3.6.1 Affected Environment/Environmental Setting

Native Anadromous Fish Species

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

Resident Native and Non-Native Fish Species

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

Non-native fish species found in the Trinity and Klamath River Basins include American shad (*Alosa sapidissima*), brown bullhead (*Ameiurus nebulosus*), green sunfish (*Lepomis cyanellus*), brown trout (*Salmo trutta*), and brook trout (*Salvelinus fontinalis*) (USFWS, unpublished data). American shad occur in the lowermost portions of the Trinity River Basin, but are primarily found in the Lower Klamath River Basin. Anadromous brown trout were propagated in the Trinity River Salmon and Steelhead Hatchery until 1977, when this practice was discontinued because of small numbers and the lack of anadromous characteristics of fish entering the hatchery. Currently, brown trout are largely limited to the upper portions of the river, although some brown trout exhibit anadromous characteristics. Brook trout provide a significant sport fishery in the tributary streams and high-elevation lakes of the Trinity River Basin. Its life cycle and habitat requirements are similar to those of brown trout. The structure and abundance of populations of these species in the Trinity and Lower Klamath River Basins are unknown.

Special Status Species

This section contains a discussion of special-status fish species. Special status fish species with the potential to occur at rehabilitation sites in the Trinity River are discussed in the Master EIR (Section 4.6 and Appendix G) and are summarized below. For the purposes of this evaluation, special-status fish species include species that are (1) listed as threatened or endangered by the state or federal governments under the Endangered Species Act (ESA) or California Endangered Species Act (CESA); (2) proposed or petitioned for federal listing as threatened or endangered; (3) state or federal candidates for listing as threatened or endangered; or (4) identified by CDFW as species of special concern and/or California Fully Protected Species. A list of special-status fish species to be considered for analysis was compiled by performing a search of the California Natural Diversity Database (CNDDB); informal consultations with the CDFW, USFWS, and NMFS; and a review of

applicable biological literature. Special status fish species considered for this analysis are included in Table 10.

Table 10. Special-Status Fish Species Considered for Analysis.

Common Name (Scientific Name)	Status FED/ST/BLM[1]	General Habitat	Comments
Southern Oregon/ Northern California Coasts ESU coho salmon *(Oncorhynchus kisutch)* Designated critical habitat	T/T/S2	Juveniles prefer deep (≥1 m) pools with dense overhead cover and clear water. Found over a range of substrates from silt to bedrock (Moyle et al. 1995). Trinity River is designated critical habitat and essential fish habitat for the species.	Suitable spawning, rearing, and/or migration corridor habitat exists within the project area.
Klamath Mts. Province ESU steelhead *(Oncorhynchus mykiss irideus)* (summer/fall- and winter-run races)	NW/SSC/S2S3	Freshwater rivers and streams (Trinity and Klamath Rivers and their tributaries). Steelhead require cool, swift, shallow water; clean, loose gravel for spawning; and suitable large pools in which to spend the summers.	Summer-run race is a state species of special concern. Suitable spawning, rearing, and/or migration corridor habitat exists within the project area.
Upper Klamath-Trinity Rivers ESU Chinook salmon *(Oncorhynchus tshawytscha)* (spring- and fall-run races)	NW/SSC/S2	Freshwater rivers and streams. (Trinity and Klamath Rivers and their tributaries). Chinook salmon require cool streams with deep pools and riffles and gravel or cobble substrate. Trinity River is designated essential fish habitat for the species.	Spring-run race is a state species of special concern. Suitable over-summering, spawning, rearing, and migration corridor habitat exists at or near the project area.
Pacific lamprey *(Lampetra tridentata)*	NW/--/S4	Spawn in freshwater rivers and streams with juveniles found in slow-moving current, silty bottom habitats; metamorphosed juveniles migrate through estuaries to the ocean.	Observed to spawn in tributaries of the upper river; Ammoecetes abundant during spring near the project area.
Green sturgeon *(Acipenser medirostris)*	SSC/SC/S2	Known to spawn in Sacramento, Feather, and Klamath rivers, and juveniles may occur in estuaries. Occurs in San Francisco, San Pablo, and Suisun bays and in the Delta. Prefers to spawn in large cobble; eggs fertilized in relatively high water.	The species may be found in the lower Trinity River, but is not known to inhabit the upper Trinity River. Project boundaries are outside the known range of the species. Therefore this species is not considered further.

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

S2 = Imperiled—Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.

S3 = Vulnerable—Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state.

S4 = Apparently Secure—Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors.

Coho Salmon

The Southern Oregon/Northern California Coasts (SONCC) Evolutionarily Significant Unit (ESU) of coho salmon was listed as threatened pursuant to the federal ESA on April 25, 1997. This listing includes coho salmon from the Trinity River and Klamath River Basins. Critical habitat for the SONCC ESU coho salmon was designated on May 5, 1999; in the Trinity River Basin, designated critical habitat for this species consists of the water, substrate, and adjacent riparian zone of those estuarine and riverine reaches (including off-channel habitats and accessible tributaries) downstream of Lewiston Dam (Federal Register Vol. 64, No. 86, May 5, 1999, 24049-24062). The 2000 Biological Opinion (BO) on the Trinity River Mainstem Fishery Restoration FEIS/EIR (NMFS 2000) found that the program "*is not likely to jeopardize the continued existence of the [SONCC ESU] coho salmon*," and "*is not likely to destroy or adversely modify critical habitat for the [SONCC ESU] coho salmon.*"

Both Reclamation's 2000 Biological Assessment (BA) and NMFS' subsequent 2000 BO acknowledged that construction at channel rehabilitation projects would not occur "within the wetted channel." However, in-channel work would occur related to proposed activities at the Proposed Project site. After considerable restoration planning and design work by TRRP staff, NMFS, with support from the TMC, now considers in-channel work a necessary component to successfully carry out and achieve program goals and objectives as detailed in the ROD. The TRRP concluded that reinitiation of formal consultation under Section 7 of the ESA was not warranted because effects to SONCC coho salmon were consistent with and not likely to rise above those that were considered in the original 2000 BO. In May 2006, NMFS concurred that reinitiation of formal consultation was not warranted if bank rehabilitation activities were authorized within the wetted channel (NMFS 2006). Reclamation is currently working to update the 2000 BA in cooperation with NMFS, which serves as a member agency of the TMC. Until that analysis is completed and NMFS has issued a new BO, the existing 2000 BO will provide continuing coverage/compliance for TRRP activities.

Steelhead

The KMP ESU of steelhead, which includes stocks from Trinity River, was proposed for federal listing as threatened on March 16, 1995; however, on February 7, 1998, NMFS determined that the population did not warrant threatened status, but that it did warrant candidate status (as defined by NMFS). Subsequent information on the KMP ESU steelhead was evaluated and NMFS made a final listing determination that the ESU did not warrant listing in April 2001 (Federal Register Vol. 66, No. 65, April 4, 2001, 17845-17856). The summer-run population segment of this ESU remains a California Species of Special Concern, as well as a USFS sensitive species (Moyle et al. 1995; USFWS 1995).

Chinook

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

Pacific Lamprey

The Pacific lamprey, along with three other lamprey species, was petitioned for federal listing in 2003. On December 27, 2004, the USFWS announced that the petition along with additional information does not present substantial scientific or commercial information indicating that listing of these species may be warranted (Federal Register Vol. 69, No. 247, December 27, 2004, 77158-77167). BLM lists the Pacific lamprey as a sensitive species (USDI BLM 2008).

Local Aquatic Habitat

Flows in the Trinity River downstream from Trinity and Lewiston Dams have been regulated since Trinity Dam closed in 1960. Diversion of up to 90 percent of the Trinity streamflow to the Sacramento River basin in the 1960s and 1970s led to substantial geomorphic change in many locations along the river, with the predominant responses being channel narrowing and vegetative encroachment along the channel margins (TRRP Federal Design Group 2014). A review of historic aerial photographs between 1944 and 2012 provides insight into channel changes over time at the Bucktail site. These photographs show a dramatic decrease in bankfull channel width between 1944 and 2012 (HVT et al. 2013). Reduced flows from Trinity Dam operations narrowed the existing bankfull channel width of 200-250 feet down to its current bankfull width of between 100 and 120 feet. Safety of Dam releases, tributary floods, and ROD high flow releases have exacerbated the problem, depositing additional fine sediment along the left bank and scouring the channel into its current rectangular form with near vertical banks. The channel upstream of RM 105 is primarily comprised of gravel and cobble (HVT et al. 2013).

The aquatic environment in the general vicinity of the project area is characterized by a sequence of aquatic mesohabitat types. Each of these habitat types consists of distinctive combinations of depth, water velocity, water temperature, cover, substrate composition (bedrock, cobble, gravel, sand, silt, etc.), and adjacent riparian vegetation. Figure 5 illustrates aquatic mesohabitat as qualitatively defined by the USFWS in a 2002 survey.

In general, moderate slope (near riffle) and low slope (glide) areas equate to faster reaches than deep pools, and runs, which are intermediate in depth. A low slope area may alternatively be named a glide and moderate slope areas (near riffle) often include aerated waters. Riparian vegetation directly adjacent to the river is referred to as shaded riverine aquatic (SRA) habitat and is included as a component of designated critical habitat for coho salmon, as well as a component of EFH for both coho and Chinook salmon. Juvenile coho are expected to utilize suitable habitats in the 40-mile reach of the mainstem Trinity River below Lewiston Dam year-round (Regional Water Board and Reclamation 2009). Pool habitat associated with boulders and large wood is particularly preferred by rearing coho salmon (Hassler 1987; Sandercock 1991; Moyle 2002).

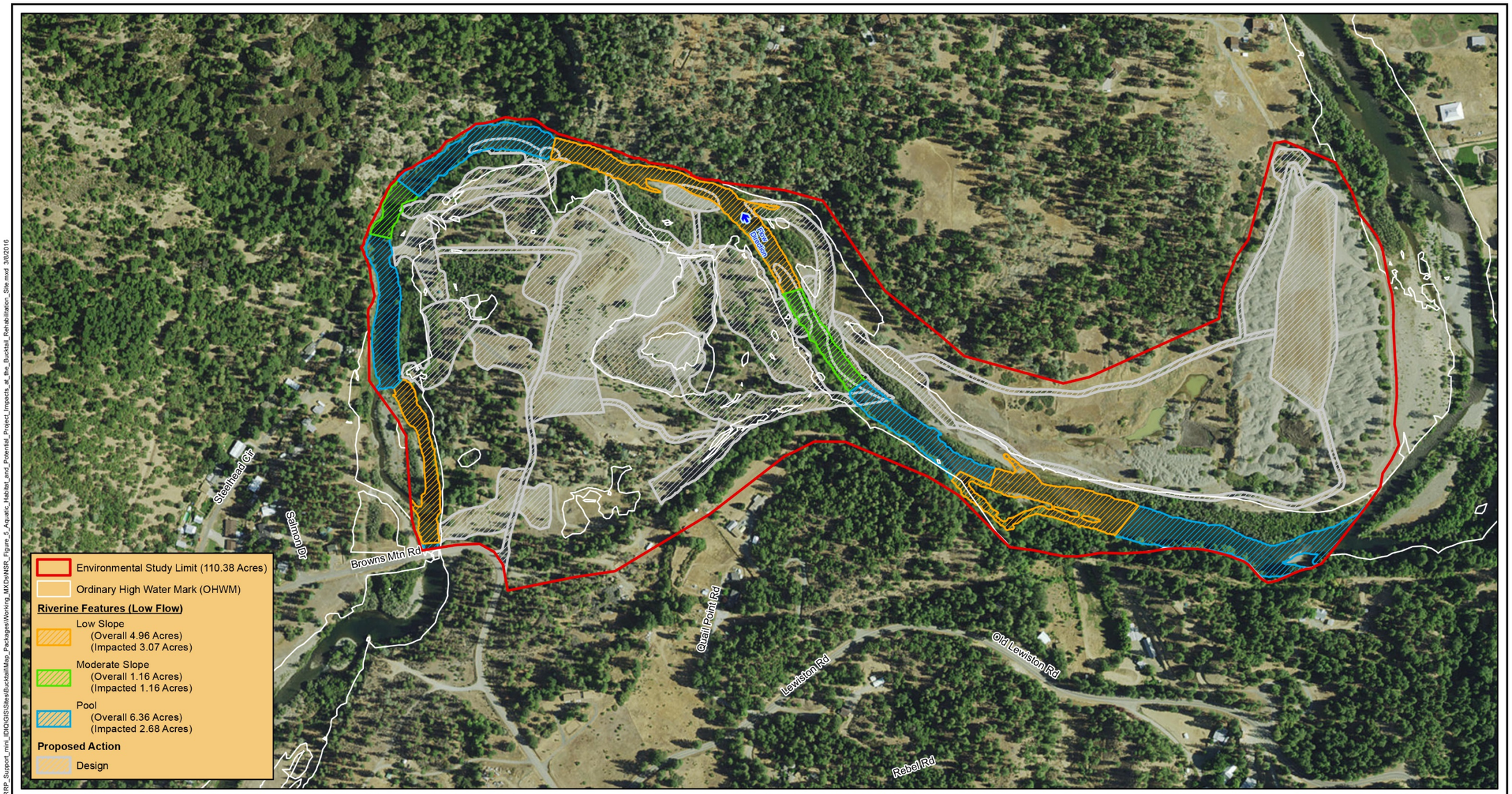

Figure 5. Aquatic Habitat and Potential Project Impacts at the Bucktail Rehabilitation Site.

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In 2003, a radio-telemetry study of migration and behavioral thermoregulation of adult spring-run Chinook salmon was conducted in the upper Trinity River (Marine and Lyons 2004). Tagged fish used available run and glide habitats that were typically large (surface area) and offered depths up to 4 feet. These habitats held fish for longer periods than other portions of the study reach. Adult summer/fall-run steelhead migrate to, and hold in, the deeper pools, runs, and glides along the river between April and January (Leidy and Leidy 1984; Moyle 2002). These fish are active throughout the salmon spawning season, and migrate to the upper-most river reaches and into tributaries to spawn from February through April.

Winter-run steelhead migrate to spawning grounds from November through April and spawn during the same time as the summer/fall run. Suitable steelhead spawning habitat occurs in riffles throughout the river. Suitable juvenile steelhead rearing habitat also occurs in the river. Fry and juvenile steelhead of both runs may be expected in the riffles and run/pool habitats year-round, especially those associated with abundant SRA and large cobble/boulder habitat, including large wood (Hampton 1988; Moyle 2002).

Suitable spawning habitat for anadromous salmonids occurs in most riffles, particularly in low-slope riffles and tail-outs of pools and deep run/glide habitats. Salmon spawning surveys in the upper Trinity River conducted annually by the CDFW (in cooperation with the YT, USFWS, and USFS) report that the greatest concentration of Chinook and coho salmon spawning occurs in the upper survey sections, which range from Lewiston Dam to Old Lewiston Bridge and Old Lewiston Bridge to Bucktail Bridge. Approximately 15 Chinook redd locations were mapped in the Bucktail reach in 2012 (HVT et al. 2013). Currently the Bucktail reach provides approximately 126,930 square feet of Chinook pre-smolt habitat and 61,660 square feet of Chinook fry habitat at 300 cfs. At 1,200 cfs the reach provides approximately 80,990 square feet of pre-smolt habitat and 38,600 square feet of fry habitat, and at 2,000 cfs there is 162,600 square feet of pre-smolt habitat and 88,150 square feet of fry habitat (HVT et al. 2013).

Habitat Conditions

Construction and operation of the TRD, combined with watershed erosion, large-scale gold dredging, and other human-caused disturbances, have resulted in major changes in habitat conditions in the Trinity River. Factors that have resulted in adverse effects on fish habitat include:

- Obstruction to river reaches upstream of the TRD (Lewiston Dam);
- Changes to quantity and timing of flows;
- Changes in channel geomorphology;
- Changes in substrate composition caused by the addition of fine sediments and restriction of gravel recruitment; and
- Changes in water temperature.

These factors are addressed in other sections of this document, specifically Section 3.3, Geology, Fluvial Geomorphology, and Soils; Section 3.4, Water Resources; and Section 3.5, Water Quality, as well as in the respective sections of the Master EIR. The relationship between these factors and fish is summarized in the following paragraphs.

The TRD blocked access to 59 miles of Chinook salmon habitat, 109 miles of steelhead habitat, and an undetermined amount of coho salmon habitat (USFWS 1994). Much of this habitat is thought to have been prime spawning and rearing habitat. In the case of Chinook salmon, it represented about 50 percent of the suitable spawning habitat in the upper Trinity River Basin. As early as 1980, the overall decline in spawning habitat was estimated at 80 to 90 percent (USFWS 1980). Furthermore, the blocking of salmon access to upstream reaches greatly reduced the diversity of habitats available to salmon in the Trinity River.

For the first 21 years of TRD operations (1964 to 1985), Lewiston Dam releases to the Trinity River averaged only 21 percent of the natural river inflow. The reduction in flows led to a reduction in habitat and declining quality in the remaining habitat. For example, spawning habitat losses in the mainstem Trinity River below the Grass Valley Creek confluence have been estimated to be 80 percent in the first 2 miles and up to 50 percent overall in the 6 miles downstream of that confluence (USFWS 1994).

The altered patterns of fluvial geomorphic processes in the upper Trinity River have resulted in a reduction in the number of alternate gravel bar sequences with a resultant change in substrate quality and a loss of important salmonid habitats associated with the alternate bars (e.g., pools, riffles, open gravel/cobble bars, and slack-water habitats). Additionally, functional side-channel habitat has also been affected by modifications to alluvial deposits.

Changes in substrate composition occur in conjunction with upland and riverine processes. The construction and operation of the TRD have modified the sediment regime of the mainstem Trinity River, particularly the 40-mile reach below Lewiston Dam. The thermal environment of the Trinity River has also changed as a combined result of the construction and operation of the TRD and the subsequently altered geomorphic patterns of the river downstream. In comparison to pre-TRD conditions, water temperatures below Lewiston Dam today are cooler in the summer and warmer in the winter.

Early Habitat Restoration Projects

The Trinity River Basin Fish and Wildlife Restoration Program conducted a variety of restoration activities in the mainstem Trinity River and its tributaries over the years. Restoration activities in the mainstem Trinity River included coarse sediment (spawning gravel) supplementation, pool dredging to remove fine sediment and restore valuable holding habitat and construction of several channel rehabilitation projects (side channels and bank rehabilitation of point bars). From 1990 through 1993, the Trinity River Basin Fish and Wildlife Restoration Program constructed 29 channel rehabilitation projects on the mainstem Trinity River between Lewiston Dam and the North Fork Trinity River, 20 side-channel projects, and nine bank rehabilitation projects (also known as feathered-edge projects). Monitoring of the previous channel rehabilitation projects has documented Chinook salmon spawning within the constructed side-channels and along some “feathered-edge” sites (Regional Water Board and Reclamation 2009; USFWS, unpublished data). An evaluation of the monitoring results associated with early restoration efforts concluded that “when properly constructed, bank rehabilitation can effectively increase the amount of salmonid fry rearing habitat in the Trinity River” (USFWS and HVT 1999).

3.6.2 Environmental Consequences/Impacts and Mitigation Measures

Methodology

The analytic methods used to assess potential impacts of the Proposed Project on fisheries resources included a comprehensive literature search and focused field surveys. Evaluation of the presence of special status fish species and sensitive habitats within the boundaries of the site was conducted by performing a database search of the CNDDB, informally consulting with resource agencies (e.g., CDFW, NMFS, and USFWS), and reviewing environmental documents and technical studies prepared for projects in the vicinity. Aquatic habitat within the 40-mile reach below Lewiston Dam was identified and characterized based on the USFWS mesohabitat delineations map, reconnaissance-level site visits, consultation with local fishery biologists, and review of pertinent literature and data. These efforts were conducted to provide an overview of the quality and character of potential suitable spawning, holding, and rearing habitat present.

CEQA Significance Criteria

Significance criteria used to assess the potential impacts of the Proposed Project on fisheries resources are based on the current scientific understanding of the biological requirements and ecological status of the species of interest, and the regulatory standards of county, state, and federal agencies, including the CEQA Guidelines. Under CEQA a significant impact on anadromous salmonids and other native fish would occur if the project would result in any of the following:

- Potential to substantially reduce the number or restrict the range of an endangered or threatened native fish species or a native fish species that is a candidate for state listing or proposed for federal listing as endangered or threatened;
- Potential for substantial reductions in the habitat of any native fish species other than those that are listed as endangered or threatened or are candidates or proposed for endangered or threatened status;
- Potential for causing a native fish population to drop below self-sustaining levels;
- Substantial adverse effect, either directly or through habitat modifications, on any native anadromous species identified as a sensitive or special status fish species in local or regional plans, policies, or regulations;
- Substantial interference with the movement of any native anadromous or resident fish species;
- A conflict with, or violation of, the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan relating to the protection of native anadromous species or resident fish species;
- Mortality of state or federally listed fish species, or species that are candidates for listing or proposed for listing;

- Reductions in the size of the population of a native fish species sufficient to jeopardize its long-term persistence;
- Temporary impacts to habitats such that native fish species suffer increased mortality or lowered reproductive success that jeopardizes the long-term persistence of those local populations;
- Permanent loss of designated critical habitat and/or essential habitat of a listed species or special status native fish species; or
- Reduction in the quantity or quality of habitats in which native fish species populations occur sufficient to reduce the long-term abundance and productivity of local populations.

Impacts and Mitigation Measures/Project Design Features

Table 11 summarizes the potential fisheries impacts that would result from the No Project and Proposed Project alternatives.

Table 11. Summary of Potential Fishery Resource Impacts for the No Project and Proposed Project Alternatives.

No Project Alternative	Proposed Project	Proposed Project With Mitigation
Impact 3.6-1. Implementation of the project could result in effects on potential spawning and rearing habitat for anadromous fishes, including the federally and state-listed coho salmon.		
No impact	Significant	Less than significant
Impact 3.6-2. Implementation of the project could result in increased erosion and sedimentation that could adversely affect fishes, including the federally and state-listed coho salmon.		
No impact	Significant	Less than significant
Impact 3.6-3. Construction activities associated with the project could potentially result in the accidental spill of hazardous materials that could adversely affect fishes, including the federally and state-listed coho salmon.		
No impact	Significant	Less than significant
Impact 3.6-4. Construction activities associated with the project could result in the mortality of rearing fishes, including the federally and state-listed coho salmon.		
No impact	Significant	Less than significant
Impact 3.6-5. Implementation of the project would result in the permanent and temporary loss of SRA habitat for anadromous salmonids.		
No impact	Significant	Less than significant
Impact 3.6-6. Implementation of the project would result in fish passage being temporarily impaired during the in-stream construction phase.		
No impact	Significant	Less than significant

Impact 3.6-1: Implementation of the Proposed Project could result in effects on potential spawning and rearing habitat for anadromous fishes, including the federally and state-listed coho salmon.

No Project Alternative

Under the No Project alternative, there would be no effects on spawning and rearing habitat other than those associated with current ongoing actions because the project would not be constructed. As described in Chapter 1, the TRRP and other entities have been implementing channel rehabilitation projects for several years. These projects continue to affect the Trinity River with regards to flows, sediments, channel morphology, and riparian vegetation. These effects would continue to influence the spawning and rearing habitat for anadromous fishes, irrespective of this alternative.

Proposed Project

Features proposed at the site would have beneficial effects on fisheries as described below. IC-1 would increase channel complexity and shallow low velocity refuge at a variety of flows. Area IC-2 combined with IC-6 and BDA-1 would provide up to 90,000 square feet of fry and juvenile rearing habitat that meets criteria for depth, velocity, and with the placement of habitat structures, cover. Constructed riffles within areas IC-2 and IC-6 would provide adult salmonid spawning areas and productive BMI habitat that increases food resources for fry and juvenile salmonids during critical winter and spring rearing periods. Area IC-6 is designed to drain seasonal wetlands to avoid juvenile fish stranding. This feature would provide fry and juvenile rearing habitat from 300 cfs to 4,500 cfs that meets criteria for cover (with the addition of habitat features), depth, and velocity. Construction of IC-3 would provide slow water refuge within a constructed alcove to provide fry and juvenile habitat at flows ranging between 300 cfs and 4,500 cfs. Area IC-4 would increase mainstem channel length that reduces slope and improves adult spawning opportunities. Area IC-4 would increase channel sinuosity and channel complexity, providing fry and juvenile rearing opportunities at a wide range of flows over existing conditions. Area IC-4 should provide suitable BMI habitat for food production for increased local drift availability. Area IC-5 would increase off-channel fry and juvenile rearing opportunities at a wide range of flows over existing conditions. Area IC-8 is a point bar and alcove that would provide slow shallow rearing habitat for flows ranging from 300 cfs to 2,500 cfs. The pool on the outside of the bend along the right bank bedrock would be maintained to preserve adult holding opportunities.

Areas R-1, R-2, R-3, and R-4 propose construction of surfaces that provide slow shallow rearing habitat for streamflows ranging from 1,500 cfs to 4,500 cfs. Area R-5 proposes construction of a surface that connects two low vegetated areas to provide slow shallow rearing habitat for streamflows ranging from 1,500 cfs to maximum fisheries flow of 11,000 cfs. Area R-6 proposes construction of surfaces that provide slow shallow rearing habitat for streamflows ranging from 450 cfs to 2,500 cfs.

Proposed wood habitat structures would provide immediate cover, depth, and velocity refugia for all salmonid life stages over flows of 300 cfs to 11,000 cfs. Large boulders may be used in combination with wood for additional complexity. ELJ-1 would provide adequate summer rearing habitat for juvenile salmonids, enhance hydraulic and escape cover along the channel margin, and reduce the distance to cover from adjacent spawning areas (IC-3 and IC-4). ELJ-2 includes placement of smaller wood along the wetted perimeter of the larger wood placements, which adds hydraulic and escape

cover for fish. The structure would also create physical complexity by creating refugia for juvenile residents and salmonids. The scour pool and cover provided by the wood placed at the apex of the medial bar would create summer rearing habitat in the form of feeding stations and holding features. ELJ-3 would provide adequate summer rearing habitat for juvenile salmonids. It would enhance hydraulic and escape cover along the channel margin and reduce the distance to cover from adjacent wood structures. All of these large wood elements would work to clean and sort spawning gravels, scour sand out of pools, and provide adequate temperature and habitat conditions for fish. Proposed construction of the beaver dam analog (BDA-1) at the upstream end of IC-6 would potentially raise water surface elevations at various flows to backwater area R-1. During winter and summer rearing periods this feature could backwater up to 90,000 square feet, providing large areas that meet velocity, depth, and cover criteria for fry and juvenile salmonid rearing habitat.

Coho Salmon

Under the Proposed Project, no permanent adverse effects to coho salmon spawning habitat would occur within the rehabilitation site. Instead, the Proposed Project is expected to result in immediate as well as long-term improvements. Figure 5 illustrates the extent of the grading, excavating, and coarse sediment addition that would occur below the OHWM in riverine habitat at the site. It is anticipated that implementation of the Proposed Project along with the flow management regime implemented by the TRRP would reactivate channel migration across the floodplain within the boundaries of the site. This dynamic fluvial channel would result in a net increase in point bar surface area through coarse sediment deposition, increasing spawning habitat within the boundaries of the site. The addition of coarse sediment would immediately provide suitable sized spawning gravels to coho and other salmonids.

Adverse effects on spawning habitat are expected to be limited to short-term, localized sedimentation caused by settling of silt disturbed by bank-side excavation activities, and the addition of coarse sediment material, including contouring and grading in the low-flow channel. Any salmon redds on or near the in-channel work could be destroyed or disturbed by these construction activities. Silt suspended by these activities may be dispersed and re-settle on downstream suitable spawning areas near the construction area. However, all in-channel work would be conducted only during late-summer (July 15-September 15) low-flow conditions, as authorized by NMFS and CDFW, to avoid impacts to spawning anadromous salmonids.

Additionally, installation of a temporary crossing across the low-flow channel could introduce a small amount of silt and cause stream bed disturbance, resulting in re-suspension of fine substrate materials (i.e., silt) and create short-term, localized increases in turbidity and suspended sediments. River crossings would occur only during the in-river work window (July 15 to September 15) or when spawning is prohibited from occurring on the crossing area (as proposed in this Proposed Project utilizing anti-spawning mats). Although the amount of silt mobilized by construction of these crossings is expected to be minimal, this silt could be deposited on either spawning habitat and/or on salmon redds downstream of the activity areas.

Some temporary effects on the quality of habitat for juvenile salmonids would occur through removal of riparian vegetation that contributes to SRA habitat in the project reach. The principal effects of in-channel work on fish include displacement of rearing salmonid fishes from their habitat and increased predation risk or reduced feeding efficiency through the loss of the cover function provided by the

SRA habitat (Michney and Hampton 1984; Michney and Deibel 1986). However, it is expected that all displaced juvenile fish, including coho salmon, would find suitable habitat within river reaches upstream or downstream of the site, because juvenile rearing habitat within the mainstem Trinity River is likely under-saturated during summer and fall months (NMFS 2006). The potential direct and indirect effects to fish resulting from increased suspended sediment and turbidity levels are addressed further under Impact 3.6-2.

The adverse impacts on habitat are expected to be offset in the long term by benefits associated with project implementation. These benefits would accrue from: 1) the constructed inundation surfaces; 2) overall reconnection of inundated surfaces to the river at low flows; 3) increased bed mobility and potential channel migration through the alluvial surfaces; and 4) revegetation of these surfaces with native plant species that would contribute shade and large wood to the river channel. Improved connectivity, particularly during high flows is expected to increase areas of slow, shallow-water habitat preferred by salmonid fry. The process of channel migration may also create new point bars, further increasing the availability of this preferred habitat. The constructed habitats and potential channel migration processes would collectively increase the relative abundance of rearing habitat, compared to the existing condition. Approximately 3.07 acres of low slope (glide) habitat would be impacted by in-channel and riverine work at the site (Figure 5). In addition, 1.16 acres of moderate slope habitat, and 2.68 acres of in-channel habitat would be impacted.

Ultimately, the collective changes in channel morphology as a result of the Proposed Project would improve rearing habitat diversity and abundance, for all anadromous salmonids. Large wood would be strategically placed to provide complex physical habitat for juvenile and adult fish in the Trinity River. Large wood hydraulic and habitat structures would create spawning and rearing habitat, increase nutrient and organic matter retention (which increases food production in the system), and provide refuge from predators and cover during high winter flows (Bustard and Narver 1975; Lestelle 1978; Lestelle and Cederholm 1982; Hicks et al. 1991; Cederholm et al. 1997).

Chinook Salmon

Potential impacts and benefits to Chinook would be generally similar to those previously described for coho salmon. Spring- and fall-run salmon potentially spawn and rear within the site. Juvenile spring-run Chinook salmon would be expected to rear year-round within the site and may be displaced by in-river work activities. Additionally, prior to spawning, adult spring-run Chinook salmon may utilize holding habitat offered by run, glide, and pool areas within the site. No permanent adverse impacts to spring-run Chinook salmon holding habitat would occur. Overall, the Proposed Project is expected to increase Chinook salmon fry habitat by 158 percent at 300 cfs, 261 percent at 1,200 cfs, and 72 percent at 2,000 cfs. The Proposed Project is expected to increase Chinook pre-smolt habitat by 85 percent at 300 cfs, 164 percent at 1,200 cfs, and 59 percent at 2,000 cfs (Hoopa Valley Tribe Design Group 2015). The Proposed Project does not include activities that would directly fill, modify, or otherwise affect the quality or quantity of spring-run holding habitat. Temporary effects on spring-run Chinook holding habitat associated with construction of the Proposed Project would be limited to short-term, localized increases in transient turbidity caused by bank-side excavation activities, in-channel construction, and contouring and grading in the side channel. The potential effects of increased suspended sediment and turbidity to holding adult spring-run Chinook salmon are addressed under Impact 3.6-2.

Steelhead

Potential impacts and benefits to steelhead resulting from implementation of the Proposed Project would be generally similar to those previously described for coho and Chinook salmon. Summer, fall, and winter runs of steelhead may migrate and stage within or near the project area and may spawn (as adults) and rear (as juveniles) in this location as well.

Pacific Lamprey

Potential impacts and benefits to Pacific lamprey resulting from implementation of the Proposed Project would be similar to those previously described for coho salmon and other anadromous salmonids. The removal of riparian vegetation that contributes to SRA habitat within the site could have a temporary impact on adult Pacific lamprey by reducing holding and hiding habitat, which is particularly important for upstream migrant adults. However, implementation of the Riparian Revegetation and Monitoring Plan, described in Chapter 2, would lessen this impact over the longer term.

Mitigation Measures/Project Design Features

Although the impacts to coho salmon and other anadromous fish under the Proposed Project would be temporary and localized, they would be significant. Implementation of the Proposed Project could result in effects on potential spawning and rearing habitat for anadromous fishes, including the federally and state-listed coho salmon. Therefore, mitigation measures 4.6-1a and 4.6-1b described in Appendix B will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.6-2: Implementation of the Proposed Project could result in increased erosion and sedimentation levels that could adversely affect fishes, including the federally and state-listed coho salmon.

No Project Alternative

Under the No Project alternative, there would be no increase in erosion or sedimentation levels that could adversely affect fish species because the project would not be constructed. Similar to previous discussions, this alternative acknowledges that a number of restoration activities that are intended to restore the fishery resources and functional values offered by the mainstem Trinity River have been implemented or are ongoing. While some of these activities may result in changes to erosional processes and sedimentation levels, these changes are taken into account in the evaluation of this alternative. The No Project alternative would not result in an impact with respect to this issue.

Proposed Project

Coho Salmon

Activities related to implementation of the Proposed Project would result in the localized loss of vegetation and general disturbance to the bed and banks of the Trinity River. Removal of vegetation and soil could accelerate erosion processes within the boundaries of the site and increase the potential for sediment delivery to the Trinity River. The turbidity of a water body is related to the

concentration of suspended solids. Suspended solids and turbidity generally do not acutely affect aquatic organisms unless they reach extremely high levels (i.e., levels of suspended solids reaching 25 mg/L). At these high levels, suspended solids can adversely affect the physiology and behavior of aquatic organisms and may suppress photosynthetic activity at the base of food webs, affecting aquatic organisms either directly or indirectly (Alabaster and Lloyd 1980).

In-channel and riverine activities including temporary crossings would disturb the alluvial materials that constitute the bed and banks of the Trinity River. Exposed soils on the upland and staging areas are susceptible to mobilization from rainfall during early season runoff events. In-river excavation is planned as part of the Proposed Project; therefore, it is expected that excavation and operation of heavy equipment would resuspend silt and sand, resulting in localized and temporary increases of suspended sediment and turbidity.

Operation of heavy equipment in the active channel during these activities would likely resuspend streambed sediments. Any juvenile coho salmon rearing in the area during in-channel construction may be temporarily displaced or their social behavior may be temporarily disrupted by turbidity created during this activity.

Trinity River main channel habitat would be temporarily impacted during construction by installation of the X-1 channel crossing that would be used for occasional equipment crossing. Removal and spreading of gravels composing the temporary low-flow channel crossings after construction would restore stream channels to original contours. These activities would likely resuspend streambed sediments but are not likely to add silt material to the river. Use of washed, spawning-sized gravels and the cleaning of vehicle wheels prior to crossing the channel would minimize the effects of this action on fish habitat. Any juvenile coho salmon rearing in the area during gravel placement or vehicle crossings may be temporarily displaced or their social behavior may be temporarily disrupted by turbidity created during this activity.

Erosion and deposition of fine sediments associated with implementation of the Proposed Project are expected to be localized and temporary. Some fine-textured materials may settle near or on spawning habitats located downstream of riverine rehabilitation areas, but these materials are not expected to impair redd excavation or spawning. Excavation, grading, and coarse sediment addition within the channel would occur only during low-flow conditions between July 15 and September 15, minimizing the potential for adverse effects on all life stages of coho salmon. Any juvenile coho salmon rearing in the area during this timeframe could be temporarily displaced or their social behavior could be temporarily disrupted by an increase in turbidity. Behavioral disruption, even temporarily, could result in some increased vulnerability to competitive interactions or predation for juvenile coho salmon (Berg and Northcote 1985). These temporary impacts were anticipated and addressed in the 2000 BO and associated incidental take statement for the ROD as well as the amended BO for in-river work.

Chinook Salmon

Potential impacts to Chinook salmon populations in the Trinity River resulting from project implementation would be generally similar to those described for coho salmon. Re-suspension of fine-textured sediment, potential erosion and sediment runoff, and elevated turbidity for short distances downstream could occur during the migration, spawning, and rearing seasons for this

species. Spring- and fall-run Chinook salmon are known to spawn in suitable habitat within and adjacent to the site. Construction activities are proposed during the spawning period, and in-river construction including temporary crossings may temporarily displace holding adult salmonids. Some fine-textured materials may settle near or on spawning habitats located downstream of riverine rehabilitation areas, but these materials are not expected to impair redd excavation or spawning. Juvenile spring-run Chinook salmon are expected to rear throughout the year within or adjacent to the site boundaries, and transient increases in turbidity and re-suspension of sediments would be likely to have similar effects on juvenile Chinook salmon as on coho salmon. Adult spring-run Chinook salmon using holding habitat during the summer months may be displaced to other holding habitats either upstream or downstream by transient turbidity and sediment plumes created by construction activity.

Steelhead

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

Pacific Lamprey

Potential impacts to Pacific lamprey populations in the Trinity River resulting from implementation of the Proposed Project would be similar to those previously described for coho salmon and other anadromous salmonids. Adult Pacific lamprey migrate upstream from spring through early summer and again in the fall to spawn. Larval lampreys inhabit the river year-round. Siltation of nests that may be built in suitable habitats (i.e., low-slope riffles) could occur. Filter feeding by larval lampreys could be disrupted by an increase in suspended sediments caused by construction-related erosion, although this impact would be very localized and temporary.

Mitigation Measures/Project Design Features

While the Proposed Project would increase aquatic habitat within the boundaries of the site, the proposed construction activities would result in an increase in erosion and sedimentation in the short-term. While the long-term impact would be beneficial, the short-term impacts on fishes within the Trinity River would be significant. Implementation of the Proposed Project could result in increased erosion and sedimentation levels that could adversely affect fishes, including the federally and state-listed coho salmon. Therefore, mitigation measures 4.6-2a, 4.6-2b, 4.6-2c, 4.6-2d, and 4.6-2e described in Appendix B will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.6-3: Construction activities associated with the Proposed Project could result in the accidental spill of hazardous materials that could adversely affect fishes, including the federally and state-listed coho salmon.

No Project Alternative

Under the No Project alternative, there would be no risk of accidental spills of hazardous material because the project would not be constructed. Therefore, there would be no impact.

Proposed Project

Coho Salmon, Chinook Salmon, Steelhead, and Pacific Lamprey

Construction activities typically include the refueling of construction equipment on location. The Proposed Project also includes activities that would place mechanized equipment (e.g., trucks, excavators) within the active channel for short periods. As a result, minor fuel and oil spills could occur and there would be a risk of larger releases. Without rapid containment and clean up, these materials could be toxic, depending on the location of the spill in proximity to surface water features, including the Trinity River. Oils, fuels, and other contaminants could have deleterious effects on all life stages of salmonids and other anadromous fish within close proximity to construction activities. Although short-term, these impacts are considered significant.

Mitigation Measures/Project Design Features

Construction activities associated with the Proposed Project could result in the accidental spill of hazardous materials that could adversely affect fishes, including the federally and state-listed coho salmon. Therefore, mitigation measure 4.6-3a described in Appendix B will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measure would reduce the impact to less than significant. Section 3.5, Water Quality, and Section 3.13, Hazards and Hazardous Materials, provide additional details on mitigation measures developed for water quality standards, hazards, and hazardous materials.

Impact 3.6-4: Construction activities associated with the Proposed Project could result in the mortality of rearing fishes, including the federally and state-listed coho salmon.

No Project Alternative

Under the No Project alternative, construction-related mortality to rearing salmonids would not occur because the project would not be constructed. Therefore, there would be no impact.

Proposed Project

Coho Salmon

Coho salmon are known to occur throughout the Trinity River. Suitable coho salmon rearing habitat exists within the boundaries of the rehabilitation site, and juvenile coho salmon may rear within these boundaries year-round. Adult coho migrate through the site and use suitable spawning habitat throughout the 40-mile reach of the Trinity River below Lewiston Dam. Direct injury to, or mortality of, coho salmon could occur during in-river construction and construction of the low-flow channel

crossings planned under the Proposed Project. These activities would be conducted only during late-summer low-flow conditions (e.g., July 15 – September 15) or when spawning is prohibited from occurring on the crossing area (as proposed in the Proposed Project utilizing anti-spawning mats), thus, minimizing the potential for direct mortality to rearing coho, because this period corresponds to a time of the year when the fewest number of juvenile coho salmon are known to occur in the project reach.

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

A small, temporary, but uncertain level of stranding of coho salmon fry could occur on the newly constructed inundation surfaces and side channel during rapidly receding flood-flow periods in the winter and early spring when fry are emerging. Additionally, construction of side channel features could result in stranding conditions as flows recede, particularly if the downstream end fills with fine sediments, potentially stranding coho salmon fry. Although stranding of fry under such receding flood conditions occurs on naturally shallow floodplains (Sommer et al. 2001), the constructed features could increase this process to varying degrees. As fluvial channel migration occurs through these surfaces, the potential for fry stranding is expected to equilibrate to that of a natural stranding risk. While the activities included in the Proposed Project are intended to benefit coho salmon, the short-term construction impacts would be significant.

Chinook Salmon

Potential impacts to Chinook salmon populations in the Trinity River resulting from implementation of the Proposed Project would be similar to those described for coho salmon. Physical construction within and directly adjacent to the river channel could disturb holding spring-run Chinook salmon. The principal effect to spring-run Chinook is that they would be forced to move to other habitat. The Proposed Project would not impair migration, and spring-run Chinook salmon would be able to locate and use suitable holding habitat outside of the disturbed areas. Water temperatures are the coolest in the reach of the Trinity River that encompasses the Proposed Project site, and physiological effects, or ultimately death, are not expected as temperatures in these reaches of the Trinity River (55 to 59°F) are below the threshold observed where spring run Chinook can accumulate stresses. Based on studies on temperature tolerance, temperatures in other locations within this section of the Trinity River are sufficiently cool that spring-run Chinook are able to deal with stressors (e.g., relocation) without adverse effect (North State Resources 2005).

Steelhead and Pacific Lamprey

Potential impacts to steelhead and lamprey populations in the Trinity River resulting from implementation of the Proposed Project would be similar to those previously described for coho and other anadromous salmonids.

Mitigation Measures/Project Design Features

While the activities included in the Proposed Project are intended to benefit salmonids and other aquatic organisms, the short-term construction impacts would be significant. Construction activities associated with the Proposed Project could result in the mortality of rearing fishes, including the federally and state-listed coho salmon. Therefore, mitigation measures 4.6-4a, 4.6-4b, 4.6-4c, 4.6-4d, and 4.6-4f described in Appendix B will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.6-5: Implementation of the Proposed Project would result in the permanent and temporary loss of SRA for anadromous salmonids.

No Project Alternative

Under the No Project alternative, loss of SRA habitat would not occur because the project would not be constructed. Therefore, there would be no impact.

Proposed Project

As described in the Master EIR Section 4.6, Fishery Resources, the term *riparian habitat* encompasses the range of riparian vegetation conditions along the river corridor including rehabilitation sites. It does not have a specific legal description or definition. For the purposes of this document, the term riparian habitat encompasses the range of riparian vegetation conditions within the boundaries of the site and is synonymous with SRA habitat.

Coho Salmon, Chinook Salmon, Steelhead, and Lamprey

Removal of montane riparian wetland vegetation along the banks of the Trinity River could adversely affect the quality of SRA habitats used by rearing salmonids. Riparian vegetation is important to the maintenance of healthy fish habitat. Riparian areas provide shade and temperature benefits, sediment, nutrient and chemical regulation, stream bank stability, and inputs of large wood and organic matter to the channel. Riparian vegetation that is adjacent to the river, a component of SRA habitat, is an element of designated critical habitat for coho salmon and a component of EFH for Chinook and coho salmon. Complexity in the riparian environment, an important component of fish habitat, would be increased over the long-term with construction at the Proposed Project site.

To maintain overall SRA habitat values in the project reach, the Proposed Project would be designed to minimize losses of riparian vegetation adjacent to the Trinity River channel, except where necessary to re-activate river access to floodplains. Boundary markers would be installed along all riparian areas outside of delineated activity areas. These markers would minimize impacts to riparian vegetation by preventing construction access. Removal of riparian berms and re-activation of adjacent floodplains within riverine activity areas would allow for natural revegetation of most of the riparian habitat that would be lost as a result of berm removal and floodplain contouring. Additionally, riparian habitat removed under the Proposed Project would be replaced during revegetation efforts consistent with requirements of the Riparian Revegetation and Monitoring Plan. While no permanent net loss of SRA features would necessarily occur, the short-term impact of removing riparian vegetation (Figure 6) is considered a significant impact.

Mitigation Measures/Project Design Features

Proposed Project implementation would result in a permanent and temporary loss of SRA habitat for anadromous salmonids. Therefore, mitigation measures 4.6-5a, 4.6-5b, and 4.6-5c described in Appendix B will be implemented to reduce the potential for impacts. Implementation of the specified mitigation measures would reduce the impacts to less than significant.

Impact 3.6-6: Implementation of the Proposed Project would result in fish passage being temporarily impaired during the in-stream construction phase.

No Project Alternative

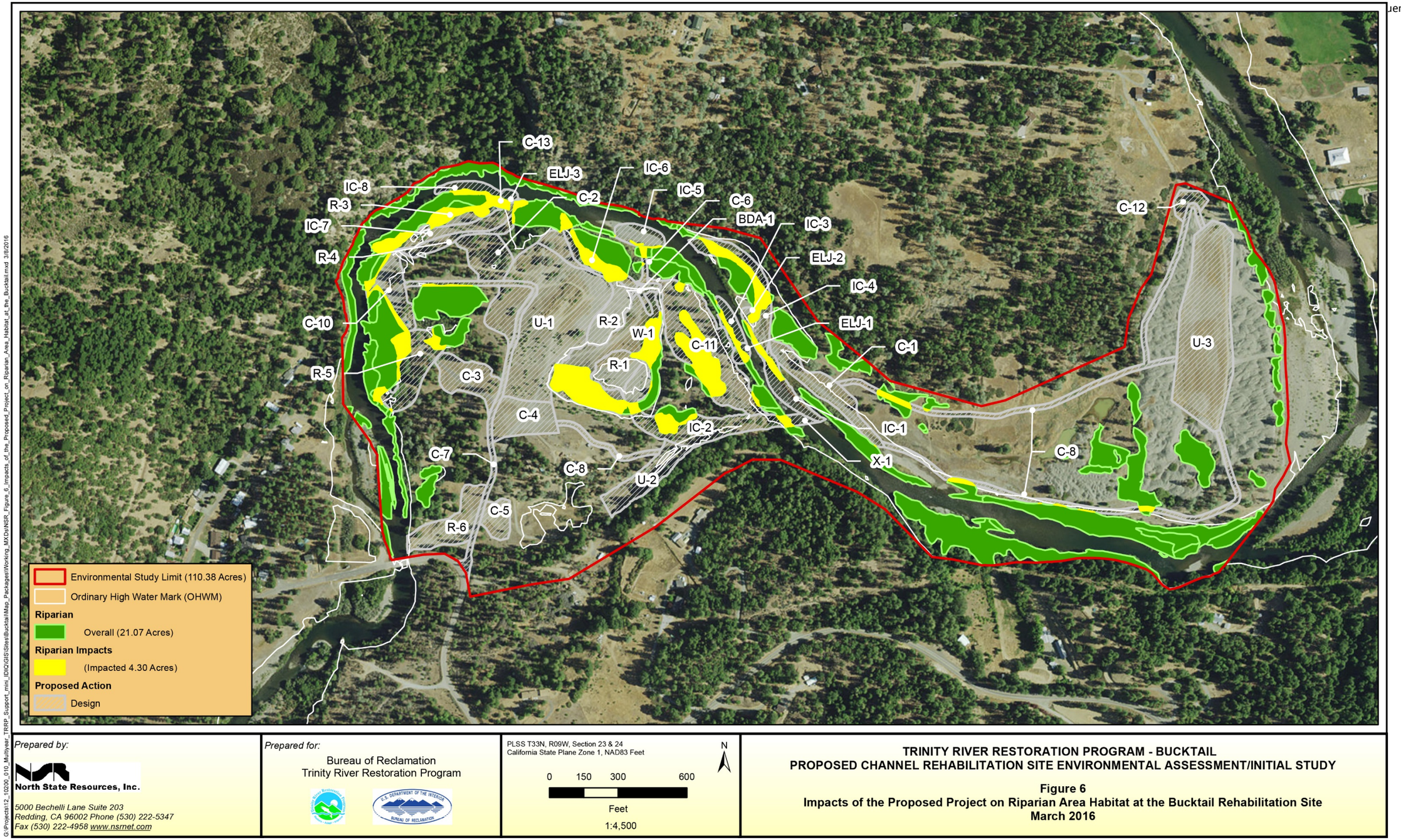
Under the No Project alternative, temporary impairment of fish passage would not occur because the project would not be constructed. Therefore, there would be no impact.

Proposed Project

Construction activities would require temporary placement of a low-flow channel crossing to move heavy equipment across the low-flow channel. The temporary crossing would also provide access for in-channel work. Construction activities may require service vehicles to cross up to several times per week, otherwise vehicle crossing traffic would be kept to a minimum. The crossing would be constructed in a manner that maintains adequate water depths and velocities for fish passage. The temporary crossing would only be constructed during late-summer, low-flow conditions (e.g., July 15–September 15). The crossing is expected to be in place long enough to complete work (including revegetation) at these activity areas and would be removed once work is completed.

Coho Salmon

Use of river crossings could occur during the onset of the fall coho smolt emigration, depending on seasonal conditions (flow, temperatures, etc.) and would occur during the coho adult migration and spawning period. Upon completion of work in riverine areas requiring use of low-flow channel crossings, these crossings would be dismantled and materials would be contoured to the river bottom or utilized in construction features (e.g., IC-1). Fill materials would consist of appropriately sized spawning gravel as specified by NMFS and CDFW. Use of the temporary crossing would be restricted to the timeframes outlined in the 2000 BO (NMFS 2000), or use of the crossing for spawning would be precluded with the use of anti-spawning mats.



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Trinity River Restoration Program

PLSS T33N, R09W, Section 23 & 24
California State Plane Zone 1, NAD83 Feet

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TRINITY RIVER RESTORATION PROGRAM - BUCKTAIL
PROPOSED CHANNEL REHABILITATION SITE ENVIRONMENTAL ASSESSMENT/INITIAL STUDY

Figure 6
Impacts of the Proposed Project on Riparian Area Habitat at the Bucktail Rehabilitation Site
March 2016

Figure 6. Impacts of the Proposed Project on Riparian Area Habitat at the Bucktail Rehabilitation Site.

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Fish passage design is normally based on the weakest species or life stage present that requires upstream access and should accommodate the weakest individual within that group. For the Proposed Project, low-flow channel crossings would need to meet velocity criteria for upstream migrating juvenile salmonids and depth criteria for migrating adult salmonids, including the federally threatened coho salmon. Maximum velocities and minimum depths are adopted from NMFS Guidelines for Salmonid Passage at Stream Crossings (NMFS 2001) and Part IX Fish Passage Evaluation at Stream Crossings of CDFW's California Salmonid Stream Habitat Restoration Manual (CDFW 2003a). Adult salmonids can negotiate water velocities of up to 8 to 9 feet per second (fps) without difficulty (Bjornn and Reiser 1991). However, juvenile salmonids can only typically negotiate water velocities up to 2 fps over short distances and up to about 1 fps over long distances and sustained periods (NMFS 2001); therefore, crossing designs would include criteria to accommodate these slower velocities for juvenile fish. Minimum water depth over the crossings at low-flow would not be less than 12 inches to provide adequate depth for migrating adult Chinook and coho salmon (NMFS 2001).

Although the construction period could extend into the smolt emigration and coho salmon spawning season, the effect of the low-water crossings on fish passage is expected to be temporary and minimal. Adult anadromous fish generally expend approximately 80 percent of their stored energy reserve during normal upstream migration to suitable spawning areas. Undue exertion or delay at stream crossings due to unsuccessful passage attempts at inadequate (blocking) structures can lead to reduced spawning success and pre-spawning mortality (Robison et al. 1999). Adequate depth and velocities over the crossing would allow for both juvenile and adult passage. While long-term beneficial changes to physical rearing habitat associated with implementing the Proposed Project are anticipated to offset the temporary impacts on fish passage, the temporary impacts on fish passage would be considered significant.

Chinook Salmon

Potential impacts to Upper Klamath-Trinity Rivers ESU Chinook salmon populations in the Trinity River would be similar to those previously described for coho salmon. However, adult migrants from the spring and fall runs of Chinook salmon would be expected to pass through, stage, and/or spawn within the project boundaries during the construction season. The temporary placement of gravel fill at the crossing would not preclude fish passage since adequate depths and velocities would be maintained.

Steelhead and Pacific Lamprey

Potential impacts to the KMP ESU steelhead and Pacific lamprey populations in the Trinity River resulting from implementation of the Proposed Project would be similar to those previously described for coho and Chinook salmon.

Mitigation Measures/Project Design Features

Implementation of the Proposed Project would result in fish passage being temporarily impaired during the in-stream construction phase. Therefore, mitigation measures 4.6-6a, 4.6-6b, 4.6-6c, and 4.6-6d described in Appendix B will be implemented to reduce the potential for impacts associated with the Proposed Project. Implementation of the specified mitigation measures would reduce the impacts to less than significant.