Chapter 3. Affected Environment and Environmental Consequences

3.1 Introduction to the Analysis

This chapter characterizes the affected environment at the Deep Gulch and Sheridan Creek rehabilitation sites and analyzes the potential environmental impacts associated with implementing the proposed action described in Chapter 2. The analysis includes a discussion of the proposed action and the no action alternative. A number of design features have been developed and incorporated into the proposed action to reduce or eliminate adverse effects. Table 2-5 provides a comprehensive list of environmental commitments that have been incorporated into the proposed action to lessen impacts to various resources. This is consistent with guidance issued by the Council on Environmental Quality (CEQ) for Federal agencies for implementing, monitoring, and evaluating environmental commitments identified in EAs completed for compliance with the National Environmental Policy Act (NEPA). Throughout this chapter, these environmental commitments are identified with a unique label (e.g., (EC-CU-1)).

The analysis for each resource area includes discussions of the existing environmental setting, applicable significance criteria, potential environmental impacts, and project design features (e.g., environmental commitments). There is a clear distinction between NEPA and CEQA with respect to mitigation measures. No CEQA mitigation measures were identified for the resource topics addressed in this chapter; the environmental commitments described in Table 2-5 have been incorporated into the proposed action to ensure that there are no significant impacts as defined under CEQA. An alphanumeric coding system that corresponds to the CEQA mitigation measures found in Appendix E of the Master EIR/Programmatic EA is used to identify each mitigation measure that is applicable to the proposed action. Where a NEPA environmental commitment corresponds to a referenced CEQA mitigation measure as described in the mitigation monitoring and reporting program (MMRP) (Appendix E of the Master EIR), it is cross referenced, for example (EC-CU-1 [4.10-2a]).

Several resource topics or issues were considered, but eliminated from further evaluation in this EA/IS due to the resource not being present or the issue not being a concern at the rehabilitation sites. Table 3-1 identifies the resource topics considered in this document as well as those eliminated from further consideration, and Appendix A1 contains an Environmental Screening Checklist based on the Master EIR/Programmatic EA, which was used to screen and identify resource topics and issues to carry forward for further evaluation.

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

Resource Topic	Analyzed in the EA/IS?	Comments
Visual Resources/ Aesthetics	Yes	Temporary and long-term changes to visual resources or aesthetics are addressed. Scenic resources associated with scenic highways are not present. Light and glare were addressed in the Master EIR, and no issues were identified.
Agricultural Resources	No	Agricultural lands and uses are not present.
Air Quality	Yes	Temporary construction-related emissions and dust are addressed. No long-term air quality impacts, including greenhouse gas contributions, are expected.
Cultural Resources	Yes	Impacts on tribal cultural resources, archeological resources, and historic properties/historical resources are addressed. The alluvial nature of the geology within the project area is not conducive to the occurrence of paleontological resources.
Environmental Justice	No	The proposed action would not disproportionately affect low-income or minority populations.
Fishery Resources	Yes	Impacts on aquatic habitat and special-status fish are addressed.
Forestry Resources	Yes	Forestry resources are addressed. This topic is covered in the Vegetation, Wildlife, and Wetlands section.
Geology and Geologic Hazards	No	Unique geological resources are not present. Geologic hazards were addressed in the Master EIR, and no issues were identified.
Geomorphology and Soils	Yes	Soil disturbance, erosion potential, changes to the geomorphology of the river, and disposal of excavated materials are addressed in this section.
Greenhouse Gases	Yes	Greenhouse gas emissions are addressed in the Air Quality section.
Hazardous Materials	No	Hazardous materials were addressed in the Master EIR, and no issues associated with hazardous material sites were identified. Use of hazardous materials during construction activities is addressed in the Soils, Fishery Resources, Wildlife, and Water Quality sections.
Hydrology and Flooding	Yes	Changes to hydrology of the river and floodplain effects are addressed.
Indian Trust Assets	Yes	Impacts on Indian Trust Assets associated with uses of the river and its resources are addressed. This topic is covered in the Cultural Resources section.
Indian Sacred Sites	No	No Indian sacred sites have been identified within or in close proximity to the project area.
Land Use	Yes	Consistency with federal agency resource management plans is addressed. Consistency with Trinity County General Plan is also addressed.
Mineral Resources	Yes	Impacts on recreational mining and from use of mineral resources are addressed. These topics are addressed in the Recreation, Geomorphology, and Soils sections.

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

Resource Topic	Analyzed in the EA/IS?	Comments
Noise	Yes	Increased noise during construction activities is addressed in the Noise section.
Population and Housing	No	No populations or housing would be affected.
Public Health and Safety	No	Hazards to the public were addressed in the Master EIR, and no issues were identified. Indirect public health or safety concerns are addressed in the Air Quality, Noise, Recreation, and Transportation and Traffic sections.
Public Services	No	Public services were addressed in the Master EIR, and no issues associated with the increased demand or disruption of public services were identified. Access-related issues are addressed in the Transportation and Traffic sections.
Recreation	Yes	Potential disruptions to recreational uses are addressed.
Socioeconomics	No	Socioeconomics were addressed in the Master EIR, and no issues were identified.
Transportation and Traffic	Yes	Increased traffic and access-related issues are addressed.
Tribal Cultural Resources	Yes	Tribal cultural resources are addressed in the Cultural Resources section.
Utilities and Energy	No	Utilities and energy were addressed in the Master EIR, and no issues were identified.
Vegetation, Wildlife, and Wetlands	Yes	Vegetation removal, disturbance to wildlife, and modifications of wetlands are addressed.
Water Quality	Yes	Temporary and long-term water quality impacts are addressed.
Wild and Scenic Rivers	Yes	The recreation and aesthetic values of the Trinity River are addressed. This topic is covered in the Recreation and Wild and Scenic Rivers, Water Quality, Fisheries, Visuals Resources/Aesthetics and Recreation sections.

3.2 Land Use

3.2.1 Affected Environment

The project area encompasses federal and private lands. About 140 acres, or 78 percent, of the lands are managed by the BLM. Portions of nine private parcels encompass approximately 40 acres in the central and eastern portions of the project area. Some of the private parcels contain large-lot rural residential uses (residences are outside the project area) and are surrounded by open space on adjacent private properties and BLM-managed lands. The private parcels in the project area are designated by Trinity County as Agriculture with a 10-acre minimum lot size (A10), Open Space (OS), and Specific Unit Development (SUD), and those portions of the parcels in the 100-year floodplain of the Trinity River have an overlay designation of Scenic Conservation. Land uses on private lands are guided by

the Trinity County General Plan and Junction City Community Plan. The BLM-managed land is used primarily for recreational activities associated with the Trinity River, although public access to the river on BLM-managed land is limited to one user developed primitive route (DG A-1) with an undeveloped launch site accessible via four-wheel-drive, high-clearance vehicles. Boats and rafts provide access to BLM lands along both sides of the river through the project area. Historic use of the land included mining, and dredge tailings are present along the river corridor. Two of the main vehicle access routes (DG A-6 and SC A-7) into the project area cross private lands and are not open to the public.

BLM-managed lands are administered in accordance with BLM's 1993 Redding Resource Management Plan (RMP), as amended. This RMP discusses the general condition of natural resources in the plan area and prescribes appropriate land use management for lands within the plan jurisdiction. The federal lands in the project area are allocated as "Other," but this allocation is overlaid with other designations with stringent management standards. The 1993 Redding RMP was amended by the Northwest Forest Plan, which added requirements for compliance with the Aquatic Conservation Strategy and other Standards and Guidelines to protect habitat for the northern spotted owl. As part of this plan, Riparian Reserves were established along rivers and streams to protect aquatic resources. The width of the Riparian Reserves essentially correlates with the floodplain of the Trinity River and includes most of the project area. Also, the Trinity River from Lewiston Dam to Weitchpec is federally designated as a Wild and Scenic River for its recreational values. BLM is the federal river manager from Lewiston Dam to the North Fork Trinity River.

3.2.2 Environmental Consequences

Proposed Action

The proposed rehabilitation activities would not change the uses of the project area or require changes to land use allocations or zoning designations. Temporary disruptions to nearby property owners and recreationists using the river and adjacent areas near the project area could occur during the rehabilitation activities (i.e., 3 to 6 months for construction and up to 5 years with respect to revegetation efforts), but no long-term impacts are anticipated and use of the land within the project area would be the same as under current conditions. Recreation-related impacts are discussed in section 3.3, Recreation, and access-related impacts are discussed in section 3.6, Transportation and Circulation. The restored floodplain and habitats would enhance the area for recreationists and would maintain open space and scenic views near the private residences.

Based on the nature of the rehabilitation activities, the proposed action would be consistent with current uses and zoning of the project area, as defined by the BLM and Trinity County. The BLM's 1993 Redding RMP describes various resource condition objectives applicable to federal lands in the project area, and the rehabilitation activities would help the BLM achieve these objectives for the Trinity River. Additional details on the consistency of the TRRP activities with the Redding RMP are presented in Appendices D (ACS), E (Survey and Manage Species) and F (Wild and Scenic Rivers).

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

No Action Alternative

Under the no action alternative, land use within the project area is expected to remain similar to existing uses. Therefore, there would be no impacts to land use as defined in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.3 Recreation and Wild and Scenic Rivers

3.3.1 Affected Environment

The project area encompasses both federally and privately owned land. About 140 acres, or 78 percent, of the land in the project area is managed by the BLM. The BLM-managed land is used primarily for recreational activities associated with the Trinity River.

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

BLM issues special recreation permits for about 100 commercial fishing guides along this reach of the river. Canoe, raft, and shuttle service permits are also issued in this area. Visitor use in the project is most likely light, with an occasional bank fisherman, drift boat, raft, or hiker transiting the area.

There are no campgrounds or other formal recreational sites in the project area, and public access to BLM land within the project area is limited due to the pattern of private ownership within and adjacent to the project area. One user created access route is available to the Deep Gulch site using DG A-1. This route provides access to the Trinity River in the vicinity of a sensitive feature locally known as Ice Box Hole (See Figure 2-1) for various recreational opportunities (e.g., angling, gold panning). Public access to the river by drift boat or raft is afforded at Evans Bar (USFS) on the west side of the river 1.5 miles upriver from the project site and at the Sky Ranch river access adjacent to SR 299, about 1.5 miles downriver.

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

The sections of the Trinity River described above were designated as Wild and Scenic to preserve the river’s free-flowing condition, water quality, and the Outstandingly Remarkable Values (ORVs). The ORV that was identified on the date of designation was the anadromous and resident fisheries. Under

an interagency agreement between the National Park Service, the Bureau of Land Management (BLM), and the U.S. Forest Service, the BLM has the responsibility for conducting WSRA Section 7 determinations for the mainstem Trinity River from Lewiston Dam to the confluence with the North Fork Trinity River. Appendix F provides additional information on this topic.

3.3.2 Environmental Consequences

Proposed Action

The proposed action would require construction within the active river channel, the floodplain, and adjacent upland areas, as described in Chapter 2. Construction activities could result in temporary disruptions to public access and recreational activities in the project area and its immediate vicinity. However, river access and recreational opportunities would continue to be available at other locations along the river. Because disruptions to recreational activities in the project area would be temporary, this impact would be less than significant.

Construction and implementation of the proposed action would have a temporary effect on the scenic and recreational components of the Trinity River's Wild and Scenic River values. However, this temporary impact would be less than significant because the rehabilitation activities would ultimately enhance the overall form and function of the Trinity River, thereby enhancing the outstandingly remarkable values for which it was designated a federal Wild and Scenic River.

Flows that typically contribute to good fishing tend to be clear; increases in turbidity may therefore affect the recreational experience of anglers and the aesthetic values held by other recreationists. Increased turbidity and suspended solids levels would adversely affect water quality (refer to discussion in section 4.8, Recreation of the Trinity River Master EIR) and could adversely affect aesthetic resources. Four specific environmental commitments developed to reduce water quality impacts as described in Table 2-5 have been integrated into the proposed action in order to reduce impacts of increased turbidity levels on recreational users. These commitments include EC-WQ-1 [4.5-1a-1e], EC-WQ-2 [4.5-2a – 2c], EC-WQ-3 [4.5-3a-3c], and EC-WQ-4 [4.5-1e].

Implementation of the proposed action could increase turbidity and total suspended solids in the Trinity River for some distance downstream during construction activities. The level of the increase would be largely dependent on the flow regime at the time of the project. Water quality objectives for the Trinity River specifically prohibit the discharge of any materials into the river that could cause a nuisance or adversely affect beneficial uses such as recreation. The extent of downstream sedimentation would be a function of the instream flow velocity and particle size. For example, fine-grained sediments like silts and clays could be carried several thousand feet downstream of the project area, while larger-sized sediments like sands and gravels would tend to drop out of the water column within several feet of the construction limit.

Temporary construction activities associated with the proposed action could pose a hazard to recreational users of the river and cause resource damage to recreational lands within the project boundaries. Potential hazards to recreationists include the presence of temporary river crossings, operation of construction equipment and vehicles in and around the rehabilitation sites, changes in the river's subsurface movement as a result of the in-channel addition or removal of gravel, the addition of wood into the channel, and an increased potential for a hazardous materials spill (e.g., diesel and

hydraulic fluid) presented by construction equipment and vehicles operating in and adjacent to the river. Potential hazards to resources on recreational lands within project boundaries include an increased potential for hazardous materials spills and unstable riverbanks and/or uplands resulting from excavation, material addition, road creation, and vegetation removal. During construction activities in the vicinity of DG R-1 and U-1, public access to the Trinity River would be limited. Several public access points to the river for recreationists would be available upstream (e.g., Evans Bar) and downstream (e.g., Junction City) of the project area throughout the construction period.

An environmental commitment listed in Table 2-5 (EC-RE-1 [4.8-1a]) requires Reclamation to prepare and post precautionary signage and public notification warning of in-river construction in order to reduce the hazards to recreational users that would be associated with in-river construction activities. This approach has worked well for previous TRRP projects and has been particularly effective in reducing impacts on in-water recreational activities such as boating and fishing over the past 10 years.

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

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

No Action Alternative

Under the no action alternative, recreational resources and uses within the project area are expected to remain similar to existing conditions. Therefore, there would be no impacts to recreational resources or disruption of uses as defined in the California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

3.4 Visual Resources/Aesthetics

3.4.1 Affected Environment

The Trinity River is considered an important aesthetic and visual resource for residents of Trinity County and visitors to the area. The river is an integral component of the communities and residential areas throughout the County. Residents and visitors actively use the river for recreation, both on and adjacent to the river. The river also offers a variety of landscapes, many of which are incorporated into the rural residential lifestyle of Trinity County.

This section describes the scenic values and visual resources that are known to occur within the project area and evaluates the effect that the proposed action could have on these values and resources. The BLM is responsible for managing public lands for multiple uses while ensuring that the scenic values and open space character of the public lands are considered before authorizing actions on public lands. The BLM accomplishes these responsibilities through its Visual Resource

Management (VRM) system. The VRM system classifies land based on visual appeal, public concern for scenic quality, and visibility from travel routes or observation points. VRM classes are used to identify the degree of acceptable visual change within a landscape based on the physical and sociological characteristics: Classes I and II are the most valued, Class III represents a moderate value, and Class IV is of least value. The proposed action would affect BLM-administered public lands in the project area with the VRM Class Objective of II (USDI BLM 1993).

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

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

As illustrated in Figures 2-1 and 2-2, the project area includes lands on either side of the Trinity River that are isolated from public roadways. Because the project area is isolated and is essentially screened by vegetation and/or topography, key observation points were not developed and described in this discussion.

On river left, Dutch Creek Road parallels the project boundary, but is several hundred feet in elevation above the project boundary. Although there are several turnouts where a motorist may catch a glimpse of the area across the river to the east, the topography screens the project area from these vantage points. Similarly, the residential development on river left and west of Sky Ranch Road has limited views of the project area. While several residences do have views of the river to the west, topography and/or vegetation screen most of the project area from these residences. While the local residents access the project area for various recreational activities, the existing vegetation and dredge tailing deposits screen most users from views of the river except during high-flow events when the floodplain is inundated. From the river itself, the bed and banks can be viewed by boaters and those wading in the river. Due to the nature of the tailing deposits and extensive riparian vegetation, these views are limited other than from directly up or down the river corridor.

Because of the rural nature of the Trinity River corridor, the primary sources of artificial light are from vehicles passing through the area on state, local, and private roads; commercial and residential buildings; and, to a lesser degree, recreational features and facilities. Glare may occur during the daylight hours as the sun is reflected off the river or light-colored alluvium associated with the Trinity River floodplain.

The section of the Trinity River within the project area was designated as Scenic under the federal and state Wild and Scenic Rivers Acts (WSRA; Public Law 90-542 1968). This designation serves to preserve the river's free-flowing condition, water quality (e.g., extremely low turbidity levels under low-flow conditions), and ORVs. The section of the Trinity River subject to the proposed action was found to have ORVs due to its anadromous fishery. Appendix F provides a comprehensive analysis and determination of the proposed action consistent with the requirements of the Section 7 of the WSRA.

3.4.2 Environmental Consequences

Proposed Action

The potential impacts of the proposed action would include changes brought about by the removal of vegetation, construction of inundated surfaces, construction of new access roads, and creation and use of staging and gravel processing areas. These various activities are intended to restore the form and function of an alluvial river, thereby enhancing the overall aesthetic values and visual resources associated with the Trinity River and the surrounding landscape. Although the adverse impacts are expected to be temporary and the long-term outcome should improve the visual diversity of the corridor, the short-term (i.e., 5 years) impacts would persist.

Activities associated with the proposed action are intended to be not only functional (e.g., enhance fisheries and restore river sinuosity), but to complement the aesthetic values and visual resources associated with the rehabilitation sites. Overall, the proposed action incorporates the project area's diversity of landscapes and vegetation types to define the location, character, and magnitude of the rehabilitation activities at the sites. For example, materials excavated from riverine areas would be removed to upland areas or used as a source of coarse sediment to enhance the alluvial function of the river. Material transported to upland activity areas would be placed in a manner that blends the materials into the contours of the topography. Retention of existing topographic features would significantly lessen the degree of visual impact.

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

Implementation of the proposed action would increase the potential for increases in turbidity levels during and, to a lesser degree, after construction. Flows that typically contribute to good fishing tend to be clear; increases in turbidity may therefore affect the recreational experience of anglers and the aesthetic values held by other recreationists. Increased turbidity and suspended solids levels would adversely affect water quality (refer to discussion in section 4.8, Recreation, of the Trinity River Master EIR) and could adversely affect aesthetic resources. As described in Table 2-5, four specific environmental commitments developed to reduce water quality impacts have been integrated into the proposed action to the reduce impacts of increased turbidity levels that could be visible to recreational users.

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

With the inclusion of CEQA mitigation measures EC-WQ-1 [4.5-1a-1e], EC-WQ-2 [4.5-2a – 2c], EC-WQ-3 [4.5-3a-3c], EC-WQ-4 [4.5-1e] and EC-RE-1 [4.8-1a] described in this section, the CEQA

impacts considered under this resource topic would be less than significant (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

No Action Alternative

Under the no action alternative, there would be no degradation or obstruction of a scenic view as a result of construction because the project would not be implemented nor would there be an effect on the scenic quality of the Wild and Scenic River. The level of artificial light or glare would be similar to the existing condition. Therefore, there would be no impacts to aesthetic resources as defined in California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.5 Cultural Resources

Cultural resources is a broad term that includes prehistoric, historic, archeological, and tribal cultural resources. The National Historic Preservation Act (NHPA) of 1966 is the primary federal legislation that outlines the federal government's responsibility related to cultural resources. Title 54 U.S.C § 306108, commonly known as section 106 of the NHPA, requires the federal government to take into consideration the effects of the undertaking on any historic property, i.e., cultural resources listed on or eligible for inclusion in the National Register of Historic Places (NRHP).

The project area's cultural resources identification and significance determinations were performed by Reclamation consistent with the terms and stipulations of a Programmatic Agreement (PA) (USFWS et al. 2000) pursuant to the NHPA's section 106 process and its implementing regulations at 36 CFR Part 800.

Assembly Bill 52 (AB52) was approved by the Governor of California in September of 2014. The bill requires that the California state lead agency consult with California Native American tribes traditionally and culturally affiliated with the geographic area of the project when the Tribe requests to be informed of such projects and requests the consultation in order to ensure that impacts to tribal cultural resources are minimized. AB 52 requirements apply to projects with a notice of preparation or a notice of negative declaration or mitigated negative declaration filed on or after July 1, 2015. Therefore, the requirements of AB 52 did not apply to the preparation and adoption of the 2009 Master EIR prepared for the TRRP. However, the Programmatic Agreement ensures that tribal cultural resources were considered and incorporated into the Master EIR, which is incorporated by reference into this EA/IS. In fact, the MMRP for the Master EIR (Appendix E) adopted by the Regional Water Board includes measures consistent with the protection of tribal cultural resources, including tribal consultation and coordination, site evaluations, and avoidance, minimization and other specific mitigation as necessary at the site-scale.

Background research used to develop this section included a review of the files at the Northeast Center of the California Historical Resources Information System and the files of BLM, Redding Field Office applicable to the area of potential effect (APE) delineated by Reclamation and BLM (see Figure 2-2). Previously produced archaeological and historical literature pertinent to the general location was given special attention. The current list of contacts from the Native American Heritage Commission (NAHC) was consulted and initial contacts were made. Additional local individuals representing tribes collaborated in the investigation. The Trinity County Historical Society was

consulted as well as archaeologists with the Shasta-Trinity National Forest and the BLM, Redding Field Office.

This background research concluded that several previous cultural resources surveys covered portions of the current project environmental study limits (Ritter 1984, 1986, Matzat 1993, AECOM 2013b, Rich et al. 2015). These surveys resulted in the identification of several placer mines whose boundaries coincide with the current project boundary. Additionally, one Native American habitation site was identified during the records search as being within the area of potential effects (APE). The project design, and thus the APE, was amended by adjusting the boundaries of the activity areas to avoid this site; the site is therefore no longer within the project boundaries. However, measures including flagging and fencing will be used to ensure that this site is protected during project implementation.

3.5.1 Affected Environment

Archaeological research indicates people have been living in this general part of Trinity County for at least 7,000 years . The prehistory of the Trinity River area has received considerable study in conjunction with various BLM, Reclamation and U.S. Forest Service projects conducted throughout the watershed, largely as the result of archaeological field work accomplished in preparation for reservoir construction in the low lying river valleys, TRRP restoration projects and on BLM and U. S. Forest Service projects in the upland areas.

The Trinity River watershed was a main source of food for the indigenous peoples. Prior to European entry into Trinity County and the surrounding area, the indigenous people's traditional lifestyle was intimately connected to the dynamics of the river’s ecology and the surrounding watersheds. Salmon, which was abundant in the Trinity River, was their main source of meat. Acorns, which were prolific in the surrounding hills, provided their main source of plant food. These primary food sources were supplemented by many other animals and plants that inhabited this region.

While the question of who were the earliest Native Americans to occupy the habitation sites in the general vicinity of the project area may be contested, there is no doubt that Penutian speaking Wintu controlled the area when Major Pierson B. Reading made the first gold discovery in Trinity County at Readings Bar near Douglas City in 1848. By 1849, word of this discovery had spread, resulting in an influx of gold miners from all over the United States, and there were miners working placer claims along the Trinity River between Reading Creek and Canyon Creek. At the confluence of Canyon Creek and the Trinity River, the community of Junction City was established in 1852, about 3 miles downstream from the project boundary.

Early claims were more primitively worked with just pick, shovel, pan, and sluice, and were often mined by just a few men. Later claims involved elaborate hydraulic equipment and were worked by larger companies of men, requiring more space for the tearing down of banks and hillsides. Bucket-line dredging required more acreage and involved even larger groups of claims.

Gold dredging in Trinity County began in the 1890s as an alternative to hydraulic mining because it was viewed at the time as having a lesser impact on the river. It became prominent during the 20th century as an economically viable gold extraction method, with some dredging companies continuing

to work well into the 1960s (Crawford 2011). Gold mining, especially dredging, remained an important part of Trinity County's economic focus, continuing into the late 1960s.

Large bucket-line dredging became the standard dredge method in California in the 1920s. This type of dredging was more efficient and was able to excavate and process large volumes of unsorted alluvial materials common in the floodplain of the Trinity River. The bucket-line dredging at various locations in the Trinity River continued until completion of Trinity Dam and diversion of the river as part of Reclamation's Central Valley Project. As dredge systems evolved over time, the character of the dredge tailing deposits changed, leaving behind a highly modified landscape of large barren tailings piles and associated ponds and pits that are still visible within and adjacent to the project boundary.

The cultural resources investigation identified nine historic mining sites within or adjacent to the project boundary. In addition, two prehistoric cultural resources, one a site and the other an isolated find, were identified in this investigation. The identified site is assumed eligible for listing on the NRHP and may potentially contribute to the eligibility of other nearby sites. In consultation with Reclamation and BLM heritage resource staff, the boundaries of the project were modified to exclude the site from potential project-related impacts. The recorded isolate is by definition not eligible for NRHP inclusion. Although it is within the APE, the isolate will nevertheless be avoided during ground-disturbing activities. At several locations, certain components of dredge tailing sites were avoided in the project design in order to ensure that they could contribute to a larger district of tailings created by the Junction City Dredge Company. Figure 2-1 illustrates sensitive features, including one historical feature that were avoided during the planning process.

3.5.2 Environmental Consequences

Proposed Action

The boundaries of the activity areas within project area were adjusted to avoid sites with known tribal cultural resources and historical resources. Implementation of the proposed action will effectively avoid, minimize, or mitigate impacts to cultural resources, as required by the PA. By incorporating the environmental commitments outlined in Table 2-5 and following the stipulations of the PA prior to implementation, there would be no impacts to known cultural resources, and all actions under CEQA and NHPA will be fulfilled. Reclamation commits to fulfilling the stipulations of the PA prior to implementation of the proposed action. This commitment is shown in Table 2-5 (EC-CU-1 [4.10-2a])

TRRP rehabilitation activities have limited[1] potential to affect unknown cultural resources that may be present within the boundary of the proposed action. In the event that any cultural resources or human remains are encountered during project implementation, all work in the area of the find would halt and Reclamation's Regional Archeologist would be immediately notified. Reclamation would follow the stipulations of the PA and appropriate laws and regulations for compliance with the NHPA and other cultural resources statues. If the discovery is determined to be a historic property that would be adversely affected by the rehabilitation activities, Reclamation would resolve the adverse effect by preparing a Historic Property Treatment Plan in accordance with section III (d) of the PA. If human

[1] Most of the project area is underlain by recent floodplain deposits.

remains are discovered and identified as Native American, they would be treated according to provisions set forth in section IV of the PA as well as the Native American Graves Protection and Repatriation Act (43 CFR 10). This commitment is outlined in Table 2-5 (EC-CU-2 [4.10-2a]).

Under the proposed action, known cultural resources were considered in the design process and avoided. With the inclusion of CEQA mitigation measures EC-CU-1[4.10-2a] and EC-CU-2 [4.10-2a] described in this section, CEQA impacts to undiscovered cultural resources considered under this resource topic would be less than significant (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

No Action Alternative

Under the no action alternative, the condition of cultural resources would remain similar to existing conditions. Therefore, there would be no impacts to cultural resources as defined in California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.6 Transportation and Circulation

3.6.1 Affected Environment

The transportation network in the vicinity of the project area is typical of a rural environment, with low traffic and little development. State Route (SR) 299 is the main highway in the region and is a designated truck route between the Sacramento Valley and the coastal communities of northern California. The highway goes through Junction City less than a mile north of the project area. Traffic counts along SR 299 between Weaverville, northeast of the project area, and Big Flat Camp, which is about 8 miles west of Junction City, were between 1,600 and 2,650 average annual daily trips in 2014 (Caltrans-http://www.dot.ca.gov/trafficops/census/volumes2014/Route280-405.html).

Sky Ranch Road provides primary access to the project area from SR 299. This road is part of the County road system and is considered a scenic county roadway. Trinity County Department of Transportation records indicate that Sky Ranch Road has evolved over time. Surveys conducted by Trinity County in 2012 and 2013 document that the section of the road in the general vicinity of the project area has a native soil subgrade with a chipseal overlay; the most recent surfacing was done approximately 15 years ago. The survey results provided by the County indicate that the segment of the road between SR 299 and activity area DG A-1 ranged in condition between fair and failing at the time the survey was conducted. Since then, the road surface has become worse, according to local residents.

Based on the number of residences accessed via Sky Ranch Road, it is estimated that traffic counts along this road equal fewer than 200 trips on a daily basis. Primary travelers along local roads near the project area are residents and property owners, with occasional recreationists, agency staff, or other users visiting the area. Private roads off Sky Ranch Road provide access onto private parcels, and, at various locations, BLM parcels are currently accessible to both motorized and non-motorized access into the project area. Public vehicle and pedestrian access to BLM lands along the river is restricted on private lands due to the landlocked nature of BLM parcels within the vicinity of the project area. Other than access from the river, the only access to a BLM parcel within the project area is via activity area DG A-1, a narrow, steep, high-clearance user created route that can be driven to

the upper end of the Deep Gulch site near Ice Box Hole. There is no developed parking along this route.

After construction of the project is completed, a portion of the DG C-1 area (entirely on BLM lands) would be graded to create a small parking lot and associated interpretive display (e.g., historic mining landscape, TRRP activities) adjacent to Sky Ranch Road and visible from that vantage point. In addition, a motorized route would provide access through DG C-1 and U-1 to a new turn-around area near the end of DG A-1. Vehicular access would end at DG R-1 (at approximately the edge of the ordinary high water mark), but non-motorized access via an existing native-surface route (DG A-2) would allow users to reach the river on BLM land. The existing user-created access route (DG A-1) would be closed to motorized vehicles upon completion of the project, recontoured to match the existing topography, and revegetated in a manner that provides BLM with administrative access. Long-term motorized access to the upper portion of the Deep Gulch site would be available through BLM lands. After the project is completed (including revegetation efforts), access to BLM lands within the Sheridan Creek site will be limited to administrative use only.

3.6.2 Environmental Consequences

Proposed Action

Construction equipment and vehicles would temporarily increase traffic on local roads around the project area, primarily Sky Ranch Road, and on major highways, primarily SR 299, that provide access to the area from local communities. Construction equipment (e.g., large trucks, excavators, and backhoes) would be mobilized to the project area prior to rehabilitation activities and would be removed upon completion of these activities to minimize the number of daily trips, in accordance with the environmental commitments outlined in Table 2-5 (i.e., EC-TC-2 [4.16-2a, 4.16-5a]). During the rehabilitation activities, 20 to 30 construction workers and their vehicles would access the project area on a daily basis. SR 299 is a designated truck route that was built to withstand occasional use by heavy equipment and has a moderate volume of existing traffic. The temporary use of SR 299 for access to the project area during rehabilitation activities would not change its existing level of service or average traffic volumes and would not affect roadway conditions. In addition, trucks carrying heavy equipment and materials would operate within the legal weight limits, as determined by the state.

The temporary use of Sky Ranch Road and the primary access routes through DG C-1 and along SC A-7 during rehabilitation activities could delay or restrict recreationist and resident access to the river or private lands, but no road closures would be required. Traffic control measures would be implemented to alert travelers about the rehabilitation activities and minimize conflicts during the activities, in accordance with environmental commitments listed in Table 2-5 (EC-TC-1 and EC-TC-4 [4.16-2a, 4.16-5a]). Access to adjacent private properties would be maintained throughout the construction period, in accordance with environmental commitment EC-TC-2; however, this access would be restricted to project traffic based on individual agreements with land owners and not available to the public during or after project implementation. Passage for emergency vehicles would not be restricted, and the temporary roads (e.g., DG A-6) in the project area would aid in emergency access, if needed, during construction. In addition, several public access points to the river for

recreationists would be available upstream (e.g., Evans Bar) and downstream (e.g., Junction City) of the project area throughout the construction period.

The use of local roads by trucks and heavy equipment could degrade roadway conditions due to increased wear and tear and require road restoration once the rehabilitation activities are complete. In accordance with EC-TC-3 [4.16-4a], Reclamation would survey the road conditions before the rehabilitation activities and assess the degree of post-construction restoration that may be needed. Sky Ranch Road and adjacent private roads may require some degree of grading, resurfacing, or drainage improvements to restore them to pre-disturbance conditions, and Reclamation would coordinate with the County and landowners and easement holders to ensure that the roads are in acceptable condition after the rehabilitation activities.

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

With the inclusion of CEQA mitigation measures EC-TC-2 [4.16-2a, 4.16-5a] and EC-TC-3 [4.16-4a] described in this section, CEQA impacts on traffic and transportation considered under this resource topic would be less than significant (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

No Action Alternative

Under the no action alternative, traffic conditions and traffic circulation would remain similar to existing conditions. Therefore, there would be no impacts to traffic conditions as defined in California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.7 Air Quality

3.7.1 Affected Environment

Trinity County has a climate characterized by hot, dry summers and cold, moderately wet winters (USDA 1998). Most precipitation in the county results from major storms originating in the Pacific Ocean; however, short thunderstorms resulting from localized climatic conditions occur in the summer months. The higher mountain ridges receive precipitation as snow and hold most of it until late spring. Precipitation at the lower elevations is predominantly rainfall, with occasional snow in the winter (North Coast Unified Air Quality Management District 1995). Trinity County has an average summer high temperature of 93.9°F and winter low of 27.3°F.

Trinity County's air quality is generally good. The low population density, limited industrial and agricultural operations, and minimal traffic congestion contribute to the good air quality. Ambient air quality data are available from the Weaverville air monitoring station, which is located approximately 6 miles from the project area. Air quality data from this station may not be a precise representation of ambient air quality in the immediate vicinity of the project area but it does provide a good indication of air quality in the general vicinity. Locally, air quality and contributions of greenhouse gas (GHG)

to the atmosphere along the Trinity River corridor is influenced by topographic features, microclimate, and pollutants (i.e., particulate matter 10 (PM 10)) such as road dust and smoke from wildfires in the summer and wood stoves/fireplaces during cold weather.

Sensitive receptors consist of human populations, particularly children, seniors, and individuals with health risks, located where there is a reasonable expectation of human exposure to pollutants. The project area is not located near a school, hospital, senior housing, or other facilities where concentrations of sensitive receptors may be located. There are a number of residential properties within or adjacent to the project area that would be exposed to changes in air quality. Sky Ranch Road is the only paved road used to access these residences. All other roads in the general vicinity of the project area serve as a source of road dust periodically. The majority of these residences use wood as a source of heat as well as burn piles to reduce fuels on private parcels. Some level of commercial truck use (e.g., logging trucks) occurs periodically on unpaved roads that intersect with Sky Ranch Road. During these periods of high truck traffic, road dust has some localized effect on air quality, even with implantation of dust control measures (e.g., road watering). Operation of heavy equipment on private parcels within and adjacent to the project area occurs periodically and is a source of vehicle emissions.

3.7.2 Environmental Consequences

Proposed Action

Rehabilitation activities associated with the proposed action would require excavation, grading, disposal of earthen materials, and the use of vehicles and heavy equipment on unpaved roads and access routes, all of which would generate fugitive dust in the project area. Fugitive dust emissions would also result from activities associated with vegetation removal and gravel injection.

Transportation and construction activity associated with project implementation would generate GHG emissions from diesel- and gasoline-powered vehicles and equipment. An environmental commitment listed in Table 2-5 (EC AQ-1 [4.11-a-1a], [4.11-2a] is incorporated into the proposed action in order to reduce the impacts to air quality and GHGs. Additionally, the following measures would be used to enhance the awareness of global warming in conjunction with the proposed action:

- Provide project contractors with educational material about fuel efficiency and incentives;
- Promote incentives for contractors to initiate ride-sharing programs;
- Promote the use of energy efficient and alternative fuel construction equipment and transportation fleets through contract incentives;
- Require contractors to provide recycling bins for on-site waste materials;
- Provide incentives for contractors to use re-usable water containers rather than plastic bottled water;
- Provide incentives for contractors to hire locally;

- Require re-useable batteries for equipment that can use them.

In order to determine the significance of the impact of the proposed action, a "carbon foot-print" was developed for the proposed action based on the project's potential generation of GHGs (primarily CO_2) from project activities at the Deep Gulch and Sheridan Creek sites. Project activities that would offset potential impacts were weighed into the equation. This analysis indicates that the proposed action would produce approximately 54 pounds of CO_2 per day over the course of a 120-day construction period. Total GHG emissions resulting from the proposed action is estimated to be 525 metric tons of CO_2.

Based on those calculations, the proposed action's GHG emissions associated with the use of heavy equipment would be measurable over the course of the project; however, GHG emissions and any effects on global climate change would not be cumulatively significant considering the amount of GHG emissions generated by the proposed action in the context of current local air quality conditions. As a result, the proposed action represents a much smaller action than that analyzed in the Trinity River Master EIR. Vegetation replanting and natural reseeding within the existing upland and riparian areas would offset the total project GHG emissions by approximately 20 metric tons of CO_2 over a 5-year period. Additionally, project activities are expected to result in opportunities to increase the amount of riparian and upland vegetation, particularly with the rehabilitation and revegetation of dredge tailing deposits[2].

High levels of PM10 in Trinity County generally coincide with regional wildland fire events during the dry summer months and with localized woodstove use and brush burning activities during periods of cool, wet weather. Fugitive dust resulting from project activities would occur during the dry summer and early fall months, when PM10 levels may be elevated by wood stove use, brush burning, or wildland fires. The proposed action would increase the PM10 levels to varying degrees, depending on the type and extent of construction activity. Dust control measures will be used to reduce project-related impacts. Once rehabilitation activities have been completed, project impacts on air quality from fugitive dust would cease.

Diesel- and gasoline-powered equipment and vehicles used in project construction could also contribute to air pollution. Diesel particulate is an identified Hazardous Air Pollutant and Toxic Air Contaminant.

The proposed action would include vegetation removal. All of the vegetative material would be chipped and left on the floodplain or placed in upland areas to enhance growing conditions. All areas not subject to inundation would be revegetated with native riparian and upland plant and tree species. In some locations, non-native grass may be planted as a short-term erosion control measure.

With the inclusion of CEQA mitigation measure EC AQ-1 [4.11-a-1a], [4.11-2a] described in this section, CEQA impacts on air quality would be less than significant (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

[2] The Road Construction Emissions Model Version 8.1.0 was used to calculate GHG emissions for combustible fuel (Sacramento Metropolitan Air Quality Management District 2016) and the Construction Carbon Calculator was used to calculate GHG emissions for vegetation loss (Build Carbon Neutral 2007). The calculation is based on 120 days of construction per site and includes diesel fuel combustion and loss of vegetation.

No Action Alternative

Under the no action alternative, air quality conditions would remain similar to existing conditions. Therefore, there would be no impacts to air quality as defined in California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.8 Noise

3.8.1 Affected Environment

Sensitive receptors are specific geographic points, such as residences or parks, where people could be exposed to unacceptable levels of noise. Noise-sensitive land uses that have been identified in the project area include private residences and recreation use of the river corridor. Noise levels in the project vicinity are governed primarily by road noise along Sky Ranch Road from local residential traffic, occasional commercial traffic (e.g., logging trucks) and miscellaneous sources (i.e., chain saws, lawn mowers, overhead aircraft, barking dogs, children at play). There are about 20 private parcels that are adjacent to, or in close proximity (0.5 mile) to, the project area; each of these parcels has one or more structures that may be occupied and susceptible to project-related noise. In addition, recreational use of the river corridor by residents and their guests as well as boaters (anglers and rafters) occurs throughout the year. These recreational user groups may be closer to one or more activity areas, during the construction period, but the duration of their exposure to construction noise would depend on the type of recreational activity. A hiker walking a trail within the project area may take several hours to walk from one point to another, while a bank angler may spend time at one location within the project area for several hours. A boater may stop to fish at one of the locations shown on Figure 2-1 for a short period of time, but typically less than an hour at each stop.

In 2002, a community noise survey was conducted for Trinity County (Brown-Buntin 2002) as part of the update for the County General Plan – Noise Element. The nearest survey points to the project area were two sites about 3 miles away in Junction City: Junction City School and Winton Pass Road (Lot 25). The community noise survey results indicate that noise levels at these two noise-sensitive areas range from 52 to 60 dB Ldn[3] at those locations. These are low noise levels, which is typical of small communities and rural areas. Maximum noise levels observed during the noise survey were generally caused by local automobile traffic and heavy trucks (Brown-Buntin 2002). Occasional aircraft overflights and construction activities were other sources of maximum noise levels. Background noise levels in the absence of these maximum-noise generating events are largely attributable to distant traffic, wind, birds, and insects.

3.8.2 Environmental Consequences

Proposed Action

During the construction phase of the proposed action, noise from construction activities would temporarily dominate the noise environment in and adjacent to activity areas for varying periods of time throughout the project area. Construction activities would generate maximum noise levels

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

ranging from 65 to 84 dB Ldn at a distance of 50 feet, although intervening terrain and vegetation could reduce these noise levels. Construction noise would be temporary and is expected to occur primarily between the months of July and December. The environmental commitments outlined in Table 2-5 (EC-NO-1 [4.14-1a] and 2 [4.14-1b]) would ensure that temporary noise impacts would be minimized (by noise muffling devices), so sensitive receptors would not be negatively affected for extended periods of time. Construction activities will be scheduled between 7:00 a.m. and 7:00 p.m., Monday through Saturday; construction activities will be prohibited on Sundays unless a variance is granted by Trinity County. As a result of ongoing communication and coordination with local stakeholders to address concerns related to project-related noise, including several comments provided during the public review process, the TRRP has reduced the size of five activity areas and adjusted the location of two of these areas. These changes to the proposed action are intended to further reduce potential noise-related impacts to sensitive receptors (e.g., adjacent residences) by increasing the distance between activity areas and sensitive receptors. Other elements of the proposed action have also been adjusted. Specifically, large-size material (e.g., cobbles 6 to 14 inches diameter) from SC-U4 will be relocated for gravel processing in the SC U-5 area, where processing may be conducted in a depression to reduce noise to nearby residences. This will increase the distance between gravel processing and the nearest residence, reducing noise levels. Further, it will reduce the type of material processed at this location and focus on the larger cobble-sized material that is found at those locations in disproportionate quantities. Processing of smaller material will primarily occur in DG U-1 in an existing topographic depression to provide a physical barrier between gravel processing and nearby residences. The noise associated with processing alluvial material is expected to occur periodically during construction activities.

Residences located near the site would be subjected to varying degrees of construction noise, primarily associated with construction traffic entering and exiting the project area during the authorized work periods. It is not anticipated that ground vibration created by project activities would be detectable at any sensitive receptor location nor would the activities result in any structural damage. Recreational users in the general vicinity of the site could encounter increased ambient noise levels during construction activities. While such an increase in noise would be significant, its impact would be temporary and localized.

In the event that migratory birds are using habitat in the project area for nesting and rearing purposes, pre-construction surveys will be performed to identify specific activity areas where noise-related impacts will be deferred until after the nesting season is complete.

With the inclusion of CEQA mitigation measure EC-NO-1 [4.14-1a] and EC NO-2 [4.14-1b] described in this section, CEQA impacts related to noise considered under this resource topic would be less than significant (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

No Action Alternative

Under the no action alternative, noise impacts to sensitive receptors would remain similar to existing conditions. Therefore, there would be no noise-related impacts as defined in California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.9 Geomorphology and Soils

3.9.1 Affected Environment

The mainstem Trinity River generally flows north through the project area. Major influences on the river channel are flow regulation from Lewiston Dam, about 13 miles upstream of the project area, and a wide array of historical large-scale mining sites.

The 1.3-mile-long reach of the river in the project area is characterized by a relatively wide alluvial valley bottom, relatively low water surface slopes, low sinuosity, and simple channel geometry (TRRP Federal Design Group 2016, Yurok Tribe 2016). The channel is almost exclusively single-thread, with some evidence of riffles, bars, or similar topographic elements. Sinuosity is low, with channel curvature being almost entirely driven by valley confinement. The surface grain size distributions on bars and riffles throughout the project area are fairly consistent, with median particle sizes in the range of 40 to 80 millimeters (mm). Surface grain sizes in the pools and runs are more variable, with the median grain sizes ranging from sand to 150 mm or more. Sections of channel not influenced by valley walls are almost perfectly straight.

The relatively low slope and simple channel geometry that dominate the area are clearly linked to historical mining activities. Just downstream of these sites, Oregon Gulch discharged millions of cubic yards of mining debris from hydraulic mining at the LaGrange Mine on Oregon Mountain over a 60-year period ending in the 1930s. Massive aggradation during the period dominated by hydraulic mining was followed by large-scale dredge mining of the alluvial valley floor that continued into the 1950s. The channel and associated alluvial features of the Trinity River were dredged extensively, and the dredge tailing deposits are evident on the right side of the river throughout the project area.

Flows in the Trinity River downstream from Trinity and Lewiston dams have been regulated since Trinity Dam was closed in 1960. Diversion of up to 90 percent of the Trinity River to the Sacramento River basin in the 1960s and 1970s led to substantial geomorphic change in many locations along the Trinity River, with the predominant responses being channel narrowing and vegetative encroachment along the channel margins (USFWS and HVT 1999). Although flow regulation has certainly influenced current conditions, larger scale historical mining impacts are also important drivers of recent geomorphic evolution in the Junction City area. Figure 2-1 illustrates several sensitive geomorphic features that influence the form and function of the river within the project area. On river right, the relic riparian corridor of Sheridan Creek is bounded on either side by large dredge tailing deposits that essentially cut off Sheridan Creek from the Trinity River. On river left, a large debris fan associated with construction and use of the Sturdivant Tunnel continues to periodically release sediment to the river just upstream of Sheridan Hole.

Currently, the average channel and valley widths through the project area are 123 feet (channel) and 770 feet (valley) at the Deep Gulch site and 133 feet (channel) and 1,225 feet (valley) at the Sheridan Creek site (TRRP Federal Design Group 2016, Yurok Tribe 2016).

Mineral resources in the project area consist primarily of gravel and cobble, which are considered suitable for use in river rehabilitation activities. Placer mining of alluvial gravel for gold using a variety of techniques over time has left tailing deposits of different types that are apparent throughout the project area; these deposits continue to influence the form and function of the Trinity River.

Recreational mining (i.e., gold panning) may take place along the river corridor, but public access is limited to a small section of the river near Ice Box Hole (see Figure 2-1) or by boat.

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

Soil types in the project area are primarily gravelly loams and clay loams with varying levels of runoff and erosion hazards. An overview of each soil type is presented below.

- **Atter-Dumps, Dredge Tailings-Xerofluvents Complex, 2 to 9 percent slopes (map unit 102):** The map unit is on alluvial fans, stream terraces, and floodplains that have been altered by dredging operations and is found in the eastern portion of the project area. The soil formed in alluvium derived from mixed rock sources. It is very deep and is somewhat excessively to well-drained. Runoff is slow to medium, and the hazard of water erosion is slight.

- **Pardaloe-Goulding complex, 50 to 75 percent slopes (map unit 186):** The map unit is 45 percent Pardaloe very gravelly loam and 30 percent Goulding very gravelly loam. It is found in slivers along the western border of the project area. The Pardaloe soil is deep or very deep and is well drained, and the Goulding soil is shallow and somewhat excessively drained. The soils formed in colluvium, residuum, and material weathered from metavolcanic rocks. Runoff is very rapid, and the hazard of water erosion is severe.

- **Weaverville loam, 30 to 50 percent slopes (map unit 209):** The map unit is a very deep, well-drained soil located on hills and is found in the southwest portion of the project area. The soil formed in residuum and colluvium derived from weakly consolidated, moderately fine grained sediments. Runoff is rapid, and the hazard of water erosion is severe.

- **Xeralfs-Xerorthents complex, 5 to 50 percent slopes (map unit 213):** The map unit is about 40 percent Xeralfs and 40 percent Xerorthents. It is located on hills and terraces and is found on both sides of the river in upland areas in the project area. The soils formed in alluvium from mixed rock sources and material weathered from weakly consolidated nonmarine sediments or schist. Much of the soil material has been removed by hydraulic mining. The soils are well drained with variable depths. Runoff is rapid to very rapid, and the hazard of water erosion is moderate or severe.

- **Xerofluvents-Riverwash Complex, 0 to 5 percent slopes (map unit 217):** The map unit is about 45 percent Xerofluvents and 35 percent Riverwash. It is located on floodplains and stream terraces and is found on both sides of the river in the project area. Xerofluvents consist of well-drained soils that formed in alluvium from mixed rock sources. Runoff is slow or medium, and the hazard of water erosion is slight or moderate. The soils are subject to flooding during prolonged, high-intensity storms.

- **Xerorthents-Rock Outcrop Complex, 2 to 15 percent slopes (map unit 218):** The map unit is similar to the Xeralfs-Xerorthents complex, except with a rock outcrop component. It is found in the northwestern and southern portions of the project area. The soil is well drained with rapid runoff and a moderate erosion hazard.

3.9.2 Environmental Consequences

Proposed Action

Most of the rehabilitation activities would take place along the floodplain and would involve activities in the active river channel and adjacent areas. Approximately 113,800 yards of material would be excavated, and about 77,805 yards of fill would be placed at various activity areas throughout the project area. The excavation and fill of alluvial materials from alluvial and upland areas would expose these disturbed areas to erosion from wind and water, to varying degrees modifying the form and function of these disturbed landscapes.

General ground disturbance from equipment access and use, vegetation removal, stockpiling of materials, and other related activities would also disturb soils on approximately 59 acres of the project area and increase the potential for erosion due to decreased soil cohesion and armoring, as well as increases in soil compaction in some activity areas. Sediment exposed to flowing water has an increased potential to mobilize and be transported downstream, resulting in other impacts such as short-term increases in surficial and channel erosional processes; increases in turbidity levels downstream (varying distances); and changes to the type, volume, and character of deposition downstream. Increased wind and water erosion and subsequent downstream sediment transport in the Trinity River would occur if soils are exposed during the wet season (typically November through May) or during infrequent precipitation events (summer thunderstorms). Soil compaction from heavy equipment can also increase runoff and subsequently increase the potential for erosion in disturbed areas. Disturbance areas would be minimized through the establishment of activity areas and clear markers (e.g., fencing, flagging) to designate the work limits, in accordance with environmental commitment EC-GS-1[4.3-2a] (see Table 2-5). Erosion control measures would be implemented during the rehabilitation activities to protect exposed soils and minimize erosion, in accordance with EC-GS-2 [4.3-2b]. Indirect effects on water quality of the Trinity River are discussed in section 3.11, Water Quality.

Newly created side channels and wetland complexes would enhance the floodplain through removal of excess dredge tailings and soils that have accumulated over the years. Some fill would be placed along the floodplain to create bars and islands, realign the main channel, and constrict the floodplain.

Soil conditions in the activity areas were evaluated as part of the design process, and the types of soil material (e.g., cobble, gravel, fines) available for the rehabilitation activities were evaluated to determine how much material could be re-used on-site. The filled areas would be initially exposed to water erosion from the river, particularly during high flow and flood events, but the newly created features are expected to stabilize after grading efforts are completed, initial erosional events occur, and vegetation is re-established in disturbed areas. Sediment would be transported downstream to be deposited on downstream alluvial features as part of the natural riverine process. The overall effects on river geomorphology would benefit aquatic resources and result in more natural alluvial processes

that would result in an increase in the size, amount and complexity of alluvial features that support diverse aquatic habitat, as discussed further in section 3.12, Fishery Resources.

Cobble, gravel, and other mineral materials associated with alluvial and dredge tailings deposits in the project area would be used on-site to enhance the floodplain as part of the rehabilitation activities. During the design process, the boundaries of upland activity areas were revised to avoid affecting adjacent tailing deposits. The processing and reuse of alluvial material excavated from in-channel, riverine, and wetland activity areas would minimize the need to obtain these materials from adjacent tailings deposits (e.g., Chapman Ranch rehabilitation site) and other off-site sources. Some alluvial material may be imported from other rehabilitation sites available to the TRRP or from local commercial sources, depending on the quality and quantity required. The mineral materials used for the rehabilitation activities would be incorporated into the riverine and riparian environment.

Although a large amount of soil would be disturbed through excavation and general construction activities, the implementation of environmental commitments specific to erosion would minimize the potential for soil erosion and adverse effects on the river and its floodplain during the rehabilitation activities. Also, the rehabilitation activities are intended to modify the geomorphology of the river in the project area in order to benefit aquatic resources and fluvial processes.

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

No Action Alternative

Under the no action alternative, impacts to geomorphic processes and soils resources would remain similar to existing conditions. Therefore, there would be no impacts on these processes or resources as defined in California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.10 Hydrology and Flooding

3.10.1 Affected Environment

The project area encompasses approximately 1.3 river miles of the Trinity River about 29 river miles downstream of Lewiston Dam. The Trinity River Division of the Central Valley Project (TRD) regulates flow in the 40-mile reach of the river in accordance with the 2000 ROD for the Trinity River Mainstem Fishery Restoration EIS. Since 2005, the flow schedule has been adjusted annually based on water year type and ranges from 369,000 acre-feet (af) in critically dry years to 815,000 af in extremely wet years. Peak flow, as measured at the Dutch Creek Bridge about 2 miles downstream of the project area, ranged from a low of about 2,600 cfs in 2001 to a high of about 30,000 cfs in 1997, and the median flow over a 21-year period (1995 to 2015) was 8,540 cfs (TRRP Federal Design Group 2016). Higher peak flows, up to about 70,000 cfs, have likely occurred during other periods, but were not recorded.

Streamflow in the project area exhibits seasonal patterns that reflect a combination of flow releases from Lewiston Dam and natural tributary accretion (TRRP Federal Design Group 2016, Yurok Tribe

2016). During the late summer and fall, Lewiston Dam releases to the Trinity River range from 300 cfs to 450 cfs; contributions from tributaries upstream of the project area are minor. Reclamation has periodically increased releases during the late summer–early fall period for short periods of time to respond to water quality concerns downstream in the Klamath River. Between November and May, flow releases from Lewiston Dam are augmented by increased tributary flow. The tributaries can also cause large floods during intense winter storms, leading to high peak flows in the project area. Between May and July, TRRP flow releases ranging from about 4,500 and 11,000 cfs are augmented by moderate tributary flows. Flow typically recedes in the summer. At about 1,500 cfs, low floodplain areas in the project area become inundated, and, at about 2,500 cfs, in-channel bars and additional floodplain areas become inundated. Most of the floodplain and in-channel bars are inundated at 4,500 cfs.

The Trinity River Flood Insurance Study (FIS) was updated for Trinity County beginning in 2014 using a hydraulic analysis conducted by the California Department of Water Resources (DWR) Northern Region Office. This analysis consisted of creating and calibrating the Trinity River FIS hydraulic model, performing the floodway analysis, and mapping the 100- and 500-year floodplains. This FIS modeled the reach of the Trinity River from just downstream of the North Fork Trinity River to Trinity Dam Boulevard (RM 72.43 to 110.96). It also included development of approximate hydraulic models for seven tributaries to the Trinity River to aid in improving flood zone A mapping (California Department of Water Resources 2016). This analysis used the best available topographic and flow data, provided in part by the TRRP.

A floodplain encroachment analysis was performed by the DWR for the TRRP using the methods consistent with the Federal Emergency Management Agency (FEMA) requirements. From this encroachment analysis, the floodway of the Trinity River was determined. The floodway is defined as the channel of a river or watercourse and the adjacent lands that must be reserved in order to discharge the base flood without cumulatively increasing the water-surface elevation more than 1 foot.

Most of the project area is within the 100-year floodplain, as defined in the 2014 FIS, and is subject to section 29.4 of Trinity County's zoning ordinance (Flood Hazard Zoning District or Flood Hazard Overly Zone). This section of the County's ordinance requires a floodplain development permit; provisions of this section require that "encroachments shall not result in any increase in [the base] flood elevation during the occurrence of the base flood discharge."

3.10.2 Environmental Consequences

Proposed Action

The elevation and extent of the floodplain of the Trinity River would be modified through the activities associated with the proposed action, as described in Chapter 2. The proposed action was designed to ensure that none of the activities within the limits of the 100-year floodplain would be in conflict with the provisions of section 29.4 of Trinity County's zoning ordinance.

Through the design and review process, a number of activity areas (e.g., SC U-2) were relocated to areas upslope of the 100-year floodplain. A key element in the selection of activity areas and subsequent engineering designs for activities in these areas was to ensure that encroachments into the

floodway would not result in any increase in the base flood elevation (BFE) during the occurrence of the base flood discharge within the project area. The hydraulic analysis conducted by DWR used the FEMA-approved model developed for the 2014 FIS. This analysis indicates that removing all the excavated material from the riverine rehabilitation areas and placing it as coarse sediment within the channel or above the BFE in upland activity areas would not result in an increase in the FEMA BFE (California Department of Water Resources 2016). A small structure (a box over a water well) downstream of DG R-1 is currently within the 100-year floodplain. At this location, the proposed action would actually decrease the water surface elevation by about 0.1 foot.

The displacement of channel and floodplain materials would have only a minimal potential to change the groundwater hydraulics in the project area. Groundwater table elevations and water volumes in nearby off-channel wetlands would not be negatively affected because groundwater elevations in these areas are associated with river stage. The construction of the wetland complexes (e.g., SC W-1, SC W-5) is intended to raise local groundwater levels to promote a robust mixed-cottonwood riparian forest and better use the water supply from the valley walls for the benefit of riparian and salmonid habitat. The tendency of the surface water–groundwater system to move to equilibrium conditions and the overall absence of impacts to the regional driving mechanisms of groundwater recharge (seasonal precipitation and Trinity River flow regimes) indicate that no long-term impacts on water table elevations would occur.

The proposed action would not result in activities intended to increase the BFE within the project area. Activities intended to modify the bed and banks of the Trinity River could have ancillary impacts to the bed and banks downstream.

While the fundamental objective of the activities associated with the proposed action is to reestablish the alluvial features of the river, isolated instances of bank erosion could result in the loss of river bank, sedimentation, deposition of sediment on alluvial features, and loss of riparian vegetation. The physical, biological, and riparian habitat objectives described in section 2.1.13 of this EA/IS provided the basis for the development and refinement of the proposed action. The environmental commitments described in Table 2-5 are an integral component of the proposed action. As a whole, the proposed action was formulated to ensure that no people or structures would be exposed to a risk of injury, death, or loss involving flooding and/or erosional processes.

The overall design of the proposed action was developed to ensure that the hydrologic function and potential for flooding meet the project objectives. No mitigation was required. CEQA impacts related to hydrology and flooding considered under this resource topic would be less than significant (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

No Action Alternative

Under the no action alternative, impacts to hydrology and flooding would remain similar to existing conditions. Therefore, there would be no impacts on hydrology or flood occurrence as defined in California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.11 Water Quality

3.11.1 Affected Environment

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

The proposed action is subject to compliance with the Water Quality Control Plan for the North Coast Region (Basin Plan; Regional Water Board 2011). The beneficial uses for the Trinity River defined in the Basin Plan are listed in Table 4.5-1 of the Master EIR. In addition to municipal and domestic water supply, the beneficial uses affected by the water quality of the Trinity River are primarily those associated with supporting high-quality habitat for fish. Recreation (contact and non-contact) is another important beneficial use potentially affected by various water quality parameters (e.g., sediment and temperature).

The Basin Plan identifies both numeric and narrative water quality objectives for the Trinity River. Table 4.5-2 in the Master EIR summarizes the water quality objectives for each of the categories that have been established by the Regional Water Board to protect designated beneficial uses. Section 4.5-1 of the Master EIR also provides a comprehensive discussion of water quality parameters that influence water quality in the 40-mile reach of the Trinity River below Lewiston Dam.

In 1992, the Environmental Protection Agency (EPA) added the Trinity River to its list of impaired rivers under the provisions of section 303(d) of the Clean Water Act (CWA) in response to a determination by the State of California that the water quality standards for the river were not being met due to excessive sediment. In 2001, the EPA established a Total Maximum Daily Load (TMDL) for sediment in the river. The Regional Water Board has continued to identify the Trinity River as impaired in subsequent listing cycles. The primary adverse impacts associated with excessive sediment in the Trinity River pertain to degradation of habitat for anadromous salmonids. The restriction of streamflows downstream of the TRD has greatly contributed to the impairment of the Trinity River below Lewiston Dam (EPA 2001).

Due to the location of the Deep Gulch and Sheridan Creek channel rehabilitation sites (RM 81.05 to 83.03), the effects of the TRD are less than those documented in TRRP monitoring efforts upstream of Douglas City at about RM 92.6. Data from on-going sediment transport monitoring suggests that below Douglas City, additional streamflow and sediment contributions (from Indian, Weaver, and Reading Creeks) significantly reduce the coarse sediment and streamflow deficits. Below Douglas City, dam releases and natural runoff events are generally capable of transporting sediment influxes (TRFE 1999; GMA 2007; GMA 2015). Local fishermen (e.g., the Trinity River Guides Association) have recently expressed concern that TRRP gravel augmentation efforts have resulted in the filling, or partial filling, of fishing holes (adult holding habitat) with gravel. According to comments provided to the TRRP on this topic, the fishing holes referred to are all upstream of Douglas City. There is no evidence that the fishing holes shown on Figure 2-1 have been affected by TRRP coarse sediment augmentation activities that have been ongoing since about 2006.

Water temperature is one of the most important variables affecting salmonids and other aquatic organisms (Carter, 2005). It influences feeding rates and growth, metabolism, development, timing of

migration, spawning and rearing, and the availability of food. Since the construction of the TRD, discharge from Lewiston Dam has played an important role in regulating water temperatures in the Trinity River downstream. Depending on the type of water year and time of year, this effect diminishes to varying degrees with distance from Lewiston Dam.

A key objective of the TRRP's flow management is to improve the thermal regimes for all anadromous salmonid life stages that use the Trinity River. The TRRP has been using flow management practices to meet specific temperature management targets, and temperature monitoring data have been collected as part of the Adaptive Environmental Assessment and Management (AEAM) process since 2002. The project area is located between two water temperature monitoring sites, Douglas City and the Trinity River above Canyon Creek.

In the river reach in the project area, water temperatures are primarily influenced by flows, topography, and aspect. Flows in this reach typically exceed the temperature targets for short periods of time in the fall (Magneson and Chamberlain 2015). This reach is oriented in a north-south direction with very little shade provided by topography or riparian vegetation. The extensive mining activities and infertility of dredge tailing deposits on the right side of the river limit the establishment of riparian forests. On the left bank of the river, mature upland forest occurs in isolated stands downslope from steep bedrock slopes.

The TMDL for sediment was established in 2001 by the EPA in accordance with section 303(d) of the CWA. The primary adverse impacts associated with excessive sediment in the Trinity River pertain to anadromous salmonid fish habitat, which the TRRP was formed to correct. Section 4.5.1 of the Master EIR provides a comprehensive discussion of this topic beginning on page 4.5-5.

On May 20, 2015, the Regional Water Board issued a General Water Quality Certification (Order R1-2015-0028) to the TRRP under the auspices of Reclamation. This order implements portions of the Trinity TMDL and provides an allowable zone of turbidity dilution (protective of sensitive aquatic life), within which turbidity levels shall not exceed 20 nephelometric turbidity units (NTUs) or 20 percent above naturally occurring background levels, whichever is greater. During in-river project construction activities, the TRRP shall monitor turbidity levels upstream within 50 feet of project activities (i.e., natural background) and 500 feet downstream of the in-river construction activities (point of compliance) that could increase turbidity. If naturally occurring background levels are greater than 20 NTUs, turbidity levels at the point of compliance shall not exceed 20 percent above the naturally occurring background level.

The Trinity River is typically very clear with natural background turbidity levels in the range of 0 to 1 NTU during low flow conditions (300 to 450 cfs). Due to the very low background concentrations during the summer, turbidity levels immediately downstream of the most carefully planned and implemented in-channel restoration activities will likely be increased by more than 20 percent above background levels, and plumes extending downstream of restoration activities may be visible. Due to the extremely low background turbidity levels during low-flow conditions, reduction of these turbidity levels to within 20 percent above background is generally not feasible, even with the environmental commitments outlined in Table 2-5. However, short-term increases in turbidity levels that occur during permitted restoration activities are generally not considered to be biologically detrimental to aquatic organisms because they are short in duration and fish are able to move away from the activity area. Monitoring turbidity increases during implementation of previous TRRP

projects has shown that periods of increased turbidity are brief (generally less than 24 hours) at monitoring points located 500 feet downstream and that beneficial uses continued to be protected. In addition, the quantity of fine sediment introduced to the river during activities at low flows is typically small and is restricted with respect to timing and location; furthermore, not all activity areas are experiencing disturbance at the same time.

Post-construction monitoring data collected for the TRRP's Wheel Gulch project in 2012 documented the effectiveness of various turbidity control measures that are commonly used in the construction of TRRP channel rehabilitation projects (Reclamation 2012). These measures include:

- Structural containment – Use structures such as earth barriers, K-rail containment dams, bladder dams and silt curtains to isolate turbid water from the active channel. These structures typically remain in place until the riverine features are fully excavated and graded.

- Processing – Gravel and cobbles excavated from alluvial deposits (e.g., floodplain, dredge tailings) are processed and in some cases washed to help maintain low turbidity levels associated with placement of gravel and cobbles in or adjacent to the channel.

- Pace of construction – Controlling the pace of in-channel excavation and placement of alluvial material ensures that sediment input into the water column is consistent with permit requirements. This method requires direct field observations and real-time turbidity data obtained by on-site construction monitoring personnel.

- Flushing – Within structurally contained areas, turbid water is flushed by allowing flow into the work area and regulating the outflow as a function of measured turbidity levels. Small weirs are used to adjust inflow and outflow rates to ensure permit requirement are met.

- Channel bottom cleaning – This method entails removal of silt- and clay-sized sediment from the channel bottom, typically by pumping or hand excavation. This method requires effluent to be pumped to containment ponds in upland areas and subsequently incorporated into site rehabilitation efforts.

Monitoring of the Wheel Gulch project documented the success of these types of measures in controlling turbidity during construction and site rehabilitation activities. TRRP monitoring data also indicates that turbidity levels downstream of the rehabilitation sites may be increased by overland flow during the initial high-flow events that occur following completion of construction activities. During high-flow spring time releases from Lewiston Dam (e.g., clear water released from the dam during ROD flows), turbidity levels may be increased by more than 20 percent at monitoring locations 500 feet or more downstream of recently completed channel rehabilitation sites. However, when the high flows are caused by natural stormwater runoff in the Trinity River Basin and the river is already carrying a substantial sediment load (e.g., turbidity greater than 40 NTUs), background levels are generally not increased by more than 20 percent at monitoring locations downstream of recently completed rehabilitation activities. Furthermore, during natural high-flow events, the relative addition of fine sediment from recently completed channel rehabilitation projects is minimal compared to the sediment load already being transported by the river. In these high-flow events, monitoring data to date indicates that the contribution of fine sediment associated with TRRP projects is minimal because the materials that increase turbidity levels are maintained in suspension and

transported downstream and eventually deposited on existing alluvial features in the same manner as fine sediment from other sources.

3.11.2 Environmental Consequences

Proposed Action

The activities incorporated into the proposed action have been developed to meet the physical, biological, and riparian objectives described in section 2.1.1 of this EA/IS and are intended to reestablish functional fluvial and alluvial processes within and to some extent downstream of the project area. In the following discussion, the environmental consequences of the proposed action on water quality and the associated beneficial uses of the Trinity River focus on three water quality parameters: sediment, temperature, and turbidity.

The consequences of the proposed action on water quality associated with the construction of in-channel alluvial bars and floodplains that would support spawning and rearing of anadromous salmonids would change the location and nature of sediment in and adjacent to the low-flow channel. The placement of spawning-sized gravel at three of the four crossings necessary to access the activity areas on river left would add approximately 450 cubic yards of material to the river; the gravel used for these crossings would be sized to ensure that it would mobilize during high flows within the first year following construction and provide some augmentation of spawning habitat downstream.

The activities incorporated into the proposed action are intended to reestablish a functional channel and associated riparian vegetation in a manner that would provide an increase in available habitat for anadromous salmonids and other aquatic organisms. Due to the location and aspect of the river within the project area, water temperature is heavily influenced by flow releases from Lewiston Dam as well as input from tributaries downstream. The north-south orientation of this reach also influences the degree that afternoon shading affects water temperature.

The proposed action would result in clearing and grading a number of activity areas, some of which have some amount of riparian vegetation. Functionally, the existing riparian vegetation has little influence on water temperature through this reach. While there would be some localized effect on water temperature as a result of clearing and grading activities, the construction of wetland complexes on either side of the river is expected to benefit aquatic biota by providing off-channel thermal refugia in the deeper reaches of these new ponds via a direct hyporheic connection to the river. Extensive revegetation efforts associated with these wetlands and associated floodplain planting would increase functional riparian vegetation that would in turn increase shade along the margins of these features under a wide range of flow conditions, including those that may occur during late-summer releases when air temperatures are high.

The activities described in Chapter 2 for the proposed action would temporarily increase turbidity and total suspended solids in the Trinity River. The incorporation of environmental commitments listed in Table 2-5 (EC WQ-1 [4.5-1a, b], EC WQ-2 [4.5-1c], EC WQ-3 [4.5-1d], EC WQ-4 [4.5-1e, 4.5-2a-2c] and EC WQ-5 [4.5-3a-3c]) in conjunction with the design elements and construction criteria described in Appendix C (e.g., in-river construction, water pollution prevention, and construction schedules) are intended to limit turbidity and suspended sediments in the Trinity River. Additionally, river's edge and in-channel construction activities would be staged to minimize potential turbidity

effects. During in-channel construction activities, increases in turbidity levels could occur because of the excavation of alluvial material. Connection of isolated and newly constructed side channels (e.g., during the first flush of flowing water) would result in short-term increases in turbidity levels as this material is removed from and/or redistributed downstream. Fine sediments may be suspended in the river for several hours following construction activities.

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

The temporary crossings at the site would provide access for in-channel and riverine work areas. The low-flow channel crossings would be constructed of appropriately sized alluvial materials. Placement of alluvial fill materials could temporarily increase turbidity and suspended materials during and immediately following crossing construction. Removal and distribution of alluvial materials upon deconstruction of the low-flow channel crossing could also increase turbidity and suspended materials during and immediately following excavation.

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

No Action Alternative

Under the no action alternative, impacts to water quality and associated beneficial uses would remain similar to existing conditions. Therefore, there would be no impacts on water quality as defined in California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.12 Fishery Resources

This section describes the fishery resources and aquatic habitats that are known to occur within the project area and evaluates the impacts of the proposed action and the no action alternatives on these resources. The discussion of fisheries resources is based on detailed design reports prepared for the Deep Gulch site by the Federal Design Team and the Sheridan Creek site by the Yurok Tribe. A focused literature review, informal consultation with resource agencies, and observations made during site visits also were incorporated into this section. Additional information on fishery resources are discussed in the Master EIR (section 4.6 and Appendix G). The Magnuson-Stevens Fishery Conservation and Management Act and Essential Fish Habitat are also described in the Master EIR (section 4.6).

3.12.1 Affected Environment

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

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

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

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

- Southern Oregon/Northern California Coasts (SONCC) Evolutionarily Significant Unit (ESU) of coho salmon;
- Klamath Mountain Province steelhead ESU;
- Upper Klamath-Trinity Rivers ESU Chinook salmon; and
- Pacific lamprey,

The aquatic environment in the Deep Gulch segment of the project reach 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. The Deep Gulch segment contains three distinct pool-riffle units (TRRP Federal Design Group 2016). The first unit is in the general vicinity of activity area DG R-1 and consists of a pool known as Ice Box Hole (see Figure 2-1), with riffles on either side. The second pool-riffle unit is in the general vicinity of activity DG IC-5, and the third unit includes the pool known as Ed's Hole downstream of activity area DG R-4. Salmonid spawning and rearing habitat and ammocoete (juvenile lamprey) rearing habitat are present throughout this segment. The highest spawning densities of chinook occur in the riffle downstream of Ice Box Hole and along the margins of the riffles.

The aquatic environment within the Sheridan Creek segment of the project reach contains three important and unique aquatic mesohabitat features that support anadromous salmonids and other aquatic organisms (Yurok Tribe 2016). At the upper end of this segment, a feature known as Upper Sheridan Bar is a riffle that provides high-quality spawning habitat just downstream of Ed's Hole. Sheridan Bar is a riffle complex that is also referred to as the Sheridan Spawning Riffle (see Figure 2-1). Long-term TRRP monitoring data indicate that this riffle complex has the highest density of salmonid spawning in the lower 40 miles of the Trinity River other than the short segment immediately downstream of the Lewiston Hatchery. At the downstream end of this riffle complex, Sheridan Hole is associated with a large bedrock outcrop on the left bank that forces an abrupt change in flow direction creating strong turbulence and scour. While this feature was heavily affected by historic mining debris and periodic flood flows (e.g., in 1997), it currently provides holding habitat for adult salmonids. The size of this pool changes periodically as high flows scour sediments and moderate flows result in some development of a gravel wedge from upstream sources.

In 2014, freshwater mussels were identified at a number of locations in the low-flow channel within the project area, primarily associated with vegetated banks. In 2015, a number of ammocoete rearing areas were identified throughout the project reach. Generally, these rearing areas were associated with eddy habitat that had abundant levels of detritus.

The aquatic values and resources that persist in the project reach were recognized early in the planning and design process and specific project objectives were developed by the TRRP design teams to ensure that key aquatic habitats are protected and/or enhanced as the proposed action is identified. Figure 2-1 illustrates the location of these sensitive areas. The activity areas presented on Figure 2-2 were modified as necessary to ensure that these sensitive areas were addressed by the design teams.

In support of the TRRP, Reclamation developed a hydraulic model that has been used by the design teams to characterize existing and potential habitat within the project area for anadromous salmonid fry and presmolt life stages. Weighted useable area (WUA) is the metric used to characterize habitat under the existing conditions based on three attributes: depth, velocity, and cover. Table 3-2 provides WUA values for flows ranging between 350 cfs and 9,000 cfs modeled for the Trinity River under the existing condition; WUA values are expressed in acres of habitat for both fry and presmolt life stages that would be available under these flows.

Table 3-2. Existing Condition WUA for Fry and Presmolt Habitat – Deep Gulch and Sheridan Creek Sites

	Flow (CFS)									
	350	450	600	800	1,200	1,800	2,500	4,800	7,150	9,000
	WUA (Acres)									
Fry	4.18	3.94	3.63	3.29	2.78	2.31	2.16	2.34	3.16	10.75
Presmolt	4.63	4.48	4.27	4.03	3.59	3.06	2.73	3.29	7.27	11.03

3.12.2 Environmental Consequences

Proposed Action

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

Activities related to implementation of the proposed action include the following environmental commitments to reduce impacts to fishery resources: EC FR-1 [4.6-1a, 1b], EC FR-2 [4.6-4a-4e], EC FR-3 [4.6-4f], EC FR-4 [4.6-5b], and EC FR-5 [4.6a-6d]. The proposed action 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 project area and increase the potential for sediment delivery to the Trinity River. As discussed in Section 3.11 (Water Quality), the proposed action would result in some project-related effects on erosional process and changes in the sediment regime within and to a limited extent downstream. The excavation and placement of alluvial materials within the channel and associated floodplain of the Trinity River would result in changes to the amount and character of sediment that may be mobilized post-construction.

In certain activity areas, processed alluvium (gravel and cobble) would be placed within and adjacent to the low-flow channel in a manner intended to increase spawning and rearing habitat for coho salmon and other salmonids. However, the environmental commitments in the above paragraph have been incorporated into the proposed action to minimize the release of fine sediment to the water column during or following construction and to reduce the impacts to existing spawning and rearing habitat for short periods of time, primarily in conjunction with elevated turbidity levels. The placement and use of four low-water fords would require increasing the amount of coarse sediment at several shallow riffles during in-river construction windows, possibly for several months. The presence and use of these fords would occur at locations occasionally used by salmonids as spawning and rearing habitat. Proportionally, these fords would occupy a small percentage of the available habitat within the project reach.

Exposed soils in the upland and staging areas are susceptible to mobilization from rainfall during early season runoff events. In-river excavation is planned as part of the proposed action; therefore, it is expected that excavation and operation of heavy equipment would re-suspend 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 re-suspend streambed sediments. Any juvenile salmonid salmon rearing in the area during in-channel construction could be temporarily displaced or their social behavior could be temporarily disrupted by turbidity created during this activity.

Erosion and deposition of fine sediments associated with implementation of the proposed action are expected to be localized and temporary. Some fine-textured sediment may settle near or on spawning habitat located downstream of riverine activity areas, but this sediment is not expected to impair redd excavation or spawning activities. 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 holding habitat. Construction activities are proposed during the spawning period, and in-river construction, including construction of temporary crossings, may

temporarily displace holding adult salmonids. Adult salmonids using holding habitat during the summer months may be displaced to other holding habitat either upstream or downstream of the project reach by transient turbidity and sediment plumes created by construction activity. Juvenile salmonids using this reach 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 salmonids. These temporary impacts were anticipated and addressed in the 2000 Biological Opinion (BO) and associated incidental take statement for the ROD as well as the amended BO for in-river work.

Adult Pacific lampreys 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. In addition to ammocetes occupying alluvial substrate, freshwater mussel populations occur at locations through the project area. The TRRP is now in the process of developing a plan to avoid or minimize impacts to these species during construction. Areas inhabited by these creatures within the construction limits will be flagged for avoidance. If construction will change presently occupied habitats, resident mussels and lamprey will be relocated to nearby appropriate habitat that would not be disturbed (see EC-VW-10).

The environmental commitments incorporated into the proposed action would be implemented in conjunction with the construction activities described in Chapter 2. In addition to the typical practice of refueling construction equipment at upland activity areas (e.g., DG U-1), the proposed action also includes activities that would result in mechanized equipment (e.g., trucks, excavators) crossing and/or operating 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 water bodies within the project area. Oils, fuels, and other contaminants could have short-term effects on the various life stages of salmonids and other anadromous fish that are using habitat within close proximity to construction activities.

Coho salmon and other special-status aquatic species occur throughout the Trinity River, and suitable salmonid rearing habitat is used within the project area year-round. Adult coho and other salmonids 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 and other salmonids could occur during in-river construction and construction of the low-flow channel crossings planned under the proposed action. These activities would be conducted only during late-summer low-flow conditions (e.g., July 15 to September 15), thus minimizing the potential for direct mortality to rearing coho and other salmonids because this period corresponds to a time of the year when the fewest number of juvenile salmonids are known to occur in the project reach.

The National Marine Fisheries Service (NMFS) expects that all displaced juvenile fish, including coho salmon, would find suitable habitat within river reaches upstream or downstream of the project reach, 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, wetland complexes, and side channels 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 exits of these features become plugged with fine sediments, potentially stranding coho salmon fry. Although stranding of fry under such receding flood conditions occurs naturally (Sommer et al. 2001), the constructed features could increase the potential for stranding. As fluvial channel migration occurs through these surfaces, the potential for fry stranding is expected to equilibrate to that of a natural stranding risk.

Table 3-3 illustrates the amount of WUA fry and presmolt salmonid habitat that would be provided with implementation of the proposed action as flows increase through the project reach.

Table 3-3. Proposed Action WUA for Fry and Presmolt Habitat – Deep Gulch and Sheridan Creek Sites

	Flow (CFS)									
	350	450	600	800	1,200	1,800	2,500	4,800	7,150	9,000
	WUA (Acres)									
Fry	5.59	5.40	5.20	5.07	5.26	5.97	6.80	8.01	9.40	12.41
Presmolt	6.02	5.92	5.82	5.77	5.99	6.60	7.31	8.48	9.81	12.93

As indicated in Table 3-4, the proposed action would result in an increase in rearing habitat within the project reach over a range of flows. The proposed action also includes design elements to protect adult spawning and holding habitat, particularly at the sensitive features shown on Figure 2-1. These beneficial effects will also apply to varying degrees to other aquatic organisms that use habitat within this reach.

Table 3-4. Increase in WUA Habitat Under the Proposed Action– Deep Gulch and Sheridan Creek Sites

	Flow (CFS)									
	350	450	600	800	1,200	1,800	2,500	4,800	7,150	9,000
	WUA (Acres)									
Fry	1.40	1.46	1.57	1.78	2.48	3.66	4.64	5.67	6.24	5.24
Presmolt	1.39	1.44	1.55	1.75	2.41	3.54	4.58	5.79	6.51	5.66

With the inclusion of CEQA mitigation measures EC FR-1 [4.6-1a, 1b], EC FR-2 [4.6-4a-4e], EC FR-3 [4.6-4f], EC FR-4 [4.6-5b], and EC FR-5 [4.6a-6d] described in this section, CEQA impacts

related to fisheries considered under this resource topic would be less than significant (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

No Action Alternative

Under the no action 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 since about 2005. 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 the no action alternative.

Under the no action 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 the no action alternative.

Under the no action alternative, there would be no risk of accidental spills of hazardous material because the project would not be constructed.

Under the no action alternative, construction-related mortality to rearing salmonids would not occur because the project would not be constructed.

Under the no action alternative, loss of spawning, rearing and holding habitat would not occur because the project would not be constructed.

Under the no action alternative, temporary impairment of fish passage would not occur because the project would not be constructed.

Under the no action alternative, impacts to fishery resources would remain similar to existing conditions. Therefore, there would be no impacts on fishery resources as defined in California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.13 Vegetation, Wildlife, and Wetlands

3.13.1 Affected Environment

The project area supports a diversity of plant communities and wildlife habitats typical of the Trinity River corridor. Wildlife habitats described in this section are based on the California Wildlife Habitat Relationships (CWHR) system. These wildlife habitats are summarized in Table 3-5.

The dominant habitat type is montane riparian, with Douglas-fir, blue oak–foothill pine, and mixed chaparral habitats scattered throughout the project area. Ponderosa pine and montane hardwood are found in upland areas outside the riparian corridor. Dominant plants in these communities include

white alder (*Alnus rhombifolia*), Oregon ash (*Fraxinus latifolia*), and various willows (*Salix* spp.) in the riparian habitats; whiteleaf manzanita (*Arctostaphylos viscida*), foothill pine (*Pinus sabiniana*), Douglas-fir (*Pseudotsuga menziesii*), and various oaks (*Quercus* spp.) in the chaparral and woodland habitats; and yellow star-thistle (*Centaurea solstitialis*), an invasive plant, and various grasses in the annual grasslands. In addition to yellow star-thistle, other invasive plants found in the project area include tree of heaven (*Ailanthus altissima*), Himalayan blackberry (*Rubus armeniacus*), dalmatian toadflax (*Linaria genistifolia* ssp. *dalmatica*), Klamath weed (*Hypericum perforatum*), bull thistle (*Cirsium vulgare*), and Scotch broom (*Cytisus scoparius*). The Trinity River provides riverine habitat, which is described in more detail in Section 3.12.2, Fishery Resources. Descriptions of the plant communities and habitat types can be found in Section 4.7.1 of the Master EIR.

Table 3-5. Wildlife Habitats in the Project Area

Wildlife Habitat Type	Estimated Amount in Project Area
Annual Grassland	30.5 acres
Barren	20.2 acres
Blue Oak-Foothill Pine	7.3 acres
Douglas-fir	4.5 acres
Mixed Chaparral	0.7 acre
Montane Hardwood	6.2 acres
Montane Hardwood-Conifer	5.0 acres
Montane Riparian	61.1 acres
Ponderosa Pine	25.7 acres
Riverine	15.4 acres
Valley Foothill Riparian	0.01 acres
Total	177.0 acres

The Trinity River is a water of the United States and is considered a navigable water that is subject to the jurisdiction of the Army Corps of Engineers (Corps). It is also considered a Riparian Reserve on public lands subject to BLM's RMP. The main channel in the project area ranges from about 59 to 188 feet wide at the ordinary high water mark, and several side channels with widths between 2 and 72 feet and lengths between 87 and 218 feet collect and convey flow into the main channel. Several intermittent streams on river left convey seasonal flow from upland areas near the outer limits of the project area into wetlands, other streams, or the main channel. The streams are narrow and have widths between 2.5 and 5 feet. Riparian wetlands occur along the main and side channels and in pockets between dredge tailings and other lowland areas (e.g., Relic Sheridan Creek Riparian Corridor). The riparian wetlands are dominated by woody riparian and open-to-dense emergent herbaceous species, such as white alder, willows, narrow-leaved cattail, common spikerush, and tall fescue. Table 3-6 provides a summary of the wetlands and other waters of the United States that occur within the project boundary.

Table 3-6. Summary of Waters of the U.S. Within the Project Area

Waters of the United States	Total Acreage	Total Linear Feet	Cowardin Type[1]
Wetlands			
Riparian wetland	41.44	N/A	PSS/PFO
Seasonal wet meadow	0.07	N/A	PEM
Other Waters			
Intermittent stream	0.067	831	R4SB
Riverine	20.46	8,148	R3UB
Total Waters of the United States	**62.03**	**8,979**	

1 Classification of Wetlands and Deep Water Habitat of the United States (Cowardin et al. 1979).

A total of 41 riparian wetlands, encompassing approximately 41.4 acres, were delineated in the project area. A sliver of a seasonal wet meadow (0.07 acre) is located adjacent to activity area SC W-4 in the eastern portion of the project area. Dominant plants in this wet meadow are tall fescue and sedges. In addition, there are 20.5 acres of other waters (13 riverine and intermittent stream features) within the project boundary; the Trinity River represents the dominant riverine feature.

Plant communities along the 40-mile reach of the Trinity River downstream of Lewiston Dam may support several special-status plant species, including species listed under the federal and state Endangered Species Acts (ESAs); BLM Sensitive Species; and species considered rare, threatened, or endangered in California based on the Rare Plant Rank (see Table 4.7-1 in Master EIR for complete list of species and their status). Botanical surveys were conducted at the Deep Gulch and Sheridan Creek sites during May and July 2015, and no special-status plants were identified by Trinity County Resource Conservation District botanists. In May and July 2016, the boundary of project area was revised and additional botanical surveys were conducted at the new locations by North State Resources (NSR) biologists.

Based on a site-specific assessment by a BLM biologist in 2015 in conjunction with additional site reviews performed by NSR's certified wildlife biologist in 2016, it was determined that no wildlife species listed under ESA or CESA as threatened or endangered or candidates for listing as threatened or endangered are present within the project area nor is there critical habitat for any listed wildlife species within the project area.

The Trinity River corridor provides habitat and travel corridors for various wildlife species, such as Pacific fisher (*Pekania pennanti*), American marten, black-tailed deer, river otter, beaver, cliff swallow (*Hirundo pyrrhonota*), bank swallow, and raccoon. The riparian vegetation along the Trinity River, in association with adjacent and nearby chaparral and woodland habitats, provides connected habitat within an area that has been fragmented by rural residential development and road building. Special-status wildlife species that may use habitats in the project area include Pacific fisher, a BLM Sensitive species and California species of special concern; ring-tailed cat (*Bassariscus astutus*), a California fully protected species; little willow flycatcher (*Empidonax traillii brewsteri*), an endangered species under the California ESA; bald eagle (*Haliaeetus leucocephalus*), an endangered species under the California ESA, a BLM Sensitive species, and a California fully protected species; several birds and bats that are BLM Sensitive species or California species of special concern; foothill

yellow-legged frog (*Rana boylii*), a BLM Sensitive species and California species of special concern; and western pond turtle (*Actinemys marmorata*), a California species of special concern. Most of these species are riparian species and may be found using trees in the montane and valley foothill riparian habitats or using wetlands in the project area. Additional details on these special-status species can be found in section 4.7 and Table 4.7-1 and Appendix C of the Master EIR.

There are several activity areas on river left (e.g., SC U-2, C-4) where mature montane hardwood–conifer occurs on lands managed by BLM. The BLM has reviewed these areas and documented that because these sites are the focus of a riparian and stream improvement project where the riparian work is riparian planting, obtaining material for placing in-stream, and road or trail decommissioning and where the stream improvement work is the placement large wood, channel and floodplain reconstruction, or removal of channel diversions, the proposed action (including vegetation removal) would meet the criteria under Exemption C of the Pechman Exemptions (October 11, 2006 Order) (see Appendix E of this EA/IS).

3.13.2 Environmental Consequences

Proposed Action

The proposed rehabilitation activities would modify the riparian and upland habitats in the project area and enhance the wetland, riverine, and upland (i.e., dredge tailings) habitats. Temporary disturbance in these habitats during project implementation would result from removal of understory vegetation, including invasive plants, to provide access and establish stockpile and staging areas in the activity areas and ground disturbance from equipment access and use. Throughout the project area, activity areas were refined to avoid wooded areas. However, several activity areas (e.g., SC U-2) require the use of upland areas to address FEMA floodway requirements, including the removal of conifers. Tree removal outside these activity areas would be limited and subject to site-specific review and authorization by the BLM prior to removal in order to enhance habitat complexity, provide safe working conditions, and facilitate access. During the rehabilitation activities, invasive plant control measures, including using weed-free erosion control materials and washing equipment, would be implemented in accordance with environmental commitment EC-VW-9 [4.3-2b] (see Table 2-5) to prevent the spread of noxious weeds in the project area. Some trees and downed logs would be reused on site to establish the wood jams and structures along the river. Riparian and wetland habitats would be protected outside the activity areas and would be clearly marked for avoidance in accordance with EC-VW-1[4.7-1a]. No special-status plants would be affected during rehabilitation activities because none have been observed in the project area based on previously conducted botanical surveys.

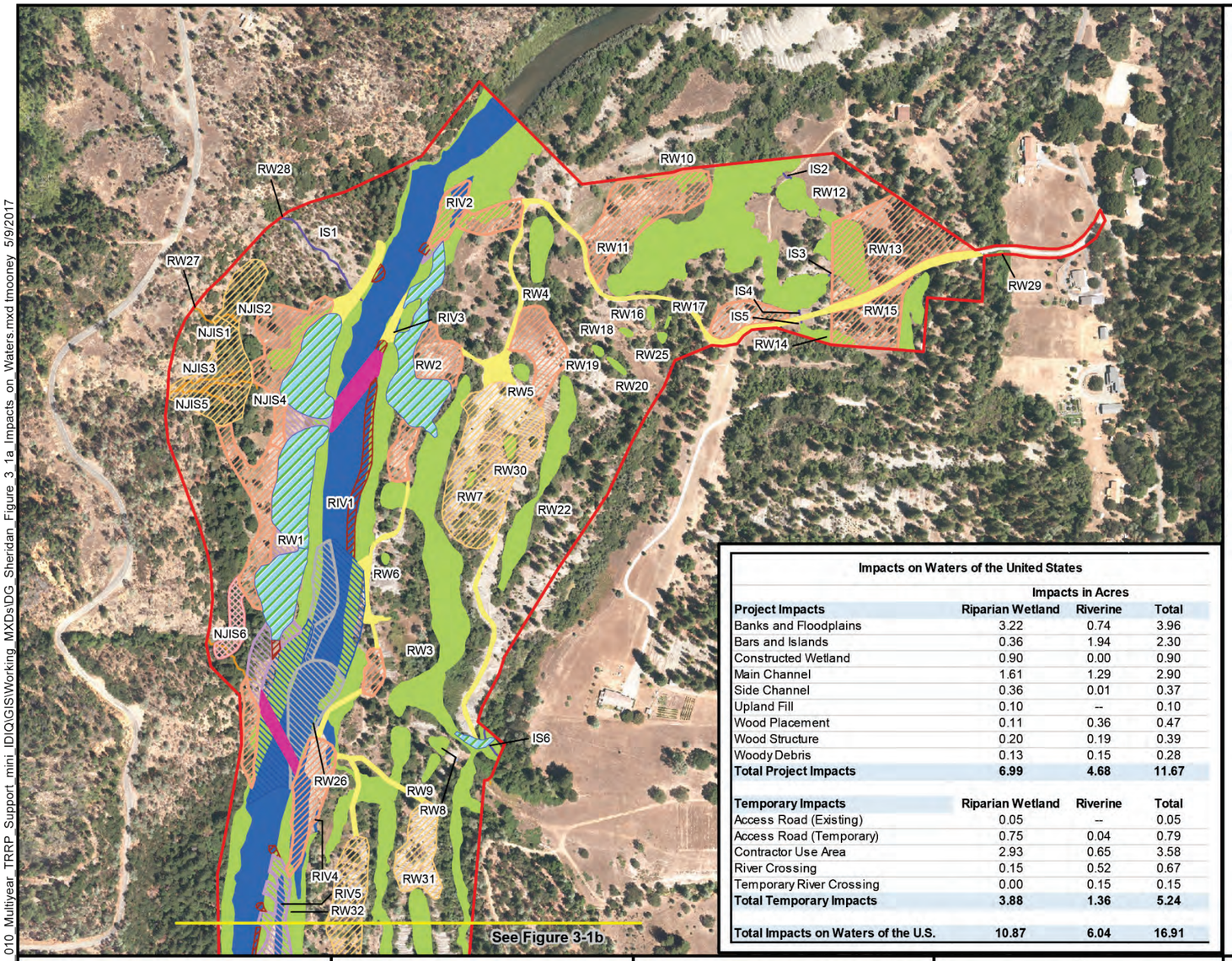
Construction activities associated with the proposed action would result in temporary impacts to waters under the jurisdiction of the Corps (jurisdictional waters), including wetland features in the project area. Figures 3.1a and 3.1b illustrate the size and location of jurisdictional waters that would be affected by the proposed action as revised to reduce potential impacts to adjacent residences. Construction of the proposed action would result in a direct temporary impact to a total of 10.87 acres of riparian wetlands and 6.03 acres of riverine habitat. Included in these totals are impacts associated with temporary access and use of activity areas (e.g., roads, staging). A total of 3.88 acres of riparian wetlands and 1.36 acres of riverine habitat would also be temporarily affected. Due to the nature of

the project, the impacts to jurisdictional waters are expected to be temporary, and it is anticipated that there will be a net increase in jurisdictional waters within 5 to 10 years after completion of the proposed action.

Construction activities associated with the proposed action would result in temporary impacts to riparian habitat. There are three distinct CWHR habitat types that occur within the project area: montane riparian, riverine and valley foothill riparian. Valley foothill riparian habitat would not be affected by the proposed action. A description of these habitat types is provided in Section 4.7.1 of the Master EIR beginning on page 4.7-2. Figures 3.2a and 3.2b illustrate the size and location of riparian habitat that would be affected by the proposed action. Construction of the proposed action would result in direct impacts to 9.34 acres of montane habitat and 3.46 acres of riverine habitat, totaling 12.80 acres. The construction and use of temporary access and use of activity areas (e.g., roads, staging) would also result in temporary impacts to 6.43 acres of montane riparian habitat and 0.62 acres of riverine habitat. Of these acres, about 5.25 acres would be revegetated with riparian species. Due to the nature of the project, the impacts to riparian habitat from construction of associated with access and staging areas would be temporary, and the riparian habitat is expected to recover over time.

As shown on Table 2-1, 25 of the activity areas included in the proposed action will be revegetated with native riparian species. Revegetation would occur at three types of activity areas: in-channel (IC), riverine (R), and wetland (W). Revegetation efforts will result in reestablishment of 2.76 acres of riparian habitat at IC activity areas; 6.41 acres of riparian habitat at R activity areas; and 4.91 acres of riparian habitat at W activity areas, equaling a total of 14.08 acres of functional riparian habitat within these three activity areas. In addition, riparian revegetation of access and staging areas would add 6.63 acres of functional riparian habitat. A total of 20.71 acres of riparian habitat would therefore be functional within 5 to 10 years after completion of the project. Based on the impact tables presented on Figures 3-2a and b, the proposed action would meet the TRRP's objective of no net loss of riparian habitat in the long term.

Temporary disturbance associated with the rehabilitation activities could discourage wildlife use of the habitats in and near the project area. Most wildlife species, such as Pacific fisher, deer, beaver, and most birds, would be able to use nearby habitats to avoid the disturbance and return once the rehabilitation activities are complete. Because the rehabilitation activities cannot avoid the nesting bird season and they would take place in riparian habitat that is likely to support nesting and breeding activities for various wildlife species, pre-construction surveys would be conducted to identify active nests, bat roosts, and ring-tailed cat dens. If the schedule allows, trees that need to be removed would be removed outside the nesting season for birds and the breeding season for ring-tailed cat and before bats establish maternity colonies (i.e., in early February). If this is not practicable and active bird nest sites, bat roost sites, or ring-tailed cat dens are found in trees or other vegetation in or near the project area during pre-construction surveys, no-disturbance buffers would be established around the nest or roost site or den until the nest is no longer active or the bats and cats can safely escape on their own before disturbance takes place near the site or den or the tree(s) are removed, in accordance with environmental commitments EC-VW-6 [4.7-7 a-d], EC-VW-7 [4.7-8a-d], and EC-VW-8 [4.7-9a-c] (see Table 2-5). With these environmental commitments, no take of little willow flycatcher or ring-tailed cat would occur, and impacts on other special-status birds and bats would be minimized or completely avoided.



Impacts on Waters of the United States

	Impacts in Acres		
Project Impacts	**Riparian Wetland**	**Riverine**	**Total**
Banks and Floodplains	3.22	0.74	3.96
Bars and Islands	0.36	1.94	2.30
Constructed Wetland	0.90	0.00	0.90
Main Channel	1.61	1.29	2.90
Side Channel	0.36	0.01	0.37
Upland Fill	0.10	--	0.10
Wood Placement	0.11	0.36	0.47
Wood Structure	0.20	0.19	0.39
Woody Debris	0.13	0.15	0.28
Total Project Impacts	**6.99**	**4.68**	**11.67**
Temporary Impacts	**Riparian Wetland**	**Riverine**	**Total**
Access Road (Existing)	0.05	--	0.05
Access Road (Temporary)	0.75	0.04	0.79
Contractor Use Area	2.93	0.65	3.58
River Crossing	0.15	0.52	0.67
Temporary River Crossing	0.00	0.15	0.15
Total Temporary Impacts	**3.88**	**1.36**	**5.24**
Total Impacts on Waters of the U.S.	**10.87**	**6.04**	**16.91**

Project Impacts
- Main Channel
- Side Channel
- Bars and Islands
- Banks and Floodplains
- Constructed Wetland
- Upland Drainage
- Wood Placement
- Upland Fill

Temporary Impacts
- Contractor Use Area
- River Crossing
- Access Road

Waters of the United States

Wetlands
- Riparian Wetland (41.441 acres)
- Riverine (20.461 acres)
- Seasonal Wet Meadow (0.001 acre)

Other Waters
- Intermittent Stream (0.067 acre)
- Non-Jurisdictional Intermittent Stream (0.057 acre)

Public Land Survey:
T33N, R10W, Sec. 18 & 19

USGS 7.5 Quad:
Junction City - Revised 1982

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Delineator: North Wind Resource Consulting, North State Resources, Inc.
Delineation Date: May-July 2015; April-June 2016
Aerial Photography Source: TRRP 2015

This delineation of waters of the United States is subject to verification by the U.S. Army Corps of Engineers (Corps). NSR advises all parties that the delineation is preliminary until the Corps provides a written verification.

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Feet
1 inch = 400 feet

TRINITY RIVER RESTORATION PROGRAM
Deep Gulch and Sheridan Creek Rehabilitation Sites

Figure 3-1a
Impacts on Waters of the United States

May 2017

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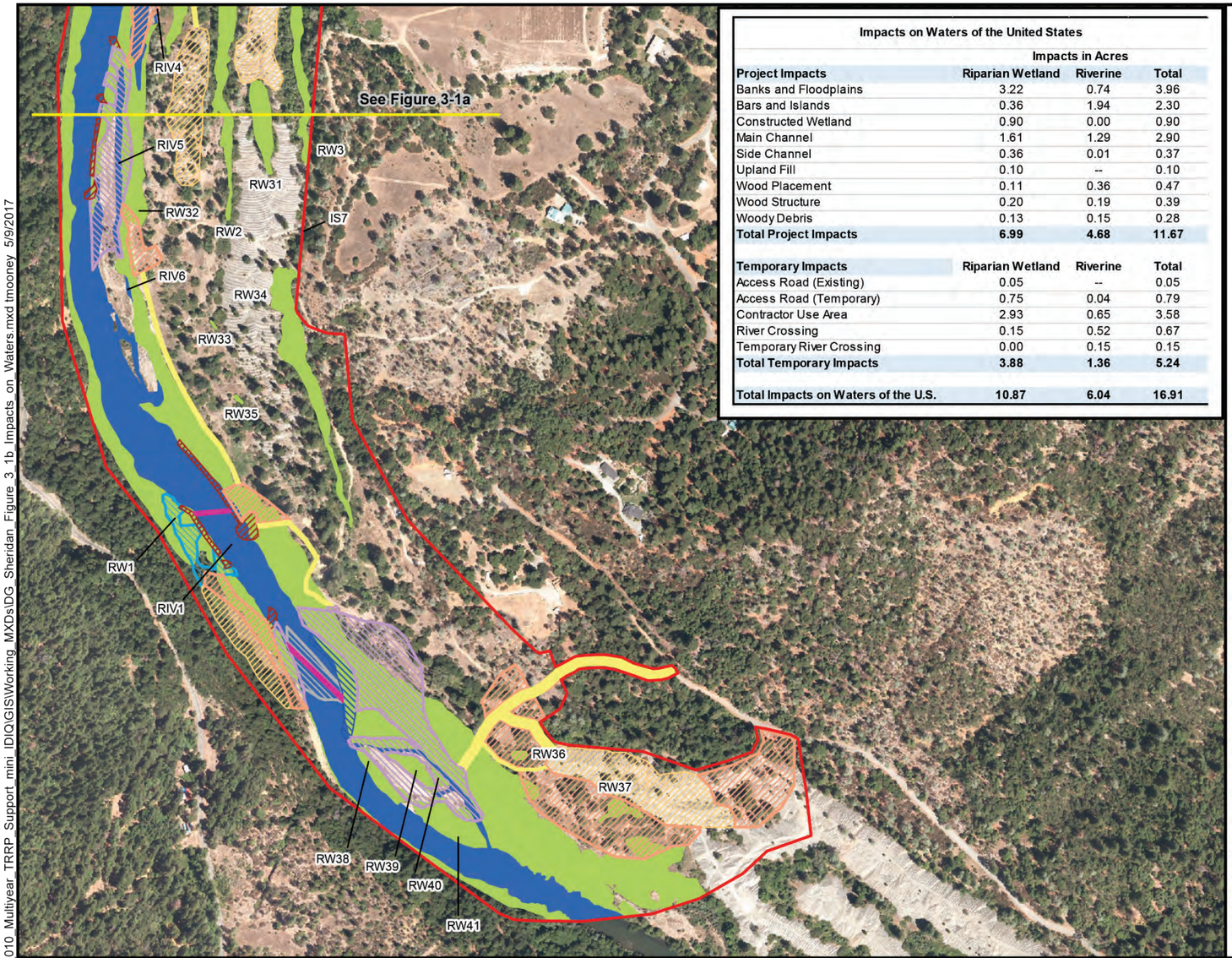

Impacts on Waters of the United States

	Impacts in Acres		
Project Impacts	**Riparian Wetland**	**Riverine**	**Total**
Banks and Floodplains	3.22	0.74	3.96
Bars and Islands	0.36	1.94	2.30
Constructed Wetland	0.90	0.00	0.90
Main Channel	1.61	1.29	2.90
Side Channel	0.36	0.01	0.37
Upland Fill	0.10	--	0.10
Wood Placement	0.11	0.36	0.47
Wood Structure	0.20	0.19	0.39
Woody Debris	0.13	0.15	0.28
Total Project Impacts	**6.99**	**4.68**	**11.67**
Temporary Impacts	**Riparian Wetland**	**Riverine**	**Total**
Access Road (Existing)	0.05	--	0.05
Access Road (Temporary)	0.75	0.04	0.79
Contractor Use Area	2.93	0.65	3.58
River Crossing	0.15	0.52	0.67
Temporary River Crossing	0.00	0.15	0.15
Total Temporary Impacts	**3.88**	**1.36**	**5.24**
Total Impacts on Waters of the U.S.	**10.87**	**6.04**	**16.91**

Project Impacts
- Main Channel
- Side Channel
- Bars and Islands
- Banks and Floodplains
- Constructed Wetland
- Upland Drainage
- Wood Placement
- Upland Fill

Temporary Impacts
- Contractor Use Area
- River Crossing
- Access Road

Waters of the United States

Wetlands
- Riparian Wetland (41.441 acres)
- Riverine (20.461 acres)
- Seasonal Wet Meadow (0.001 acre)

Other Waters
- Intermittent Stream (0.067 acre)
- Non-Jurisdictional Intermittent Stream (0.057 acre)

Public Land Survey:
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Delineator: North Wind Resource Consulting, North State Resources, Inc.
Delineation Date: May-July 2015; April-June 2016
Aerial Photography Source: TRRP 2015

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Feet
1 inch = 400 feet

TRINITY RIVER RESTORATION PROGRAM
Deep Gulch and Sheridan Creek Rehabilitation Sites

Figure 3-1b
Impacts on Waters of the United States

May 2017

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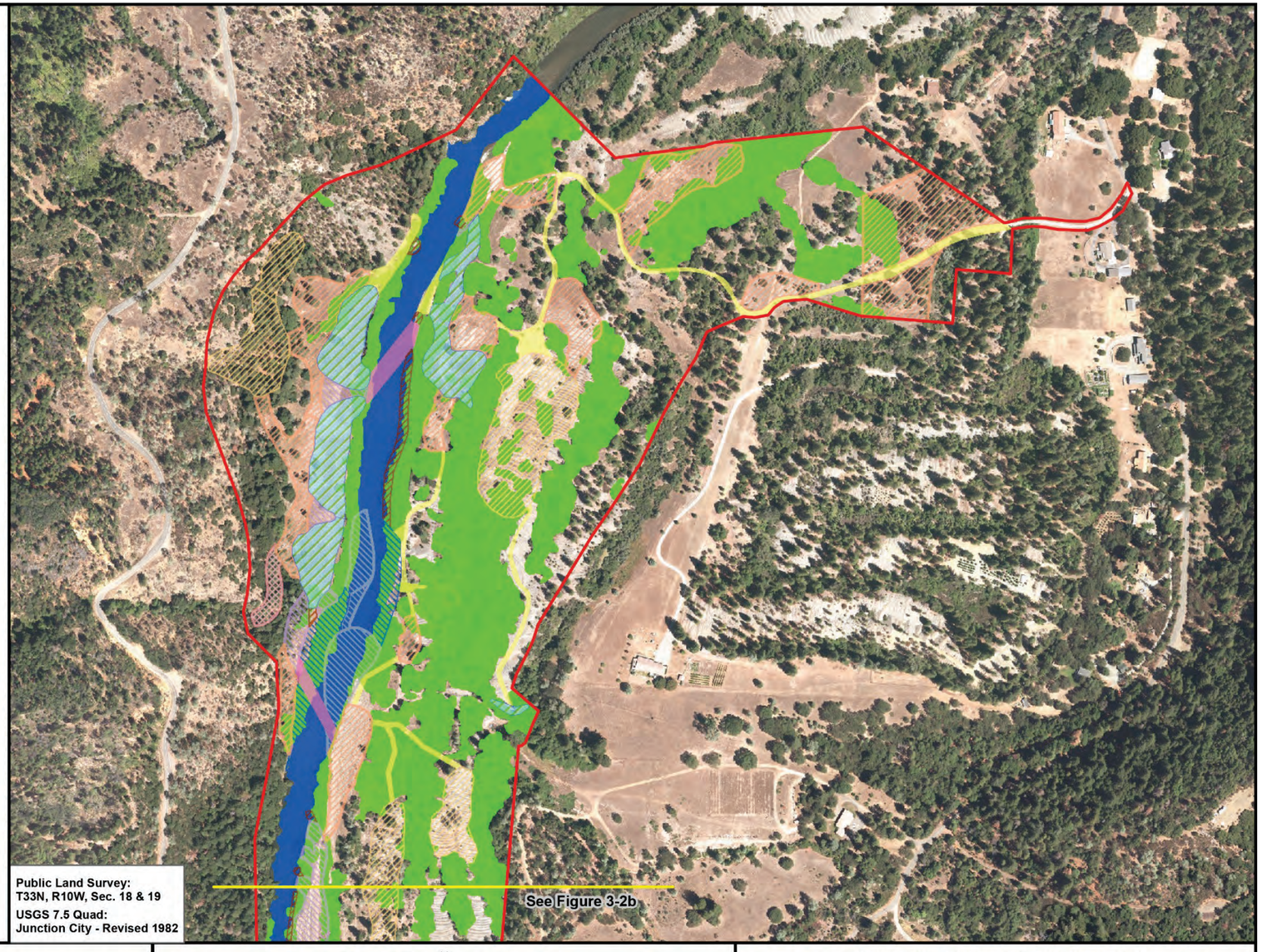
Project Impacts
- Main Channel
- Side Channel
- Bars and Islands
- Banks and Floodplains
- Constructed Wetland
- Upland Drainage
- Wood Placement
- Upland Fill

Temporary Impacts
- Contractor Use Area
- River Crossing
- Access Road

Riparian Habitat
- Montane Riparian
- Riverine
- Valley Foothill Riparian

Impacts on Riparian Habitat

	Impacts in Acres		
Project Impacts	**Montain Riparian**	**Riverine**	**Total**
Banks and Floodplains	3.60	0.05	3.65
Bars and Islands	0.44	1.84	2.28
Constructed Wetland	1.14	--	1.14
Main Channel	1.77	1.16	2.93
Side Channel	0.26	< 0.01	0.26
Upland Fill	1.44	--	1.44
Wood Placement	0.24	0.22	0.46
Wood Structure	0.25	0.12	0.37
Woody Debris	0.20	0.07	0.27
Total Project Impacts	**9.34**	**3.46**	**12.80**
Temporary Impacts	**Montain Riparian**	**Riverine**	**Total**
Access Road (Existing)	0.25	--	0.25
Access Road (Temporary)	1.12	0.01	1.13
Contractor Use Area	4.88	< 0.01	4.88
River Crossing	0.17	0.47	0.64
Temporary River Crossing	0.01	0.14	0.15
Total Temporary Impacts	**6.43**	**0.62**	**7.05**
Total Impacts on Riparian Habitat	**15.77**	**4.08**	**19.85**



Public Land Survey:
T33N, R10W, Sec. 18 & 19

USGS 7.5 Quad:
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Feet

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TRINITY RIVER RESTORATION PROGRAM
Deep Gulch and Sheridan Creek Rehabilitation Sites

Figure 3-2a
Impacts on Riparian Habitat

May 2017

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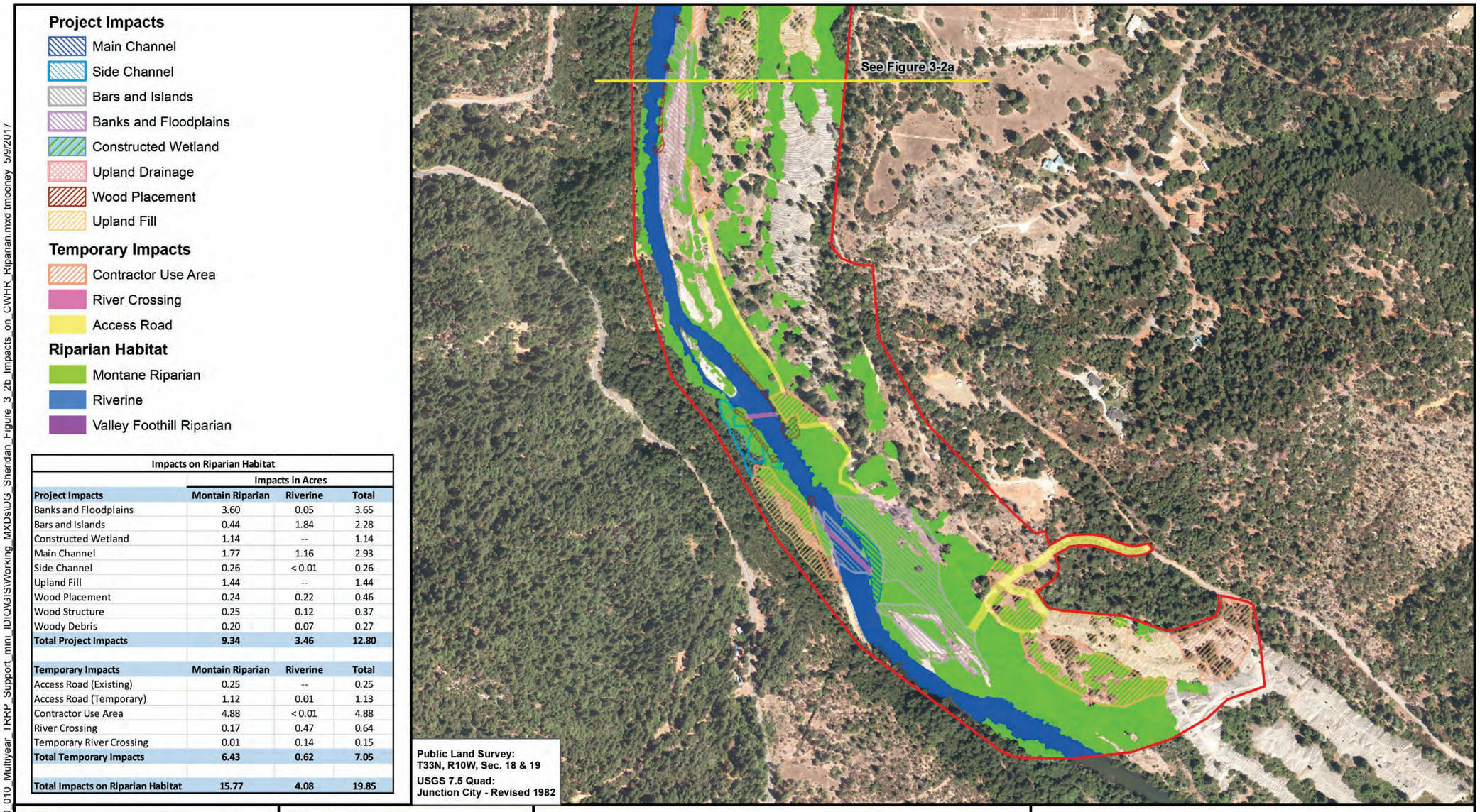

Project Impacts
- Main Channel
- Side Channel
- Bars and Islands
- Banks and Floodplains
- Constructed Wetland
- Upland Drainage
- Wood Placement
- Upland Fill

Temporary Impacts
- Contractor Use Area
- River Crossing
- Access Road

Riparian Habitat
- Montane Riparian
- Riverine
- Valley Foothill Riparian

Impacts on Riparian Habitat

	Impacts in Acres		
Project Impacts	**Montain Riparian**	**Riverine**	**Total**
Banks and Floodplains	3.60	0.05	3.65
Bars and Islands	0.44	1.84	2.28
Constructed Wetland	1.14	--	1.14
Main Channel	1.77	1.16	2.93
Side Channel	0.26	< 0.01	0.26
Upland Fill	1.44	--	1.44
Wood Placement	0.24	0.22	0.46
Wood Structure	0.25	0.12	0.37
Woody Debris	0.20	0.07	0.27
Total Project Impacts	**9.34**	**3.46**	**12.80**
Temporary Impacts	**Montain Riparian**	**Riverine**	**Total**
Access Road (Existing)	0.25	--	0.25
Access Road (Temporary)	1.12	0.01	1.13
Contractor Use Area	4.88	< 0.01	4.88
River Crossing	0.17	0.47	0.64
Temporary River Crossing	0.01	0.14	0.15
Total Temporary Impacts	**6.43**	**0.62**	**7.05**
Total Impacts on Riparian Habitat	**15.77**	**4.08**	**19.85**

Public Land Survey:
T33N, R10W, Sec. 18 & 19

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Feet

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TRINITY RIVER RESTORATION PROGRAM
Deep Gulch and Sheridan Creek Rehabilitation Sites

Figure 3-2b
Impacts on Riparian Habitat

May 2017

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The foothill yellow-legged frog and western pond turtle are known to use the Trinity River and adjacent habitats. The frog may use pools and slow-moving areas of the river with adequate substrate for egg laying, and disturbance to these areas during in-water activities could dislodge egg masses or injure frogs. Turtles may nest in upland areas adjacent to the river or be found in the water, and disturbance in these areas could damage nests or injure turtles. Pre-construction surveys for breeding and nesting activity of these species would be conducted in accordance with EC-VW-4 [4.7-5a-d] and EC-VW-5 [4.7-6a-e], and foothill yellow-legged frog egg masses or western pond turtle nests that could be disturbed by the rehabilitation activities would be relocated to nearby suitable habitat outside the activity areas. Precautionary measures would also be taken during the rehabilitation activities in the event a frog or turtle is encountered in an activity area, and the individual(s) would be relocated outside the activity areas in accordance with EC-VW-4 and EC-VW-5. With these environmental commitments, impacts on foothill yellow-legged frog and western pond turtle would be minimized or completely avoided.

Once the rehabilitation activities are complete, the habitats in the project area would shift to include more riparian and wetland habitat with side channels off the mainstem Trinity River providing additional riverine habitat. Revegetation of disturbed areas would return the activity areas to their current or better conditions and would ensure reestablishment of native plants while reducing the extent of non-native and invasive plants. If invasive plants recolonize the restored areas, Reclamation would implement targeted control methods to remove the plants and reestablish native plants in accordance with EC-VW-9 [4.7-13a-g]. Long-term monitoring of the rehabilitation sites and adaptive measures to further enhance or create additional riparian or wetland habitat in accordance with EC-FR-4 [4.7-1b] would ensure no net loss of riparian or wetland habitat occurs, consistent with TRRP's Riparian Revegetation and Monitoring Plan (TRRP Federal Design Group 2016). The rehabilitation activities would benefit wildlife, particularly wetland and riparian species, by enhancing the Trinity River corridor for nesting, breeding, roosting, foraging, and other activities. The corridor would continue to function as a movement corridor for many wildlife species, and the enhanced floodplain and riparian conditions could attract more wildlife to the project area.

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

No Action Alternative

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

Under the no action alternative, impacts to vegetation, wildlife and wetlands would remain similar to existing conditions. Therefore, there would be no impacts on these resources as defined in California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382.

3.14 CEQA Significance

As described in section 3.1, this document is an integrated NEPA/CEQA document. Table 3-7 provides a summary of the CEQA mitigation developed for each resource topic discussed in this chapter (see Appendix A2 for details). It also identifies the level of significance as defined in California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382).

Table 3-7. Summary of Resource Topics Considered in This EA/IS

Resource Topic	CEQA Mitigation	CEQA Significance
Aesthetics	EC-WQ-1 [4.5-1a-1e], EC-WQ-2 [4.5-2a – 2c], EC-WQ-3 [4.5-3a-3c], EC-WQ-4 [4.5-1e], and EC-RE-1 [34.8-1a].	Less than Significant
Air Quality	EC AQ-1 [4.11-a-1a], [4.11-2a]	Less than Significant
Cultural Resources	EC-CU-1 [4.10-2a] and EC-CU-2 [4.10-2a]	Less than Significant
Fishery Resources	EC FR-1 [4.6-1a, 1b], EC FR-2 [4.6-4a-4e], EC FR-3 [4.6-4f], EC FR-4 [4.6-5b], and EC FR-5 [4.6a-6d]	Less than Significant
Geomorphology and Soils	EC-GS-1[4.3-2a] and EC-GS-2 [4.3-2b]	Less than Significant
Hydrology and Flooding	Not Applicable	Less than Significant
Land Use	Not Applicable	Less than Significant
Noise	EC-NO-1 [4.14-1a] and EC NO-2 [4.14-1b]	Less than Significant
Recreation and Wild and Scenic Rivers	EC-WQ-1 [4.5-1a-1e], EC-WQ-2 [4.5-2a – 2c], EC-WQ-3 [4.5-3a-3c], EC-WQ-4 [4.5-1e] and EC-RE-1 [4.8-1a]	Less than Significant
Transportation and Traffic	EC-TC-2 [4.16-2a, 4.16-5a] and EC-TC-3 [4.16-4a]	Less than Significant
Vegetation, Wildlife, and Wetlands	EC-VW-9 [4.3-2b], EC-VW-1[4.7-1a], EC-VW-6 [4.7-7 a-d], EC-VW-7 [4.7-8a-d], EC-VW-8 [4.7-9a-c], EC-VW-4 [4.7-5a-d], EC-VW-5 [4.7-6a-e], EC-VW-9 [4.7-13a-g], and EC-FR-4 [4.7-1b]	Less than Significant
Water Quality	EC WQ-1 [4.5-1a, b], EC WQ-2 [4.5-1c], EC WQ-3 [4.5-1d], EC WQ-4 [4.5-1e, 4.5-2a-2c] and EC WQ-5 [4.5-3a-3c]	Less than Significant