float through the Project WSRs would be maintained at all times.

An environmental commitment described in Appendix B of the EA requires implementors to post precautionary signage of instream construction to reduce the hazards to recreational users associated with in-river

construction activities. This approach has worked well for previous TRRP projects and has been particularly effective in reducing short-term impacts for in-water recreational activities such as boating and fishing over the past 10 years. In the long-term, natural vegetation and a more sinuous naturally-functioning river would benefit river recreation.

## **5.2 How the Project Would Directly Alter Riparian and/or Floodplain Conditions**

### **5.2.1 The Position of the Project Relative to Riparian and Floodplain Areas**

The Project activities would primarily occur in riparian and floodplain areas and would improve floodplain interaction and allow for river dynamics to shift in response to flow and sediment regimes that persist after the construction of the TRD. Project activities would restore hydraulic connections and inundation across the floodplain to improve the diversity and complexity of aquatic, meadow, and riparian habitat; and ecosystem and geomorphic functions within the watershed. Project activities relating to floodplain restoration include: the setback, breaching, modification, and removal of levees, berms, and dikes; excavation or fill in support of hydraulic reconnection across the floodplain (including restoration to stage zero, which creates streams that are fully connected with their floodplains; typically, with multi-thread channels). Floodplain restoration activities also includes rock placement (specifically as engineered stream material, riffle ramps, or weirs); filling or reshaping of on- and off-channel gravel pits; and other strategies to aggrade the channel and improve connectivity within the floodplain. At site-specific project locations, riparian vegetation conditions would be enhanced and restored and nonnative species would be controlled to the extent possible.

### **5.2.2 Potential Project-Related Changes to Floodplain Conditions**

#### ***5.2.2.1 Vegetation Composition, Age Structure, Quantity, or Vigor***

In places, the riparian vegetation along the Project WSR corridors lack complexity with respect to species diversity, multiple age classes, and structure. The riparian corridors along the Project WSRs were impacted by placer mining activities, including both hydraulic and dredge operations, which resulted in increased floodplain elevations 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).

Certain Project activities would lower floodplain elevations to enable alluvial processes to reestablish under low flows and would provide opportunities for reestablishment of complex assemblages of native riparian and upland vegetation communities, including trees, shrubs, and grasses, at elevations that enable rooting within the hyporheic zone of alluvial features.

Project revegetation activities would be designed through collaboration with BLM and USFS botanists and fish biologists to ensure establishment of complex and regionally appropriate riparian communities. Revegetation efforts implemented in conjunction with floodplain grading, weed management, and extensive planting would improve riparian community reestablishment within 5 to 10 years post project construction. Some Project activities would include removing nonnative terrestrial and aquatic plant species by manual and mechanical methods (i.e., no herbicides); removing trees where necessary for watershed restoration (and salvaging for instream placement when appropriate); and revegetating areas with native herbaceous plants (including sedges, rushes, grasses, and forbs), shrubs, and trees. Revegetation efforts would involve harvesting and installing

willow cuttings, stakes, mats, and fences; installing livestock fences around sensitive habitat; providing temporary irrigation; and coordinating with upstream operators to control dam releases or instream flow levels to provide water during early plant establishment.

#### **5.2.2.2 *Relevant Soil Properties Such as Compaction or Percent Bare Ground***

Historic mining activities along Project WSRs resulted in loss of soil structure and in some areas complete loss of topsoil, limiting the establishment of native vegetation. By removing tailings within the floodplains and preserving remnant soils where found, the Project would create opportunities for riparian vegetation to naturally colonize some newly open areas. Revegetation efforts and natural recruitment are expected to decrease the amount of bare ground over the long term as riparian and upland vegetation becomes reestablished within restored floodplains.

#### **5.2.2.3 *Relevant Floodplain Characteristics Such as Width, Roughness, Bank Stability, or Susceptibility to Erosion***

As described previously, changes to channel morphology by increasing sinuosity, stabilizing banks, reconnecting the channel to the floodplain, and creating side channel habitat would occur as a result of the Project. Generally, channel complexity within floodplain areas would be improved. At some locations, eroded banks would be stabilized and upslope erosion would be controlled so that less sediment enters the channel.

### **5.3 How the Activity Would Directly Alter Upland Conditions**

#### **5.3.1 The Position of the Activity Relative to the Uplands**

Many areas throughout the watershed have been subjected to some degree of disturbance associated with historic mining. Upslope areas within the watershed where vegetative communities have been disturbed by past land disturbances (wildfire, introduction of nonnative species, or construction activities) and where habitat functions (e.g., water quality, biodiversity, etc.) have been degraded would be targeted for restoration or enhancement. Project activities implemented in uplands would include nonnative/invasive plant management by manual and mechanical methods (i.e., no herbicides); removing trees where necessary for watershed restoration (and salvaging for instream placement when appropriate); and revegetating areas with native herbaceous plants, shrubs, and trees.

### **5.4 Resident Fish Species**

Project activities that improve the Project WSRs for anadromous fish would also offer opportunities to improve aquatic habitat conditions in support of resident fish and other aquatic organisms (e.g., freshwater mussels).

#### **5.4.1 Potential Project-Related Changes to Uplands**

##### **5.4.1.1 *Vegetation Composition, Age Structure, Quantity, or Vigor***

The composition, age structure, and quantity of some upland vegetation has been altered or degraded in areas impacted by boat line dredge piles from the 1930s and 1940s. Some of these upslope areas along Project WSRs would be revegetated with native trees (conifers and hardwoods), shrubs, and grasses. In addition, any areas disturbed by Project activities would be targeted for invasive species removal and would be revegetated with

native grasses, forbs, shrubs, and trees, with a goal of reestablishing complex and resilient native plant communities.

#### **5.4.1.2 Relevant Soil Properties Such as Compaction or Percent Bare Ground**

Project activities may involve removal of excessive fill material and lowered surface elevations resulting in conversion of uplands to floodplain habitat. Areas with significant soil compaction would be ripped prior to revegetation or seeding. Existing high-quality topsoil would be stockpiled and used in revegetation areas as appropriate. In addition, in upland areas where roads are decommissioned, soils would be decompacted (through soil ripping) as part of the decommissioning.

#### **5.4.1.3 Relevant Hydrologic Properties Such as Drainage Patterns or the Character of Surface and Subsurface Flows**

A goal of upland Project activities would be to improve surface and subsurface drainage patterns. Grading plans would be designed to create topographic features that would disperse rather than concentrate overland flows and grading resulting in steep slope angles would be avoided to minimize erosion from the upland areas after site-specific project implementation.

#### **5.4.1.4 Archaeological, Cultural, or Other Identified Significant Resource Values**

Surveys for pre-historic and historic resources would occur within and adjacent to the site-specific project areas. Close coordination between Reclamation, USFS, and BLM cultural resource managers would ensure that Project activities would have no adverse effect on historic properties pursuant to Section 106 determination of the National Historic Preservation Act.

## **5.5 How Changes in On-Site Conditions Could Alter Existing Hydrologic Processes**

### **5.5.1 Ability of the Channel to Change Course, Reoccupy Former Segments, or Inundate Its Floodplain**

Project activities are expected to increase the Project WSRs' ability to evolve into more complex and dynamic channel structures that can access floodplains at a much wider range of flows than under current conditions. Post-project conditions would promote morphological responses to changes in the onsite flow and sediment regime, thus contributing to improved geomorphic function.

### **5.5.2 Potential Project-Related Changes to Hydrologic Processes**

#### **5.5.2.1 Streambank Erosion Potential, Sediment Routing and Deposition, or Debris Loading**

A key objective of the TRRP is reestablishing the alluvial processes that existed before the construction of the TRD to the extent possible. Periodic natural fluvial disturbances such as bank erosion, sediment flux, and debris loading, can be essential to a dynamic and high functioning river system. Areas with severe bank erosion/cut banks would be stabilized or reconfigured.

### **5.5.2.2 *The Amount or Timing of Flow in the Channel***

The flow regime of the upper reach of the Trinity River is highly influenced by releases from the TRD and Lewiston Dam. Project activities could result in lowered floodplain surfaces, allowing for floodplain inundation to occur on a more frequent basis. Increased surface and subsurface inundation would maintain floodplain habitat important for juvenile fish rearing. Surface flows in the free-flowing Project WSRs would not be negatively affected by Project activities.

### **5.5.2.3 *Existing Flow Patterns, Surface and Subsurface Flow Characteristics***

Trinity River flows are highly regulated, particularly under base-flow conditions. Project activities would not change the volume of flow within Project WSRs but would substantially increase floodplain inundation during periods of juvenile fish inhabitation. Where structured log jams (SLJs) and other large wood would be placed on the floodplain, surface flow complexity would increase and immediate refuge habitat would be created for many fish species. Within the vicinity of wood installation, flow variability would increase across all river depths.

### **5.5.2.4 *Floodplain Storage (Detention Storage)***

The existing topographic setting of some of the Project WSR floodplains is not conducive to floodplain storage. However, lowering floodplain elevations would increase the hyporheic connection between the river and shallow groundwater and would increase overbank flows and subsurface recharge. This dynamic is expected to improve conditions for opportunistic native riparian plant recruitment and establishment.

### **5.5.2.5 *Aggradation or Degradation of the Channel***

Project activities are meant to reestablish geomorphological processes that would enhance opportunities for riverbed aggradation and degradation that emulates natural fluvial processes. Floodplain and in-channel restoration activities are intended to jumpstart more natural fluvial processes and provide the Trinity River basin with the means to continue this cycle over time under the TRRP-managed mainstem flow regime.

## **5.5.3 Estimation of the Magnitude and Spatial Extent of Potential Off-Site Changes**

### **5.5.3.1 *Changes That Influence Other Parts of the River System***

Project activities are likely to affect areas downstream of the Project WSRs in several ways. The short-term episodic increases in turbidity related to in-channel construction and access activities would be noticeable for periods of time ranging from several hours to several days, though the turbidity levels would be managed as to not exceed water quality permit thresholds. High flows following construction are expected to remobilize floodplain material on depositional features downstream and to increase channel complexity. Over time, large wood structures would degrade and potentially dislodge, becoming a source of large wood to areas downstream. Modification of site-specific hydraulic conditions could affect the channel downstream while the channel adjusts to the new configuration. During this period, alluvial material may mobilize and deposit along downstream reaches.

### **5.5.3.2 *The Range of Circumstances under Which Off-Site Changes Might Occur***

During and after site-specific project implementation and after flooding events, increases in turbidity may be visible for several miles downstream of activity areas for short periods of time before dilution and mixing occur.

The downstream mobilization of large wood could occur periodically for several years; the distance large wood is mobilized downstream would vary considerably depending on the duration and magnitude of flood events.

### **5.5.3.3 The Likelihood That Predicted Changes Will Be Realized**

The predicted fluvial process changes from implementation of Project activities would likely be realized. Recent TRRP projects intended to restore alluvial processes and benefit anadromous fish habitat in the mainstem Trinity River have achieved the desired restoration objectives that are intended for the Project and therefore, similar outcomes are anticipated for the proposed Project activities.

### **5.5.3.4 Specify Processes Involved, Such as Water and Sediment, and the Movement of Nutrients**

The construction of river meanders and side channels and expansion of inundated floodplain conditions, coupled with placement of large wood and other habitat elements would improve hydraulic conditions, sediment transport (including organic sediment), and nutrient cycling within the Trinity River basin overtime. The Project is expected to have a beneficial effect on the anadromous fishery ORV in both the short- and long-term.

## **6 Analysis of Effects to Water Quality**

### **6.1 Relevant Water Quality Parameters**

Potential chemical contamination effects related to potential fuel and fluid leaks from heavy equipment or contaminated sediment being released with the removal of instream structures. However, the probability of such an uncontrolled event is low with the implementation of the BMPs provided in Appendix B of the EA under "Avoidance and Minimization Measures."

Project restoration activities involving construction with heavy machinery and earthmoving create the greatest potential for sediment and turbidity concerns. Restoration and Enhancement of In-Channel Habitat; Floodplain Restoration; Removal or Retrofitting of Fish Passage Barriers, Small Dams, Flood Gates, Pilings and Other In-water Structures; Water Conservation Projects; Bioengineered Bank Stabilization; and Road Maintenance, Rehabilitation, and Decommissioning Activities would be those most likely to produce short-term construction-related sedimentation and turbidity impacts. The duration of most turbidity plumes would be limited to hours or days, though large projects may continue to produce turbidity (though gradually declining) for weeks. Actions in other activity categories have minor, if any, construction components. Fish would be exposed to longer-term increases in sediment mobilization caused by Project activities, but several measures would reduce the potential impact of sedimentation. Erosion and sediment control best management practices (BMPs) would be implemented to ensure compliance with the turbidity thresholds specified by the site-specific Section 401 water quality certifications (typically, more than 20 NTUs at 500 feet downstream of in-river construction when background turbidity is less than or equal to 20 NTUs, and more than a 20% increase in turbidity at 500 feet downstream when background is greater than 20 NTUs). If standards are not met, construction activities would cease.

In addition to typical erosion and sediment control BMPs, effective sedimentation/turbidity control measures would be utilized to minimize turbidity impacts during instream 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.
- Pace of Construction – Controlling the pace of in-channel work 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-specific restoration efforts.

## 7 Analysis of Effects to The Outstandingly Remarkable Value: The Anadromous Fishery

The Project WSRs support numerous native and non-native fish and other aquatic organisms. Before installing the TRD, the Trinity River provided habitat for numerous anadromous fish species, including Chinook salmon, coho salmon, steelhead, and Pacific lamprey. Since completion of the TRD, anadromous fish populations have dramatically decreased in abundance, which led to the establishment of the TRRP for the purpose of restoring aquatic habitat in an effort to recover anadromous fish populations within the Trinity River. The anadromous fishery is the ORV identified in the Trinity River's 1981 WSR designation.

The Project would enhance or restore stream structure/complexity, stream sinuosity and length, bank stability, floodplain connectivity, and riparian vegetation structure and diversity. These improvements would promote conditions that maintain or decrease stream temperature, reduce turbidity and excessive sediment discharges (via stabilized streambanks, improved sediment retention through floodplain reconnection, and roadway activities), and improve nutrient cycling (via improved riparian, meadow, and wetland conditions as well as salmonid carcass placement). Removing or repairing in-water structures would restore fish passage for spawning, migrating, and rearing fish, and would increase aquatic habitat area. Restoration of riparian vegetative communities would improve or create shade and cover along streambanks in the long-term, which would help maintain water temperatures.

Large wood and boulder placement would enhance habitat elements for migrating and rearing fish. Wood placement tends to result in improvements in physical habitat (e.g., increased pool frequency, cover, and habitat diversity) and positive responses from salmonids. Increased salmon spawning activity in areas where gravel has accumulated behind large wood has also been observed.

Restoring off-channel habitat, including side channels, would increase adult and juvenile rearing habitat by creating flow refugia. Bioengineered bank stabilization projects would decrease direct sediment inputs into the river and improve riparian conditions would benefit rearing juvenile fish.

In addition, the use of remote site incubation (RSI) systems would supplement tributary streams with anadromous salmonids. The RSI systems also have been shown to improve the survival of these fish compared with more traditional hatchery production.

## 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, discharges from Lewiston Dam have played an important role in regulating downstream water temperatures in the Trinity River. Depending on the type of water year and time of year, this effect diminishes to varying degrees with distance from Lewiston Dam.

Restoration and enhancement efforts associated with Project activities would improve riparian vegetation communities, particularly through the planting of trees and shrubs, which would increase shade and improve habitat conditions for juvenile salmonids along the margins of the mainstem and tributaries. It is also worth mentioning that invasive plant species management at site-specific project locations is anticipated to be a challenge without herbicide application allowed. Adding channel complexity and restoring flows across the floodplain would increase adult and juvenile salmonid rearing habitat where cooler water temperatures in some off-channel habitats would provide refugia from mainstem temperatures.

## 7.2 Water Quality

As a result of construction activities, the Project would have short-term sedimentation/turbidity effects as previously discussed. However, in the long-term, the Project would improve suspended sediment conditions in the Trinity River basin as well, which would benefit salmonids. Adding channel roughness, such as boulders, SLJ's, and loose wood placements, would increase the sediment storage capability within Project waterways. One or more of these added instream habitat features could capture tens to hundreds of cubic yards of sediment and wood that would otherwise be lost through annual stream flows in the absence of placed structures. Restoring floodplain connections by decommissioning of roads with removing their associated culverts and cross-drains, paired with floodplain restoration activities, would increase sediment storage within its reconnected floodplain. Studies indicate that road decommissioning would reduce human-caused sediment to streams. One study (Black et al. 2017) noted an 80% reduction in sediment delivery to streams in National Forests in the Pacific Northwest, Northern, and Intermountain Forest Service Regions.

## 7.3 Aquatic and Riparian Habitat

The purpose of the Project is to improve instream and riparian habitat at a watershed scale and to accelerate the recovery of north coast salmonid populations (coho salmon, steelhead, and Chinook salmon). One of the Project objectives is to restore and improve riparian and meadow habitat associated with the Trinity River in order to promote healthy conditions for aquatic and terrestrial wildlife populations.

Dewatering, heavy equipment use in the channel, removal of riparian vegetation to access sites, grading of floodplain areas, and re-contouring of streambanks would likely result in a temporary reduction of available forage and instream habitat for wildlife. Site-specific Project designs would preserve large riparian trees or reuse

them to create instream large wood structures to the extent possible. In some cases, riparian vegetative cover would be reduced or removed, which would result in a temporal reduction of cover and shading, and potentially reduced nutrient cycling and reduced terrestrial invertebrate production on a localized and temporary scale. Displacement of salmonids from preferred habitat may also result in an increased predation risk or reduced feeding efficiency due to the loss of cover (Michney and Hampton 1984; Michney and Deibel 1986). Some of these effects would be short-term and would therefore be negligible for salmonids and other migrating fish. Invertebrates would rapidly recolonize disturbed areas following reintroduction of water (Harvey and White 2008). Riparian plantings and natural recruitment would ensure no net loss of riparian habitat; however, there would be a temporal loss of riparian functions while riparian areas re-establish. The addition of large wood structures would provide immediate cover and shade adjacent to pools and encourage natural sediment build-up next to the wood structures, allowing the bank to fill in and recruit more vegetation for improvement of long-term streambank functions and development of habitat features. Increases in shallow-water habitat at point bars and along floodplains, including side channels and alcoves, would benefit invertebrate production, and increases in point bar surface areas would increase salmon spawning habitat within the boundaries of the rehabilitation sites (Goodman et al. 2012, Beechie et al. 2014). Project activities would ultimately increase floodplain connectivity, facilitate channel migration across floodplains, and improve riparian and aquatic habitat diversity for anadromous salmonids throughout the Project.

The Project would also manage noxious weeds and invasive plant species through control measures, grading, clearing, native revegetation activities, and periodic flooding of newly constructed floodplains. Prevention measures for invasive plants would include using weed-free erosion control materials and washing equipment, would be implemented at Project sites per erosion and sediment control BMPs.

### **7.3.1 Geomorphic Condition (Sediment Transport and Substrate Quality)**

The geomorphic setting of the Project WSRs is characterized by a subsection of mountains with rounded summits, steep sides, and narrow canyons formed during the Trinity Alps glaciation period, as Quaternary glacial till and outwash occur in many areas. On the western side of the Project activity area, alluvial glacial outwash that impinged on older metavolcanic formations to the east and older ultramafic sea floor deposits to the north (elevations ranging from about 1,500 to 5,000 feet) occurs. Mass wasting and fluvial erosion are the main geomorphic processes that influence conditions in the Project WSRs.

The South Fork Trinity River lies between rugged mountains with deeply incised stream valleys. Logging has historically been part of the economy of this area. A flood in December 1964 caused extensive natural landslides, mostly on the west-side geologic terranes. The resulting sediment input caused widespread channel aggradation, decreased channel complexity, and decreased pool depth and reduced temperature stratification (USFS 2001). As a result, fish populations experienced substantial declines.

Some reaches of the Project WSRs, especially on the mainstem Trinity River, are characterized by a relatively wide alluvial valley bottom, low gradient, low sinuosity, and simple channel geometry. The channel is almost exclusively single thread, with some evidence of riffles, bars, or similar channel bed elements. Dredge tailings piles occupy portions of the floodplain and disrupt surface and subsurface hydrological connections with the river. Hydraulic mining caused significant aggradation, such that depth to bedrock is anticipated to be at least 10 feet or more. Flow velocities increase rapidly with discharge volume and greatly exceed the thresholds deemed to be suitable for rearing salmon (1-2 ft/s) throughout most of the channel.

Massive aggradation during the period dominated by hydraulic mining was followed by large-scale dredge mining of the alluvial valley floor that continued into the 1940s. The channel and associated alluvial features of the Trinity River were dredged extensively and the dredge tailing deposits are evident along the river corridor.

For Project activities that address floodplain connectivity, floodplain soils would be enhanced both by placement of materials during construction and as flows deposit sediment in newly lowered locations. The overall Project 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.

### **7.3.2 Substrate Quality**

Project activities would include amending the floodplain substrate in historically mined areas through sediment and wood augmentation. In addition, enhanced post-project floodplain topography will encourage the deposition of fines from upslope areas and sediment capture in revegetation areas

### **7.3.3 Nutrient Cycling**

At some of the site-specific project sites, large wood and other organic materials would be placed within the channel, along the banks, or on the floodplain. The addition of large wood and other organic materials (chips and slash) would increase nutrient cycling as aquatic invertebrates, saprotrophic fungi, and detritivores such as bacteria directly consume deadwood. In turn, these organisms will release nutrients by converting them into other forms of organic matter that may then be consumed by other organisms.

### **7.3.4 Condition of Aquatic Invertebrate, Amphibian, and Mollusk Habitat**

Project activities that increase meanders, reconnect channels with the floodplains, and add large wood structures and/or other habitat elements would increase the complexity of habitat available to amphibian and aquatic invertebrate species, including mollusk beds.

### **7.3.5 Species Composition and Diversity**

The Project is expected to increase aquatic species biodiversity and habitat complexity in the watershed. Project activities are intended to benefit fisheries, and these benefits are expected to increase over time. Project activities would:

- Restore and improve instream conditions sufficient to support all life stages of salmonids and other aquatic species.
- Restore upstream and downstream fish passage for all life stages of salmonids.
- Restore continuous paths for wood dispersal, nutrient cycling, sediment transport, and movement of other vegetative material essential for productive aquatic habitat.
- Maintain or restore native plant communities and vegetative structure impacted by invasive plants and pathogens, while rehabilitating eroding streambanks to improve water quality, shade conditions, and large wood recruitment.
- Repair, replace, or remove ineffective instream structures.

- Restore and improve riparian and meadow habitat in order to promote healthy conditions for aquatic and terrestrial wildlife populations.
- Improve late summer/fall base flow conditions through process-based restoration, water conservation improvements, and meadow restoration.

## 7.4 Fish Species Population Conditions

### 7.4.1 Anadromous Salmonid Species

The Project is expected to improve anadromous adult fish spawning success in several ways. The Project would enhance or restore stream structure/complexity, stream sinuosity and length, bank stability, floodplain connectivity, and riparian vegetation structure and diversity. These improvements would promote conditions that maintain or decrease stream temperature, reduce turbidity and sediment discharges (via stable streambanks, improved sediment retention through increased channel structure, riparian areas, and floodplains), and improved nutrient input (via improved riparian conditions) and retention (via increased channel structure, sinuosity, and floodplain areas). Removing or repairing in-water structures would restore fish passage for spawning, migrating, and rearing fish and would increase aquatic habitat area. Restoration of riparian vegetative communities would improve shade along streambanks in the long-term, which would help maintain water temperatures. Large wood placement has been shown to improve physical habitat (e.g., increased pool frequency, cover, habitat diversity, sediment retention). Restoring off-channel habitat would increase adult and juvenile rearing habitat would provide flow and cold water refugia. Streambank stabilization measures would decrease direct sediment inputs into the stream channel while also using bioengineering techniques, thereby enhancing conditions for rearing juvenile fish (USFS 2019).

## 7.5 Species Traditionally Used By, and Culturally Important To, Native Americans

The need to restore and maintain the natural production of anadromous fish in the mainstem Trinity River is derived in part from the federal government's trust responsibility to protect the fishery resources of the region's Indian tribes. The Trinity River Basin Fish and Wildlife Restoration Act of 1984 (Public Law 98-541) expressly acknowledges tribal interests in the basin's fishery resources by declaring that the measure of successful restoration of the Trinity River fishery includes the "ability of dependent tribal...fisheries" to participate fully, through enhanced in-river "harvest opportunities, in the benefits of restoration." In addition, the 1992 Central Valley Project Improvement Act (CVPIA) specifically recognizes the federal trust responsibility regarding the Trinity River fishery. The Project would affect anadromous fish, non-anadromous fish, water, wildlife, vegetation, and overall riverine health; these impacts in turn, could affect tribal traditional practices, uses, and economy.

Salmon, steelhead, sturgeon, and lamprey that spawn in the Trinity River and other WSRs pass through the Hoopa Valley and Yurok Reservations and are part of the tribal fishery harvest. The fishing traditions of these tribes stem from practices that pre-date the arrival of non-indigenous people. 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 tribal fishing rights. The Yurok and Hoopa Valley tribes' federally reserved

fishing rights entitle them to take fish for ceremonial, subsistence, and commercial purposes from the rivers that flow through the reservations.

While the focus of the legal history surrounding indigenous 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 knowledge and practices including basketry, art, and medicine. Thus, while anadromous fish are the focus of the Project, 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 TRRP's 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 the Project is intended to do.

Implementation of the Project activities would continue to support tribal trust assets. The short-term impacts described in sections of the EA pertaining to water quality and hydrology, geology and soils, vegetation and wetlands, fisheries, wildlife, and temperature and drought conditions would occur where site-specific projects are implemented. These impacts are expected to be short-term and outweighed by the overall benefits to tribal trust assets gained through the implementation of Project.

## 8 Time Frame Over Which Effects Are Likely to Occur

The proposed Project is expected to begin achieving, to some degree, the site-specific objectives immediately following completion of activities and would continue to provide ecosystem and habitat benefits within the Trinity River basin well into the future. Removing fish barriers and restoring fish passage, incorporating large wood into the channel and riparian areas, and stabilizing upslope areas around road infrastructure would have immediate benefits. During implementation of instream Project activities, insignificant amounts of turbidity are expected to occur due to removal and placement of material, instream structures, and habitat elements. These effects are expected to be temporary and would generally be confined to the area within and adjacent to the site-specific project locations. In areas where invasive plant species would be removed and/or native revegetation is implemented, there would be temporal effects of 1 to 5 years before native vegetation is successfully established. Following bank stabilization projects, sediment discharges as a result of eroding bank would decrease. Restoration of aquatic, riparian, wetland, and meadow habitat would also provide long-term benefits within the watershed that would last for many years into the future.

## 9 Comparison of Project Analyses To Management Goals

BLM's RFO manages federal lands in the Trinity River Basin in accordance with its 2024 Northwest California Integrated Resource Management Plan (NCIP) and Record of Decision (ROD, BLM 2024). The NCIP discusses the general condition of natural and cultural resources in the plan area and prescribes appropriate land use management for BLM-administered lands. The Trinity River from Lewiston Dam to Weitchpec is federally

designated as a 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 (Section 2.5.3.3 of the NCIP). As part of its decision-making process, BLM must evaluate the consistency of the Proposed Action with the 2024 NCIP.

In addition to the BLM’s NCIP, 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.

The STNF manages federal lands within the Trinity River basin in accordance with the 1994 Land and Resource Management Plan (Forest Plan). The management activities described in the Forest Plan for WSR are directed towards the enhancement of anadromous fisheries and recreational opportunities. The South Fork Trinity River is the only segment to have its’ own WSR management plan in the Trinity River Basin. The pertinent (paraphrased) goals of the South Fork Trinity River WSR Management Plan are to maintain and enhance anadromous fisheries habitat, maintain and enhance other values of the river, support recreational opportunities, and adequately monitor and document impacts to the river to protect the ORV.

## 10 Summary of Effects to WSR Values

Table 4 and Table 5 below outline the indicators and the effects to free-flowing condition, water quality, and the anadromous fisheries ORV that underscores the WSRA designations in the Project activity area.

**Table 4. Summary of effects to Wild and Scenic River values for the Proposed Action alternative versus No Action alternative.**

Values	Indicator or Measure	Proposed Action	No Action
Free Flowing Conditions	Obstruction or modifications to free-flowing river conditions.	Changes to the WSRs' existing form and functions within and, to varying degrees downstream of project sites would occur by restoring and improving floodplain habitat, increasing channel complexity, reestablish self-sustaining riparian vegetation, and removing instream structures. Direct and indirect effects will vary by project. (A more thorough list of the effects of the Proposed Action to the free-flowing conditions is available in Table 5.)	Natural tree mortality due to drought, disease, or wildfire may occur and introduce large wood and sediment into the systems.

Values	Indicator or Measure	Proposed Action	No Action
Water Quality	Effects to stream sediment, temperature, and beneficial uses.	Projects utilizing heavy machinery and earthmoving have the potential for chemical contamination and sediment turbidity concerns to varying degrees downstream of project sites. Best management practices for spills and sediment control will be in place and maintain turbidity to the site-specific Section 401 water quality certifications to limit contributions to short term impacts. Stream temperature may increase briefly if riparian vegetation is removed and replanted during a project, but projects would support long-term cooler water temperatures. Project designs may improve and decommission roads contributing sediment into the designated and eligible WSR river segments and/or improve late summer/fall base flow conditions through process-based restoration, water conservation improvements, and meadow restoration. Direct and indirect effects will vary by project. (A more thorough list of the effects of the Proposed Action to the water quality is available in Table 5.)	Natural contributions of sediment will continue, increased average temperatures and precipitation extremes may contribute to increasing stream temperatures, and sediment from access roads and roads alongside river segments may contribute sediment. Stream diversions will continue without application of voluntary conservation strategies.
Outstandingly Remarkable Value: Anadromous Fishery	Effects to the values determined to meet the criteria as an ORV (fisheries).	Short-term contributions to turbidity and potential increase in water temperature. Long-term benefit to aquatic and riparian habitats, improved floodplain connectivity, bank stability, restoration of native plant communities, stream sinuosity and length, and repair, replace or remove ineffective instream structures overall enhancing the structure and quality of fisheries habitat for adults and juveniles. Direct and indirect effects will vary by project. (A more thorough list of the effects of the Proposed Action to the ORV is available in Table 5.)	Natural contributions of sediment will continue, stream segments will continue to be large wood limited, stream channelization will persist promoting warm water temperatures and limiting juvenile rearing habitat.

**Table 5. Summary of effects to WSR values. The magnitude and exact duration of effects to WSR would be based on site-specific project location and design guidelines.**

Project Activity	Free-flowing Condition	Water Quality	Outstandingly Remarkable Value (Anadromous Fisheries)
<p>Restoration and Enhancement of In-Channel Habitat</p>	<p><b>Short-term Effects:</b> The activity may result in short-term manipulation and adjustment of the active channel, channel geometry, channel slope, and channel morphology during the short window of site-specific project implementation.</p> <p><b>Long-term Effects:</b> The activity is expected to improve of the function and complexity of active channel, channel geometry, channel slope, and channel morphology after implementation. Navigation of the river would be maintained throughout project implementation and post-implementation maintenance.</p>	<p><b>Short-term Effects:</b> The activity may temporarily degrade water quality during implementation and BMPs will be utilized for sediment and erosion control and potential chemical due to fuel or fluid leaks form heavy equipment use.</p> <p><b>Long-term Effects:</b> The activity is expected to improve channel stability and re-established native vegetation that supports improved water quality during storm events by slowing and filtering sediment from the flow. Restoring a more natural sediment contribution regime.</p>	<p><b>Short-term Effects:</b> The activity may temporarily degrade the opportunity or experience of anadromous recreational fishing and fish may avoid project site during construction. Project-level ESA consultation for anadromous fish, along with the incorporation of BMPs, will minimize potential for take during project construction and support the recovery of salmonid populations.</p> <p><b>Long-term Effects:</b> The activity is expected to improve anadromous fish instream and side channel habitat promoting adult spawning and juvenile rearing habitat, which would increase run sizes and opportunity for recreational and tribal fishing.</p>

Project Activity	Free-flowing Condition	Water Quality	Outstandingly Remarkable Value (Anadromous Fisheries)
Floodplain Restoration	<p><b>Short-term Effects:</b> The activity may alter the active channel, channel geometry, channel slope, and channel morphology during the short window of project implementation. Vegetation within the riparian corridor may be removed during the project preparation and replanted for reestablishment to take 5-10 years. Navigation of the river will be maintained through project implementation and any post-implementation maintenance.</p> <p><b>Long-term Effects:</b> The activity is expected to improve the function and complexity of active channel, channel geometry, channel slope, and channel morphology after implementation. Beaver dam analogues may be installed to store and redirect water throughout the floodplain to increase inundation. Levee adjustment projects are expected to result in larger area for free flow of the river segments.</p>	<p><b>Short-term Effects:</b> The activity may affect water quality during implementation and BMPS will be utilized for sediment and erosion control during implementation. Potential chemical contamination may occur due to fuel or fluid leaks from heavy equipment use. The activity may cause increases in turbidity during storm events at and below the project site.</p> <p><b>Long-term Effects:</b> The activity is expected to improve channel stability and reestablished vegetation is likely to support improved water quality during storm events by slowing and filtering sediment from the flow. Restoring a more natural sediment aggradation and deposition regime.</p>	<p><b>Long-term Effects:</b> Increased floodplain and side-channel inundation may expand recreational fishing opportunities. The activity is expected to improve anadromous fish instream and side channel habitat promoting adult spawning and juvenile rearing habitat which is likely to increase run sizes and opportunity for recreational and tribal fishing.</p>

Project Activity	Free-flowing Condition	Water Quality	Outstandingly Remarkable Value (Anadromous Fisheries)
<p>Removal or Retrofitting of Fish Passage Barriers, Small Dams, Flood Gages, Pilings, and Other In-water Structures</p>	<p><b>Short-term Effects:</b> The activity may require limited windows of dewatering to remove barriers. The activity may promote increased sinuosity and habitat complexity above barriers and small dams.</p> <p><b>Long-term Effects:</b> The activity is expected to improve free flow and navigation of the river by removing barriers and in-water structures.</p>	<p><b>Short-term Effects:</b> The activity may degrade water quality during implementation and BMPs will be utilized for sediment, contamination, and turbidity control during implementation. Sediment and loose natural debris trapped behind structures may mobilize in storm events after removal.</p> <p><b>Long-term Effects:</b> The activity is expected to improve freshwater circulation providing cooler water and increased flow volume during dry season therefore providing improved water quality.</p>	<p><b>Short-term Effects:</b> Barrier removal may require limited windows of dewatering to remove barriers. Hydroacoustic blasting may cause project site avoidance decreasing the recreational fishing opportunity during deconstruction.</p> <p><b>Long-term Effects:</b> Fish passage to upper watershed reaches activity is expected to be restored and support access to additional habitat. Non-native predatory fish and other non-native fish may be opportunistically removed during dewatering to promote native fish populations.</p>
<p>Water Conservation Projects</p>	<p><b>Short-term Effects:</b> The activity may change stream bed morphology or geometry to remove existing instream infrastructure and replace with new infrastructure.</p> <p><b>Long-term Effects:</b> The activity is expected to improve existing diversions or utilize forbearance techniques to increase flow in the dry season.</p>	<p><b>Long-term Effects:</b> The activity is expected to improve existing diversions or utilize forbearance techniques to increase flow volume in the dry season.</p>	<p><b>Long-term Effects:</b> The activity is expected to improve dry season flows improving quality of and increasing accessibility to habitat for juvenile and adult salmonids. The activity is expected to expand juvenile and adult habitat in tributary reaches supporting diversification of habited reaches to support increased populations and fishing opportunities.</p>

Project Activity	Free-flowing Condition	Water Quality	Outstandingly Remarkable Value (Anadromous Fisheries)
Salmon Carcass Placement	<p><b>Short-term Effects:</b> The activity may place salmon carcasses or analogs within the wetted edge of the river. The action is very unlikely to cause any change to the channel morphology nor impede flow or navigation.</p>	<p><b>Short-term Effects:</b> The activity may improve nutrient availability within the water column and promote algae and macroinvertebrate productivity.</p>	<p><b>Short-term Effect:</b> The activity may improve food availability for juvenile salmonids within the tributaries to support larger size during outmigration.</p> <p><b>Long-term Effects:</b> The activity is expected to support increased salmonid run size and increase opportunity for tribal and recreational fishing.</p>
Remote Site Incubators (RSIs)	<p><b>Short-term Effects:</b> The activity may temporarily divert a small volume of water from the tributary through the RSIs to rear the eggs in off channel basins.</p>	<p><b>Long-term Effects:</b> The activity may support the return of adult salmon into underperforming tributaries generating carcasses to support healthier nutrient cycles and improve the water quality.</p>	<p><b>Short-term Effects:</b> The activity may increase juvenile salmonid outmigration in underperforming tributaries.</p> <p><b>Long-term Effects:</b> The activity is expected to increase adult salmonid returns to the Trinity River Basin and increase the opportunity for tribal and recreational fishing.</p>
Bio-engineered Bank Stabilization	<p><b>Long-term Effects:</b> The activity alters the channel morphology and geometry with natural materials. Natural materials may increase roughness and create variability to direction and rate of flow. The activity may improve bank stability and natural recruitment of large wood in the rivers.</p>	<p><b>Short-term Effects:</b> The activity may degrade water quality during construction. BMPs will be utilized to minimize effects.</p> <p><b>Long-term Effects:</b> The activity would introduce biodegradable materials which may increase nutrient availability for algae and macroinvertebrate populations. The activity may reduce site specific sediment contribution.</p>	<p><b>Long-term Effects:</b> The activity may diversify habitat and rate of flow promoting pockets of juvenile habitat and nutrient release for macroinvertebrate and algae productivity improving juvenile salmonid food resources. The activity may create eddies providing slow holding water and potentially create new recreational fishing opportunities.</p>

Project Activity	Free-flowing Condition	Water Quality	Outstandingly Remarkable Value (Anadromous Fisheries)
Aquatic, Wetland, Riparian, and Upslope Habitat Enhancement	<p><b>Long-term Effects:</b> The activity is expected to increase native vegetation inundated during high and storm flows. This activity may support natural channel migration and change diversifying morphology, geometry, and channel composition.</p>	<p><b>Short-term Effects:</b> The activity may degrade water turbidity and increase sediment contributions in the first few years after implementation during high flows.</p> <p><b>Long-term Effects:</b> Once the native vegetation has been reestablished, during high flow events the inundated vegetation is expected to slow the rate of flow and collect fine sediments on the floodplain and create pockets of shade.</p>	<p><b>Long-term Effects:</b> The removal of nonnative invasive species may increase suitable foraging habitat in the floodplains during high flows.</p> <p>The activity constructs a healthier riparian habitat which can contribute to more natural nutrient cycling to produce food resources and additional foraging habitat for juvenile salmonids. This activity is expected to support creation of side channel habitat for juvenile rearing or adult spawning.</p>
Road Maintenance	<p><b>Short-term Effects:</b> This activity may prevent stream channel erosion and improve free flow of water from headwaters to mainstem river segments.</p>	<p><b>Long-term Effects:</b> This activity is expected to reduce sediment contributions.</p>	<p><b>Long-term Effects:</b> This action may improve accessibility for recreational fishing opportunities.</p> <p>This activity is expected to improve accessibility for instream restoration activities to improve instream adult and juvenile habitat.</p>

Project Activity	Free-flowing Condition	Water Quality	Outstandingly Remarkable Value (Anadromous Fisheries)
Road Rehabilitation	<p><b>Short-term Effects:</b> This activity may require flow to be redirected during site-specific project construction.</p> <p><b>Long-term Effects:</b> This activity is expected to improve stream crossings by upgrading culverts or installing bridges which may improve the free-flowing nature in those project areas or may install new piles or structures within the stream channel degrading the free-flowing nature of a project site.</p>	<p><b>Short-term Effects:</b> This activity may increase sediment contribution and turbidity during and after construction. Sediment and loose natural debris may mobilize in storm events after construction. BMPs will be utilized for sediment, contamination, and turbidity control during and after construction.</p> <p><b>Long-term Effects:</b> The activity is expected to upgrade water crossings, culverts, and bridges that may reduce the potential for failure and support a more natural sediment contribution regime.</p>	<p><b>Short-term Effects:</b> This action may require limited windows of dewatering.</p> <p><b>Long-term Effects:</b> Fish passage to upper watershed reaches may be improved or restored and support access to additional habitat. Non-native predatory fish and other non-native fish may be opportunistically removed during dewatering to promote native fish populations. This activity is expected to improve accessibility for instream restoration activities to improve instream adult and juvenile habitat.</p>
Road Decommissioning	<p><b>Short-term Effects:</b> This activity may require flow to be redirected during project construction.</p> <p><b>Long-term Effects:</b> This activity is expected to remove infrastructure that may limit the free flow of water and support natural evolution of channel formation and migration.</p>	<p><b>Short-term Effects:</b> This activity may increase sediment contribution and turbidity during and after construction. Sediment and loose natural debris may mobilize in storm events after construction. BMPs will be utilized for sediment, contamination, and turbidity control during and after construction.</p> <p><b>Long-term Effects:</b> This activity is expected to remove stream crossing infrastructure which may improve groundwater connectivity, floodplain inundation, support cooler water temperatures, and promote a more natural sediment contribution regime.</p>	<p><b>Short-term Effects:</b> This action may require limited windows of dewatering.</p> <p><b>Long-term Effects:</b> Fish passage to upper watershed reaches is expected to be restored and would support access to additional habitat. Non-native predatory fish and other non-native fish may be opportunistically removed during dewatering to promote native fish populations.</p>

## 11 WSRA Section 7 Determination

The Project consists of a suite of habitat restoration projects located throughout the Trinity River basin and more specifically, within rivers designated as WSRs. An EA was prepared, led by TRRP with BLM and USFS as cooperators, and includes the above analysis of the Project’s consistency with the WSRA.

Based on the findings of this analysis and considering the direction established by the BLM’s NCIP, there would be an overall beneficial effect to free-flowing conditions, water quality, and the anadromous fisheries ORV. BMPs, design guidelines, and conservation measures described in both TRRP’s 2020 NMFS Biological Opinion (NMFS 2020) and USFWS’ 2022 Statewide Restoration Biological Opinion (USFWS 2022) would be employed for all site-specific restoration projects using the EA for NEPA coverage. These are included in Appendix B of the EA.

The overall purpose of the Project is to improve instream and riparian habitat to accelerate the recovery of north coast salmonid populations (coho salmon, steelhead, and Chinook salmon) and other special status aquatic species, thereby fulfilling tribal trust responsibilities and obligations to local communities as well as recreational and commercial fishing industries (per the STNF LRMP, BLM’s RMP, and state and federal recovery plan goals).

Implementation of the Project provides a net positive effect of protecting and enhancing river values by restoring the Project WSR's natural characteristics, including free-flowing conditions with improved floodplain accessibility, and improved habitat quality for fish and other aquatic organisms. We have determined that there would be an overall beneficial effect to the river's free-flowing condition, water quality, and anadromous fishery ORV.

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Date

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