Indian Creek Connectivity and Restoration Project

Preliminary Environmental Assessment/Initial Study

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Project Proponent and Co-Lead for NEPA

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Mission Statements

The mission of the Yurok Tribe is to exercise the aboriginal and sovereign rights of the Yurok People to continue forever our Tribal traditions of self-governance, cultural and spiritual preservation, stewardship of Yurok lands, waters and other natural endowments, balanced social and economic development, peace and reciprocity, and respect for the dignity and individual rights of all persons living within the jurisdiction of the Yurok Tribe, while honoring our Creator, our ancestors and our descendants.

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

The mission of Trinity County: With transparency and integrity Trinity County works responsively to create and maintain a safe and healthy quality of life for all citizens.

Table of Contents

1.0 Introduction 1

1.1 Background 1
1.2 Summary of Proposed Action 2
1.3 Purpose and Need 20
1.4 Land Use Plan Conformance 22
1.5 Relationship to Statutes, Regulations, Other NEPA Documents 23
1.6 Scoping and Public Involvement 24
1.7 Issues Identified for Detailed Analysis 24
1.8 Issues Identified but Eliminated from Detailed Analysis 25

2.0 Alternatives 30

2.1 Alternative 1 – Proposed Action Alternative 30
2.2 Alternative 2 – No Action Alternative 38
2.3 Alternatives Considered but not Analyzed in Detail 38

3.0 Affected Environment and Environmental Consequences 38

Past, Present, and Reasonably Foreseeable Future Actions 38
3.1 Hydrology 39
3.1.1 Affected Environment 39
3.1.2 Environmental Impacts 43
3.2 Vegetation 44
3.2.1 Affected Environment 44
3.2.2 Environmental Impacts 44
3.3 Geomorphology and Soils 48
3.3.1 Affected Environment 48
3.3.2 Environmental Impacts 48
3.4 Wildlife 49
3.4.1 Affected Environment 49
3.4.2 Environmental Impacts 54
3.5 Heritage Resources 61
3.5.1 Affected Environment 61
3.5.2 Environmental Impacts 63

4.0 Cumulative Impacts 63

4.1 Geographic and Temporal Scope 64
4.2 Past, Present, and Reasonably Foreseeable Future Actions 64
4.3 Cumulative Effects 65

5.0 Consultation and Coordination 67

5.1 Summary of Consultation and Coordination 67
5.2 Summary of Public Participation 68
5.2.1 Public Comments Analysis 68
5.3 List of Preparers 68

References 69

APPENDIX A – CEQA Checklist of Environmental Impacts 1

APPENDIX B – Mitigation, Monitoring and Reporting Program 45

Introduction 45

Legal Requirements 45

Intent of the Mitigation Monitoring and Reporting Program 46

Development and Approval Process 46

Authorities and Responsibilities 46

Summary of Monitoring Requirements 46

Resolution of Noncompliance Complaints 47

Best Management Practices - Common Activities and Construction Criteria and Methods 48

Vegetation Removal and Invasive Species Management 48
Water Use 48
Roadway Approaches 48
Rights-of-Way/Easements 48
Construction Criteria and Methods 48
Construction Process Overview 48
In-channel Construction 49
Traffic Control/Detour 50
Staging Areas 50
Air Pollution and Dust Control 50
Fire Protection and Prevention 50

Water Pollution Prevention **50**

APPENDIX C – Aquatic Conservation Strategy Consistency Evaluation **65**

APPENDIX D – BLM Sensitive Species List **71**

APPENDIX E – Compliance with Standards and Guidelines for Survey & Manage Species **100**

List of Tables

Table 1 Summary of Impacts and Mitigation Measures 11

Table 2. Key processes currently impacted on Indian Creek in the Project area. 20

Table 3. Supplemental Authorities/List of Issues Considered 25

Table 4. Cut and fill quantities by grading area. All volumes in yd^3. 31

List of Figures

Figure 1 Indian Creek watershed (yellow) and Project location (red) 3

Figure 2 Map of Indian Creek Project and ownership boundaries 4

Figure 3 Design elements comprising the proposed Indian Creek Connectivity Project. The creek flows from right to left. 5

Figure 4 Cut and fill depths across the Project area. 5

Figure 5 Profiles of water surface elevations in test pits and in the adjacent Indian Creek channel in the spring of 2019 30

Figure 6 Areas of cut and fill with respective depths 32

Figure 7 Areas of cut and fill with respective depths 33

Figure 8 Areas of cut and fill with respective depths 33

Figure 9 Areas of cut and fill with respective depths 34

Figure 10 Areas of cut and fill with respective depths 34

Figure 11 Existing vegetation will be preserved almost everywhere it exists at the Project site. The current design requires the removal of existing canopy only in the area outlined in red. The creek flows from right to left. 37

Figure 12 Valley stationing, access routes, and the extents of the valley bottom work area on maps showing A) hillshade relief; and B) aerial photography. Green dots on Figure 7.B indicate the locations of test pits. Indian Creek flows from right to left in the images. 40

Figure 13 Geology of the Indian Creek watershed. The white star indicates the Project location and the watershed boundary is shown in yellow. The confluence with the Trinity River is near the upper left corner of the figure. pSs = Abrams mica schist; pSv = Salmon hornblende schist; Shasta Bally batholith is the lighter pink area on the far right side of the map. 41

Figure 14 Longitudinal profiles of the channel bed elevation, the valley grade line, and water levels observed in test pits in spring 2019. 42

Figure 15 Revegetation design elements. Buried willow and cottonwoods will provide substantial roughness to ensure the channel is not re-occupied after construction. Willow trenches will provide further floodplain roughness in the newly graded surfaces. 47

Figure 16 Willow and cottonwood trench detail. Clusters of trenches will form forested islands within the floodplain and encourage flow sinuosity and complexity. 48

1.0 Introduction

1.1 Background

In accordance with the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) other relevant Federal and State laws, the Yurok Tribe and the Bureau of Land Management (BLM) Redding Field Office prepared this Environmental Assessment/Initial Study (EA/IS), as joint lead agencies, to examine the environmental effects that could result from the implementation of the proposed Indian Creek Connectivity and Restoration Project (Project) and alternatives. Additionally, this document has been prepared in coordination with Trinity County (County) to meet CEQA requirements. This EA/IS focuses on site-specific activities for the proposed action and serves as a joint NEPA/CEQA document for Project authorization by both federal and California state regulatory agencies. This EA/IS contains a Project description and other information required to apply for a Trinity County Floodplain Development permit for Indian Creek rehabilitation activities that the County will consider in making its determination and approval decision.

In addition to CEQA and NEPA, the proposed rehabilitation activities are subject to a variety of federal, state, and local statutes, regulations, policies, and other authorities, such as the Clean Water Act, Endangered Species Act, California Fish and Game Code, National Historic Preservation Act, Wild and Scenic Rivers Act, and BLM's Redding Resource Management Plan (RMP) and Record of Decision (BLM 1993). An addendum to the RMP, the Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl (Standards and Guidelines), provides survey and manage direction for management of BLM-administered lands within northern spotted owl habitat (USDA, USDI 1994a). The primary responsible and trustee agencies are the U.S. Army Corps of Engineers (USACE), United States Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), California Department of Fish and Wildlife (CDFW), and the Regional Water Board (North Coast Regional Water Quality Control Board-NCRWQCB). Section 404 of the federal Clean Water Act (1972) requires a diagnostic environmental characterization of a proposed Project area to identify vegetative, hydrologic, and soils traits indicative of wetland habitats before a Project begins. The USACE is authorized to issue permits for the discharge of dredged or fill material into waters of the United States, including wetlands.

The Cooperative Agreement between U.S. Department of the Interior and Yurok Tribe for the Cooperative Management of Tribal and Federal Lands and Resources in the Klamath River Basin of California (Agreement) was entered into by the Yurok Tribe and the U.S. Department of the Interior (DOI) in 2006 with the purpose to coordinate and cooperatively manage resources within the Klamath Basin in California subject to jurisdictional authorities of Tribal lands and DOI agencies such as the BLM. The Agreement provides collaborative management objectives of Federal and Tribal lands while furthering the Trust relationship between the DOI and the Yurok Tribe. The Agreement addresses shared goals of DOI and the Tribe which includes the improvement of health and vitality of the fisheries and to collaboratively identify issues critical to the success and survival of a healthy river-based ecosystem in the lower Klamath. The purpose of this EA/IS aligns with shared goals of the Agreement and to restore the ecological functionality of a critical valley reach on Indian Creek (refer to Section 1.3 Purpose and Need).

1.2 Summary of Proposed Action

Indian Creek is a tributary to the Trinity River within the Klamath Basin and has an approximately 34 square mile watershed located within Trinity County, California. The Project area (see Figure 1) is set in the uppermost portion of a low gradient alluvial valley near the mid-point of the watershed. The Yurok Tribe proposes to rehabilitate an approximately 3,300 foot alluvial valley bottom area of Indian Creek with a "stage-0" design to raise groundwater elevations and improve surface water connectivity (refer to Section 2.1 Proposed Action). This area of Indian Creek has become degraded due to historic (gold) mining activities and more recent upslope logging practices, which buried the valley in mining debris and altered hydraulic properties of the valley substrate. Consequently, the central portion of the Project area runs dry during the late summer and early fall of most years. The proposed action would shorten the period when low flows present a barrier to anadromous fish passage and connection to upstream habitat, thereby improving ecologic and geomorphic conditions by promoting the establishment of riparian vegetation and increasing the residence time of water and sediment within the Project area of Indian Creek.

The proposed action/stage-0 restoration design involves the following:

- Re-grading the valley bottom to create a laterally-flat valley bottom that slopes downstream at a near-constant gradient.
- Cutting and filling approximately 32,700 cubic yards of material to create the proposed geomorphic grade surface.
- Doing away with a continuous channel that rapidly conveys water through the reach to allow surface water and groundwater to be retained within the reach for extended periods. Rather than flowing rapidly downstream and drawing down the groundwater table, surface flow will spread over a large portion of the valley bottom where it can recharge the alluvial aquifer. In addition to increasing aquatic habitat availability during low-flow periods, spreading the flow over a large portion of the valley bottom spreads the erosive energy of floods over a wide area, thereby discouraging channel incision.
- Revegetating graded areas with willow and cottonwood pole plantings to prevent the channel from re-incising. Natural revegetation of native species is expected to occur throughout the Project area following Project completion as seeds and fine sediment are deposited onto the graded surfaces. Mature vegetation will be retained on site to the extent possible.

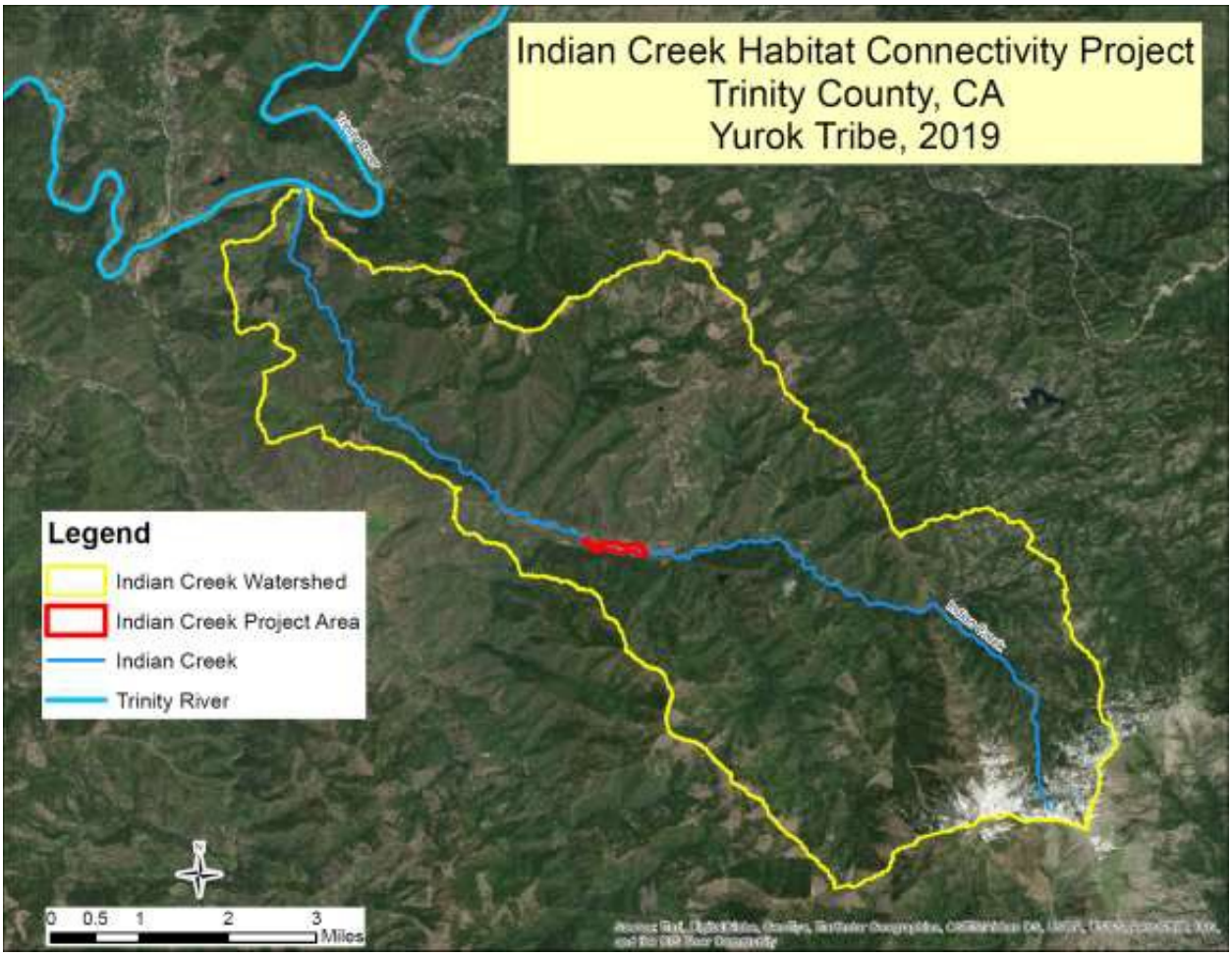

Figure 1 Indian Creek watershed (yellow) and Project location (red)

Location of Proposed Action

The Indian Creek Project site is located adjacent to Indian Creek Road in Section 25 of Township 32 North, Range 9 West, Mount Diablo Meridian, in western Trinity County. The downstream end of the Project area is located approximately 200 feet northwest of where Indian Creek Road Bridge 5C-046 crosses Indian Creek. From the downstream area, the Project area extends upstream for approximately 4,000 feet (see Figure 2). The downstream (west) half of the Project area is located entirely on BLM-administered public land, whereas the upstream half is about evenly split between BLM land and portions of two private parcels. Of the 29.25 acres within the Environmental Study Limits (ESL, the area evaluated in this document) , the BLM owns 22.55 acres and 6.7 acres are private property.

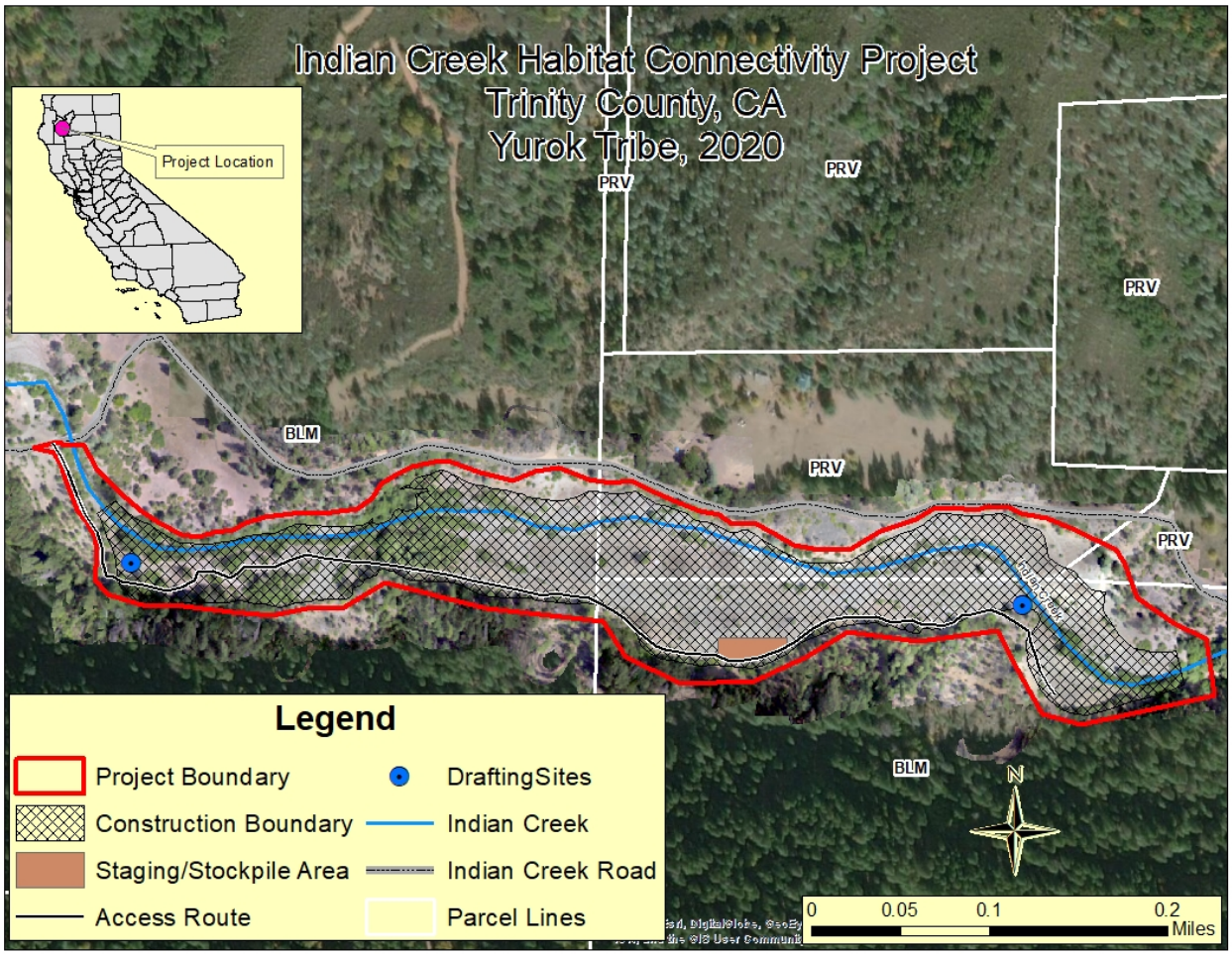

Figure 2 Map of Indian Creek Project and ownership boundaries

The Proposed Action will involve cut/fill grading operations to recontour the floodplain. The following figures show segments of the 3,300 linear foot project where cut and fill depth areas are depicted in relation to the valley floor and current creek location (see Figures 3 and 4). Additional detail regarding cut and fill depths are available in Section 2, Alternatives (Figures 6-10).

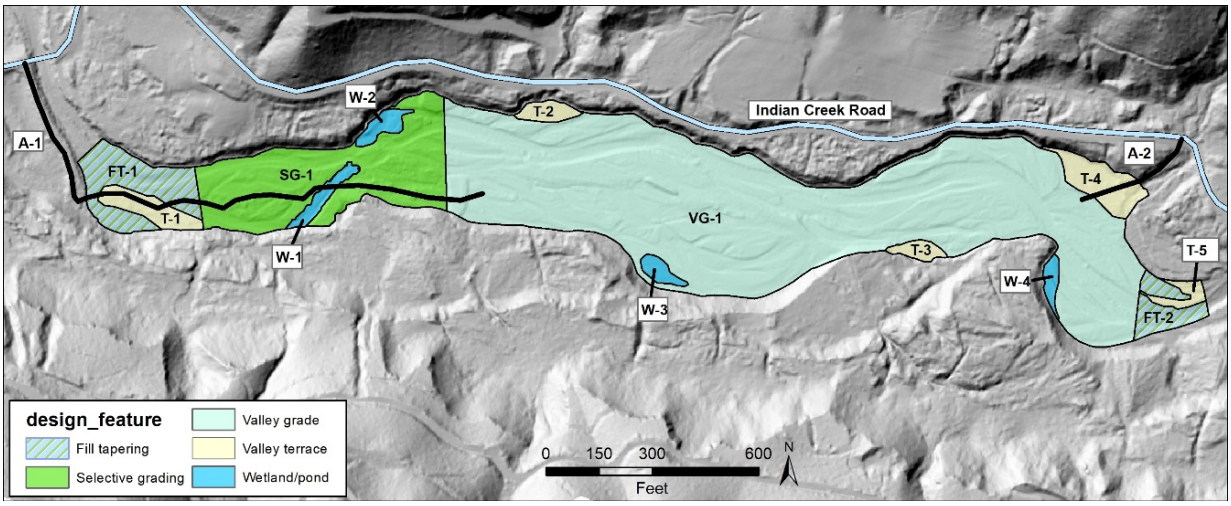

Figure 3 Design elements comprising the proposed Indian Creek Connectivity Project. The creek flows from right to left.

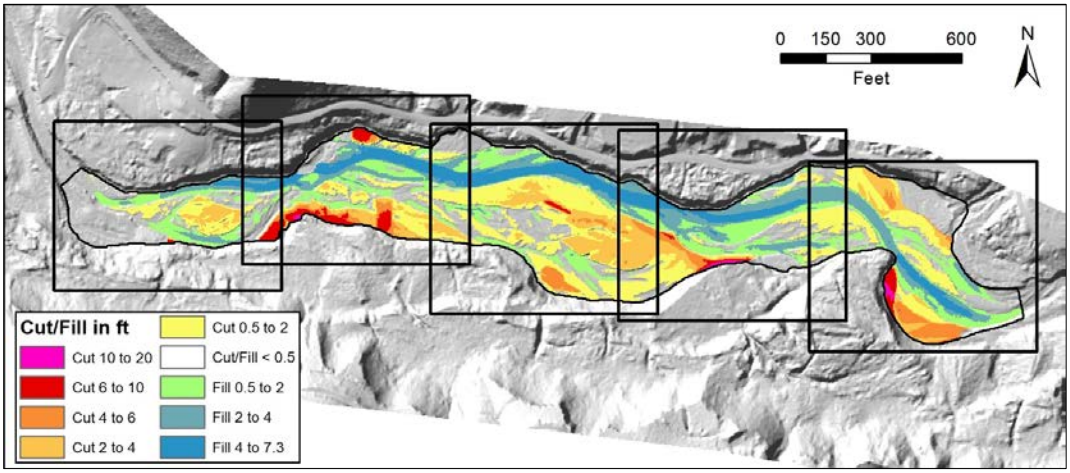

Figure 4 Cut and fill depths across the Project area.

For more details on the Proposed Action, see Chapter 2: Alternatives.

Proposed Action Implementation Schedule

The proposed improvements are expected to be constructed in the late summer and/or early fall of 2020 with construction expected to be completed within 17 working days. Initial earthwork activities would be scheduled around the first to second week of September. For project elements in Indian Creek, work in Waters of the U.S. would be scheduled during the dry season when there is little or no flow, typically between May and October. The construction timeline is subject to change based on equipment mobilization, weather conditions and field conditions encountered at the time of operation. The construction commencement is subject to change based on the availability of funding and receipt of permits and approvals for the project.

Construction Criteria and Methods

The Yurok Tribe will provide construction services for the project. The contractor will be responsible for implementing standard construction practices and best management practices (BMPs) in accordance with

BLM and the Trinity River Restoration Program's standard specifications for restoration projects as the physical setting, construction techniques and practices are similar. The contractor will also be responsible for upholding any requirements specific to this project and for complying with applicable permits and authorizations, including environmental commitments identified for this project.

Standard Environmental Commitments

As part of the Project, the Yurok Tribe would implement the following environmental commitments to avoid and minimize potential environmental impacts associated with the Project. These may differ from mitigation measures proposed for specific environmental elements that are evaluated in Appendix A, CEQA Checklist of Environmental Impacts. The environmental commitments are similar to the best management practices described in Appendix B, Mitigation, Monitoring, and Reporting Program.

All Resources

- Comply with applicable laws, ordinances, safety codes, regulations, orders, and decrees and with permits and agreements obtained by the Government for performing the work that is included in the contract. Obtain additional permits or agreements and modifications to Government-obtained permits or agreements that are required by the Contractor's methods of operation that may include, but would not be limited to:
    - Endangered Species Act, as amended in 1973, biological opinion and letter of concurrence;
    - Clean Water Act Section 404 Permit;
    - Clean Water Act Section 401 Certification;
    - National Pollution Discharge Elimination System Construction General Permit;
    - Lake or Streambed Alteration Agreement;
    - Trinity County Floodplain Development Permit;
    - Trinity County Encroachment Permit;
    - Environmental Education Workshop;
    - BLM Right of Way: After the 30-day appeal period, commencing with the signing of a Decision Record, BLM would issue a right-of-way to the Yurok Tribe pursuant to Title V of the Federal Land Policy and Management Act (43 USC 1761 et seq. and 43 CFR 2800) for implementation of the rehabilitation activities on BLM-managed land.
    - BLM Free Use Permits: After the 30-day appeal period, commencing with the signing of a Decision Record, the BLM would issue the Yurok Tribe two Free Use Permits. The first would authorize the Yurok Tribe to remove a pre-determined amount of vegetative materials for restoration activities at the site (43 CFR 5510). The second would authorize the Yurok Tribe to process and use up to 32,700 cubic yards of mineral materials for restoration activities at the site (43 CFR 3604). All environmental commitments, project design features, mitigation measures, and best management practices (BMPs) developed for this EA/IS would be considered for incorporation into the BLM authorizations.
    - Construction personnel and all subcontractors would be required to participate in, and fully comply with, an environmental education workshop. The workshop would include, but not be limited to:
    - Federal, state, and local environmental laws and permits, as well as the benefits of compliance and penalties for noncompliance with environmental requirements and conditions;
    - Threatened, endangered, and other special status species, and their habitats;
    - Environmental protection measures, mitigation, compensation, and restoration. A member of the contractor's management staff would be required to participate in the training session to discuss the contractor's environmental protection plans;

- The importance of working exclusively in designated work zones and the importance of avoiding any impacts to environmentally sensitive exclusion zones;
- What to do when there is a potential violation; and
- Upon completion of the training all personnel would sign and date a form stating that they received and understand the materials presented.

Air Quality

- Provide an adequate water supply and apply water uniformly across the traveled way as necessary to control dust. Uniformly apply water using pressure-type distributors, pipelines equipped with spray systems, or hoses with nozzles. Control dust within the construction limits as necessary including nights, weekends, and periods of non-work. Control dust in areas of the project that have a nearby residence. Control dust on active haul roads, in pits and staging areas, and on the project during periods not covered above.
- Cover all trucks hauling dirt, sand, silt, or other loose materials or maintain at least 6 inches of freeboard.

Cultural and Paleontological Resources

- Do not excavate, remove, damage, alter, or deface any archeological or paleontological remains or specimens. Control the actions of employees and subcontractors on the project to ensure that protected sites are not disturbed or damaged. Should these items be encountered, suspend operations at the discovery site, notify the Construction Manager and continue operations in other areas. The Construction Manager would inform work crews when operations may resume at the discovery site.

Designated Work and Exclusion Zones

- Construction equipment and activities would be confined to designated work zones including designated access roads. These work zones would be indicated on the Project construction plans. Prior to construction, the work zones would be clearly fenced and flagged. In addition, sensitive areas within, or near, the designated work zone would also be indicated on the Project plans as exclusion zones and clearly marked in the field with high-visibility fencing or flagging adequate to prevent accidental entry, and maintained throughout construction activities. Project boundary marking would be checked and maintained daily by the construction contractor.
- Exclusion zones within the Project boundaries would have signs attached that identify each area as an Environmentally Sensitive Area.
- During construction, job inspectors and resource monitors would ensure that construction equipment and ancillary activities avoid any disturbance of sensitive resources outside the designated work zones. Resource monitors would conduct surveys as appropriate for threatened, endangered, and special status species. The following measures would also be implemented:
    - Use and storage of construction equipment would be confined to designated work zones;
    - Existing roads and access points would be used to the greatest extent possible to minimize disturbance to the environment and wildlife;
    - Equipment staging areas, borrow material sites, parking locations, stockpile areas, and storage areas would be located outside of Environmentally Sensitive Areas as much as feasible and would be clearly marked and monitored; and

- Vehicle fueling and maintenance would occur in upland areas, away from water bodies.

Hazardous Materials

- Submit a Spill Prevention Plan at least 2 days before beginning work. If a SPCC plan is not required, submit a hazardous spill plan at least 2 days before beginning work. Describe preventative measures including the location of refueling and storage facilities and the handling of hazardous material. Describe actions to be taken in case of a spill. Do not use equipment with leaking fluids. Repair equipment fluid leaks immediately. Keep absorbent material manufactured for containment and cleanup of hazardous material on the job site. Notify the Construction Manager of hazardous spills.
- Sand or soils are not approved absorbent materials. Report the spill to the appropriate federal, state, and local authorities as required by the SPCC plan or hazardous spill plan.

Land Use

- Use only approved portions of the defined project Environmental Study Limits for storing material or equipment. Do not use private property for storage without written permission of the owner or lessee. Submit copies of agreements and documents. Provide security for stored material. Restore Government-provided storage sites to their original condition.

Noxious Weeds

- Do not import into the project limits rock, sand, gravel, earth, subsoil, or other natural materials from a Contractor-selected non-commercial materials source that have not been certified free of noxious weeds. Materials imported into the project limits which do not include a noxious weed free certification may be rejected and ordered by the Construction Manager to be removed from the project limits. The Construction Manager has the discretion of requesting inspection of certified materials by a third party and rejecting the use of the source if noxious weeds or seeds thereof are found to be present.
- Conform to the Federal Seed Act, the Federal Noxious Weed Act, and applicable State and local seed and noxious weed laws.

Traffic, Visual Quality

- Maintain roadways as follows:
  - Construct and remove diversion roads and bridges as required by the traffic control plan.
  - Maintain a dust-free traveled way such that visibility and air quality are not affected and a hazardous condition is not created.
  - Remove accumulations of soil and other material from traveled way.
  - Do not allow water to pond on the traveled way.
  - Maintain the roadway, detours, intersections, and diversions in a safe and acceptable condition.
- Perform construction operations during the hours of daylight (sunrise to sunset). Where night operations are permitted, submit a night lighting system for approval.
- All road closures must be approved by the Construction Manager at least two weeks in advance. The Contractor shall advertise all closures to the public 7 days prior to the scheduled work. The Construction Manager must be available on the project every working day to provide information to Trinity County Department of Transportation, Bureau of Land Management, emergency service providers, local news media, affected businesses, private individuals, and

local organizations interested in the project whenever the construction schedule changes and when construction delays start and end.

Utilities

- Before beginning work in an area, contact the local utility locating service to mark the utilities. Protect utilities from construction operations. Cooperate with utility owners to expedite the relocation or adjustment of their utilities to minimize interruption of service and duplication of work.

Vegetation

- Minimize damage to vegetation designated to remain. Where possible, preserve vegetation adjacent to bodies of water.

Water Quality, Wetlands and Waters of the U.S.

- Before developing a material source, measure the sediment content of bodies of water adjacent to the work area that would receive drainage from the work area. Perform erosion and sediment control per the Storm Water Pollution Prevention Plan (SWPPP) or Erosion Control Plan.
- Construct and maintain barriers in work areas and in material sources to prevent sediment, petroleum products, chemicals, and other liquids and solids from entering wetlands or waters of the United States. Remove and properly dispose of barrier collected material. Do not revise terms or conditions of permits without the approval of the issuing agency.
- Obtain approval from the Construction Manager to use temporary bridges or other structures whenever crossings are necessary. Immediately clear ephemeral drainages, intermittent streams, and perennial streams of all work items, debris or other obstructions placed by or resulting from construction operations. Locate machinery servicing and refueling areas away from streambeds and washes to reduce the possibility and minimize the impacts of accidental spills or discharges.
- Construct silt fence, berms, and fiber rolls and socks to reduce the velocity of runoff to allow sediment to settle.
- Construct sediment retention structures of the following types:
  (a) Temporary sediment traps that may include, but not be limited to straw wattles, silt fencing, compost socks, straw bales, and sand bags Construct temporary sediment traps to detain runoff from disturbed areas and settle out sediment.
  (b) Sediment basins. Construct sediment basins to store runoff and settle out sediment for large drainage areas.

Water Quality, Soils

The Contractor will implement the requirements of the (NPDES) for erosion and storm water runoff control during construction as specified under the NPDES Construction General Permit No. 2009-0009-DWQ for California. This includes preparation of a Stormwater Pollution Prevention Plan (SWPPP) and filing a Notice of Intent with the North Coast Regional Water Quality Control Board. The Contractor will designate an erosion control/water quality supervisor who will be responsible for implementing the SWPPP.

- Provide soil erosion and sediment control measures per the contract erosion and sediment control plan or SWPPP and permits approved for the Project. Do not modify the type, size, or location of controls or practices without approval. The erosion and sediment control plan or SWPPP addresses special concerns and measures to protect resources. When soil erosion and

sediment control measures are not functioning as intended, take corrective action to eliminate or minimize pollutants in stormwater discharges from the project. If wood chips are used, do not import without approval from the Construction Manager.

- Before grubbing or grading construct sediment controls around the perimeter of the project including filter barriers, diversion, and settling structures. Construct and implement soil erosion and sediment control measures as follows:
  (a) Construct temporary controls in incremental stages as construction proceeds;
  (b) Construct temporary slope drains, diversion channels, and earth berms to protect disturbed areas and slopes;
  (c) When a soil disturbing activity within a portion of the project is complete, apply permanent measures to the finished slopes and ditches within 14 days;
  (d) When a soil disturbing activity within a portion of the project has temporarily ceased, apply temporary measures within 14 days;
  (e) Construct and maintain soil erosion and sediment controls on and around soil stockpiles;
  (f) Following each day's grading operations, shape earthwork to minimize and control erosion from stormwater runoff; and
  (g) Maintain stabilized construction exits to minimize tracking of soil onto existing roads.
  (h) Upon project completion the necessary final erosion controls will be implemented at the project site.

Water Quality, Hazardous Materials

- Contain construction debris within the construction limits. Do not permit debris to enter waterways, travel lanes open to public traffic, or areas designated not to be disturbed.

Summary of Mitigation Measures

An evaluation of the Project's impacts on the physical environment determined that all impacts could be avoided, minimized, or mitigated to a less than significant level.
Appendix A includes an Evaluation of Environmental Impacts in the form of a checklist as provided in Appendix G of the CEQA Guidelines. The checklist includes an evaluation of 20 specific environmental elements and a discussion of impacts and mitigation measures associated with each. The CEQA Mandatory Findings of Significance is included with a discussion of cumulative impacts at the end of this checklist.

Because CEQA requires a determination of significance for each resource provided in the checklist, the checklist provided in Appendix G of the CEQA Guidelines is used to form the body of the effects analysis. For NEPA, significance is determined for an overall Project by considering the direct and indirect impact as well as the context and intensity of any effects as addressed in Section 3 of the Environmental Assessment.

A summary of mitigations measures of project impacts is included below:

Table 1 Summary of Impacts and Mitigation Measures

Impacts	Significance before Mitigation	Mitigation Measure	Significance after Mitigation
NI = No impact LTS = Less than significant PS = Potentially significant S = Significant SU = Significant and unavoidable CC = Cumulatively considerable NCC = Not Cumulatively considerable			
1. **Aesthetics** (Environmental Assessment (EA) Section 1.8 Scenic Resources)			
Impact 1.1 Implementation of the proposed Project could result in the degradation and/or obstruction of a scenic view from a public view.	LTS	No mitigation is necessary; impact would be less than significant	LTS
2. **Agricultural and Forest Resources** (EA Section 1.8 Farmlands, Forestry Resources and Woodland Products)			
Impact 2.1 Project implementation could result in the loss of forest resources.	LTS	No mitigation is necessary; impact would be less than significant	LTS
3. **Air Quality** (EA Section 1.8 Air Quality)			
Impact 3.1 Construction activities associated with the proposed Project could result in an increase in fugitive dust and associated particulate matter (PM_{10} and $PM_{2.5}$) levels.	PS	**Mitigation Measure 3.1a -** The Yurok Tribe will implement a dust control program to limit fugitive dust and particulate matter emissions. The dust control program will include the following elements as appropriate: • Inactive construction areas will be watered as needed to ensure dust control. • Pursuant to the California Vehicle Code (Section 23114), all trucks hauling soil or other loose material to and from the construction site will be covered or will maintain adequate freeboard to ensure retention of materials within the truck's bed (e.g., ensure 1-2 feet vertical distance between top of load and the trailer). • Excavation activities and other soil-disturbing activities will be conducted in phases to reduce the amount of bare soil exposed at any one time. Mulching with weed-free materials will be used to minimize soil erosion. • Watering (using equipment and/or manually) will be conducted on all stockpiles, dirt/gravel roads, and exposed or disturbed soil surfaces, as necessary, to reduce airborne dust. • All paved access roads, parking areas, and staging areas will be swept (with water sweepers), as required by the Yurok Tribe. • Paved roads will be swept (with water sweepers) if visible soil material is	LTS

		carried onto adjacent private and public roads, as required by the Yurok Tribe. • All ground-disturbing activities with the potential to generate dust will be suspended when winds exceed 20 mph, as directed by the NCUAQMD. The Yurok Tribe or its contractor will designate a person to monitor dust control and to order increased watering as necessary to prevent transport of dust offsite. This person will also respond to citizen complaints.	
Impact 3.2 Construction activities associated with the proposed Project could result in an increase in construction vehicle exhaust emissions.	PS	**Mitigation Measure 3.2a -** The Yurok Tribe will comply with NCUAQMD Rule 104 (4.0) Particulate Matter. This compliance could occur by using portable internal combustion engines registered and certified under the state portable equipment regulation (Health & Safety Code 41750 through 41755).	LTS
Impact 3.3 Construction activities would generate short-term and localized fugitive dust, gas, and diesel emissions, and smoke that could affect adjacent residences.	PS	**Mitigation Measure 3.3a –** The Yurok Tribe will ensure that a notice is posted at/adjacent to the project site that contains a phone number for the public to contact for concerns related to air quality.	LTS
4. **Biological Resources** (EA Sections 3.2 Vegetation and 3.4 Wildlife)			
Impact 4.1 Implementation of the Project could harm fish in the Project area	PS	**Mitigation Measure 4.1a -** Project implementation shall occur during the late summer low flow period when most of the Project area is expected to have subsurface flow and fish and other aquatic species are not present.	LTS
		Mitigation Measure 4.1b - In Project areas that have surface flow, fish and other aquatic species will be captured and relocated pursuant to conditions of a Scientific Collecting Permit obtained from the California Department of Fish and Wildlife and the flow of water will be diverted around individual worksite locations to isolate the location and allow heavy equipment work to take place without species present or additional surface flow entering the location.	
		Mitigation Measure 4.1c - When **h**eavy equipment is entering or placing material in wetted worksite locations from which fish and other aquatic species have been removed, it will be done slowly to allow any fish or other aquatic species previously undetected during relocation effort to leave the area by moving downstream.	
		Mitigation Measure 4.1d - All water drafting activities will adhere to NMFS, Southwest Region, Water Drafting Specifications (2001) and CDFW Regulations to prevent fish from being entrained.	

Impact 4.2 Implementation of the Project could increase erosion potential and lead to elevated turbidity levels in Indian Creek	PS	**Mitigation Measure 4.2a -** All compacted floodplain areas will be fully decommissioned and subsoiled to improve infiltration, reduce compaction, reduce erosion potential and facilitate native vegetation regrowth. **Mitigation Measure 4.2b -** To reduce surface erosion potential of floodplain surfaces, roughness will be added in the form of large wood and open areas will be seeded with native grasses and forbs after construction. **Mitigation Measure 4.2c -** Best Management Practices (BMP's), including placement of silt fence, straw wattles, compost socks or other applicable measures, will be used to control off-site movement of sediment.	LTS
Impact 4.3 Construction activities associated with the proposed Project could result in impacts to the little willow flycatcher (*Empidonax traillii*).	PS	**Mitigation Measure 4.3a -** Grading and other construction activities should be scheduled to avoid the nesting season to the extent possible. The nesting season for this species in Trinity County extends from June 1 to mid-August. If construction occurs outside of the breeding season, no further mitigation is necessary. If the breeding season cannot be completely avoided, then the following measures shall be implemented: A qualified biologist shall conduct protocol-level surveys for the species within the Project site and a 250-ft buffer around the site (Attachment 1 A Willow Flycatcher Survey Protocol for California). If an active nest is found, a qualified biologist, in consultation with CDFG, shall determine the extent of a construction-free buffer zone to be established around the nest.	LTS
Impact 4.4 Construction activities associated with the proposed Project could result in impacts to California yellow warbler (*Dendroica aestiva brewsteri*), and yellow breasted chat (*Icteria virens*).	PS	**Mitigation Measure 4.4a -** Grading and other construction activities should be scheduled to avoid the nesting season to the extent possible. The nesting season for these species in Trinity County extends from March 15 through August. If construction occurs outside of the breeding season, no further mitigation is necessary. If the breeding season cannot be completely avoided, then the following measures shall be implemented: • A qualified biologist shall conduct a minimum of one pre-construction survey for all three species within the Project site and a 250-ft buffer around the site. The survey should be conducted no more than 15 days prior to the initiation of construction in any given area (the survey may be conducted at the same time as the pre-construction survey for the western pond turtle, foothill yellow-legged frog, and Coastal giant salamander). The pre-construction survey should be used to ensure that no nests of these species within or immediately adjacent to the Project site would be disturbed during Project implementation. If an active nest is found, a qualified biologist, in consultation with CDFW, shall determine the extent of a construction-free buffer zone to be established around the nest. If vegetation is to be removed by the Project and all necessary approvals have been obtained, potential nesting substrate (e.g., shrubs and trees) that will be	LTS

		removed by the Project should be removed before the onset of the nesting season, if feasible. This will help preclude nesting and substantially decrease the likelihood of direct impacts. Trees and shrubs shall be cut, but roots and stumps left in place to avoid disturbing the ground during the rainy season.	
Impact 4.5 Construction activities associated with the Proposed Project could result in impacts to the foothill yellow-legged frog (*Rana boylii*) and Coastal giant salamander (*Dicamptodon tenebrosus)*.	PS	**Mitigation Measure 4.5a -** The following measures will be implemented to avoid impacts to foothill yellow-legged frog and Coastal giant salamander: • If any construction in the Indian Creek channel will occur prior to August 1 of any construction season, a pre-construction survey for the foothill yellow-legged frog larvae and/or eggs and Coastal giant salamander larvae and neotenes will be conducted by a qualified biologist. This survey will be conducted within the construction boundary no more than 2 weeks prior to the start of in-stream construction activities. If individuals or eggs are detected, the biologist will relocate them to a suitable location outside of the construction boundary. • In the event that a foothill yellow-legged frog or Coastal giant salamander is observed within the construction boundary, the contractor will temporarily halt in-stream construction activities until qualified personnel have moved the frog(s) or salamander(s) to a safe location within suitable habitat outside of the construction limits. Planned locations for placement of transferred animals will be downstream of the construction limits and will be reported to the CDFW prior to construction. Mitigation measures identified in Section 9 (Hazards and Hazardous Materials) and Section 10 (Hydrology and Water Quality) for addressing erosion and sedimentation and accidental spills will be fully implemented to mitigate for potential indirect impacts to dispersal habitat for the foothill yellow-legged frog and Coastal giant salamander due to sedimentation and accidental spills.	LTS
Impact 4.6 Construction activities associated with the Proposed Project could result in impacts to the western pond turtle (*Actinemys marmorata pallida*).	PS	**Mitigation Measure 4.6a -** The following measures will be implemented to avoid impacts to western pond turtles: • Any Project activities in the aquatic or riparian habitat will be preceded by a pre-construction survey. Surveys will be conducted by a qualified biologist. If a western pond turtle is found the biologist will move it to appropriate habitat either up or downstream of the Project site. If a pond turtle nest is found, the biologist shall flag the site and determine if construction activities can avoid impacting the nest. If the nest cannot be avoided, it will be excavated and re-buried at a	LTS

		suitable location outside of the construction impact zone by a qualified biologist. • If a western pond turtle is encountered during construction, activities in the vicinity shall cease until appropriate corrective measures have been implemented (e.g., relocation of the turtle by a qualified biologist to appropriate habitat either up or downstream of the Project area) or it has been determined by the biologist that the turtle will not be harmed. Any trapped, injured, or killed turtles shall be reported immediately to the CDFW. • Mitigation measures identified in Section 9 (Hazards and Hazardous Materials) and Section 10 (Hydrology and Water Quality) for addressing erosion and sedimentation and accidental spills will be fully implemented to mitigate for potential indirect impacts to dispersal habitat for the western pond turtle due to sedimentation and accidental spills.	
5. **Cultural Resources** (EA Section 3.5 Cultural Resources)			
Impact 5.1 Implementation of the proposed Project could potentially result in disturbance of undiscovered prehistoric or historic resources.	PS	**Mitigation Measure 5.1a -** Prior to initiation of construction or ground-disturbing activities, all construction workers will be alerted to the possibility of discovering cultural resources. This includes prehistoric and/or historic resources. Personnel will be instructed that upon discovery of buried cultural resources, work within 50 feet of the find will be halted and BLM's designated archaeologist will be consulted. Once the find has been identified, BLM will be responsible for developing a treatment plan for the cultural resource including an assessment of its historic properties and methods for avoiding any adverse effects, pursuant to the PA and in compliance with the NHPA.	LTS
Impact 5.2 Implementation of the proposed Project could potentially result in disturbance of undiscovered human remains.	PS	**Mitigation Measure 5.2a -** If human remains are encountered during construction on non-federal lands, work in that area will be halted and the Trinity County Coroner's Office will be immediately contacted. If the remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) will be notified within 24 hours of determination, as required by PRC, Section 5097. The NAHC will notify designated Most Likely Descendants, who will provide recommendations for the treatment of the remains within 24 hours. The NAHC will mediate any disputes regarding treatment of remains. If Native American human remains and associated items are discovered on federal lands, they will be treated according to provisions set forth in the Native American Protection and Repatriation Act (25 USC 3001) as well as Reclamation's Directives and Standards LND 02-01. If the find is determined to be a historical resource or a unique archaeological resource, as defined by CEQA, contingency funding and a time allotment	LTS

		sufficient to allow for implementation of avoidance measures or other appropriate mitigation will be made available. Work may continue on other parts of the Project while mitigation for historical or unique archaeological resources takes place.	
6. **Energy**			
	LTS	No mitigation is necessary; impact would be less than significant	LTS
7. **Geology and Soils** (EA Section 3.3)			
Impact 7.1 Construction activities associated with the Proposed Project could result in increased erosion and short-term sedimentation of Indian Creek.	PS	**Mitigation Measure 7.1a -** The Yurok Tribe will implement the following measures during construction activities: • Areas where ground disturbance will occur will be identified in advance of construction and limited to only those areas that have been approved by the Yurok Tribe. • All vehicular construction traffic will be confined to the designated access routes and staging areas. • Disturbance will be limited to the minimum necessary to complete all rehabilitation activities. All supervisory construction personnel will be informed of environmental concerns, permit conditions, and final Project specifications.	LTS
Impact 7.1 Construction activities associated with the Proposed Project could result in increased erosion and short-term sedimentation of Indian Creek.	PS	**Mitigation Measure 7.1b -** The Yurok Tribe will prepare an erosion and sedimentation control plan (SWPPP). Measures for erosion control will be prioritized based on proximity to the creek. The Yurok Tribe will provide the SWPPP for review by associated agencies (e.g., BLM, the Regional Water Board, NMFS, and CDFW) upon request. The Yurok Tribe's Project manager will ensure the preparation and implementation of an erosion and sediment control plan prior to the start of construction. The following measures will be used as a guide to develop this plan: • Salvage, store, and use the highest quality soil for revegetation. • Discourage noxious weed competition and control noxious weeds. • Clear or remove roots from steep slopes immediately prior to scheduled construction. • Leave drainage gaps in topsoil and spoil piles to accommodate surface water runoff. • To the fullest extent possible, cease excavation activities during significantly wet or windy weather. • Use bales, wattles, and/or silt fencing as appropriate. • Before seeding disturbed soils, work the topsoil to reduce compaction caused by construction vehicle traffic. • Rip feathered edges (and floodplain surfaces where appropriate) to approximately 18 inches deep. The furrowing of the river's edge will	LTS

		remove plant roots to allow mobilization of the bed, but will also intercept sediment before it reaches the waterway. • Spoil sites will be located such that they do not drain directly into a surface water feature, if possible. If a spoil site will drain into a surface water feature, catch basins will be constructed to intercept sediment before it reaches the feature. Spoil sites will be graded and vegetated to reduce the potential for erosion. Sediment control measures will be in place prior to the onset of the rainy season to ensure that surface water runoff does not occur. Project areas will be monitored and maintained in good working condition until disturbed areas have been seeded and mulched or revegetated in another fashion. If work activities take place during the rainy season, erosion control structures will be in place and operational at the end of each construction day.	
		Mitigation Measure 7.1c - To minimize the potential for increases in turbidity and suspended sediments entering Indian Creek as a result of access routes (e.g., roads), the Yurok Tribe will implement the following protocols: • Keep bare soil to the minimum required by designs. Erosion control devices/measures will be applied to areas where vegetation has been removed to reduce short-term erosion prior to the start of the rainy season.F • Keep runoff from bare soil areas well dispersed. Dispersing runoff keeps sediment on-site and prevents sediment delivery to streams. Direct any concentrated runoff from bare soil areas into natural buffers of vegetation or areas with more gentle slopes where sediment can settle out. • Disconnect and disperse flow paths, including roadside ditches, that might otherwise deliver fine sediment to stream channels. • Decompact or rip floodplain areas so that surfaces are permeable and no surface water runoff occurs.	LTS
8. **Greenhouse Gas Emissions** (EA Section 1.8 Farmlands, Forestry Resources and Woodland Products)			
		See Air Quality Impacts 3.1, 3.2, and 3.3	
9. **Hazards and Hazardous Materials**			
Impact 9.1 Construction of the proposed Project could cause contamination of Indian Creek from hazardous materials spills.	PS	**Mitigation Measure 9.1a -** A spill prevention and containment plan will be prepared in accordance with applicable federal and state requirements.	LTS
		Mitigation Measure 9.1b - The Yurok Tribe will ensure that any construction equipment that will come in contact with Indian Creek will be inspected for leaks daily and immediately prior to entering the flowing channel. External oil, grease, and mud will be removed from equipment.	
		Mitigation Measure 9.1c - Yurok Tribe will ensure that hazardous materials, including fuels, oils, and solvents, not be stored or transferred within 150 feet	

		of the active Indian Creek channel. Areas for fuel storage, refueling, and servicing will be located at least 150 feet from the active river channel or within an adequate secondary fueling containment area. Gas pumps and engines will be stored and maintained on impermeable barriers so that any leaking petroleum products are isolated from the ground. In addition, the construction contractor will be responsible for maintaining spill containment booms onsite at all times during construction operations and/or staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times.	
Impact 9.2 Operation of heavy equipment during construction may expose people or structures to wildland fires.	PS	**Mitigation Measure 9.2a -** Construction contractors would be required to follow applicable regulations of Public Resource Code 4428-4442 during dry periods to minimize the potential for the initiation and spread of fires from the work site.	LTS
10. **Hydrology and Water Quality**			
		See Biological Resources Impact 4.2 **See Geology and Soils Impact 7.1** **See Hazards and Hazardous Materials Impact 9.1**	
Impact 10.1a In-water work could result in substantial erosion or siltation on- or off-site.	PS	**Mitigation Measure 10.1a -** During in-water work, turbidity will be monitored to remain within criteria established by the North Coast Regional Water Quality Control Board in the Clean Water Act, Section 401 Water Quality Certification obtained for the Project.	LTS
11. **Land Use Planning**			
	LTS	No mitigation is necessary; no impacts would occur	
12. **Mineral Resources**			
	LTS	No mitigation is necessary; no impacts would occur	
13. **Noise**			
Impact 13.1 Construction activities associated with the proposed Project would result in noise impacts to nearby sensitive receptors.	PS	**Mitigation Measure 13.1a -** Construction activities near residential areas will be scheduled between 7:00 a.m. and 7:00 p.m., Monday through Saturday. No construction activities will be scheduled for Sundays or other hours and days established by the local jurisdiction (i.e., Trinity County). The contractor may submit a request for variances in construction activity hours. **Mitigation Measure 13.1b -** The Yurok Tribe will require that all construction equipment be equipped with manufacturer's specified noise muffling devices.	LTS
14. **Population and Housing**			

	LTS	No mitigation is necessary; impact would be less than significant	
15. **Public Services**			
Impact 15.1 Implementation of the proposed Project could result in temporary disruption to emergency services, school bus routes, or student travel routes during construction activities.	PS	**Mitigation Measure 15.1a -** The applicant will require that staging and construction work, including temporary road or bridge delays occurs in a manner that allows for access by emergency service providers.	LTS
16. **Recreation**			
	LTS	**No mitigation is necessary; impact would be less than significant**	
17. **Transportation**			
Impact 16.1 Construction activities would generate short-term increases in vehicle trips.	PS	**Mitigation Measure 16.1a -** The Yurok Tribe will post signs at the local post office in Douglas City and at the intersection of Indian Creek Road and Reading Creek Road prior to Project activities notifying travelers of increased traffic activity on local roads accessing the Project.	LTS
18. **Tribal/Cultural Resources**			
		See Cultural Resources Impacts 5.1 and 5.2	
19. **Utilities and Service Systems**			
	LTS	No mitigation is necessary; impact would be less than significant	
20. **Wildfire**			
		See Hazards and Hazardous Materials Impacts 9.1 and 9.2 See Public Services Impacts 15.1	

1.3 Purpose and Need

The purpose of the Proposed Action is to restore the ecological functionality of a critical valley reach on Indian Creek. The Proposed Action would improve the aquatic habitat and habitat connectivity to the extent practical for steelhead trout, coho salmon and Chinook salmon by improving groundwater conditions so that the period of time that Indian Creek goes dry in the Project reach during the summer is decreased relative to existing conditions. The Proposed Action would also restore Indian Creek geomorphic processes by increasing floodplain connectivity which will result in the deposition and storage of fine sediment in the Project area and decrease the delivery of fine sediment to downstream areas of Indian Creek. The combined effect of increasing groundwater storage, increasing the annual duration of surface flow, and increasing the floodplain inundation capability within the Project reach will result in conditions that will promote natural revegetation throughout the Project area of desirable species such as Alder trees, Cottonwood trees, and various species of willow.

The need for the Proposed Action is in response to the degradation of a valley segment of Indian Creek due to the legacy effects of mining and logging in the watershed. The streamflow in Indian Creek, within the Project reach, routinely goes subsurface during August and September which prevents fish from using this area or accessing the relatively cold water sections found upstream. Juvenile steelhead trout would likely benefit the most by having improved access to upstream areas of Indian Creek as the stream gradient is considered too steep for other anadromous fish species. That the Project area occurs in a valley section of Indian Creek, which is highly desirable to salmon and somewhat uncommon in the Trinity Basin, increases the need to focus restoration efforts here. Chinook salmon and coho salmon, currently found in limited numbers downstream of the Project area, would have access to a restored valley reach for spawning and rearing. The limited capacity of the Project reach to store groundwater and frequently inundate the adjacent floodplain has resulted in a near total lack of vegetation in a majority of the Project area.

The Proposed Action is a comprehensive effort to restore and self-maintain a critical valley reach of Indian Creek. Groundwater interactions, geomorphic processes, terrestrial habitat conditions, and aquatic habitat conditions would be improved in the Project reach following Project completion. These improvements are necessary to aid recovery of anadromous fish species in Indian Creek as well as promote natural revegetation of the adjacent floodplain. The Aquatic Conservation Strategy (ACS) is the regional strategy applied to riparian and aquatic ecosystem management on BLM and Forest Service (FS) lands within the area covered by the Northwest Forest Plan. The ACS utilizes an ecosystem approach where the following objectives are achieved: (1) healthy and functional watersheds are identified and protected and, (2) ecological processes are restored in degraded watersheds to create and maintain favorable conditions in aquatic ecosystems there. Appendix B of this EA//IS includes an Aquatic Conservation Strategy Consistency Evaluation.

A summary of existing impairments of key stream processes is included in Table 1.

Table 2. Key processes currently impacted on Indian Creek in the Project area.

Process Group	Specific Process	Description	Cause(s) of Impairment

Stream flow	Surface flow	Movement of water through stream and river channels	Reduced surface, subsurface, and groundwater flow in side channels and across floodplain due to main stem channel incision
	Subsurface flow	Water delivered to streams by flow below ground	
	Groundwater flow	Water delivered to streams by flow via flow below the soil layer	
Sediment, nutrient, and organic matter supply, transport, and storage	Sediment and organic matter supply	Delivery of sediment and organic matter (including large woody material) from the upper watershed	The incised stream channel acts as a transport channel that routes sediment and woody material through the Project reach instead of depositing these materials in the floodplain except at the highest flows
	Nutrient production and delivery	Nutrient delivery to streams via litter fall, photosynthesis, dissolved nutrients, or anadromous fishes (marine derived nutrients)	(1) Reduction in nutrient delivery via litter fall because the wetted area and subsequent riparian influence zone has been reduced due to stream channel incision; (2) Major reduction in marine derived nutrients due to lack of Indian Creek Chinook and coho salmon in the Project area
	Sediment, nutrient, and organic matter transport and storage	Transport vs. storage of sediment, nutrients, and organic matter (including large wood) from stream flow through the system	Increased transport/ reduced storage of sediment, nutrients, and organic matter due to channel incision (concentrated high energy), and lack of large woody material, and floodplain connectivity
Riparian, channel, and floodplain processes	Stream shading	Blockage of solar insolation by vegetation	Decreased shading on stream channel due to main stem channel incision and lack of vigorous riparian vegetation
	Pool or bar formation	Formation of pools or bars by hydraulic scour and deposition, often influenced by wood accumulations	Decreased formation of pools and bars due to sediment and large woody material being transported through reach
	Floodplain building	Deposition of sediments on floodplain surfaces	Decreased deposition of sediments on floodplain surfaces due to lack of floodplain connectivity
	Channel migration	Channel movement by bank erosion (lateral migration) and avulsion	No channel migration due to the combination of an incised channel and riprap boulders meant to limit channel migration
	Pond and wetland formation	Formation of ponds and wetlands by beaver dams and wood accumulations	Lack of ponds/ wetlands due to large woody material deficiency and difficulty of beaver dam construction on high energy main stem channel
Instream biological processes	Primary production	Algae and aquatic plant production by photosynthesis	(1) Overall decrease in aquatic plant production because the valley wetted area and subsequent riparian influence zone has been reduced due to the incised, single thread, main stem channel; (2) Reduction in primary productivity due to reduction in marine derived nutrients due to lack of Indian Creek Chinook and coho salmon in the Project area

	Secondary production	Production of aquatic invertebrates that consume algae, plants, leaf litter, and other organic matter	Reduced secondary production due to limited primary production
	Tertiary production	Consumption of algae, plants, or invertebrates by fishes and other organisms	Reduced tertiary production due to limited primary and secondary production
	Competition / invasive species	Competition among native and non-native organisms for space or food resources	Increased competition due to limited space and food

Decision to be Made

Should there be a finding of no significant impact, the BLM Authorized Officer would decide whether to authorize permits to the Yurok Tribe to implement the proposed restoration Project as described in this EA/IS, and if so, under what terms and conditions. Trinity County intends to determine whether to certify a Mitigated Negative Declaration and issue a Floodplain Development Permit for the Project.
A Memorandum of Understanding (MOU) between the BLM, Yurok Tribe, and Trinity County documents agreements that have been made regarding collaboration and cooperation between all three of the agencies to address and authorize the Indian Creek Connectivity and Restoration Project.

1.4 Land Use Plan Conformance

The Proposed Action was developed to be consistent with the following EISs and plans:

- The *Northwest Forest Plan and Record of Decision and Standards and Guidelines for Management of Habitat for Lake-Successional and Old-Growth Related Species with the Range of the Northern Spotted Owl* (USDA and USDI 1994a; referred to as the "Northwest Forest Plan"). The Forest Plan provides management direction through the designation of specific management areas and standards and guidelines specific to these designations.
- *BLM Redding Resource Management Plan (RMP) and Record of Decision* (June 1993). The RMP discusses the general condition of natural resources in the plan area and prescribes appropriate land use management for lands within the plan jurisdiction, including BLM-managed lands at the site.
  The RMP was amended by the Northwest Forest Plan in 1995 to include new land allocations (e.g., Riparian Reserves) and established requirements for compliance with the Aquatic Conservation Strategy (ACS) and other Standards and Guidelines to protect habitat for the northern spotted owl (*Strix occidentalis caurina*). A key component of this amendment to the RMP was the establishment of Riparian Reserves along rivers and streams to protect aquatic resources. Virtually all of the Project area on BLM lands are designated Riparian Reserves and are subject to the standards and guidelines of the ACS. An addendum to the RMP, the Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl (1994) (Standards and Guidelines), provides survey and manage direction for management of BLM lands within northern spotted owl habitat.

CEQA-specific impacts would be less than significant (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15382). 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 the objectives for the Trinity River.

1.5 Relationship to Statutes, Regulations, Other NEPA Documents

In addition to CEQA and NEPA, the proposed activities at the project site are subject to a variety of federal, state, and local statutes, regulations, policies, and other authorities. These include the Clean Water Act (CWA), Rivers and Harbors Act, Federal Endangered Species Act (ESA), California Endangered Species (CESA), California Fish and Game Code, National Historic Preservation Act (NHPA), and Trinity County Ordinances.

The primary responsible and trustee agencies for the Clean Water Act (CWA) are the U.S. Army Corps of Engineers (USACE) and the Regional Water Board. A draft Section 404 permit application was submitted by the Yurok Tribe to the Eureka Office of the USACE on 4/14/2019. Issuance of a Section 404 permit is required and expected prior to project implementation. A draft Section 401 permit application was submitted by the Yurok Tribe to the Santa Rosa office Regional Water Board on 4/14/2019. Issuance of a Section 401 permit is required and expected prior to project implementation.

The primary responsible and trustee agencies for the Rivers and Harbors Act is the USACE. A draft Section 10 permit was submitted by the Yurok Tribe to the Eureka Office of the USACE on 4/14/2020. Issuance of a Section 10 permit is required and expected prior to project implementation. The 404 Permit and Section 10 Permits were applied for concurrently using the same application form.

The primary responsible and trustee agencies for the Federal Endangered Species Act (ESA) are the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). The USFWS is currently reviewing the Trinity River Restoration Program (TRRP) Programmatic Wildlife Biological Assessment. The USFWS is expected to issue Letter Of Concurrence (LOC) regarding the effects determinations for listed terrestrial wildlife species by late summer 2020. Following issuance of the LOC, the ESA Section 7 - Consultation requirements will have been met for these species. The NMFS is currently reviewing the Trinity River Restoration Program (TRRP) Programmatic SONCC Coho Salmon Biological Assessment. The NMFS is expected to issue a Biological Opinion (BO) regarding the effects determinations for listed terrestrial wildlife species by late summer 2020. Following issuance of the LOC, the ESA Section 7 - Consultation requirements will have been met for aquatic listed species near the project area.

The primary responsible and trustee agency for the California Endangered Species (CESA) and California Fish and Game Code is the California Department of Fish and Wildlife (CDFW). The Yurok Tribe submitted a draft 1600 permit application to the Redding CDFW Office on 4/14/2020. Issuance of a 1600 permit is required and expected prior to project implementation. The Tribe also intends to submit a Scientific Collection Permit (SCP) application to CDFW on 6/12/2020. Issuance of an SCP is required and expected prior to project implementation.

The primary responsible and trustee agency for the National Historic Preservation Act (NHPA) is the State Historic Preservation Office (SHPO). The BLM, Redding Field Office, has an agreement with State

Historic Preservation Office (SHPO) in which consultation does not occur if the Project will have no effect on archaeological resources (Ritter, pers. comm. April 29, 2020).

The primary responsible and trustee agency for insuring compliance with Trinity County Ordinances are the Trinity County Planning and Transportation Departments. A Floodplain Development Permit (FDP) was submitted by the Yurok Tribe to the Planning Department on 5/13/2020. Issuance of an FDP is required and expected prior to project implementation. The Yurok Tribe also intends to submit an Encroachment Permit application to the Trinity County Transportation Department by 6/19/20. Issuance of an Encroachment Permit is required and expected prior to project implementation.

1.6 Scoping and Public Involvement

The Yurok Tribe and the BLM interdisciplinary team of specialists conducted a field visit August 15, 2019 and identified resource issues through a preliminary review process.

On April 6, 2020 BLM mailed a letter to tribes asking for tribal input. No responses were received. See Chapter 4 for further information regarding Consultation and Coordination.

1.7 Issues Identified for Detailed Analysis

The Council on Environmental Quality (CEQ) regulations state that the BLM should focus on "issues that are truly significant to the action in question, rather than amassing needless detail" (40 CFR 1500.1). An "issue" is a point of disagreement, debate, or dispute with the Proposed Action based on some anticipated environmental effect. Issues identified for analysis in this assessment include issues that could potentially be significantly affected by one of the proposed alternatives, where analysis is necessary to determine significance of impacts, or if analysis of an issue is necessary to make a reasoned choice between alternatives.
The following issues have been identified for detailed analysis (see Chapter 3):

<u>Issue 1</u> – Hydrology (see Chapter 3, Section 3.1)

- How will the Project change the flow of water through the Project site and within the larger watershed? Feet of stream course altered will be used as an indicator for this issue.

<u>Issue 2</u> – Vegetation (see Chapter 3, Section 3.2)

- How will the Project affect the abundance, connectivity, and vigor of riparian and wetland vegetation in the Project area? Acres of riparian and wetland vegetation impacted during Project implementation will be used as an indicator for this issue.

<u>Issue 3</u> – Geomorphology and Soils (see Chapter 3, Section 3.3)

<u>Issue 4</u> – Wildlife (see Chapter 3, Section 3.4)

- The proposed Project will affect aquatic and terrestrial animal populations and their habitat. Number of individuals surveyed before and after Project implementation will be used as an indicator for this issue.

<u>Issue 5</u> – Heritage Resources (see Chapter 3, Section 3.5)

- Cultural Resource Survey

1.8 Issues Identified but Eliminated from Detailed Analysis

The following resources were considered but eliminated from detailed analysis in Section 3 of this EA/IS because they were determined by the BLM not to be significant issues concerning the Proposed Action. The BLM has determined the analysis of the following issues is not necessary to make a reasoned choice between alternatives pursuant to NEPA.

The County included an additional analysis of resources pursuant to CEQA in the Environmental Impacts Checklist (Appendix A) of this EA/IS as indicated in Table 2. Additional discussion and analysis are included in Appendix A for resource topics that had the potential to cause significant impacts pursuant to the County's thresholds of significance unless mitigation was incorporated.

Table 3. Supplemental Authorities/List of Issues Considered

Issue	Determination and Rationale	
PI – Potential Impact NI - No Impact		
Air Quality	PI	• The Proposed Action was designed to meet the National Ambient Air quality standards through avoidance of practices that degrade air quality below health and visibility standards. This Project is consistent with the 1990 Clean Air Act and the 1977 Clean Air Act and its amendments. • Restoration activities require use of construction equipment that would temporarily contribute to air pollution in the form of ozone precursors and PM10. Construction excavation, fill, grading, hauling materials, land clearing and equipment travel on unpaved road surfaces would be temporary sources of fugitive dust emissions (PM10). Fugitive dust resulting from Project activities could occur over a period of up to two months during the dry summer and early fall months, when PM10 levels may be elevated by wood stove use, brush burning, or wildland fires. While the Proposed Action would increase the PM10 levels to varying degrees, depending on the type and extent of construction activity, potential PM10, VOC and NOX emissions would be negligible for remaining revegetation efforts. Once activities are complete, the resulting emissions and impact on air quality would also cease. • This topic is further addressed in the Air Quality Section of Appendix A. Implementation of mitigation measures, Project design elements, and conformance with Environmental Commitments would minimize these emissions to less than significant levels.
Areas of Critical Environmental Concern	NI	• Not present in Project area.
Environmental Justice	NI	• The Project occurs well away from any large population center that will be directly affected by the Project. The Proposed Action will not impose any hardships on minority or low-income communities

		and there will be no significant changes in agricultural communities or practices. Therefore, the Proposed Action will not have disproportionately negative impacts on low-income or minority individuals or populations within the Project area. The Proposed Action could have a beneficial effect on the downriver tribal communities by enhancing salmonid populations significant to their economy and cultural traditions.
Farmlands (Prime or Unique)	NI	• The Project area does not contain any prime farmlands or rangelands.
Fire and Fuels	PI	• The types and amounts of fuels and their continuity may be decreased temporarily by implementation of the Proposed Action, particularly in areas subject to vegetation removal, but any such changes would not be significant with respect to fire potential and behavior. In the long-term, potential fire conditions would be similar to those that currently exist. • The proposed tree removal sites will have little or no effect on fuel loading. The Project design element to scatter the slash or hand pile and burn heavier concentrations of slash generated by tree removal shall be employed. There will be no adverse effects to fuel loadings and no increased fire risk by the Proposed Action. • The risk of fire due to operation of heavy equipment on site is addressed in Appendix A in the Wildfire section.
Fish Habitat	NI	• Fish habitat within the Project area is impaired. The Project area is deficient in woody material, has shallow pools, and is also considered ephemeral as the stream annually goes dry in this reach during August and September.
Floodplains	PI	• The Proposed Action involves activities in the floodplain of Indian Creek. This issue is addressed in the Hydrology and Water Quality section of Appendix A.
Forestry Resources and Woodland Products	NI	• Forestry resources will not be affected on site; any logs needed for large wood structures will be obtained from locations off site. The Project will not affect woodland products on or off site.
Human health and safety concerns	NI	• The Proposed Action has the potential to temporarily impact human health and safety as discussed in the following sections of Appendix A: Hazards and Hazardous Materials, and Public Services.
Indian Sacred Sites and Trust Assets	NI	• Sacred sites are defined in Executive Order 13007 (May 24, 1996) as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of

		an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site." No Indian Sacred Sites have been identified in the Project area; therefore, the Proposed Action would not affect nor prohibit access to and ceremonial use of Indian sacred sites. Indian Trust Assets Indian Trust Assets (ITAs) are legal interests in assets that are held in trust by the United States for federally recognized Indian tribes or individuals. There are no Indian reservations, rancherias or allotments in the Project area.
Invasive, Non-native Species	NI	• Several non-native invasive species are found in the Project area. However, these species are already common throughout the watershed and the Project is unlikely to increase their overall presence in the watershed. Incorporation of Project design features will limit the spread of these infestations to new areas or new species being transported to the Project site.
Lands and Realty	NI	• The Project encompasses private and federal lands. The Proposed Action would not affect the zoning or designation of any of the Project area, nor would it create uses inconsistent with the current zoning or designation during the Project or following implementation of the Project. Consistency with federal resource management plans and the Trinity County General Plan is addressed in Appendix A.
Lands with Wilderness Characteristics	NI	• BLM Instruction Memorandum 2011-154 and Manuals 6310 and 6320 set out the BLM's approach to protecting wilderness characteristics on BLM public lands. This guidance acknowledges that wilderness is a resource that is part of BLM's multiple use mission, requires the BLM to keep a current inventory of wilderness characteristics, and directs the agency to consider protection of these values in land use planning decisions. The BLM has not designated any lands as Lands with Wilderness Characteristics (LWC), within the Redding Field Office, beyond those previously established as wilderness study areas. Lands that lack wilderness characteristics are those that do not meet the naturalness criterion (BLM Manual 6310) because they have extensive surface disturbance and/or do not meet the size criterion of 5,000 acres or larger. Areas less than 5,000 acres may have wilderness characteristics and require protective actions if BLM determines that wilderness characteristics are present. No areas of this nature have been identified at this time. An inventory of Lands with Wilderness Characteristics within the Redding Field Office was completed in December of 2016. Although some areas within the Redding Field Office were found to meet LWC criterion, the Project area does not fall within an area that meets the criteria

		for LWC. Currently there are no land use decisions for the protection or management of these LWC. Therefore, this resource would not be discussed or analyzed in this document.
Livestock Grazing Management	NI	• There are no existing grazing allotments in the Project area and none of the Project area is suitable for grazing.
Migratory birds and wildlife	PI	• Few birds nest in the Project area because there is little potential nesting habitat. If construction is implemented during the bird nesting season (February 1-August 31), surveys will be conducted to detect nesting birds and nests will be avoided if found.
Minerals	NI	• There are no active or pending mining claims in Township 32 North, Range 9 East, Section 25, Mount Diablo Meridian.
Noise Resources	PI	• Noise concerns are typically described in terms of effects on noise-sensitive land uses that are located within hearing range of a noise-producing activity. These noise-sensitive land uses are referred to as "sensitive receptors" and include residences, schools, hospitals, child-care facilities, and other similar land uses. Noise sources that are generally of concern include heavy equipment, gas or diesel motors, and conveyor systems. Sensitive receptors near the Project area include residences located adjacent to the Project area. Construction hours will be limited to mitigate noise disturbance. No significant impacts related to noise are anticipated through implementation of the Proposed Action.
Recreation Resources	NI	• The Proposed Action will have no direct, indirect or cumulative effects on recreation resources. Hiking, camping and other recreation activities will not be affected. Enhancement of floodplain function can help sustain diverse recreation opportunities that are a major driver of economic activity in the Pacific Northwest.
Socioeconomics	NI	• The Proposed Action may benefit the economy and cultural traditions of the federally recognized Hoopa and Yurok tribes directly and may aid in salmonid harvest in the nearby Pacific by recreationalists and commercial operators with socioeconomic benefits to communities nearby such as Crescent City.
Threatened, Endangered or Candidate Animal Species	NI	• No threatened, endangered, or candidate species are known to occur in the Project area. There are no known nest sites of Bald Eagle near the Project area. A pair of Northern Spotted Owls has nested to the south and east of the Project area, but the nest site is not within ¼ mile of the Project and no disturbance to the owls is anticipated. Habitat within the Project area is not suitable for the

		Pacific Fisher, though they have been found within ½ mile to the south of the work area. • Additional discussion regarding special status species is included in Section 4 of Appendix A.
Vegetation	PI	• Impacts to riparian vegetation within the Project area will be further analyzed.
Rare plant species (Threatened, Endangered, Candidate, or Special Status)	NI	• Based on review by BLM specialists, there are no known rare plant populations found in the Project area. The Project location and habitats involved lead to a low likelihood of rare plants existing in the Project area. Project design features will be incorporated in the event that a previously unknown population is discovered.
Wastes, Hazardous or Solid	NI	• Heavy equipment will be on site to complete construction activities, although standard best management practices and mitigation measures will be implemented to avoid or minimize the risk of hazardous waste spills. The Project design will not generate excessive solid waste.
Scenic Quality	NI	• Implementation of the Proposed Action will affect the scenic quality of a 3,300-foot reach of Indian Creek short-term during construction. Rapid re-growth and establishment of new riparian vegetation is expected to occur within the first year following construction, thereby improving the scenic quality of the Project area. • Activities associated with the Proposed action are intended to provide wildlife and geomorphological function (e.g., to enhance fisheries and restore river function), but would also complement the aesthetic values associated with the rehabilitation site. Construction activities could be visible from access roads short term (during active rehabilitation). Any short- term impacts resulting from the Proposed Action would diminish over time, likely after the first wet season. Implementation of the Proposed Action alternative would not result in significant visual resource differences. The level of change to the characteristic landscape, as perceived by a casual observer, would be low, particularly when viewed from a distance, and over time.
Wetlands/Riparian Zones	PI	• Impacts to riparian vegetation and wetlands within the Project area will be further analyzed.
Wild and Scenic Rivers	NI	• Indian Creek is not a Wild or Scenic River

2.0 Alternatives

2.1 Alternative 1 – Proposed Action Alternative

"Stage 0" Design

The primary objective of the proposed Indian Creek Connectivity design is to increase the extent and duration of groundwater-surface connectivity within the Project area. The creek loses sufficient water into the subsurface in the upstream half of the Project area. Water lost to the subsurface near station 3300 at the upstream end of the site reemerges as surface flow near station 1700, but the intervening stream reach is frequently dry and that stretch of valley is nearly devoid of riparian vegetation. A geologic investigation was conducted in March 2019 to better understand the groundwater processes in the Project area. A total of 16 piezometers were installed in the adjacent floodplain area of Indian Creek to continuously record the groundwater water depths for each well. Continuous monitoring water level sensors were placed in the creek near the wells to facilitate a comparison of the groundwater elevation in the wells versus the water level elevation within the adjacent creek itself. The data evidence (see Figure 4) indicates the lack of groundwater connection between the creek and the adjacent floodplain is partly due to unusually large hydraulic conductivity of the valley alluvium, particularly near the interface between the alluvium and underlying bedrock. However, it is also partly due the incised condition of the stream channel, which represents an efficient groundwater drain.

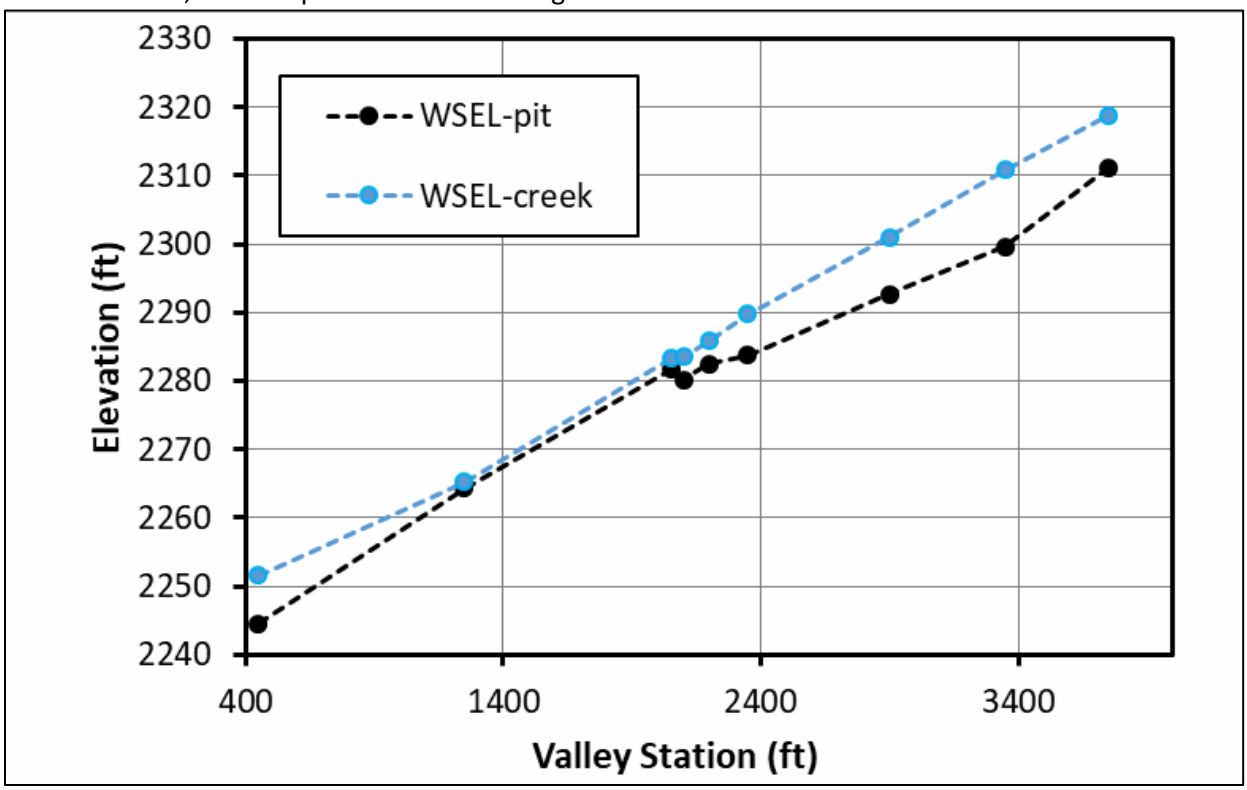

Figure 5 Profiles of water surface elevations in test pits and in the adjacent Indian Creek channel in the spring of 2019

The Proposed Action is to increase groundwater residence times and groundwater elevations by implementing a "stage-0" restoration approach. First described by Cluer and Thorne (2013), the stage-0 concept has been applied to restoration of ground water connectivity in impaired alluvial valleys with

incised channels at multiple sites around the region (Powers et al. 2019). The Yurok Tribe proposes to implement a stage-0 approach to increase the lateral habitat connectivity of the valley bottom during the wet season and the duration of surface flows during the annual dry period within the Project area. Based on results observed from other completed stage-o projects, it is expected that the approach would facilitate the revegetation of the valley bottom, providing allochthonous inputs to the aquatic ecosystem and improving wildlife habitat connectivity.

Excavation and Fill

The stage-0 design would be used for restoring an alluvial reach with disconnected floodplains and groundwater due to channel incision. The Proposed Action involves excavation of high portions of the valley floor and filling in low areas to create a valley grade surface that approximates the average longitudinal profile of the valley floor (as depicted in Figures 3 and 4). This valley grade surface has zero slope perpendicular to the valley axis, but slopes at a roughly constant rate parallel to the valley axis. Although valley grade surfaces are defined by sloping planes at the large scale, as constructed they incorporate micro-topography and roughness elements such as vegetation and wood that slow flow and promote hydraulic diversity. Roughness elements are applied at a 50% higher rate on fill surfaces compared to cut surfaces to prevent the channel from reoccupying its previous course, over less consolidated material. As initially constructed, valley grade surfaces lack a defined low-flow channel and so are perpetually in a state of flood. Water spreads out over a wide area, providing abundant salmonid rearing habitat and efficiently recharging groundwater supplies. In time, we expect a multi-thread network of anastomosing channels with easily overtopped banks to develop.

Sediment produced in the upper basin will continue to be delivered to the project site at rates that are independent of project implementation. Depending on the rates of upstream sediment production, sediment deposition at the upstream end of the project site could lead to the formation of a fan-like environment similar to those found at tributary confluences. Such confluence areas are associated with increased geomorphic activity and ecologic diversity (Benda et al. 2004).

The Project work area covers a total of 29.25 acres. Figures 6-10, below, provide detailed depictions of cut and fill depths across the Project. Total cut and fill quantities are nearly balanced, with approximately 32,700 yd3 of fill required to reach design grade. The design cut is slightly less at about 28,200 yd3, but additional areas for harvesting material to meet the fill requirements are identified, denoted T-1 through T-5 (Figure 3) that would be excavated as needed to supply the necessary fill material. Those areas consist of unvegetated valley terraces or alluvial fan terraces that together have the potential to yield an estimated 7,800 yd3 of fill while remaining at or above the adjacent valley grade surfaces. The actual quantity of fill harvested from each of these terrace surfaces will likely be smaller than the harvest potential listed in Table 3, depending on proximity to the locations where additional fill is needed during construction. The majority of the excavated material would be sourced in close proximity to the location where it is used as fill, so material handling and transportation costs will be minimized.

Table 4. Cut and fill quantities by grading area. All volumes in yd^3.

Grading Area	Cut	Fill	Net	Harvest Potential
FT-1	160	420	Fill 260	
SG-1	6,385	6,570	Fill 190	
VG-1	21,570	24,960	Fill 3390	
FT-2	70	750	Fill 680	
Totals	28,185	32,700	Fill 4,500	

T-1				3,370
T-2				900
T-3				550
T-4				2,500
T-5				480
Total				7,800

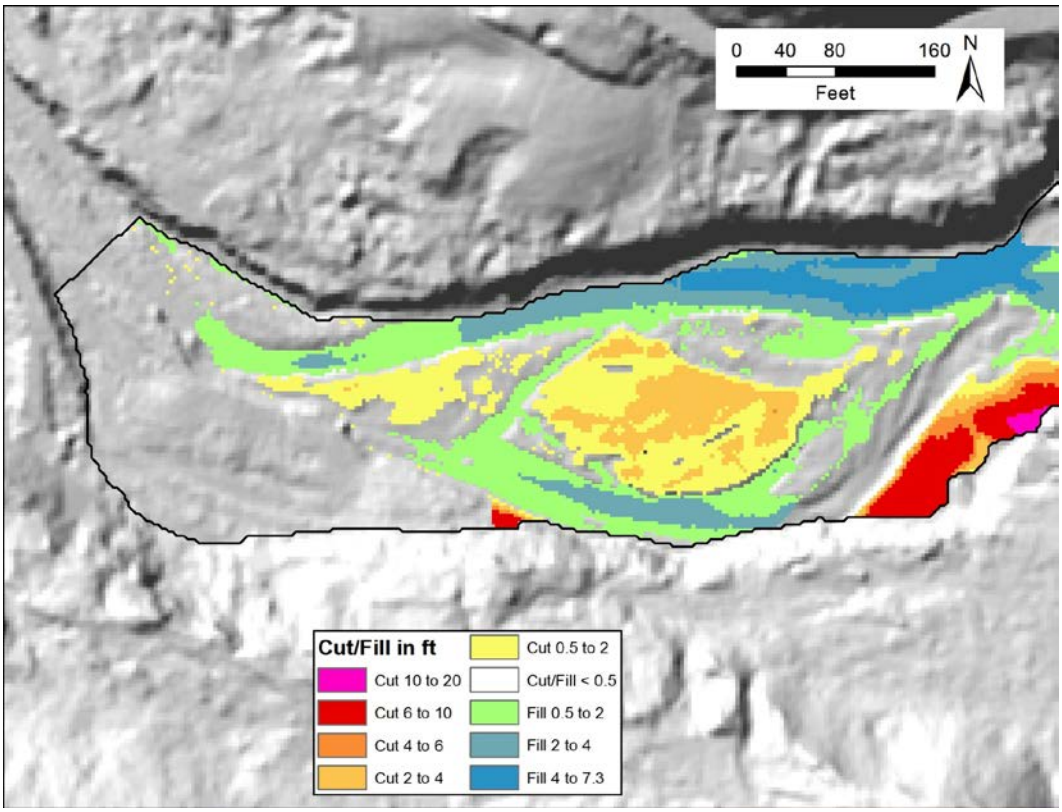

Figure 6 Areas of cut and fill with respective depths

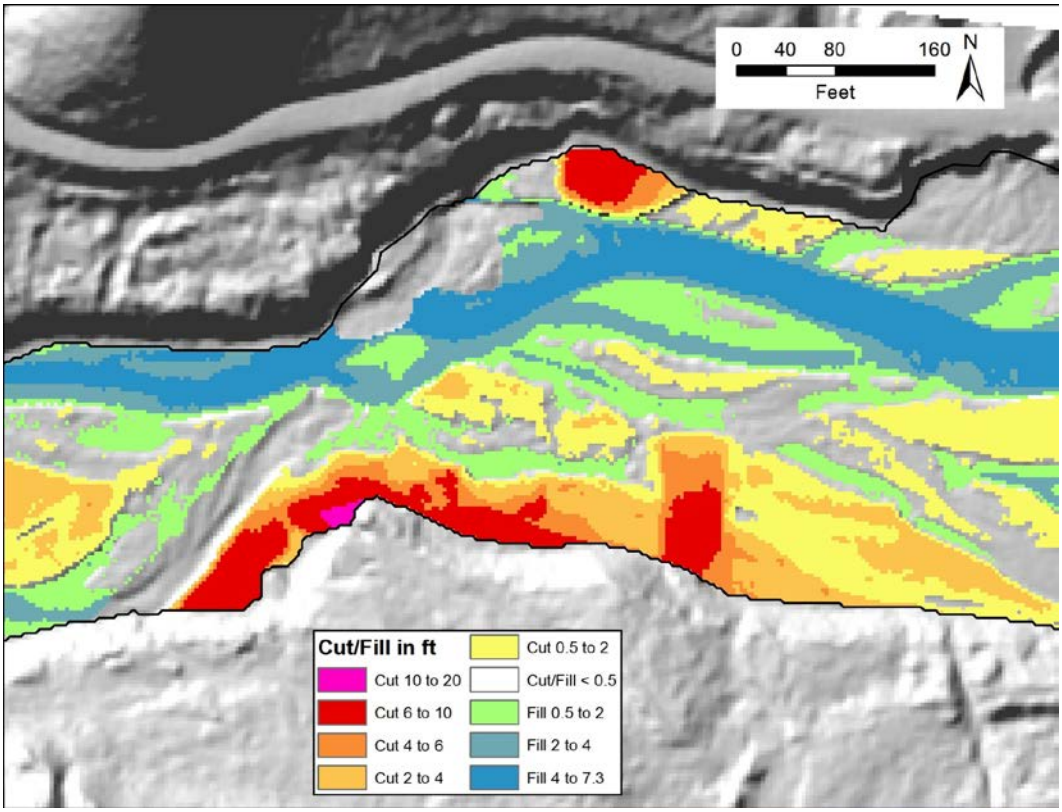

Figure 7 Areas of cut and fill with respective depths

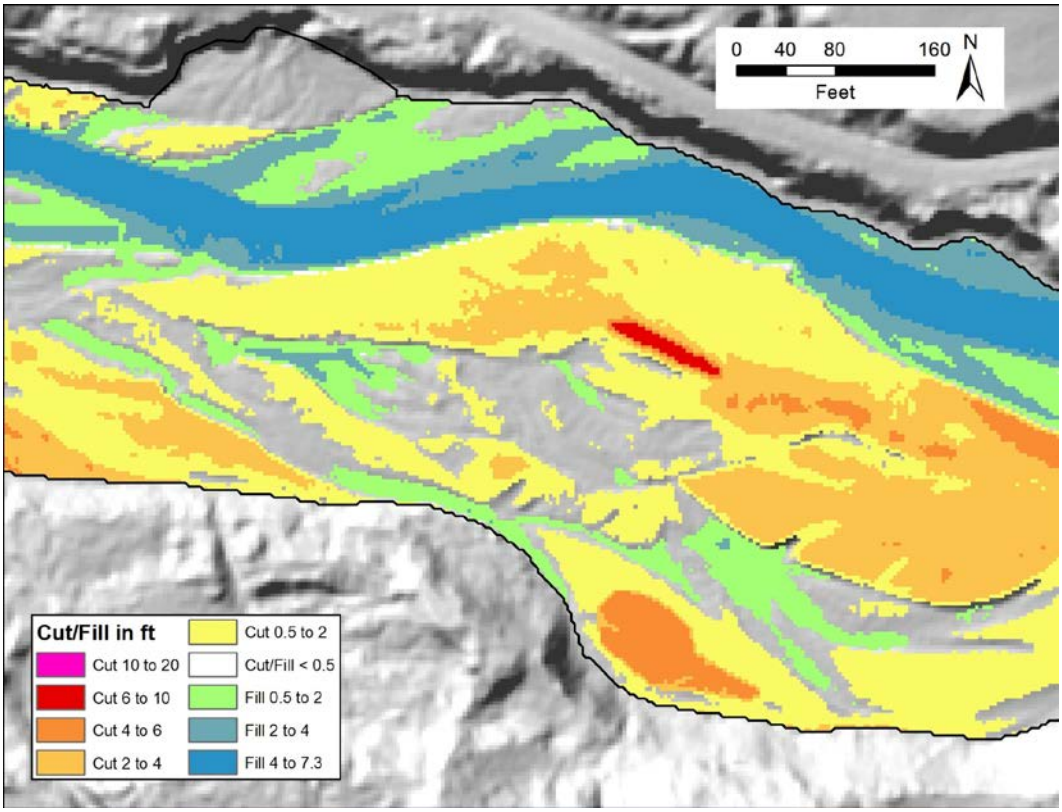

Figure 8 Areas of cut and fill with respective depths

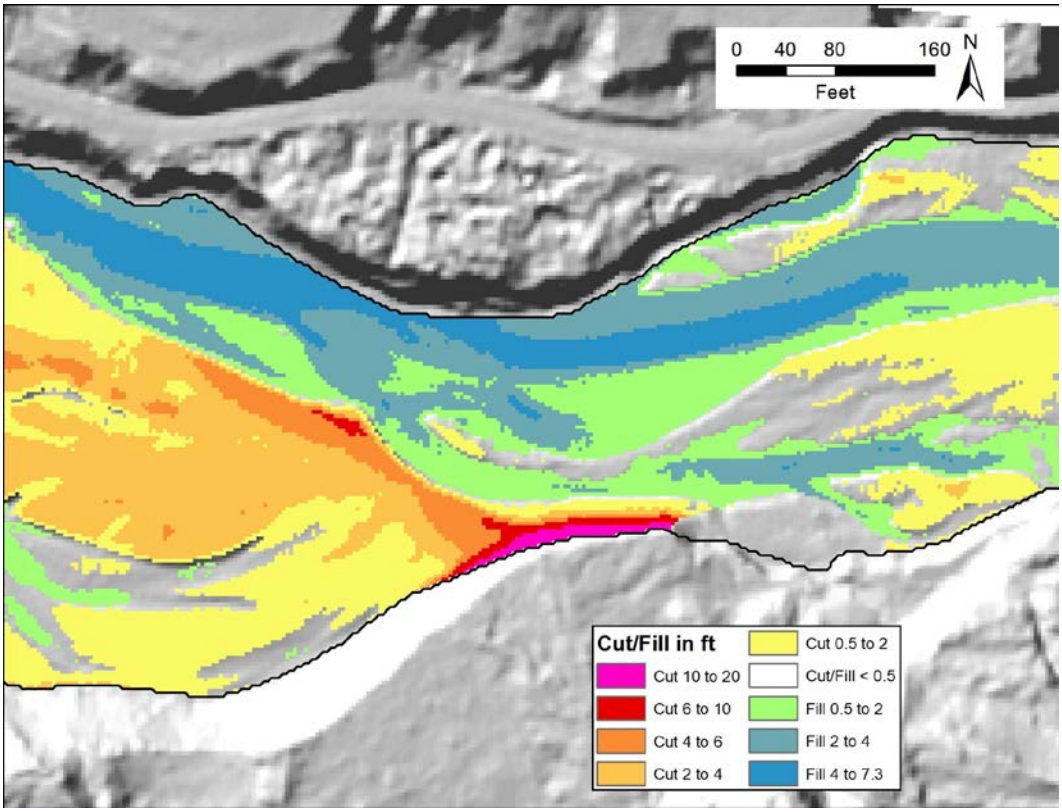

Figure 9 Areas of cut and fill with respective depths

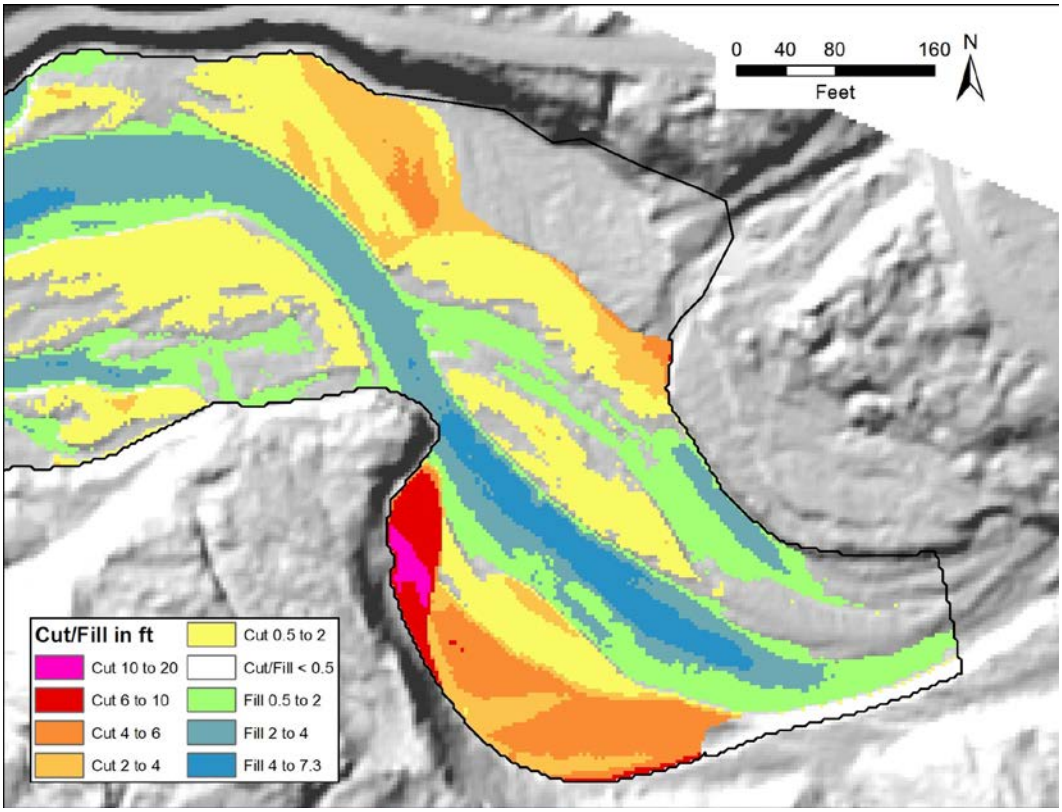

Figure 10 Areas of cut and fill with respective depths

- *VG-1 Valley Grade Surface*

VG-1 is the main valley grade surface that approximates the average longitudinal profile of the valley floor through most of the upper two-thirds of the Project site. This portion of the Project site is where groundwater connectivity is most impaired and the primary target of the proposed restoration design. Subtracting the valley grade surface from the existing surface yields a cut/fill surface indicating the depth of fill to be placed in existing depressions and the depth of excavation required in elevated parts of the valley. The methods used to develop the valley grade surface are intended to result in an approximate balance between cut and fill quantities. Those methods are discussed in a later section on design development. As currently graded, VG-1 covers 14.45 acres and requires 21,570 yd3 of cut and 24,960 yd3 of fill, for a net fill of 3,390 yd3.

- *SG-1 Selective Valley Grade*

SG-1 is a modified valley grade surface in which portions of the SG-1 area are selectively excluded from grading. The SG-1 grade surface and cut/fill surface is similar to the VG-1, but it differs in that the design grading will be applied selectively. Some areas will be left lower than the valley grade and other areas will be left higher. We expect to identify small-scale deviations from the design grade in the field prior to or during construction, but a few larger deviations that have already been identified are presented as independent design elements below. Although a perennial connection between the stream and groundwater currently exists in SG-1, grading in the area is nonetheless needed to address the incised condition of the existing channel as well as to reduce the potential for future incision. Filling the incised channel in the SG-1 area is analogous to plugging a drain that draws down the local groundwater pool and removes backwater control on the subsurface flow of groundwater farther upstream. A small local plug with a steep downstream slope, however, would be likely to initiate headward migration of a new knick point that extends a new cycle of channel incision well upstream from SG-1. Thus, it is important for the plug to extend well downstream at a mild slope. In the current design, SG-1 covers 3.33 acres and requires 6,380 yd3 of cut and 6,570 yd3 of fill, for a net fill of 190 yd.

- *FT-1, FT-2 Fill Tapering*

FT-1 and FT-2 are regions in which the valley grade surfaces described above transition back to existing ground. In FT-1, the grading was developed by matching the valley grade surface at the downstream end of SG-1 and extending that surface downstream at a constant slope of 0.027 until the surface meets the channel bed elevation at station 720. We chose that station for blending the transition surface into the existing ground because the local channel gradient is relatively low at that point. In FT-2, the grading was developed by extending the valley grade elevation at the upstream end of VG-1 until it meets the channel bed. In both FT-1 and FT-2, the fill portions of the cut/fill surfaces are implemented whereas most surfaces above the valley grade elevation will be left at existing grade. Together, FT-1 and FT-2 cover 1.6 acres and require 1,170 yd3 of fill.

- *T-1, T-2, T-3, T-4, T-5 Valley Terraces*

These units are relatively high, barren areas within the valley that can be excavated to harvest additional fill material as needed to balance cut and fill throughout the site. T-1 and T-5 are high portions of the valley bottom adjacent to the FT-1 and FT-2 fill tapering areas at the upstream and downstream ends of the site. T-2, T-3, and T-4 are alluvial fan terraces along the valley margins in the central part of the site. T-2 is located where Frietas Creek enters the valley bottom and T-4 is at the mouth of an unnamed tributary where access road A-2 enters the valley. T-3 is a small alluvial fan located where a mining sluice discharges into the valley from the south. Final grade at these locations will likely be somewhat higher than the adjacent valley grade surface, but their final elevations will depend on the volume of additional fill material needed to complete nearby surfaces. Together, these areas cover 1.44 acres and contain up to about 7,800 yd3 of material that can be harvested if needed.

- *W-1, W-2 Wetland/Ponds*

These features are relatively large areas within SG-1 that will not be graded. W-1 is an existing high-flow channel that is 1 to 2 ft lower than the design valley grade surface. It will remain at its existing elevation and will likely function as the baseflow stream channel after Project completion. W-2 occupies a portion of the existing Indian Creek channel that includes a relatively deep pool. That area will remain at its existing elevation and will function as an off-channel pond and wetland after Project completion. Together, these features cover 0.37 acres.

- *W-3, W-4 Wetland/Ponds*

These features identify excavated depressions in the valley grade surface. W-3 will be excavated to about 1.5 ft below the adjacent valley grade to form a small wetland (0.13 acres) near the south valley margin at the center of the site. W-4 will be excavated to as much as 4 ft below the adjacent valley grade to create a small pond (0.12 acres) at the base of bedrock knob near the upstream end of the site. Cut associated with these features is included in the grading given for the VG-1.

- *A-1 Access Road*

The A-1 access road is an existing track on top of a lateral levee at the downstream end of the Project site. It terminates about 800 ft upstream from the Indian Creek Road Bridge. Upstream from the levee, A-1 occupies patches of open ground and largely avoids existing vegetation before reaching the upper two-thirds of the site, which is almost completely barren of vegetation.

Revegetation

In most cases beyond the existing channel bed, less than 3 ft of fill is required to reach design grade (Figure 4). Those fill or zero-cut areas where survival of the existing vegetation is expected span 11.45 acres, or 54% of the total work area (Figure 6). Additional patches of vegetation outside of the zero-cut area would be preserved. Although those patches are in areas where excavation is planned, the depth of the cut is such that it will be possible to leave desirable vegetation on low pedestals a foot or two above the general valley grade. An added benefit of this preservation strategy, which saves an additional 0.55 acres of existing vegetation, is that the patches of slightly higher ground and the plants they support also serve as ready-made floodplain roughness elements. Beyond the regions of zero-cut and patches of selectively preserved vegetation, almost all of the remaining work area (9.15 acres) consists of essentially barren upland. Canopy removal is anticipated in just one small area along the southern edge of the valley where excavation to widen the valley requires the removal of about a dozen medium-sized conifers. That area, outlined in red on Figure 6 covers 0.25 acres. We will utilize any trees removed from that area in large wood structures or other floodplain roughness elements. Revegetation efforts will be limited to excavated wetland features (W-3 and W-4), and areas of fill. Wetland areas will be planted with container stock of emergent herbaceous plants and willow cuttings or clumps will be used to provide roughness within the fill sections of VG-1, SG-1, FT-1 and FT-2. All other valley grade surfaces will be expected to exhibit natural recruitment of vegetation on surfaces, which will self-select for proper speciation as the new anastomosed channel and adjacent floodplains take shape and adjust after construction. Seeding and mulching with native grasses will occur from access points along A-1.

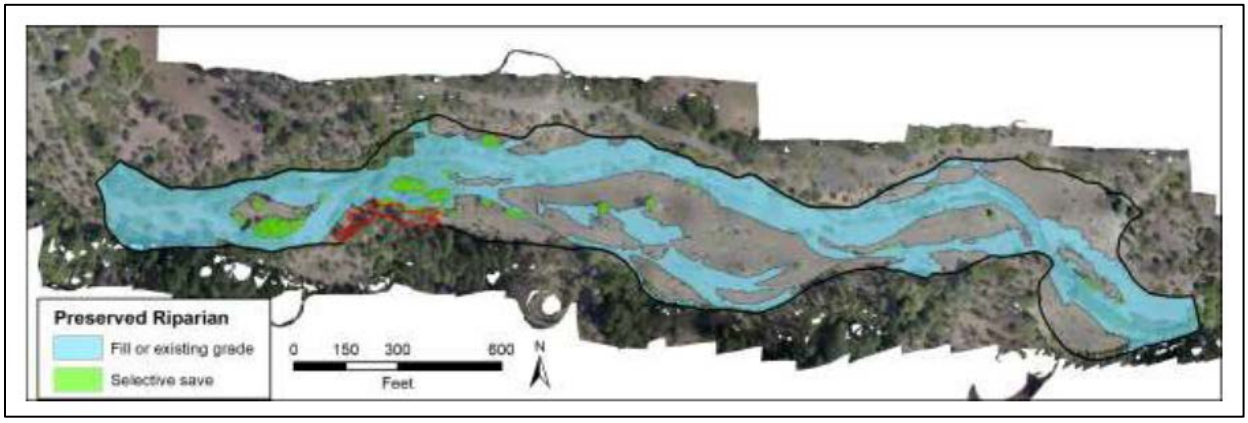

Figure 11 Existing vegetation will be preserved almost everywhere it exists at the Project site. The current design requires the removal of existing canopy only in the area outlined in red. The creek flows from right to left.

Environmental Protection Measures and Commitments

- As described in Section 1.2 Summary of Proposed Action, the Project includes environmental commitments and mitigation measures to avoid or minimize potential environmental impacts associated with the Project.

2.2 Alternative 2 – No Action Alternative

Under the No Action Alternative, the BLM would not issue necessary permits to the Yurok Tribe for the restoration of the proposed Indian Creek area. There would be no Project undertaken and the highly degraded channel would remain in its current state.

2.3 Alternatives Considered but not Analyzed in Detail

This Project would occur in an area of Indian Creek that has been identified as being impaired for over 40 years. There have been several failed attempts to restore this reach with the most recent occurring in 2011. During the initial planning phases of this Project several design alternatives were considered. One design alternative included the installation of a valley wide sub-surface layer of impermeable bentonite clay to act like a dam to help trap and store groundwater in the Project reach for a longer duration than currently exists. This alternative was not pursued in depth due to the necessity to add large volumes of non-native clay to the stream channel, the high cost associated with this type of Project, and the high level of uncertainty regarding this techniques ability to restore groundwater processes in the Project reach. Another alternative that was considered involved enhancing the existing stream channel with large wood and boulder additions. This would create channel diversity and encourage the stream to develop more flow paths and interact more aggressively with the adjacent floodplain area. This alternative was deemed insufficient in scale following the completion of the groundwater investigations in Spring 2019. Those investigations showed that the current channel was over efficient at routing water through the Project reach. Those investigations also indicated that an effective restoration strategy here needed the stream to interact across the entire valley floor with a multitude of channels rather than allow the stream to remain a single channel.

3.0 Affected Environment and Environmental Consequences

Chapter three describes the affected environment— the condition and trend of issue-related elements of the human environment that may be impacted by implementing one of the alternatives. This section also describes the environmental consequences to each issue-related resource from the analyzed alternatives. It describes past and ongoing actions that contribute to present conditions, and provides a baseline for analyzing direct, indirect, and cumulative effects.

Direct effects are those caused by the action and occurring at the same time and place. Indirect effects are those caused by the action but occurring later or in a different location. Cumulative effects result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. The cumulative effects analysis includes other BLM actions, other federal actions, and non-federal (including private) actions. Reasonably foreseeable future actions are those for which there are existing decisions, funding, formal proposals, or which are highly probable, based on known opportunities or trends.

Past, Present, and Reasonably Foreseeable Future Actions

The following information regarding past, present, and future relevant actions for cumulative effects applies to all alternatives, and for all resource impacts discussed below:

In addition to the history of mining impacts, current conditions at the Project site also reflect the effects of previous rehabilitation actions. There is a long history of unsuccessful attempts to improve instream habitat within this reach and the valley downstream of Indian Creek Road dating back to the 1970’s. In 1989 BLM fish biologists attempted to increase available habitat by stabilizing the channel in the lower

mile of the valley segment downstream of Indian Creek road using heavy equipment and bank stabilizing structures. Main and side channel pools were created to increase summer rearing habitat. Success was minimal due to high bedload movement throughout the zone during high winter flows (WA 1996). A 1996 restoration attempt by TCRCD and Watershed Associates (WA), in which the stream was confined to a relatively narrow portion of the valley bottom, involved excavation of a mildly sinuous channel within a relatively narrow inset floodplain. The design included at least three rock revetments, built to prevent lateral channel migration. Material from the floodplain excavation filled other portions of the valley. That Project was destroyed within weeks of its completion by the New Year's flood of 1997, but the additional flow confinement associated with the valley fill and floodplain excavation could be partially responsible for the incised condition currently observed at the site. A subsequent effort to do restoration in the Project reach in 2011, led by Phillip Williams & Associates, Ltd (PWA), and managed by the TCRCD yielded significant findings about the existing conditions of the Project reach and established four ground water wells or piezometers, which the Yurok design team has since reoccupied. However, the actual work done was limited to minor excavation and the construction of several willow baffles (PWA 2011), which experienced 100% mortality.

Activities recently occurring on site include geological investigations performed within the Project area in late March and early April of 2019. The investigation included excavation of nine test pits upstream from the Indian Creek Road Bridge and installation of piezometers to monitor groundwater levels throughout the upcoming dry season.

Current activities on site include ongoing monitoring of the test pits and scheduled restoration work. In the reasonably foreseeable future, there may be increased recreational use of the area as proposed restoration work restores the physical, chemical, and biological processes that maintain a healthy, diverse, and resilient floodplain ecosystem.

3.1 Hydrology

3.1.1 Affected Environment

The hydrology of Indian Creek, and the Trinity River Basin, is driven by a Mediterranean climate of hot, dry summers and cool, wet winters. Most precipitation occurs October through May as rain at lower elevations and snow at higher elevations (>4,000 feet). Extended high, snowmelt-driven flows occur April through June for most years, and the end of the snowmelt recessional limb leads to the start of summer baseflow typically in July or August. Baseflow continues from August through October. In November, flow increases with the onset of the wet season as rainfall recharges groundwater and snow is stored in the upper watershed. Baseflows begin to increase as a result, and continue to increase due to seasonal rain-driven floods from November through January. These rain-driven floods coincide with the spawning and migration timing of several anadromous fish species. Rainfall and snowmelt-driven flows typically commence in February and last until flows are dominated by snowmelt in April. The February to April elevated and variable flows that occur coincide with the early rearing period for juvenile salmonids. The U.S. Geological Survey (USGS) has operated and maintained a stream gage, USGS 11525670 INDIAN C NR DOUGLAS CITY CA, from October of 2004 until present. This gage is located at the lower end of Indian Creek near its confluence with the Trinity River. The general patterns described above are reflective by the average monthly flows over the period of record (Yurok Tribe, 2019, see Table 1). Looking at the probability of exceedance flows from the summer and winter time periods further describes the annual drought/flood cycle that is typical of watersheds in Mediterranean climates.

After initial site visits to the Project site during the latter half of 2018, the Yurok design team established several gaging stations in the Project reach, during the winter and spring of 2019, to monitor stage and

discharge at various points in the valley. One of these sites re-occupied a gaging station established by the North Coast Regional Water Quality Control Board (NCRWQCB) as part of a 2016 and 2017 effort to look at instream flows and water use in tributaries to the Trinity River (NCRWQCB 2019). These stations are still being monitored using continuous temperature and water level data loggers, Onset® HOBO® Water Level (30') Data Logger, and calibrated with instantaneous measurements of discharge using, Sontek® Flow Tracker® 2. Ground water wells established in 2011 by PWA were re-occupied during the summer of 2018 and the same continuous temperature and water level loggers described above were installed in the winter of 2019. All of the ground water wells established during the 2019 geological investigations (Figure 7.B) are also being monitored using the same continuous data loggers, installed in May of 2019. Subsurface flows were observed in September of 2019 while the USGS gage was reading 4.52 cfs. The upstream extent was near valley station 2300 and the downstream extent was near valley station 1800 on 9/6/2019. This information was used to generate expected subsurface flows for the historic record (Yurok Tribe, 2019, see Table 1).

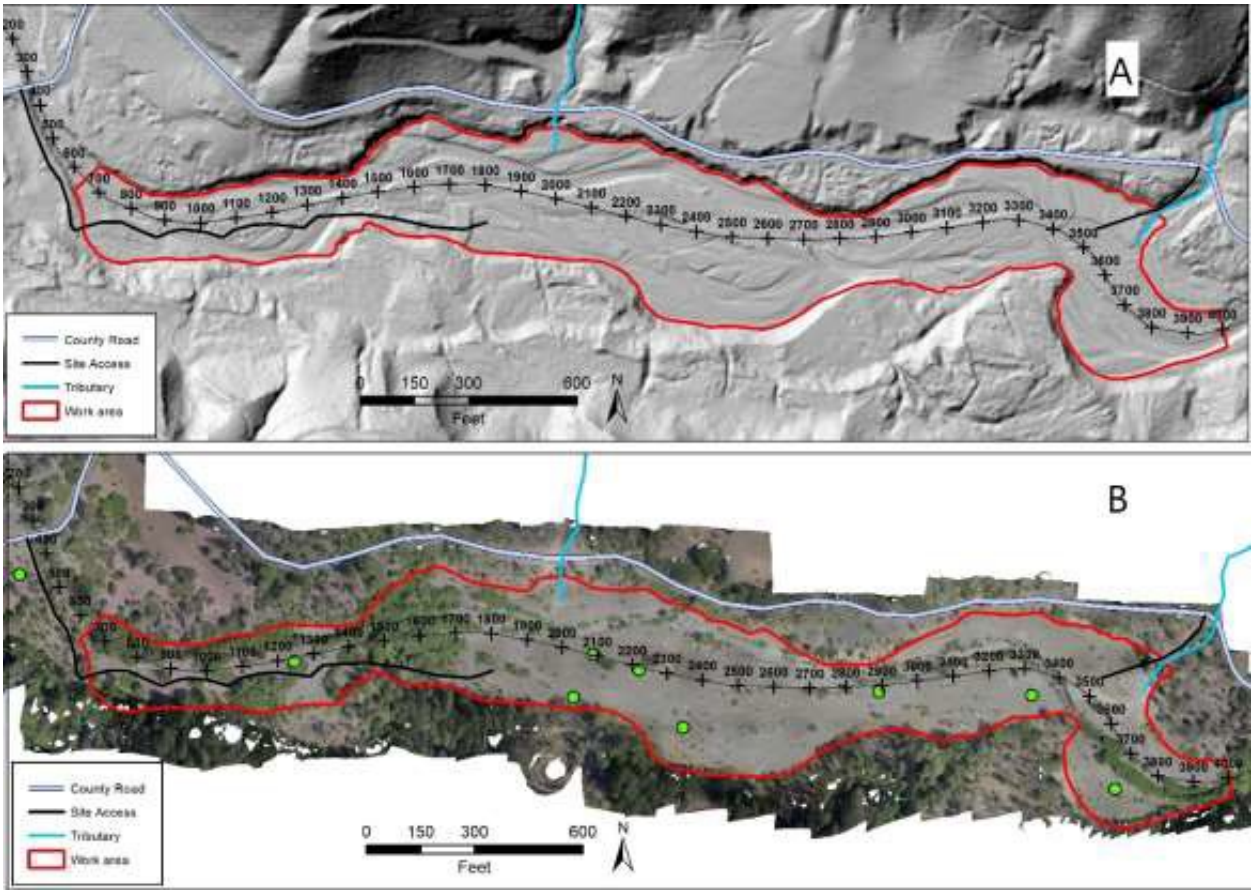

Figure 12 Valley stationing, access routes, and the extents of the valley bottom work area on maps showing A) hillshade relief; and B) aerial photography. Green dots on Figure 7.B indicate the locations of test pits. Indian Creek flows from right to left in the images

The Indian Creek watershed drains about 34 square miles on the northeast side of Bully Choop Mountain, which rises to 6977 ft on the divide between Trinity and Shasta Counties in northern California. From the divide, the creek flows about 12.5 miles toward the northwest where it discharges into the Trinity River at Douglas City, CA. Most of the watershed is underlain by Abrams mica schist and Salmon hornblende schist of the Central Metamorphic Terrain (Fraticelli et al. 1987) (Figure 8). A small headwater portion of the watershed drains the Shasta Bally batholith, which weathers to produce

copious amounts of sandy sediment referred to as decomposed granite. The Indian Creek Project site is located in the middle of the watershed, 6.25 miles upstream from the confluence with the Trinity River. The area in which work is planned occupies a relatively wide, flat valley bounded by a bedrock escarpment on the north and to the south by terraces composed of hydraulic mining outwash and occasional bedrock knobs (Figure 7.A). The valley slope through the work area is fairly constant with an average value of 0.0214 and a standard deviation of 0.0062. Hydraulic mining scars and sluices cut into the bedrock farther upslope on both sides of the valley attest to severe disturbance of the site by historical mining activities. Vast quantities of sediment were washed off the surrounding hillsides and appear to have buried the pre-settlement valley. The creek later incised into the valley fill, leaving outwash terrace scarps as much as 35 ft high in places.

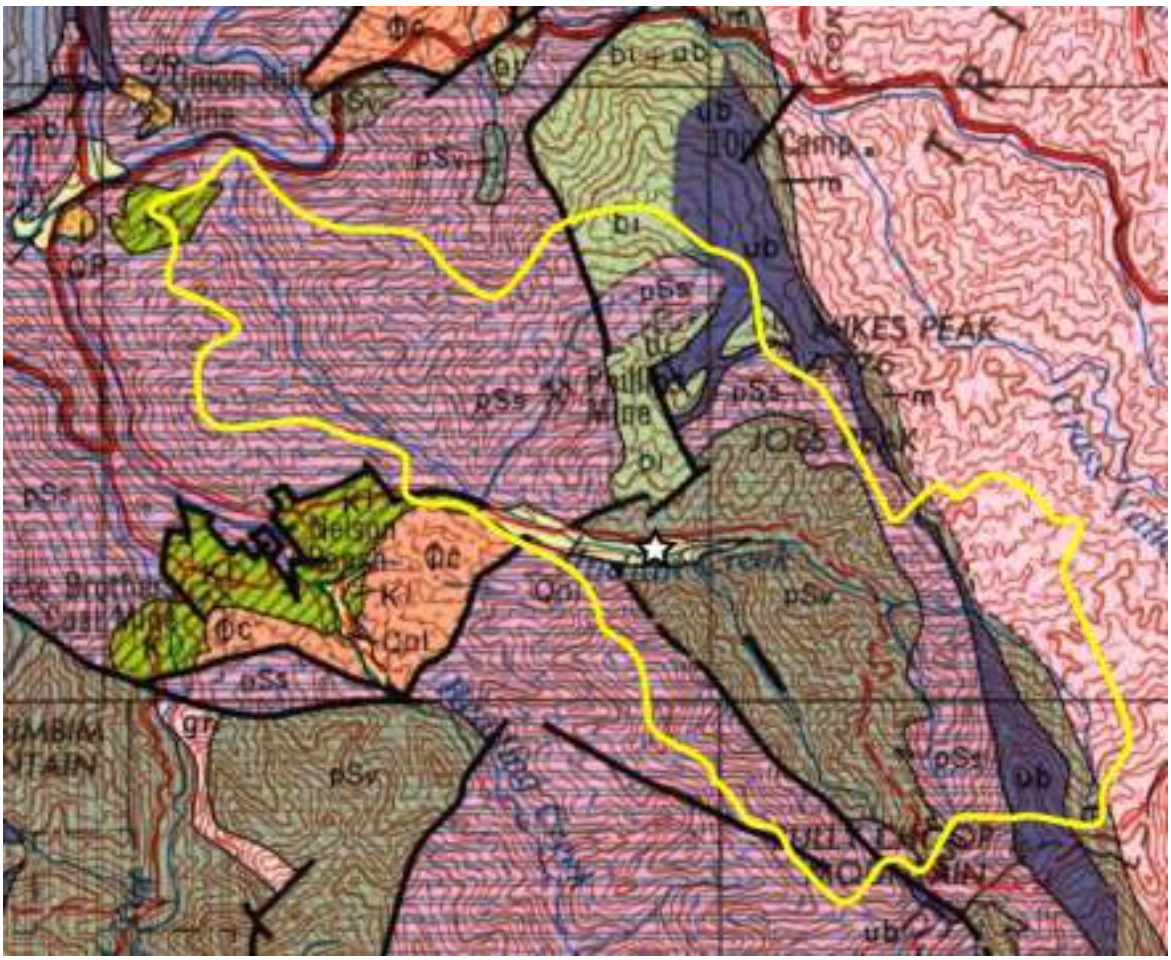

Figure 13 Geology of the Indian Creek watershed. The white star indicates the Project location and the watershed boundary is shown in yellow. The confluence with the Trinity River is near the upper left corner of the figure. pSs = Abrams mica schist; pSv = Salmon hornblende schist; Shasta Bally batholith is the lighter pink area on the far right side of the map.

Hydrology/Hydrologic Features: The hydrology of the site is influenced almost exclusively by the mainstem Trinity River and associated operation of the Trinity River Division of the Central Valley Project (i.e., Lewiston Dam and Trinity Dam). To a lesser extent, development and runoff from adjacent roads

and hillsides following precipitation also affect the site. Weaver Creek, an important tributary to the Trinity River, enters the river from the north. Indian Creek enters the river from the south, about a mile upstream of Weaver Creek. Both of these tributaries contribute substantial quantities of water, sediment, and organic material to the Trinity River.

The upstream limit of construction activities is at approximately station 4000 where a narrow canyon transitions to the broader valley. The valley makes a sharp turn to the left between a bedrock knob to the south and an alluvial fan formed by an unnamed ephemeral tributary to the north (Figure 7.A and Figure 7.B). Between the bend to the left and station 1700 the valley reaches a maximum width of about 420 ft and is almost entirely devoid of vegetation. Frietas Creek, an intermittent tributary, enters this portion of the valley from the north. Indian Creek itself goes dry in this part of the Project area during the summer and fall of many years.

LiDAR data exist for the Project reach from a 2014 effort led by Trinity County Resource Conservation District (Watershed Sciences 2015). The Yurok design team has also flown orthophotography using drone base cameras and used structure from motion to create a digital terrain map from the summer and fall of 2018. This will allow for the use of 2-D hydrodynamic modeling to assess later stages of Project design. Longitudinal profiles of channel bed elevations and the valley grade line are plotted in Figure 9. The bed profile was created by projecting elevations extracted from LiDAR topography onto the valley station line. The significance of the valley grade line is discussed more thoroughly in later sections of this report, and details regarding its development are presented in Appendix B. For the time being it suffices to explain that the valley grade line is a statistically smoothed representation of the mean elevation across the valley floor as a function of longitudinal position. It maintains a nearly constant slope through the Project site, as demonstrated by application of ordinary least squares regression, which yields a coefficient of determination of 0.999. The streambed elevations, however, display a more stepped profile. A particularly large step occurs at station 2330, where the bed elevation drops more than 4 ft over a horizontal distance of 20 ft. This distinct knick point in the bed elevation profile likely originated some distance downstream and propagated upstream to its present position. The time scale over which the knick point propagation may have occurred is uncertain.

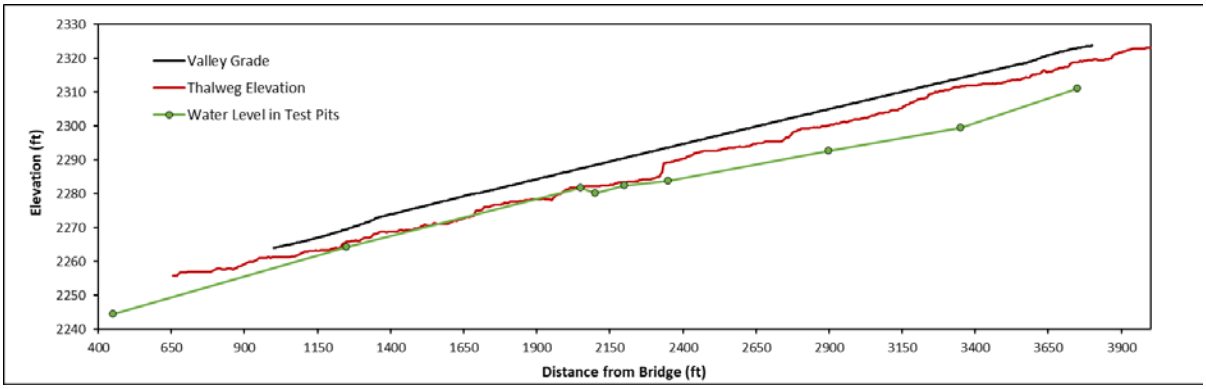

Figure 14 Longitudinal profiles of the channel bed elevation, the valley grade line, and water levels observed in test pits in spring 2019.

In addition to water surface elevations in the test pits, water surface elevations in the stream channel adjacent to each pit were collected on the days the pits were open. A comparison between the two water surface profiles provides a snapshot of groundwater to surface water dynamics at the site during a wet period with abundant rainfall. Despite the wet conditions, groundwater levels were as much as 10 ft below the adjacent creek levels in the upstream half of the Project site.

3.1.2 Environmental Impacts

No Action Alternative

The impact of the no-action alternative would be that streamflow would continue to go subsurface in the central part of the site for two months or more in most years. The reach would remain a fish passage barrier during the late summer in nearly all years and block passage well into the spring and fall during drought years. The valley bottom in the central part of the site would remain essentially barren of vegetation and offer little ecological benefit to either the aquatic or terrestrial ecosystems.

Proposed Action

Construction of the Project could result in increased turbidity in Indian Creek during construction and during the first flush of the rainy season or following periods of peak flows. An increase in turbidity during construction is anticipated to be unlikely because construction is deliberately planned to begin during the driest time of year when historical data indicates that the creek would most likely be dry.

During the first flush of the rainy season, turbidity is expected to be higher than during subsequent precipitation events, although nearly the entire surface area of the Project will be pervious area where effects of the first flush may not be as significant as following periods of peak flows (Maestre and Pitt, 2005).

Long-term, the proposed Project would reduce the duration of time when the stream goes subsurface in dry years and increase the proportion of time that the stream maintains surface flow throughout the summer. This improvement in surface connectivity would extend over as much as 800 feet of stream. The Project would raise the elevation of the groundwater table closer to the stream bed elevation, thereby encouraging the establishment of riparian forest on up to 10 acres of valley bottom that is currently barren. Stream processes would further enhance the riparian zone through the deposition of fine organic-rich sediments on the floodplain. Improved riparian conditions expected from this Project will benefit the aquatic ecosystem by shading the stream and supplying it with wood, leaf litter, macroinvertebrates, and other nutrients. Such resource exchanges between the stream and the riparian zone are among the core objectives of the stage-0 restoration approach planned for the site. A healthy riparian zone would also benefit the terrestrial ecosystem by providing shade, browse, nesting habitats, and cover for local wildlife.

Cumulative Impacts

According to Council of Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA, a cumulative impact is defined as *the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time* (40 CFR 1508.7). Each issue generally has its own geographic scope and temporal scopes, but these can be concurrent among some issues. The geographic scope is based on the resource's natural boundaries. The temporal scope is based on the duration of the effects of the alternative, not the timeframe of the actions taken within the alternative.

The proposed Project is unlikely to produce any cumulative impacts to hydrology at the watershed scale. The proposed Project could result in slight decreases in the magnitudes of flood peaks downstream from the site, but any such changes would likely be too small to detect and would not significantly affect water surface elevations.

Mitigation and Residual Impacts

No residual hydrologic impacts are expected as a result of this Project. The following environmental commitments will be implemented to minimize a temporary increase in turbidity in Indian Creek.

- Areas where ground disturbance will occur will be identified in advance of construction and limited to only those areas that have been approved by BLM.
- All vehicular construction traffic will be confined to the designated access routes and staging areas.
- Disturbance will be limited to the minimum necessary to complete all restoration activities.
- All supervisory construction personnel will be informed of environmental concerns, permit conditions, and final Project specifications.

Mitigation measures related to impacts to hydrology (and water quality) are also addressed in Appendix A, CEQA Environmental Impacts Checklist, and included as Mitigation Measures 3.1a, 4.1a, 4.2a, 4.2b, 4.2c, 7.1a, 7.1b, 7.1c, 9.1a, 9.1b.

3.2 Vegetation

3.2.1 Affected Environment

BLM specialists conducted a pedestrian survey of the site in 2019 and observed that most of the Indian Creek Project is currently devoid of any vegetation. Patches of continuous riparian vegetation are limited to small patches in SG-1 and FT-1 and narrow strips along some portions of the existing stream channel throughout the rest of the Project area. The total Project area is 29.25 acres. Using aerial imagery, five patches of continuous riparian vegetation were outlined, totaling approximately 3.1 acres, or 14% of the Project area. There is one larger patch of about 1.6 acres and four smaller patches. In addition to these five patches of riparian vegetation, understory riparian plants are found along some parts of the stream margin, but this area has limited functionality as riparian habitat. Individual riparian trees and shrubs occur throughout the Project area but also do not serve as riparian habitat. Riparian vegetation in the Project area consists riparian dependent species such as Fremont cottonwood, black cottonwood, white alder, willow species, big-leaf maple, mugwort, and clematis. There is also Himilayan blackberry, an invasive riparian species, present in the riparian vegetation patches in the Project area. In the one large patch of riparian vegetation, the health and vigor of the plants present is generally good and indicative of a strong hydrologic connection and healthy riparian function. However, outside of this 1.6-acre patch, the riparian species present in the Project site seem less healthy and more exposed to upland conditions. Generally, the patches of riparian vegetation exist where the hydrology in the Project area supports water close to the surface such as near a small spring alongside the stream channel, and in the SG-1 area where perennial surface water reappears at approximately station 1700 mostly attributed to shallow bedrock beneath the alluvium which forces the water towards the surface.

The rest of the Project area is essentially barren of any vegetation, and accounts for approximately 18.4 acres (86%) of the Project area. Some riparian and upland shrubs and trees occur sparsely as individuals throughout but have limited functionality as riparian or upland forest habitat. Upland vegetation that occurs sparsely in the Project area includes live oak, deerbrush, buckbrush, incense cedar, madrone, Douglas-fir, yerba santa, and various non-native invasive grasses and forbs.

Upstream of the Project area more intact patches of riparian vegetation exist and could serve as important seed sources for riparian vegetation recruitment in the Project area.

Appendix D includes a list of Special Status Species that may within lands administered by the BLM's Redding Field Office.

3.2.2 Environmental Impacts

No Action Alternative

Under the no action alternative, there would be no change to the current abundance, connectivity, or vigor of riparian vegetation in the Project area. There would continue to be approximately 3.1 acres of riparian vegetation community that functions as riparian habitat for plant and animal species. Most of the Project area would continue to be dominated by a barren landscape with sparse upland and riparian trees and shrubs and a few small patches of disconnected riparian habitat.

Proposed Action

Under the Proposed Action two major impacts to the abundance, connectivity, and vigor of the riparian vegetation would be anticipated: (1) impacts to the existing vegetation due to construction activities and (2) longer term impacts due to changes in hydrology throughout the Project area.

Impacts to the existing riparian vegetation due to construction activities would be caused by the cut and fill of the Project site to create the continuous valley grade surface through the Project site that is the goal of the stage-0 concept. In cut areas, the existing elevation will be brought down to meet the target valley grade. This will mean in some areas the existing vegetation would have to be removed to bring the surface elevation down. However, the Proposed Action would leave most of the existing individual riparian trees and shrubs on pedestals at the existing elevation as well as most of two of the contiguous patches identified in the Affected Environment section (3.2.1) in the downstream end of the Project area. It is estimated that approximately 0.55 acres of existing vegetation will be preserved by this pedestaling. These pedestals will function as “roughness” a central component of the stage-0 concepts. The existing understory riparian species would not be able to survive this reduction in elevation.

In fill areas the existing surface elevation will have to be brought up by adding material in order to meet the target valley grade. Most of these fill areas will have a fill depth under 3 ft. It is estimated that 11.45 acres, or 54% of the Project area, falls into this category. It is also anticipated that most riparian shrubs and trees can survive being buried to a depth of up to 3 feet; woody riparian vegetation has generally evolved to deal with large influxes of sediment on periodic bases due to flood cycles. Three of the contiguous patches of existing riparian vegetation fall into this category, for a total of approximately 2.4 acres. The existing understory riparian species would not survive this sort of burying.

Considering the anticipated outcomes described above for both the cut and fill portions of the Project, the existing 3.1 acres of riparian habitat patches would likely survive the grading impacts but may change in composition and vigor in the short term. The understory vegetation in these patches would be removed in both the cut and fill areas and would need to re-establish after completion of construction. The structure and habitat provided by the woody species would mostly survive the grading but may have reduced vigor due to burying or loss of root structure. The habitat function of these riparian patches might be reduced in the short term after the grading but would not be completely removed.

The areas along the stream margin which support understory riparian vegetation and the individual riparian shrubs and trees throughout the barren areas will be impacted by the grading. In some cases, the pedestalling and burying will enable the woody vegetation to survive and will be important for providing roughness through the Project area. However, most of the area along the stream margin and some of the individuals will not survive the burying and excavating. Though this might cause impacts to vegetation, it would not actually impact the abundance, connectivity, or vigor of riparian habitat because these areas don’t currently support functional habitat.

In the longer term the abundance, connectivity, and vigor of the riparian vegetation is anticipated to greatly increase across the Project area because of the changes in hydrology that should occur due to the Project. While the exact estimates of riparian habitat created by this Project in the medium to long term are hard to know for sure, this Project will create a situation where almost the entirety of the 29.25-acre Project area, 21.5 acres, could become riparian habitat. This type of stage-0 restoration should provide an opportunity for the creek to hydrologically connect with large portions of the valley,

creating the opportunity for woody and understory riparian vegetation to flourish and create functioning riparian habitat. Compared to the no action alternative, this Project would greatly increase the amount of available riparian habitat and create habitat that is spatially connected across the Project area. This new hydrology should support a healthy riparian system compared to the sparse, individual riparian shrubs and trees that currently cover most of the Project area and that would persist under the no action alternative.

No known rare plant populations will be impacted by this project. The project area was analyzed for the potential to contain previously unknown rare plant populations during a pedestrian survey conducted by BLM in 2019. Analysis conducted for the project area concluded there is an extremely low likelihood of rare plants occurring in the project area and being negatively affected by the project. In general, this project is expected to create much more habitat for native plant species rather than the existing barren landscape. Overall, this will benefit native vegetation. If any rare plants are found at any point however, construction will be postponed immediately until modifications have been made.

Because this site is the focus of a riparian habitat and stream improvement Project where the riparian work is riparian planting, obtaining material for placing in-stream, and road or trail decommissioning; and where the stream improvement work is the placement large wood, channel and floodplain reconstruction, or removal of channel diversions, the BLM has made the determination that this Project meets Exemption C of the Pechman Exemptions (October 11, 2006 Order), and therefore may still proceed even if the District Court sets aside or otherwise enjoins use of the 2007 Survey and Manage ROD since the Pechman exemptions would remain valid in such case. Refer to Appendix E, *Compliance with Standards and Guidelines for Survey & Manage Species*, for details.

Cumulative Effects

The Indian Creek watershed encompasses approximately 21,507 acres and is a tributary to the Trinity River watershed. Indian Creek runs for approximately 14 miles until its confluence with the Trinity River. It has areas that were highly modified by historic mining and agricultural development, especially where the slopes are shallower and the riparian areas are more easily accessible. The upper watershed is generally characterized by steep hillsides and narrow valleys. In the middle of the watershed, where the Project area is located, the Indian Creek valley opens up into a larger alluvial landscape that once likely served as functional riparian habitat. However, as in the Project site, much of this area does not currently support riparian vegetation and habitat function. The habitat that does exist is currently found in disconnected patches. The lower watershed has a mix of open valleys and more confined, narrower valleys. In the upper and lower watershed, where the valleys are narrower, riparian vegetation often persists due to inaccessibility for habitat modifying uses such as historic mining and agriculture.

The short term impacts due to construction activities on the 3.1 acres of existing riparian vegetation habitat would represent an extremely small percentage of the potential riparian habitat along Indian Creek. These impacts would only be anticipated for a short time, as described in the effects analysis above. Past actions in the watershed such as historic mining and agricultural developments were at a much greater scale to this impact and had a much longer temporal effect across many acres of riparian habitat. Other present or future effects to riparian vegetation and habitat are not anticipated in the watershed as this sort of impact is regulated heavily now. Any cumulative short-term impacts are not major because of the small number of acres that will be impacted and the overshadowing effect of historic mining and agriculture in the watershed.

The medium to long term impacts of the restoration of up to 21.5 acres of riparian habitat in the Project area will serve to connect healthy riparian vegetation and habitat to existing, larger patches upstream of the Project area. While 21.5 acres is still relatively small compared to the scale of the watershed, this

Project is located in an important area the can drastically increase the acres of connected functional riparian habitat in the watershed. No other past, present, or future actions are known that would cumulatively impact the abundance, connectivity, and vigor of the restoration of riparian vegetation in the watershed.

Mitigation and Residual Impacts

Residual impacts of the Proposed Action would be a long-term improvement in the site's capacity to foster new vegetative growth of upland and, to a greater extent, riparian species. Mitigation proposed for the site includes a revegetation plan consisting of two elements to create surface roughness. The first revegetation design element includes the high densities of existing and salvaged willows and cottonwoods that will be buried within the existing channel of Indian Creek (Figure 15). Most of the existing willows and cottonwoods are located along the channel. This vegetation will be left in place but will be 'filled' up to the finished grade. The willows and cottonwoods left in place will therefore be buried with up to four feet of material. We expect some survival after burial depending on final hydrologic conditions. Surviving stems will root within the new sediments further strengthening the new substrate. Additional cottonwoods and willows and other vegetation salvaged from 'cut' areas will be placed in the old channel during grading to increase stem densities. Stems that do not survive will still provide significant surface roughness. The goal of this approach is to create substantial roughness in the old channel to discourage the river from re-occupying the channel post-construction.

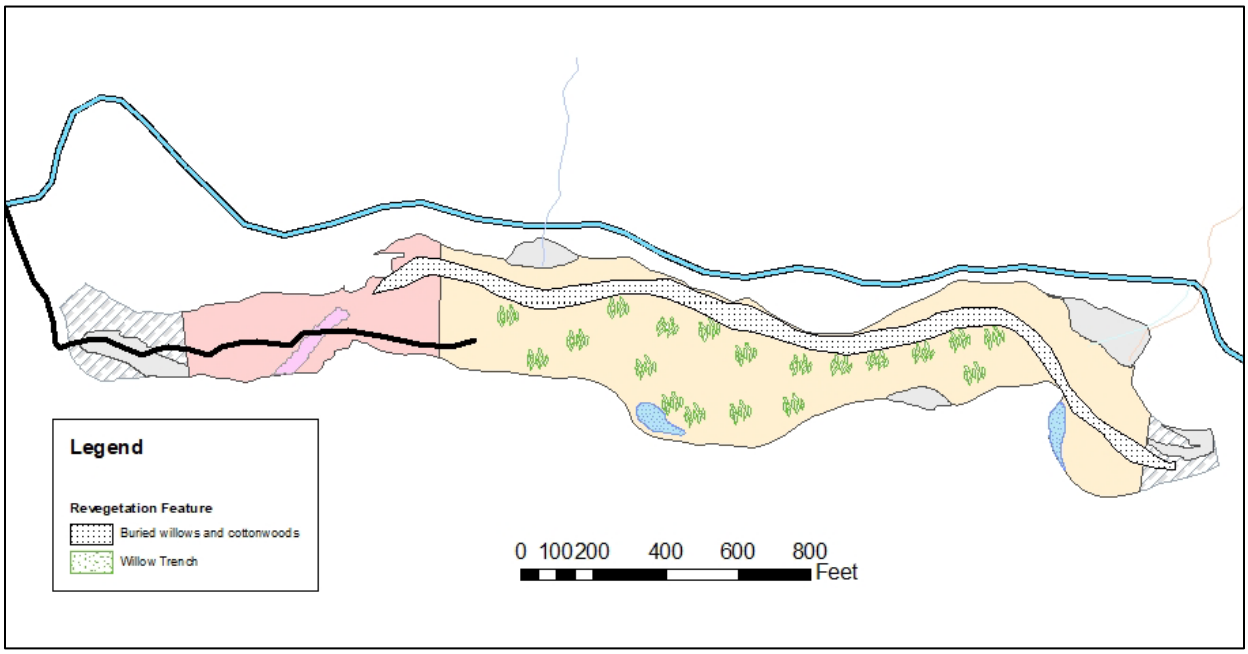

Figure 15 Revegetation design elements. Buried willow and cottonwoods will provide substantial roughness to ensure the channel is not re-occupied after construction. Willow trenches will provide further floodplain roughness in the newly graded surfaces.

The second revegetation design element includes establishing clusters of willow trenches across the floodplain, primarily in section VG-1. The trenches will be created post-construction in November to increase survival rates of the live cuttings. These features will consist of multiple trenches, each approximately 15-25 ft long and oriented perpendicular to the flow of Indian Creek and planted with 4-5 ft long willow and/or cottonwood stakes (see example, Figure 16). The density of stakes will be 1 ft on center resulting in 15-25 stakes per trench. Trenches will be clustered together to form forested islands

within the floodplain. The target number of trenches is 132 requiring between 1,980-2,640 cuttings. The final number of trenches will depend on the number of stakes that can be harvested on site.

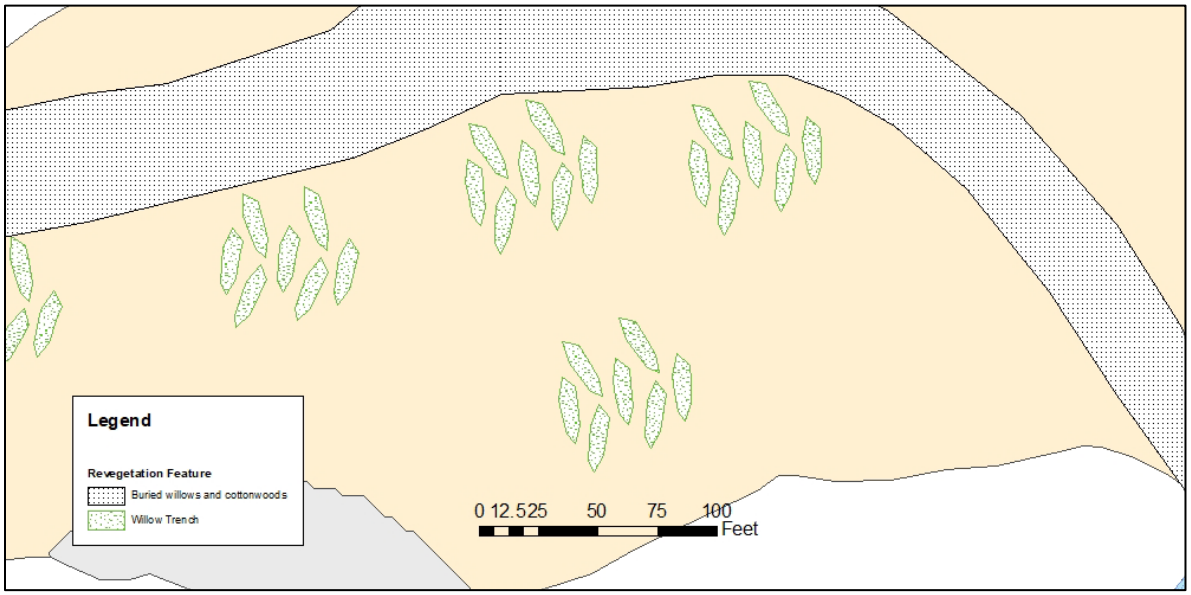

Figure 16 Willow and cottonwood trench detail. Clusters of trenches will form forested islands within the floodplain and encourage flow sinuosity and complexity.

3.3 Geomorphology and Soils

3.3.1 Affected Environment

As discussed in Section 3.1, this area has an extensive history of mining impacts and previous rehabilitation efforts.

Geological investigations were performed within the Project area in late March and early April of 2019. March of 2019 was a wet month that included several significant storm events. Flow in Indian Creek at the time was relatively high (around 100 cfs) and lateral inflow from ephemeral hillslope sources was observed. The investigation included excavation of nine test pits upstream from the Indian Creek Road Bridge and installation of piezometers to monitor groundwater levels throughout the upcoming dry season. The pits revealed an upper layer of poorly sorted sand, gravel, and cobble. This upper layer was typically greyish in color and ranged from 2 to 5 ft in thickness, with a fabric ranging from weakly bedded with signs of imbrication to almost entirely unstructured. Most pits showed a rather sharp break between the upper greyish layer and a deeper layer of similar material that differed by its inclusion of a significant fraction of boulder-sized material and by its reddish color. Despite a high sand content, the deposits were fully clast supported. We interpreted the upper grey layer as valley alluvium that had been reworked by relatively recent flood events and the lower reddish layer as older alluvium that had accumulated iron oxide under oxidizing conditions. No organic soil horizons were observed in any of the pits.

3.3.2 Environmental Impacts

No Action Alternative

The impact of the no-action alternative would be that the stream channel would remain incised into the coarse alluvium that constitutes the valley floor. The prominent knick point near the center of the site,

as well as a few smaller knick points identified elsewhere, would likely continue to propagate upstream, increasing the depth and extent of channel incision. As the incised condition of the channel prevents streamflow from accessing the valley bottom during all but the largest floods, there is very little opportunity for flows to deposit fine sediments that could support the development of soil or for vegetation that would contribute organic materials to become established. The current absence of soil over most of the Project site would remain unchanged.

Proposed Action

The proposed Project will raise the stream bed and lower the valley floor so as to bring them to roughly the same elevation. The existing incised channel will be replaced by a complex network of shallow channels that are expected to provide high quality rearing habitat within a few years following implementation of the Project. Due to the excavation and fill required to regrade the valley, the first flushes of flows across the constructed surfaces can be expected to generate elevated turbidity levels downstream. This initial spike in turbidity is expected to be brief and moderate in magnitude due to the relatively low flow velocities associated with flows that spread out over a wide floodplain area and due to the mitigation measures described below. In the longer term, however, the constructed floodplains will become sediment sinks as small to moderate floods spread over the valley bottom and deposit fine sediments that contribute to riparian recruitment and floodplain soil development. Elimination of the incised channel, which functions as an efficient groundwater drain, will also promote the retention of groundwater and raise groundwater levels in the valley alluvium.

Cumulative Effects

Long-term fine sediment deposition on floodplains within the Project reach will reduce the fine sediment supply to downstream reaches. This reduction is unlikely to have an effect on the portion of Indian Creek between the Project site and the Trinity River because its valley is steep and narrow enough to transport whatever quantity of fine sediment is delivered from upstream. Sequestering fine sediments in the Project reach, however, may reduce the quantity of fine sediments delivered to the Trinity River.

Mitigation and Residual Impacts

The residual impacts to geomorphology and soils resulting from this Project are expected to be beneficial as discussed in the preceding Cumulative Effects section. Mitigation measures related to the short-term impact of a temporary increase in turbidity in Indian Creek are further discussed in Appendix A, CEQA Environmental Impacts Checklist, and addressed as Mitigation Measures 3.1a, 7.1a, 7.1b, and 7.1c.

3.4 Wildlife

3.4.1 Affected Environment

Fish Resources

Indian Creek is known to support four anadromous and six resident fish species. The anadromous fish species utilizing the Indian Creek Watershed include fall Chinook Salmon (*Oncorhynchus tshawyscha*), coho salmon (*Oncorhynchus kisutch*), Steelhead (*Oncorhynchus mykiss*), and Pacific Lamprey (*Entosphenus tridentatus*). Summer-run steelhead and spring-run Chinook salmon are not believed to occur in Indian Creek due to a lack of large pools and cold water. The resident fish species known to utilize Indian Creek are brown trout (*Salmo Trutta*), rainbow trout (*Oncorhynchus mykiss*), speckled dace (*Rhincthys osculus*), three-spined stickleback (*Gasterosteus aculeatus*), Klamath smallscale sucker

(*Catostomus rimiculus*), and sculpin (*Cottus* sp.). There are several barriers to fish movement and migration within the Indian Creek watershed, which limit the temporal and spatial variability of fish movement. The most downstream barrier has been documented in the Project reach and extending downstream for approximately 1.2 miles to the Spring Gulch confluence (Parkinson et al., 1991). This is considered a temporal barrier as subsurface flows that occur in the Project reach between July and the onset of fall rains block fish movement during this time. The next known barrier to fish migration is located approximately 1.1 miles upstream of the Project area in South Fork Indian Creek. This barrier is listed in the California Department of Fish and Wildlife (CDFW) Passage Assessment Database (PAD) as a 9-foot waterfall. The South Fork Indian Creek barrier is considered a total barrier to all fish species and only resident fish are believed to occur upstream of here. The last known barrier to fish migration is located on the mainstem of Indian Creek approximately 2.25 miles upstream of the Project reach. This barrier is listed as a set of falls in a bedrock chute. This mainstem Indian Creek barrier is considered a total barrier to all fish species and only resident fish are believed to occur upstream of this point.

The Yurok Tribe conducted direct observation fish surveys within the Project reach on the following dates; 6/21/2019, 7/26/2019, and 9/6/2019. The purpose of these surveys was to provide a qualitative assessment of fish species that utilize the Project reach during the summer months. Numerous juvenile steelhead were observed within the Project reach during each of the surveys with the highest abundance occurring in the upstream and downstream portions of Project (FT-2, SG-1, and FT-1). A single juvenile brown trout was observed in the downstream portion of the Project (FT-1) during the 6/21/19 survey and two speckled dace were observed on 9/6/19 at the upstream portion of the Project (FT-2). No other fish species were observed during these surveys.

Fall Chinook Salmon

Chinook salmon found in Indian Creek are part of the Upper Klamath/Trinity River (UKTR) Chinook Salmon Evolutionarily Significant Unit (ESU). Currently there is no distinction made between fall-run Chinook Salmon and spring-run Chinook Salmon within this ESU. However, this ESU is currently undergoing a status review to determine if listing of spring-run Chinook Salmon is warranted under the Endangered Species Act (ESA). Adult UKTR fall Chinook Salmon enter the Klamath system, from the ocean, in August to begin their upstream migration to the spawning grounds. Fall Chinook Salmon spawning typically occurs between October and December. Adult fall Chinook Salmon have been documented utilizing the mainstem of Indian Creek for spawning. CDFW (formerly CDFG) tributary spawning surveys conducted in the lower 1.5-mile reach of lower Indian Creek between 1990 and 1995 documented a total of seven live Chinook Salmon during this time, with five of those fish occurring in 1995. (CDFG 1991-1995). The upper extent of Chinook Salmon spawning for Indian Creek is thought to be near the Spring Gulch confluence (Parkinson et al., 1991) and approximately 1.2 miles downstream of the Project; personnel observed adult fall Chinook Salmon attempting to migrate through the Project reach with “great difficulty” during this assessment of fish habitat in Indian Creek.

Coho Salmon

Coho Salmon found in Indian Creek are part of the Southern Oregon Northern California Coast (SONCC) ESU. This ESU was listed as threatened under the ESA in 1997. A subsequent Critical Habitat (CH) designation was added in 1999 for this species. Adult SONCC coho salmon enter the Klamath system from the ocean in September to begin their upstream migration to the spawning grounds. SONCC coho salmon spawning typically occurs between October and December. CDFW tributary spawning surveys conducted in the lower 1.5-mile reach of lower Indian Creek between 1990 and 1995 documented a total of two live coho salmon during this time (CDFG 1991-1995). As mentioned above, direct observation fish surveys were conducted during summer 2019 within the Project reach. No coho salmon were observed during these surveys. This indicates that the Project area is not utilized by juvenile coho

salmon for over-summer rearing. The upper extent of coho salmon spawning for Indian Creek is likely near the Spring Gulch confluence, which is approximately 1.2 miles downstream of the Project.

Steelhead

Steelhead found in Indian Creek are part of the Klamath Mountain Province (KMP) Distinct Population Segment (DPS). This DPS is currently not listed under the ESA. This DPS comprises fall-, winter-, spring-, and summer-run steelhead. Because of these overlapping runs of steelhead, discussion of steelhead stocks is complex. All runs of steelhead into the Trinity River will be grouped together to simplify discussion of Indian Creek utilization by steelhead. Adult steelhead enter Indian Creek during high winter flows and commence spawning from January thru March. BLM fish surveys and CDFW reports indicate juvenile steelhead presence throughout the watershed. However, the upper limits of steelhead vs. resident trout habitat in the headwaters is unclear. BLM fish surveys from 1978-81 document that steelhead/resident trout are present in the major headwater tributaries that include the South Fork, Cannonball Creek, and Corral Creek. The only documentation of steelhead presence in any of the downstream tributaries is a BLM fish survey of Spring Gulch in 1981. However, steelhead are considered the most numerous and prevalent anadromous fish in the Indian Creek watershed.

Pacific Lamprey

The spawning run of anadromous adult lamprey occurs from May thru September. The adults will remain in the system until spawning commences the following spring. There is little current data on adult lamprey or juvenile (ammocoetes) distribution and abundance in Indian Creek.

Resident Fish

Resident salmonids present in Indian Creek are Brown Trout and Rainbow Trout. BLM fish spawning survey field notes from 1979-1980 report adult Brown Trout spawning in lower Indian Creek from the confluence with Trinity River to Goods Gulch. Resident Rainbow Trout are present throughout the watershed but are referred to as Rainbow Trout (vs. steelhead) only in the headwater tributaries. Rainbow Trout occurrence above presumed natural barriers in the South Fork and in the high gradient reach of the North Fork, including Cannonball and Corral Creeks, are classified as resident and non-anadromous. Non-salmonid species present in the watershed include Speckled Dace, Three Spine Stickleback, Klamath Small Scale Sucker, and sculpin. Distribution and abundance of the resident fish of Indian Creek is relatively unknown, however they are widespread throughout the watershed.

Aquatic Habitat

The 29.25-acre Indian Creek Project ESL occurs in a broad valley reach of Indian Creek, a perennial stream, near the midpoint of the watershed where the stream transitions from a steep-sloped transport channel to a gradually sloped valley reach. The proposed Project includes four separate primary design features, FT-2, VG-1, SG-1, FT-2, that encompass a 3,300 ft. long channel segment of Indian Creek and nine smaller design features, T-1, T-2, T-3, T-4, T-5, W-1, W-2, W-3, and W-4, that overlay the primary Project features. These design features are described in detail in section 2.1 of this Project EA/IS and shown in Figure 4. The VG-1 feature represents the most sizeable portion of the Project, encompassing 14.45 acres and 1,900 ft. of stream channel, and is also the focus area of the proposed Project. The aquatic habitat conditions of Indian Creek in VG-1 have been severely degraded due to historic gold mining activities. These gold mining activities deposited vast quantities of coarse sediment from the surrounding hillslopes into the valley. A large portion of these coarse sediment deposits remain intact in VG-1 while the coarse sediments in FT-2, SG-1, and FT-1 have largely been transported downstream due to hydraulic conditions in these areas.

The coarse sediment deposited in the Project reach from the historic gold mining disturbance has had significant negative impacts on Indian Creek and the adjacent floodplain in the Project area (see key processes currently impacted in Indian Creek, Table 1). Indian Creek has down cut and incised a linear,

simplified channel within VG-1. This has created elevated coarse sediment floodplain terraces that have effectively disconnected the creek from the adjacent floodplain area in all but the largest of stream flows. The channel within VG-1 is now confined to a single thread transport reach channel that lacks the type of dynamic aquatic habitat normally found in depositional valley reaches. Furthermore, the streamflow of Indian Creek in VG-1 annually goes subsurface during portions of August and September each year as the linear incised channel efficiently routes water down the valley rather than allowing it to percolate into the surrounding area and contribute to the groundwater storage capacity. The dry stream channel also creates a substantial temporal barrier to all aquatic organisms during the seasonal period when they would likely be in search of cold water refugia that currently exists upstream of the Project area. The linear incised channel within VG-1 also lacks suitable spawning and rearing habitat for fish. The straightened channel within VG-1 has led to hydraulic conditions that promote increased stream velocities and sediment transport capacity. This, in turn, has resulted in a channel that lacks suitable sized spawning gravels, large wood, and pool habitats. The current hydraulic conditions also prevent the formation of off-channel habitats, and limit the potential for riparian vegetation recruitment and growth.

Wildlife Resources

Additional discussion of wildlife resources is included in Section 4, Biological Resources, of Appendix A (CEQA Environmental Impacts Checklist). Appendix D includes a list of Special Status Species that may occur on lands administered by the BLM's Redding Field Office.

Herpetofauna

The following species of aquatic dependent animals are also found in Indian Creek, including the Project reach: Coastal Giant Salamander (CGS) (*Dicamptodon tenebrosus*), BLM Sensitive Foothill Yellow-legged Frog (FYLF) (*Rana boylii*), Pacific Chorus Frog (*Pseudacris regilla*), Garter Snake (genus *Thamnophis*), BLM Sensitive Western Pond Turtles (*Actinemys marmorata*), and Western Toad (*Anaxyrus boreas*).

Several populations of FYLFs have recently been listed as Threatened or Endangered under California's Endangered Species Act. The North Coast population, which occurs on Indian Creek, was not included in this listing and is no longer a candidate for listing. It continues to be listed as a State Species of Special Concern and a BLM Sensitive Species. FYLFs are relatively common throughout the Indian Creek watershed, and are uncommon, but well distributed through the Project area reach. FYLF breeding and egg oviposition occurs from early April to early June, tadpole development occurs from mid-May to early September, and sub-adult development occurs from mid-July through late September. Surveys conducted by BLM during the summers of 2018 and 2019 located approximately 15 FYLFs in the Project area, including one subadult. Individual frogs may be adversely affected by construction activities while FYLF habitat is affected by construction activities. Ultimately, after the Project is completed it is likely that there will be an increase in both habitat quantity and quality for FYLFs in the Project area.

Western Pond Turtles were not found in the Project area during BLM surveys during 2018 and 2019, but have been detected downstream from the Project. Habitat for this species in the construction area is very poor and they are not expected; therefore, they will not be adversely affected by the Project. It is likely that the Project will increase the habitat quantity, quality, and value for this species.

Coastal Giant Salamanders were found at several locations in the Project area during BLM's surveys in 2018 and 2019. This species is not listed as Sensitive by BLM but can be managed in the same way and at the same time as the FYLF. Ultimately, after the Project is completed it is likely that there will be an increase in both habitat quantity and quality for this species.

Mammals

A wide variety of wildlife occurs in the Indian Creek watershed including black bear (*Ursus americanus*), elk (*Cervus canadensis*), and black-tailed deer (Odocoiledus hermionus). Many smaller mammals including squirrels, rabbits, and wood rats are also found in the watershed.

Two species of sensitive mammals also occur in the watershed. They are the Federal candidate for Threatened listing and BLM sensitive Pacific fisher (*Pekania pennanti*) and the State Fully Protected ring-tailed cat (*Bassariscus astutus*). In addition, there are four species of sensitive bats. These species require special management consideration when they are found within a project area.

Pacific fishers have been detected on numerous occasions during BLM's camera trap surveys within a half mile to the south and a mile to the north of the Project area, although there is no forested habitat for this species within the Project area and they are not likely to occur there. Sites where they have been detected in the watershed are far enough away from the Project area that active construction will not adversely affect them.

Ring-tailed cats have not been detected during BLM's camera trap surveys in the forested area south of the Project area. They likely occur in the vicinity of the Project area, but there are no trees in the Project area of sufficient size for dens for this species. They are not to be expected in the Project area and will not be disturbed by the construction activity.

Several BLM Sensitive bat species may occur in the Indian Creek watershed including Fringed Myotis (*Myotis thysanodes*), Long-eared Myotis (*Myotis evotis*), Yuma Myotis (*Myotis yumanensis*), and Townsend's big-eared bat (*Corynorhinus townsendii*). These bat species rely on caves, cliffs, and other rocky features for roosting which may occur in the watershed, but do not occur in the Project area. Bats may travel a distance from their roosting habitat to forage. However, they forage at night and therefore will not be disturbed by the construction activity which is confined to daylight hours. As a result, we do not anticipate that these sensitive bat species will be disturbed by this Project.

Birds

The following species that require special management considerations are known to (or possibly) occur in the Indian Creek watershed: State and Federally Threatened Northern Spotted Owl (*Strix occidentalis caurina*), State Endangered and Federally De-listed Recovered Bald Eagle (*Haliaeetus leucocephalus*), BLM Sensitive Northern Goshawk (*Accipter gentillis*), and State Endangered Willow Flycatcher (*Empidonax traillii*).

Northern spotted owl Critical Habitat is located immediately south of the Project area. There is no critical habitat within the Project area itself as the construction site lacks the Primary Constituent Elements of Spotted Owl Habitat. A known northern spotted owl nest site is located 0.44 miles (2,310') east southeast of the eastern most Project area construction zone and 1.03 miles (5,414') from the western edge of the Project area. Project activities located at distances greater than 0.25 miles from nest sites are not considered to be sources of disturbance. As a result, the Project will not adversely affect this species.

Bald eagles have not been observed in or near the Project area, though they could possibly occur in the area. No eagle nest sites have been located anywhere within the Indian Creek Watershed and we do not expect to find one based on the low-quality foraging and nesting habitat near the Project area. Much better foraging and nesting habitat is found on the mainstem of the Trinity River 5 to 6 miles to the north. As a result, the Project will not adversely affect this species.

Northern goshawk have not been seen in or near the Project area. There is potential nesting habitat a half mile to the southeast and more than a mile to the north, but it appears to be unoccupied. Project activities located at distances greater than 0.25 miles from nest sites are not considered to be sources of disturbance. As a result, the Project will not adversely affect this species even if it is found in the area.

Despite years of local survey efforts, willow flycatchers have not commonly been found as breeding birds in Trinity County. It is possible that migrating individuals of this species could stop in the riparian habitat in the western end of the Project area. There is sufficient riparian habitat immediately downstream from the Project area for migrant foraging flycatchers to move to if disturbed by construction activities. Construction of the Project will likely increase the quality and quantity of riparian habitat in the Project area over time.

Several species of riparian obligate migratory birds including Yellow Warbler (*Setophaga petechia*), Yellow-breasted Chat (*Icteria virens*), Warbling Vireo (*Vireo gilvus*), and Song Sparrow (*Melospiza melodia*) may breed in the riparian habitat at the western end of the Project area. Mitigation measures will be implemented to avoid or minimize impacts to breeding birds. Construction of the Project will over time, likely increase the quality and quantity of riparian habitat in the Project area.

3.4.2 Environmental Impacts

No Action Alternative

Fish Resources and their habitat

Under the No Action Alternative, the fish community will continue to be limited by the impaired processes, as discussed in the Affected Environment section, above. The proposed Project area of Indian Creek will likely continue to provide limited species diversity and abundance, less than optimal ecosystem productivity, limited available habitat, lower quality habitat, minimal thermal refugia and thermal diversity, limited suitable spawning and rearing habitat for salmonids, and a temporal barrier to aquatic organism movement during the critical late summer period as the stream flow continues to annually flow subsurface.

Under the No Action Alternative, stream channel conditions in the Project area will also remain in an impaired state due to the continued presence of historic gold mining coarse sediments that prevent the adjacent floodplain from properly functioning in VG-1. The majority of the Project reach will continue to function as a high energy transport reach, moving sediment and organic material through the system, with little opportunity for storage. Channel incision is likely to remain, and the channel will remain composed of oversized substrates that are indicative of a high energy stream system. The channel is likely to remain in its current straightened state as the high energy stream maintains channelization. The majority of the floodplain will remain hydrologically disconnected, resulting in the stream flow annually going subsurface during the late summer period and a continued lack of off channel habitat. The system will continue to be large woody material (LWM) limited, resulting in poor spawning and rearing habitat and simplified geomorphic features throughout the Project area, with the exception of the SG-1 area. The SG-1 area will likely continue to have surface flow throughout the year, functioning as one of the few wetted areas in the Project reach during the late summer.

Wildlife Resources

FYLFs and CGSs will continue to occupy the area at low density and will breed successfully in some above average rainfall years. A low density of riparian obligate migratory birds will continue to use the limited riparian resource for foraging and breeding.

Proposed Action

The physical characteristics of the Project reach will be greatly improved by the Proposed Action. The Proposed Action will hydrologically reconnect the historic floodplain in the Project area, decreasing stream power, and converting current transport reaches back to depositional areas, as they historically functioned. The Project will greatly increase LWM abundance both in channels and across the floodplain by adding LWM. Fine sediment, made available through sediment redistribution and channel migration,

will be sorted and stored within the floodplain, greatly increasing geomorphic habitat complexity in the form of pools and bars and decreasing the average substrate size in the Project area. The resulting system will be more resilient to increased air temperatures and disturbance events such as floods, fires and landslides.

It is anticipated that implementation of stage-0 design will cause streamflow velocities to decrease as the floodplain area is increased under the Proposed Action. Storage of flood waters on the reconnected floodplain and reduction of high flow velocities would increase flood storage and attenuate peak flows downstream of the Project. Within the Project area, high flows will no longer be contained primarily in a single, incised channel. Flow will be spread onto the floodplain and will follow numerous flow paths at the full range of flows. Additional wetted floodplain area will be created at high flows. As a result, streamflow velocities will be reduced. Flood flow velocities on the floodplain will be low due to the wide floodplain and abundant roughness (i.e. downed wood and vegetation). While minimal floodplain erosion will be expected, natural channel migration and side channel formation will become more frequent. Low flows will occupy more channels than the pre-Project condition.

Soil compaction within the project area will occur in several locations during Project implementation. Soil compaction is desired and will be necessary where fill material is used to aggrade the existing channel to prevent the stream from re-occupying the same pre-project flow path. The existing channel fill compaction rates will be determined during project construction and based on the measured compaction rates of the adjacent constructed floodplain surfaces. Soil compaction will also occur on the temporary access road A-1. This area will likely require decompaction to closely match the soil compaction rates found in the constructed floodplain areas.

Sedimentation from the Proposed Action will likely occur in months following implementation and is related to the first flush event following a precipitation event on the completed project area. The action of manually aggrading incised channels and excavating to create floodplain connection could also generate a substantial short-term (on the scale of minutes to hours) sediment pulse during implementation. The project has been designed to reduce this potential as implementation will occur during the late summer low flow period when most of the Project area is expected to have subsurface flow. In areas that do have surface flow during implementation, namely SG-1, the streamflow will be diverted around each worksite prior to construction activities. Although surface flow will be diverted around project areas, some water may remain in the channel and become turbid while heavy equipment is working. In these cases, a 3” screened water pump will be set below these areas and used to move the resultant turbid water to the adjacent off-channel areas before leaving the project area. This strategy allows turbidity to be removed and treated without affecting downstream turbidity values.

In the first year or two following implementation, before riparian plants become established, turbidity could increase locally during high flows as fine sediment in relic channels, newly forming channels, and disturbed floodplain areas are mobilized. This potential for erosion from open surfaces will be offset by the reduction in stream power as a result of flow being distributed through a much wider, roughened floodplain than the existing channelized condition. To help reduce surface erosion, roughness will be added in the form of large wood and open areas will be seeded with native grasses and forbs after construction. Although turbidity will be increased in the Project area and potentially downstream, it will be short-term and should dissipate quickly within 200 feet of open areas, likely redistributing on newly accessible floodplains downstream. Turbidity increases during high flows will also coincide with high flows and natural turbidity increases in Indian Creek and may not be detected above those background levels.

Limited duration activities may be allowed to exceed the turbidity standard if a permit has been authorized under terms of Section 401 or 404 of the Clean Water Act, with limitation and conditions governing the activity set forth in the permit. The 401 and 404 permits will be secured prior to

implementation of this Project. Turbidity will be monitored according to the standards in these permits and if turbidity levels are exceeded then work will be stopped until the turbidity dissipates.

Haul of material and trees will occur in designated sediment removal areas, on temporary access road B-1. In the Project area, all haul routes will be fully decommissioned and subsoiled to a depth of 18-24'', as needed, to improve infiltration, and seeded and/or planted following restoration activities.

Long-term sedimentation effects from Project implementation will be mitigated by subsoiling compacted sites, adding roughness to the floodplain, and replanting disturbed areas.

The long-term effect of the Proposed Action on sediment, nutrient and organic matter supply, transport and storage will be: increased sediment supply from improved channel migration processes, increased nutrient and organic matter supply from augmented LWM and expanded area of riparian vegetation influence and floodplain inundation, decreased sediment, nutrient and organic matter transport and increased storage due to reduced stream power and improved roughness and floodplain connectivity. Because a primary intent of the Project is to restore floodplain function, efforts will be made to preserve all existing vegetation. The Proposed Action will still reduce stream shading along the existing channel margins. This is because live willows and cottonwood trees will have stem cuttings harvested from them in order to replant newly created floodplain Project areas that currently lack vegetation. This could potentially lead to a short-term impact to water temperature in channels adjacent to those disturbed areas. However, because the area where stream shading will be reduced is the same area where the stream channel currently goes dry during the summer low flow period, the short-term impacts to water temperature are likely to be immeasurable at the scale of the Project area.

Following restoration activities, a large percentage of available flows will no longer be contained in the area of the current channel, but will be spread throughout the floodplain, often occupying relic side channels, resulting in a net increase in stream shade for the Project area. Fine sediment will be stored in slow water areas during high flows, resulting in new areas for riparian vegetation to become established. The newly connected floodplain will also more efficiently store ground water, releasing cool water during low flow periods. Within 2-5 years following implementation, improved water quality, including temperature, is anticipated due to water table recovery, vegetative recovery and re-establishment of hyporheic processes. Replanting of disturbed areas along with use of BMPs and long-term monitoring are expected to minimize impacts and restore water quality in the Project area over time (Appendix B, Mitigation, Monitoring, and Reporting Program).

It is widely recognized that LWM locally influence bed and bank scour, side channel development, bar and island formation, and can reduce pool spacing to values less than one channel width (Montgomery et al. 1995). The Proposed Action will add a substantial number of pieces of LWM and is therefore expected to vastly improve side channel development, bar and island formation, and frequency of pools in the Project area.

The frequency of gravel bars and other alluvial bed forms is largely dictated by the interaction between the sediment supply and the ability of the channel to transport and redeposit this sediment (Risley et al. 2010). The majority of sediment that is mobilized by high flow events in the proposed Project reach is currently transported through areas of the Project functioning as transport reaches due to channel incision and straightening. The Proposed Action will increase the sediment supply and transform incised transport reaches back into depositional reaches allowing the system to form bars, islands, and complex channel and floodplain features. It is also expected that the channel substrate will include more patches of fine sediment and gravels, which are currently in very low abundance.

Pond and wetland formation in the Project area are currently impaired due to the lowered water table associated with incised channels. The Proposed Action will restore floodplain connection and initiate surface water flow to side channels and constructed depressional features and will result in a higher

capacity for storing flood waters, a higher water table year round, and more wetlands. A higher water table and more surface water will also provide suitable habitat for beavers, a species known to build dams that create and maintain stream systems with slow, deep water and floodplain wetlands dominated by emergent vegetation and shrubs. Recently there has been widespread recognition that beaver dams play a vital role in maintaining and diversifying stream and riparian habitat (Pollock et al. 2003).

The Proposed Action is expected to immediately improve floodplain connectivity and result in the creation of side channels and periodic inundation of a larger portion of the historic floodplain at a range of flows. By increasing available aquatic habitat, productivity of the biological community is expected to substantially increase.

The Proposed Action is expected to raise the groundwater table and result in greater hyporheic flow through the alluvial valley of Indian Creek. Hyporheic flow through sediment supports a complex, diverse food web composed of microbes, crustaceans, and aquatic insects, particularly in wide alluvial valleys that have disproportionately large hyporheic alluvial aquifers (Hauer et al. 2016). These hyporheic invertebrates can be a large portion of total production in a stream and thus directly affect higher levels of the stream food web, including fishes, amphibians, birds, and mammals. Studies have shown that depending on the size of the hyporheic alluvial aquifer, subsurface production can be even greater than instream production (Bellmore 2014). An increase in hyporheic function is expected to support a healthy, diverse assemblage of hyporheic invertebrates and improve productivity of the biological community.

The Proposed Action is also expected to improve the supply and retention of fine sediment and gravels, which are extremely important to aquatic organisms. The current lack of spawning sized gravels is considered a major limiting factor for most fishes in the Project area. The current lack of fine sediment is limiting suitable habitat for lamprey ammocoetes, invertebrates, and other microorganisms. By increasing patches of fine sediment and gravels, the Project is expected to have beneficial effects on the diversity and productivity of the biological community.

Large woody material supply and retention is particularly important to ecological function. It creates habitat diversity by forming pools, back eddies, islands, and side channels, and by increasing channel sinuosity and hydraulic complexity (Fox and Bolton 2007). It retains organic matter, nutrients, and spawning sized gravels. It provides thermal refugia and cover for fish, and serves as an important food source for the food web. The Proposed Action will greatly increase LWM abundance and retention and will therefore provide substantial benefits to the biological community.

The Proposed Action is expected to result in improved water quality and temperature due to water table recovery, vegetative recovery, and re-establishment of hyporheic processes. The newly connected floodplain will also more efficiently store water, releasing cool water during low flow periods. These restored natural processes will create pockets of cold water that are important thermal refugia for fish and other organisms throughout the year. Temperature plays an important role in the ecology, behavior, and life history strategies of aquatic organisms. It influences movement and distribution patterns, survival, both inter- and intraspecific interactions, feeding, metabolic rates, and parasite resistance (Stevens and DuPont 2011). The Proposed Action will create spatial and temporal temperature conditions closer to those that native species are adapted to and will therefore benefit the native biological community.

The Proposed Action will restore Indian Creek in the vicinity of VG-1 to a multi-thread system with abundant LWM, which will dramatically increase habitat complexity and diversity. The complexity of habitats found in multi-thread channels with functioning floodplains is associated with high species diversity and productivity (Jungwirth et al 2002). Cluer and Thorne (2013) found that habitat and

ecosystem benefits are greatest in multi-thread (i.e. anastomosing, stage-0) systems compared to streams that are incised. Complex habitat, particularly pools and areas of slow water, provide important habitat for fish, amphibians, mammals and many other aquatic species and can greatly increase the carrying capacity of rivers and streams (Murphy and Meehan, 1991). The Proposed Action will provide more suitable habitat for beavers, who play a vital role in maintaining and diversifying stream and riparian habitat (Pollock et al. 2003). Ponds and wetlands created by beavers increase habitat diversity and support a broad range of plant and animal species, including invertebrates which are a crucial food source for fish.

The Proposed Action will restore floodplain processes to the extent possible and floodplains are among the most biologically productive and diverse ecosystems on earth. Given the continual deposition and retention of nutrient-rich sediments, they tend to be more productive than adjacent uplands and are critical for maintaining aquatic and riparian biodiversity (Tockner and Stanford 2002). This diversity strengthens the ability of systems to resist disease and disturbance, which is particularly important in the face of climate change and other stressors on riparian systems (Mace et al. 2005).

Steelhead

Indian Creek provides habitat for all life stages of Steelhead and serves as spawning and rearing habitat for steelhead. The Proposed Action will have some short-term impacts to juvenile steelhead and their habitat during implementation. The dewatering, salvage, and sediment redistribution actions are likely to result in the mortality of juvenile steelhead that are not able to be collected during dewatering and salvage activities. By slowly dewatering Project areas over the course of days, many individuals should be able to migrate out of the work areas. The salvage activities will collect as many remaining individuals as possible but will not be able to collect them all. Mortality of juvenile steelhead individuals during implementation is expected to be minor relative to their abundance throughout the entire Project area. They are expected to reseed disturbed areas immediately following implementation.

The increased stream turbidity may deposit fine coats of sediment on channel substrate a short distance downstream, encourage fish to move downstream, and alter fish behavior patterns for a short time. Because the work will be conducted during the late summer low flow period when much of the Project area channel will have subsurface flow (a time when spawning is not expected and after emergence of fry), the Project should not interfere with spawning, egg development, and the sac fry life stage. In cases of fall-spawning fish, the fine layer of sediment deposited on channel substrate will be cleared away as the fish construct redds. It is anticipated that most Project related fine sediment will be flushed out during the first high flows of the fall which occurs before adult steelhead would be anticipated to utilize the Project area for spawning. Therefore, long-term impacts to turbidity and spawning gravels are not expected and will have minor effects on steelhead growth, survival, life history diversity, and genetic integrity.

Placement of LWM will have minimal impacts to individuals because channel conditions will be mostly dry when placement occurs and because most individuals will be able to swim away from placement sites that are wetted. Placement of LWM with heavy equipment could result in mortality to individual juvenile steelhead. Impacts to individuals from LWM placement is expected to be minor due to the relatively small area of impact and their ability to swim away from placement sites that occur in wetted areas.

In the long-term, the Proposed Action will result in complex habitat characteristics much more favorable to all life stages of steelhead – more frequent pools, areas of slow water, and side channels; more cover and cold-water refugia; and more gravels for spawning. Because the Proposed Action will result in an increase of these habitat types, there will be a much larger area of suitable habitat. The increase in food web productivity is also expected to benefit steelhead. A review of restoration Projects by Ogsten et. al.

(2014) revealed that Projects that enhanced off-channel habitat increased salmonid production by 27-34%. Recent studies show that floodplains contain a diversity of habitats and have higher salmonid productivity than areas of continuous flow (Martens and Connolly, 2014). Bellmore et. al. (2013) found that carrying capacity estimates based on food were 251% higher for anadromous salmonids in side channels than the main channel.

In summary, the Proposed Action is expected to have short-term minor impacts to steelhead in the Project reach during implementation, but the long-term benefit of improved habitat and productivity will greatly outweigh the short-term impacts. Steelhead abundance in Indian Creek is expected to increase over time.

SONCC Coho Salmon

The proposed Project area of Indian Creek is designated as Critical Habitat for ESA-Threatened SONCC Coho salmon. The Project area currently provides limited spawning and rearing habitat for coho salmon. During implementation of the Proposed Action, coho salmon adults, fry, and juveniles are not expected to be present in the Project area. Based on three separate snorkel surveys conducted over the course of summer of 2019 no individual coho salmon were encountered. Furthermore, the furthest upstream distribution limit of coho salmon in Indian Creek is believed to occur 1.2 miles downstream of the Project area. The Proposed Action is therefore highly unlikely to have any short-term impacts to coho salmon individuals during implementation as they will not be in the Project area.

The increased stream turbidity may deposit fine sediment on channel substrate a short distance downstream and alter fish behavior patterns for a short time. Because the work will be conducted during the late summer when stream flows in the majority of the Project area will be subsurface, the Project should not interfere with spawning, egg development, and the sac fry life stage. In cases of fall-spawning fish, the fine layer of sediment deposited on channel substrate will be cleared away as the fish construct redds. It is anticipated that most Project-related sediment will be flushed out during the first high flows after Project completion, and site protection and mitigation measures are expected to prevent future Project-related sediment inputs into the stream. Therefore, long-term impacts to turbidity and spawning gravels are not expected and will have minor effects on coho salmon growth, survival, life history diversity, and genetic integrity.

In the long-term, the Proposed Action will result in complex habitat characteristics much more favorable to all life stages of coho salmon – more frequent pools, areas of slow water, and side channels; more cover and cold-water refugia; and more gravels for spawning. Because the Proposed Action will result in a dramatic increase of these habitat types, there will be a much larger area of suitable habitat. The increase in food web productivity is also expected to benefit coho salmon. A review of restoration Projects by Ogsten et. al. (2015) revealed that Projects that enhanced off-channel habitat increased salmonid production by 27-34%. Recent studies show that floodplains contain a diversity of habitats and have higher salmonid productivity than areas of continuous flow (Martens and Connolly, 2014). Bellmore et. al. (2013) found that carrying capacity estimates based on food were 251% higher for anadromous salmonids in side channels than the main channel.

In summary, the Proposed Action is expected to have short-term minor impacts to coho salmon in Indian Creek during implementation, but the long-term benefit of improved habitat and productivity will vastly outweigh the short-term impacts. Coho salmon abundance in Indian Creek is expected to increase over time as a result.

ESA coverage will be provided by NOAA and the USFWS, as described below in the **Mitigation and Residual Impacts** of this section, below. The following determinations are expected to be made in the Biological Opinion for coverage related to SONCC coho salmon and their habitat.

Endangered Species Act Effects Determination: "May Affect, Likely to Adversely Affect" SONCC Coho Salmon and their designated Critical Habitat. The Proposed Action is not likely to jeopardize this species or adversely modify their Critical Habitat.

Essential Fish Habitat Effects Determination: The Proposed Action will have the following adverse effects to EFH designated for SONCC Coho salmon:

1. Freshwater EFH quantity will be reduced due to short-term construction effects, including reduced riparian permeability and increased riparian runoff, and will increase slightly over the long-term due to improved riparian function and floodplain connectivity.
2. Freshwater EFH quality will be reduced due to a short-term release of suspended sediment, increased dissolved oxygen demand, and increased water temperature due to riparian and channel disturbance. These conditions will improve over the long-term due to improved riparian function and floodplain connectivity.
3. The quality of channel substrate will be reduced in the short term due to increased compaction and sedimentation and will increase over the long-term due to increased amounts of available spawning substrate and sediment storage from LWM.
4. Floodplain connectivity will decrease in the short-term due to increased compaction and riparian disturbance during construction, and a will improve over the long-term due to off- and side channel habitat formation,
5. Forage availability will decrease in the short term due to riparian and channel disturbance and improve over the long-term due to improved habitat diversity and complexity, and improved riparian function and floodplain connectivity.
6. Natural cover will decrease in the short term due to riparian and channel disturbance and increase in the long-term due to improved habitat diversity and complexity, improved riparian function and floodplain connectivity, and off- and side channel habitat restoration.
7. Fish passage will be impaired in the short term due to decreased water quality and in- water work isolation and improved over the long-term due to improved water quantity and quality, habitat diversity and complexity, forage, and natural cover.

Cumulative Effects

Fishery Resources / Wildlife Resources

According to Council of Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA, a cumulative impact is defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7). Potential impacts of the Proposed Action would not be cumulatively significant because there have been few activities in the area that have occurred or that are anticipated to take place in the reasonably foreseeable future that would elevate the relatively minor effects of the Proposed Action.

Mitigation and Residual Impacts

Fishery Resources

Immediately prior to construction activities fish habitat will be surveyed. Adults and juveniles will be removed and relocated to suitable habitat outside the Project area. Surveys will continue during construction and any additional individuals will be relocated.

Wildlife Resources

Immediately prior to construction activities FYLF and CGS habitat will be surveyed for adults, juveniles, larvae, and eggs. Adults and juveniles will be removed, and relocated to suitable habitat outside the Project area. If larvae or eggs are detected, they will also be relocated to a suitable location outside the construction boundary. Surveys for frogs will continue during construction and any found will be relocated.

Appendix A of this EA/IS includes discussion regarding additional wildlife species. Appendix B includes the following mitigation measures to avoid or minimize impacts to a level that is less than significant: 4.1a, 4.1b, 4.1c, 4.1d, 4.1e, 4.3a, 4.4a, 4.5a, and 4.6a. A Specific Use Scientific Collecting Permit will be obtained from CDFW prior to relocating animals.

In addition, the Endangered Species Act directs all Federal agencies to work to conserve endangered and threatened species and to use their authorities to further the purposes of the Act. Section 7 of the Act, called "Interagency Cooperation," is the mechanism by which Federal agencies ensure the actions they take, including those they fund or authorize, do not jeopardize the continued existence of any listed species.

The Project requires Section 7 consultation for SONCC coho salmon. The Bureau of Reclamation, Trinity River Restoration Program (TRRP), initiated consultation with NOAA in February, 2020 by submitting a Fisheries Programmatic Biological Assessment to NOAA in which the Indian Creek Connectivity and Restoration Project is specifically named. It is expected that NOAA will issue a Biological Opinion for the Fisheries Programmatic Biological Assessment. Because the Project is specifically considered in the Biological Assessment, no additional analysis or tiering will be required to provide ESA coverage for SONCC coho salmon for the Project. The activities included in the Proposed Action will be consistent with the restoration activities in the Biological Opinion and will not have additional impacts to what was analyzed in the Programmatic Biological Assessment.

The TRRP also submitted a Wildlife Programmatic Biological Assessment to the USFWS in February, 2020 that similarly includes the Indian Creek Connectivity and Restoration Project. ESA coverage for the northern spotted owl for the Project is expected to occur through the issuance of a Letter of Concurrence from USFWS.

3.5 Heritage Resources

3.5.1 Affected Environment

Federal agencies are required to consider the effects of their actions on historic properties (i.e., cultural resources that rise to a certain level of significance), in compliance with Title 54 USC § 306108, commonly referred to as Section 106 of the National Historic Preservation Act (NHPA) of 1966. The Section 106 process of the NHPA is often used to satisfy the requirements for cultural resources under NEPA. The Section 106 process includes identification, consultations, and, if needed, mitigation measures for determined adverse effects.

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

Additional state regulations apply, including Assembly Bill 52 (AB 52), which went into effect on July 1, 2015. The bill requires that California state lead agencies consult with California Native American tribes traditionally and culturally affiliated with the geographic area of a Project when the tribe requests to be informed of such Projects and requests the consultation to ensure that impacts to tribal cultural resources are minimized. AB 52 requirements apply to Projects with a notice of preparation or a notice of negative declaration or mitigated negative declaration filed on or after July 1, 2015.

The Project locality was occupied at the time of historic contact by the Wintu, hunters and foragers who seasonally occupied the area. Perhaps European and American trappers made initial contact with the Wintu here in the late 1830s or 1840s. However, it was the search for gold as part of the California Gold Rush that rapidly displaced the Wintu locally by the early to mid-1850s. A diaspora of gold miners and supporters very early following the Gold Rush found profitable diggings in this interior mountainous setting. One dominant ethnic group was the emigrant Portuguese. Less documented Chinese miners also had a place here. The gold riches led to the establishment of a small town, Indian Creek or INDEEK, that lasted for decades (1850s into 1940s) until mining declined by the start of WWII. Limited ranching also occurred in the Project vicinity. The largely placer mining operations started with simple pans, rockers and sluices eventually replaced by larger ground sluicing set-ups and eventually hydraulic mining dislodging hundreds of thousands of sediments into the creek well into the 20th century. Some limited dredge work may have also occurred. The mining landscape of today reflects these individual, small group, and later corporate operations.

Specific to the area of potential impact is the creek bottom partially choked with older mining debris. This large, amorphic mass of mining debris and alluvium from upstream is not considered an archaeological site. However, on the remnant terraces and mountainsides surrounding the floodplain there are other tailings, cuts, headwalls, ditches, drains, townsite ruins, cabin remnants, roads, small camps, and historic trash scatters. These occur on both BLM-administered and private lands.

The first archaeological work in the Project vicinity was by BLM archaeologist Clark Brott and D.P. Miller who in 1978 surveyed and recorded the Indian Creek townsite (CA-030-004) as an archaeological site. This location is considered potentially eligible for listing on the National Register of Historic Places. They stated the site has both educational and scientific importance and emotional value in terms of pioneer, ancestral, traditional, patriotic, and descendant interests. The southside of the major mining site in the Project vicinity was inventoried by Howard Matzat for a timber sale (Report FY 84-37). The area closest to the Project area, south of the creek, was inventoried by Alden Neel, Eric Ritter, and Max Kalina with the multi-acre Indian Creek Mines site recorded as CA-030-2137. This location could also be eligible for listing on the National Register of Historic Places, perhaps in concert with the townsite. A small inventory in 1984 was conducted above the current paved road (just outside the Project zone). Here was found the unevaluated Freitas Gulch Site (CA-030-233, CA-TRI-1446H), a mining complex of tailings, cabin pad, artifact scatters, workings, old road, and ditch. Also, northeast just outside the Project area there was a small survey and documentation of an early 20th century structure foundation and reservoir (Indian Creek Reservoir/Pad Site, CA-030-2152). Demonstrably, outside the current channel and flood zone there is a rich legacy of mining and settlement.

The actual area of work (other than access roads and laydown areas) is non-archaeological due to many periods of erosion and deposition. Walks made over portions of the floodplain by BLM archaeologists (Neel and Ritter) yielded no cultural remains. Any artifacts washed into the floodplain would not be in situ. Based on this fact and with well-directed activities outside the floodplain that will be aligned to

avoid cultural remains, the Project is determined to have no effect in terms of Section 106 of the National Historic Preservation Act. Under BLM's existing Protocol with the State Historic Preservation Office and the Advisory Council on Historic Preservation, no consultation is necessary with those agencies.

Native American Indians (Nor-El-Muk Wintu and Redding Rancheria) whose ancestral land base included the Project area or who benefit from improvements in the fisheries (Hoopa and Yurok) will be asked through certified mail of any concerns they might have with regard to sacred or sensitive values in the Project area. Since this Project will potentially benefit downriver tribes in terms of increases in salmonid numbers, this is a Project tribal people want, support, and are involved now in the planning. The Yurok will be participating in the Project implementation. A review of previous ethnographic literature and discussions with regional tribal groups did not lead to the identification of any Traditional Cultural Properties potentially impacted by the Project (Theodoratus Cultural Resources 1984).

3.5.2 Environmental Impacts

Proposed Action

Secondary activities in support of the main Project work could impinge on archaeological values if not closely planned and monitored. BLM will be certain that workers are oriented to the cultural values present adjoining the main Project area prior to construction. Any sensitive locations to be avoided will be flagged and a knowledgeable monitor (archaeologically trained) will be present during the operation at those key points to be identified. Any disturbances or potential disturbances will be immediately brought to the attention of BLM archaeologists and management and activities will cease in that location with a 50-foot buffer until the situation can be evaluated. If undocumented cultural values or human remains are discovered outside the floodplain in the area of ground-disturbing operations (i.e. access roads, laydown area, etc.), activities in that location (with a 50 foot buffer) will cease until a BLM archaeologist can assess the situation within a reasonable timeframe, usually less than a day or two.

No Action

Cumulative Impacts

If the Project follows all stipulations and design, there will be no cumulated impacts to cultural resources. In fact, if the Project is successful, downriver tribes will benefit from increased salmonid runs and controlled harvests.

Mitigation

Project workers will be alerted to the heritage resource sensitivity (mining landscape, townsite, and settlement remains) of areas above the active floodplain. No work areas or access roads should occur in the upland areas not previously approved for Project activities, and these zones should be monitored on at least a weekly basis by an individual trained in the recognition of heritage resources. Any transgressions should be immediately passed on the BLM management or archaeologist for further action as determined by the BLM. Following final consultation with the tribes, if sacred or sensitive heritage resources are identified, then further action with regard to the Project implementation will need to be addressed.

4.0 Cumulative Impacts

Cumulative impact, as defined by the CEQ (40 CFR 1508.7), is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably

foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes other such actions. Cumulative impacts could result from individually minor, but collectively significant actions taking place over a period of time. The purpose of the cumulative effects analysis is to ensure that the decision-makers consider the full range of consequences of a Proposed Action and Alternatives, including the No Action Alternative. The CEQ has defined the resulting effects of a Proposed Action and its alternatives as direct and indirect. Direct effects are caused by the Project Action and occur at the same time and place. Indirect effects also are caused by the Project Action, but are later in time or further removed in distance, yet are still reasonably foreseeable (40 CFR 1508.8). Cumulative effects, discussed in this chapter, are the total effects on a given resource or ecosystem of all actions taken or proposed.

The cumulative effects assessment process considered (1) scoping and Project issues; (2) cumulative effect timeframes and the resources (or receptors) that could be affected by the Proposed Action and Alternatives; (3) the geographical area in which the impacts would occur; and (4) other past, present, and reasonably foreseeable future actions that have, or could be expected to cause, impacts on these resources when considered with development of the Project.

The identification of issues for analysis in the EA/IS is discussed in Section 1.7. Those issues determined to potentially involve a cumulative effect with other past, present, or RFFAs are included in the cumulative effects analysis. An exception is if the Proposed Action or Alternatives would have no direct or indirect effects on a resource, it would not contribute incrementally to cumulative effects and is not included in the analysis for that resource.

Reasonably foreseeable future actions are those for which there are existing decisions, funding, formal proposals, or which are highly probable, based on known opportunities or trends.

4.1 Geographic and Temporal Scope

The geographic scope is the spatial extent where cumulative effects may occur on a resource. The geographic scope is assessed for each cumulative effects issue. It is generally based on the natural boundaries of the resource affected. The geographic scope for a resource may be larger than the corresponding alternative route study corridors for Project-related effects to consider an area large enough to encompass likely effects from other projects on the same resource. The temporal scope is established by the timeframe for a cumulative effects issue—that is, the duration of short-term and long-term effects anticipated. Together, the geographic and temporal scopes make up the cumulative impact analysis area.

4.2 Past, Present, and Reasonably Foreseeable Future Actions

The following information regarding past, present, and future relevant actions for cumulative effects applies to all alternatives, and for all resource impacts discussed below:

In addition to the history of mining impacts, current conditions at the Project site also reflect the effects of previous rehabilitation actions. There is a long history of unsuccessful attempts to improve instream habitat within this reach and the valley downstream of Indian Creek Road dating back to the 1970's.

In 1989 BLM fish biologists attempted to increase available habitat by stabilizing the channel in the lower mile of the valley segment downstream of Indian Creek road using heavy equipment and bank

stabilizing structures. Main and side channel pools were created to increase summer rearing habitat. Success was minimal due to high bedload movement throughout the zone during high winter flows (WA 1996).

A 1996 restoration attempt by TCRCD and Watershed Associates (WA), in which the stream was confined to a relatively narrow portion of the valley bottom, involved excavation of a mildly sinuous channel within a relatively narrow inset floodplain. The design included at least three rock revetments, built to prevent lateral channel migration. Material from the floodplain excavation filled other portions of the valley. That Project was destroyed within weeks of its completion by the New Year's flood of 1997, but the additional flow confinement associated with the valley fill and floodplain excavation could be partially responsible for the incised condition currently observed at the site.

A subsequent effort to do restoration in the Project reach in 2011, led by Phillip Williams & Associates, Ltd (PWA), and managed by the TCRCD yielded significant findings about the existing conditions of the Project reach and established four ground water wells or piezometers, which the Yurok design team has since reoccupied. However, the actual work done was limited to minor excavation and the construction of several willow baffles (PWA 2011), which experienced 100% mortality.

Activities recently occurring on site include geological investigations performed within the Project area in late March and early April of 2019. The investigation included excavation of nine test pits upstream from the Indian Creek Road Bridge and installation of piezometers to monitor groundwater levels throughout the upcoming dry season.

Current activities on site include ongoing monitoring of the test pits and scheduled restoration work. In the reasonably foreseeable future, there may be increased recreational use of the area as proposed restoration work restores the physical, chemical, and biological processes that maintain a healthy, diverse, and resilient floodplain ecosystem.

4.3 Cumulative Effects

Fishery Resources / Wildlife Resources

According to Council of Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA, a cumulative impact is defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7). Potential impacts of the Proposed Action would not be cumulatively significant because there have been few activities in the area that have occurred or that are anticipated to take place in the reasonably foreseeable future that would elevate the relatively minor effects of the Proposed Action.

Hydrology

Implementation of the Proposed Action in combination with other stream rehabilitation activities would have beneficial impacts on the hydrology and water storage capabilities, reducing negative impacts on flooding. Based on preliminary analysis, the proposed project is unlikely to produce any cumulative

impacts to hydrology at the watershed scale and may result in slight decreases in the magnitudes of flood peaks downstream from the site.

Vegetation

The Indian Creek watershed encompasses approximately 21,507 acres and is a tributary to the Trinity River watershed. Indian Creek runs for approximately 14 miles until its confluence with the Trinity River. It has areas that were highly modified by historic mining and agricultural development, especially where the slopes are shallower and the riparian areas are more easily accessible. The upper watershed is generally characterized by steep hillsides and narrow valleys. In the middle of watershed, where the Project area is located, the Indian Creek valley opens up into a larger alluvial landscape that once likely served as functional riparian habitat. However, as in the Project site, much of this area does not currently support riparian vegetation and habitat function. The habitat that does exists is currently found in disconnected patches. The lower watershed has a mix of open valleys and more confined, narrower valleys. In the upper and lower watershed, where the valleys are narrower, riparian vegetation often persists due to inaccessibility for habitat modifying uses such as historic mining and agriculture.

The short term impacts due to construction activities on the 3.1 acres of existing riparian vegetation habitat would represent an extremely small percentage of the potential riparian habitat along Indian Creek. These impacts would only be anticipated for a short time, as described in the effects analysis above. Past actions in the watershed such as historic mining and agricultural developments were at a much great scale to this impact and had a much longer temporal effect across many acres of riparian habitat. Other present or future effects to riparian vegetation and habitat are not anticipated in the watershed as this sort of impact is regulated heavily now. Any cumulative short-term impacts are not major because of the small number of acres that will be impacted and the overshadowing effect of historic mining and agriculture in the watershed.

The medium to long term impacts of the restoration of up to 21.5 acres of riparian habitat in the Project area will serve to connect healthy riparian vegetation and habitat to existing, larger patches upstream of the Project area. While 21.5 acres is still relatively small compared to the scale of the watershed, this Project is located in an important area that can drastically increase the acres of connected functional riparian habitat in the watershed. No other past, present, or future actions are known that would cumulatively impact the abundance, connectivity, and vigor of the restoration of riparian vegetation in the watershed.

Wildlife

No significant cumulative impacts to vegetation, wildlife, and wetlands are anticipated to occur as a result of implementation of the Proposed Action in combination with other related projects. The Proposed Action as designed, in conjunction with mitigation measures, would benefit rather than adversely affect vegetation, wildlife, and wetland in the long term, as would most of the other related projects and programs. Implementation of the Proposed Action would contribute to long-term ecological benefits in terms of vegetation, wildlife, and wetlands.

Geomorphology and Soils –

No significant cumulative impacts associated with geologic hazards, geomorphic processes, or erosional processes are anticipated to occur as a result of implementation of the Proposed Action in combination with other related projects and landscape-level changes in the watershed. Large fires throughout the watershed may continue to influence flow and sediment regimes within the watershed. Appropriate implementation of environmental commitments, project design features, and mitigation measures would reduce potential impact to less-than-significant level.

Long-term fine sediment deposition on floodplains within the Project reach would reduce the fine sediment supply to downstream. This reduction is unlikely to have an effect on the portion of Indian Creek between the Project site and the Trinity River because its valley is steep and narrow enough to transport whatever quantity of fine sediment is delivered from upstream.

Cultural

No significant cumulative impacts to cultural resources are anticipated to occur as a result of implementation of the Proposed Action. The environmental commitments, project design features, and implementation of prescribed mitigation measures would adequately address impacts, including cumulative impacts.

5.0 Consultation and Coordination

5.1 Summary of Consultation and Coordination

Tribal Consultation

The following Tribes were consulted: Redding Rancheria, Nor-El-Muk Tribe, Yurok Tribe, and the Hoopa Valley Tribe on April 6, 2020.

No comments or response have been received from the Tribes.

The State Historic Preservation Officer representative (Brendon Greenaway indicated by phone conversation (2019) with the Redding BLM archaeologist (Eric Ritter) that the existing Protocol between BLM, the State Historic Preservation Officer, and The Advisory Council on Historic Preservation would apply and that BLM can act on their (SHPO and ACHP) behalf for this Project assuming there are no negative affects to heritage resources that are on or could be listed to the National Register of Historic Places.

Consultation with tribal groups associated with the Project area and resources resulted in no negative comments or no response. The State Historic Preservation Officer representative (Brendon Greenaway indicated by phone conversation (2019) with the Redding BLM archaeologist (Eric Ritter) that the existing Protocol between BLM, the State Historic Preservation Officer, and The Advisory Council on Historic Preservation would apply and that BLM can act on their (SHPO and ACHP) behalf for this Project assuming there are no negative affects to heritage resources that are on or could be listed to the National Register of Historic Places.

Wildlife Consultation

As described in Section 3.4 (Mitigation and Residual Impacts), above, the Project requires Section 7 consultation for SONCC coho salmon. It is expected that NOAA will issue a Biological Opinion in late July, 2020 for the Trinity River Restoration Program's Fisheries Programmatic Biological Assessment that includes the Indian Creek Connectivity and Restoration Project.

As also described in Section 3.4, it is expected that USFWS will issue a Letter of Concurrence to provide coverage for the northern spotted owl in late July, 2020 based on the TRRP's Wildlife Programmatic Biological Assessment that includes the Indian Creek Connectivity and Restoration Project.

Links to both programmatic biological assessments are available here:
(SONCC BA)
https://aa66d7ad-ce17-4f18-b261-e08464f615b8.filesusr.com/ugd/23c897_16e47fd639664ca3bdc81deb3d401aab.pdf

(Wildlife BA)
https://aa66d7ad-ce17-4f18-b261-e08464f615b8.filesusr.com/ugd/23c897_2517304810d442ccb868de16e443ff32.pdf

5.2 Summary of Public Participation

The BLM posted the preliminary EA/IS to the national NEPA Resister for a 30-day public comment and review period. The comment period begins June 10,2020 and ends July 10, 2020.

Notice was provided to the California Office Planning and Research's State Clearinghouse (SCH) to coordinate the state-level review of this environmental document prepared pursuant to the California Environmental Quality Act (CEQA). This document can be viewed at CEQA.net, **https://eplanning.blm.gov/eplanning-ui/project/1505780/510** or https://www.trinitycounty.org/Planning.

To comment to the County, public written comments can be sent through email to dcolbeck@trinitycounty.org or mailed to the attention of David Colbeck, Environmental Compliance Specialist, Trinity County Department of Transportation, PO Box 2490, Weaverville CA 96093 between June 10, 2020 and July 10, 2020. Comments must be postmarked by **July 10, 2020.**

Public comments may also be received by the BLM:

- Electronically by using the comment function on the BLM's Project website link above. Click "participate now" on the following link: **https://eplanning.blm.gov/eplanning-ui/project/1505780/510**.
- Mailed to the BLM Redding Field Office: ATTN: Asley Phillips, 6640 Lockheed Drive, Redding, CA 96002. Comments must be postmarked by **July 10, 2020.**
- Electronically via email to the BLM Redding Field Office, BLM_CA_Web_RE@blm.gov

Public and agency comments and responses will be listed in the Section or Section 1.6 after the close of the comment period.

5.2.1 Public Comments Analysis

(if any received)

5.3 List of Preparers

Eric Ritter	Archeologist, BLM
Ashley Phillips	Planning and Environmental Coordinator, BLM
Stephen Laymon	Wildlife Biologist, BLM
Laura Broadhead	Ecologist, BLM
Shawn Stapleton	Outdoor Recreation Specialist, BLM
Kody Shellhouse	Geologist, BLM
Eric Wiseman	Restoration Specialist, Yurok Tribe
Leslie Hubbard	Environmental Specialist, Yurok Tribe

Bethany Prince	Registered Environmental Health Specialist, Trinity County
Bella Hedtke	Associate Planner, Trinity County
Kim Hunter	Director of Building & Planning, Trinity County
David Colbeck	Environmental Compliance Specialist, Trinity County

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APPENDIX A – CEQA Checklist of Environmental Impacts

Indian Creek Connectivity and Restoration Project

Project Proponent

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Klamath, CA 95548

California Lead Agency for CEQA

Trinity County Planning Department
PO Box 2819
61 Airport Road
Weaverville, CA 96093

Federal Lead Agency for NEPA

U.S. Department of Interior – Bureau of Land Management
Redding Field Office
6640 Lockheed Drive
Redding, CA 96002

EVALUATION OF ENVIRONMENTAL IMPACTS

This checklist identifies physical, biological, social and economic factors that might be affected by the proposed Project. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts. The CEQA Mandatory Findings of Significance is included with a discussion of cumulative impacts at the end of this checklist.

Because CEQA requires a determination of significance for each resource provided in the checklist, the checklist provided in Appendix G of the CEQA Guidelines is used to form the body of the following effects analysis. For NEPA, significance is determined for an overall Project by considering the direct and indirect impact as well as the context and intensity of any effects as addressed in Section 3 of the EA/IS.

The following 19 environmental issue areas are addressed in this chapter:

Aesthetics	Greenhouse Gas Emissions	Population and Housing
Agricultural and Forest Resources	Hazards and Hazardous Materials	Public Services
Air Quality	Hydrology and Water Quality	Recreation
Biological Resources	Land Use and Planning	Transportation
Cultural Resources	Mineral Resources	Tribal/Cultural Resources
Energy	Noise	Utilities and Service Systems
Geology and soils		Wildfire

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

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

Environmental Factors Potentially Affected:
The environmental factors checked below would be potentially affected by this project. The significance

level is indicated using the following notation: 1=Potentially Significant; 2=Less Than Significant with Mitigation; 3=Less Than Significant.

3	Aesthetics	3	Agriculture Resources	2	Air Quality
2	Biological Resources	2	Cultural Resources	3	Energy
2	Geology / Soils	2	Greenhouse Gas Emissions	2	Hazards & Hazardous Materials
2	Hydrology / Water Quality	3	Land Use / Planning	3	Mineral Resources
2	Noise	3	Population / Housing	2	Public Services
3	Recreation	2	Transportation / Traffic	2	Tribal/Cultural Resources
2	Wildfire	3	Utilities / Service Systems	3	Mandatory Findings of Significance

Summary of Mitigation Measures:

Mitigation Measure 3.1a: Air Quality

A dust control program will be implemented to limit fugitive dust and particulate matter emissions. The dust control program will include the following elements as appropriate:

- Inactive construction areas will be watered as needed to ensure dust control.
- Pursuant to the California Vehicle Code (Section 23114), all trucks hauling soil or other loose material to and from the construction site will be covered or will maintain adequate freeboard to ensure retention of materials within the truck's bed (e.g., ensure 1-2 feet vertical distance between top of load and the trailer).
- Excavation activities and other soil-disturbing activities will be conducted in phases to reduce the amount of bare soil exposed at any one time. Mulching with weed-free materials will be used to minimize soil erosion.
- Watering (using equipment and/or manually) will be conducted on all stockpiles, dirt/gravel roads, and exposed or disturbed soil surfaces, as necessary, to reduce airborne dust.
- All paved access roads, parking areas, and staging areas will be swept (with water sweepers) to prevent sediment trackoff.

Mitigation Measure 3.2a: Air Quality

Construction operations will comply with NCUAQMD Rule 104 (4.0) Particulate Matter. This compliance could occur by using portable internal combustion engines registered and certified under the state portable equipment regulation (Health & Safety Code 41750 through 41755).

Mitigation Measure 4.1a: Biological Resources

Project implementation shall occur during the late summer low flow period when most of the Project area is expected to have subsurface flow and fish and other aquatic species are not present.

Mitigation Measure 4.1b: Biological Resources

In Project areas that have surface flow, fish and other aquatic species will be captured and relocated pursuant to conditions of a Scientific Collecting permit obtained from the California Department of Fish and Wildlife and the flow of water will be diverted around individual worksite locations to isolate the location and allow heavy equipment work to take place without species present or additional surface flow entering the location.

Mitigation Measure 4.1c: Biological Resources

When heavy equipment is entering or placing material in wetted worksite locations from which fish and other aquatic species have been removed, it will be done slowly to allow any fish or other aquatic species previously undetected during relocation efforts to leave the area by moving downstream.

Mitigation Measure 4.1d: Biological Resources

All water drafting activities will adhere to NMFS, Southwest Region, Water Drafting Specifications (2001) and CDFW Regulations to prevent fish from being entrained.

Mitigation Measure 4.2a All compacted floodplain areas will be fully decommissioned and subsoiled to improve infiltration, reduce compaction, reduce erosion potential and facilitate native vegetation regrowth.

Mitigation Measure 4.2b: Biological Resources

To reduce surface erosion potential of floodplain surfaces, roughness will be added in the form of large wood and open areas will be seeded with native grasses and forbs after construction.

Mitigation Measure 4.2c: Biological Resources

Best Management Practices (BMP's), including placement of silt fence, straw wattles, compost socks or other applicable measures, will be used to control off-site movement of sediment.

Mitigation Measure 4.3a: Biological Resources

Grading and other construction activities should be scheduled to avoid the nesting season to the extent possible. The nesting season for this species in Trinity County extends from June 1 to mid-August. If construction occurs outside of the breeding season, no further mitigation is necessary. If the breeding season cannot be completely avoided, then the following measures shall be implemented:

- A qualified biologist shall conduct protocol-level surveys for the species within the Project site and a 250-ft buffer around the site (Attachment 1 *A Willow Flycatcher Survey Protocol for California*). If an active nest is found, a qualified biologist, in consultation with CDFG, shall determine the extent of a construction-free buffer zone to be established around the nest.

Mitigation Measure 4.4a: Biological Resources

Grading and other construction activities should be scheduled to avoid the nesting season to the extent possible. The nesting season for these species in Trinity County extends from March 15 through August. If construction occurs outside of the breeding season, no further mitigation is necessary. If the breeding season cannot be completely avoided, then the following measures shall be implemented:

- A qualified biologist shall conduct a minimum of one pre-construction survey for all three species within the Project site and a 250-ft buffer around the site. The survey will be conducted no more than 15 days prior to the initiation of construction in any given area (the survey may be conducted at the same time as the pre-construction survey for the western pond turtle, foothill yellow-legged frog, and Coastal giant salamander). The pre-construction survey should be used to ensure that no nests of these species within or immediately adjacent to the Project site would be disturbed during Project implementation. If an active nest is found, a qualified biologist, in consultation with CDFW, shall determine the extent of a construction-free buffer zone to be established around the nest.

Mitigation Measure 4.5a: Biological Resources

The following measures will be implemented to avoid impacts to foothill yellow-legged frog and Coastal giant salamander:

- If any construction in the Indian Creek channel will occur prior to August 1 of any construction season, a pre-construction survey for the foothill yellow-legged frog larvae and/or eggs and Coastal giant salamander larvae and neotenes will be conducted by a qualified biologist. This

survey will be conducted within the construction boundary no more than 2 weeks prior to the start of in-stream construction activities. If individuals or eggs are detected, the biologist will relocate them to a suitable location outside of the construction boundary.

- In the event that a foothill yellow-legged frog or Coastal giant salamander is observed within the construction boundary, the contractor will temporarily halt in-stream construction activities until qualified personnel have moved the frog(s) or salamander(s) to a safe location within suitable habitat outside of the construction limits. Planned locations for placement of transferred animals will be downstream of the construction limits and will be reported to the CDFW prior to construction.
- Mitigation measures identified in Section 9 (Hazards and Hazardous Materials) and Section 10 (Hydrology and Water Quality) for addressing erosion and sedimentation and accidental spills will be fully implemented to mitigate for potential indirect impacts to dispersal habitat for the foothill yellow-legged frog and Coastal giant salamander due to sedimentation and accidental spills.

Mitigation Measure 4.6a: Biological Resources

The following measures will be implemented to avoid impacts to western pond turtles:

- Any Project activities in the aquatic or riparian habitat will be preceded by a pre-construction survey. Surveys will be conducted by a qualified biologist. If a western pond turtle is found the biologist will move it to appropriate habitat either up or downstream of the Project site. If a pond turtle nest is found, the biologist shall flag the site and determine if construction activities can avoid impacting the nest. If the nest cannot be avoided, it will be excavated and re-buried at a suitable location outside of the construction impact zone by a qualified biologist.
- If a western pond turtle is encountered during construction, activities in the vicinity shall cease until appropriate corrective measures have been implemented (e.g., relocation of the turtle by a qualified biologist to appropriate habitat either up or downstream of the Project area) or it has been determined by the biologist that the turtle will not be harmed. Any trapped, injured, or killed turtles shall be reported immediately to the CDFG.
- Mitigation measures identified in Section 9 (Hazards and Hazardous Materials) and Section 10 (Hydrology and Water Quality) for addressing erosion and sedimentation and accidental spills will be fully implemented to mitigate for potential indirect impacts to dispersal habitat for the western pond turtle due to sedimentation and accidental spills.

Mitigation Measure 5.1a: Cultural Resources

Prior to initiation of construction or ground-disturbing activities, all construction workers will be alerted to the possibility of discovering cultural resources. This includes prehistoric and/or historic resources. Personnel will be instructed that upon discovery of buried cultural resources, work within 50 feet of the find will be halted and BLM's designated archaeologist will be consulted. Once the find has been identified, BLM will be responsible for developing a treatment plan for the cultural resource including an assessment of its historic properties and methods for avoiding any adverse effects, pursuant to the PA and in compliance with the NHPA.

Mitigation Measure 5.2a: Cultural Resources

If human remains are encountered during construction on non-federal lands, work in that area will be halted and the Trinity County Coroner's Office will be immediately contacted. If the remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) will be notified within 24 hours of determination, as required by PRC, Section 5097. The NAHC will notify

designated Most Likely Descendants, who will provide recommendations for the treatment of the remains within 24 hours. The NAHC will mediate any disputes regarding treatment of remains. If Native American human remains and associated items are discovered on federal lands, they will be treated according to provisions set forth in the Native American Protection and Repatriation Act (25 USC 3001) as well as Reclamation's Directives and Standards LND 02-01. If the find is determined to be a historical resource or a unique archaeological resource, as defined by CEQA, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or other appropriate mitigation will be made available. Work may continue on other parts of the Project while mitigation for historical or unique archaeological resources takes place.

Mitigation Measure 7.1a: Geology and Soils

The following measures will be implemented during construction activities:

- Areas where ground disturbance will occur will be identified in advance of construction and limited to only those areas that have been approved by the Yurok Tribe.
- All vehicular construction traffic will be confined to the designated access routes and staging areas.
- Disturbance will be limited to the minimum necessary to complete all rehabilitation activities.
- All supervisory construction personnel will be informed of environmental concerns, permit conditions, and final Project specifications.

Mitigation Measure 7.1b: Geology and Soils

An erosion and sedimentation control plan (SWPPP) will be prepared prior to construction. Measures for erosion control will be prioritized based on proximity to the creek. The Yurok Tribe will provide the SWPPP for review by associated agencies (e.g., BLM, the Regional Water Board, NMFS, and CDFW) upon request. The Project manager will ensure the preparation and implementation of an erosion and sediment control plan prior to the start of construction.

The following measures will be used as a guide to develop this plan:

- Salvage, store, and use the highest quality soil for revegetation.
- Discourage noxious weed competition and control noxious weeds.
- Clear or remove roots from steep slopes immediately prior to scheduled construction.
- Leave drainage gaps in topsoil and spoil piles to accommodate surface water runoff.
- To the fullest extent possible, cease excavation activities during significantly wet or windy weather.
- Use bales, wattles, and/or silt fencing as appropriate.
- Before seeding disturbed soils, work the topsoil to reduce compaction caused by construction vehicle traffic.
- Rip feathered edges (and floodplain surfaces where appropriate) to approximately 18 inches deep. The furrowing of the river's edge will remove plant roots to allow mobilization of the bed, but will also intercept sediment before it reaches the waterway.
- Spoil sites will be located such that they do not drain directly into a surface water feature, if possible. If a spoil site will drain into a surface water feature, catch basins will be constructed to intercept sediment before it reaches the feature. Spoil sites will be graded and vegetated to reduce the potential for erosion.

- Sediment control measures will be in place prior to the onset of the rainy season to ensure that surface water runoff does not occur. Project areas will be monitored and maintained in good working condition until disturbed areas have been seeded and mulched or revegetated in another fashion. If work activities take place during the rainy season, erosion control structures will be in place and operational at the end of each construction day.

Mitigation Measure 7.1c: Geology and Soils

To minimize the potential for increases in turbidity and suspended sediments entering Indian Creek as a result of access routes (e.g., roads), the following protocols will be implemented:

- Keep bare soil to the minimum required by designs. Erosion control devices/measures will be applied to areas where vegetation has been removed to reduce short-term erosion prior to the start of the rainy season.
- Keep runoff from bare soil areas well dispersed. Dispersing runoff keeps sediment on-site and prevents sediment delivery to streams. Direct any concentrated runoff from bare soil areas into natural buffers of vegetation or areas with more gentle slopes where sediment can settle out.
- Disconnect and disperse flow paths, including roadside ditches, that might otherwise deliver fine sediment to stream channels.
- Decompact or rip floodplain areas so that surfaces are permeable and no surface water runoff occurs.

Mitigation Measure 9.1a: Hazards and Hazardous Material

A spill prevention and containment plan will be prepared in accordance with applicable federal and state requirements.

Mitigation Measure 9.1b: Hazards and Hazardous Material

The Yurok Tribe will ensure that any construction equipment that will come in contact with Indian Creek will be inspected for leaks daily and immediately prior to entering the flowing channel. External oil, grease, and mud will be removed from equipment.

Mitigation Measure 9.1c: Hazards and Hazardous Material

Yurok Tribe will ensure that hazardous materials, including fuels, oils, and solvents, not be stored or transferred within 150 feet of the active Indian Creek channel. Areas for fuel storage, refueling, and servicing will be located at least 150 feet from the active river channel or within an adequate secondary fueling containment area. Gas pumps and engines will be stored and maintained on impermeable barriers so that any leaking petroleum products are isolated from the ground. In addition, the construction contractor will be responsible for maintaining spill containment booms onsite at all times during construction operations and/or staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times.

Mitigation Measure 9.2a: Hazards and Hazardous Material

Construction contractors would be required to follow applicable regulations of Public Resource Code 4428-4442 during dry periods to minimize the potential for the initiation and spread of fires from the work site.

Mitigation Measure 10.1a: Hydrology and Water Quality

During in-water work, turbidity will be monitored to remain within criteria established by the North Coast Regional Water Quality Control Board in the Clean Water Act, Section 401 Water Quality Certification obtained for the Project.

Mitigation Measure 13.1a: Noise

Construction activities near residential areas will be scheduled between 7:00 a.m. and 7:00 p.m., Monday through Saturday. No construction activities will be scheduled for Sundays, holidays or other hours and days established by the local jurisdiction (i.e., Trinity County). The contractor may submit a request for variances in construction activity hours.

Mitigation Measure 13.1b: Noise

All construction equipment will be equipped with manufacturer's specified noise muffling devices.

Mitigation Measure 15.1a: Public Services

The applicant will require that staging and construction work, including temporary road or bridge delays occurs in a manner that allows for access by emergency service providers.

Determination

On the basis of this initial evaluation:

☐ I find that the proposed Project COULD NOT have a significant effect on the environment and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the Project have been made by or agreed to by the Project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed Project MAY have a "Potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is required.

Signature	Date

Printed Name	For
Kim Hunter Director of Planning	Trinity County Planning Department

ENVIRONMENTAL IMPACT CHECKLIST

1. **AESTHETICS —** Except as provided in Public Resources Code Section 21099, **would the Project:**	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points.) If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Refer to Section 1.8 (Table 2) of the Environmental Assessment for determination and rationale.

Discussion of Impacts

a. *Have a substantial adverse effect on a scenic vista?*

This 3,300-foot section of Indian Creek is characterized by a broad, open valley laden with gravel cobble and boulder and nearly void of vegetation. Upstream and downstream of the Project, riparian vegetation occupies areas adjacent to the creek.

During implementation, views of the Project would be obscured by construction activities and equipment, although the interrupted view of Indian Creek would be of short duration. Implementation of the Project is expected to promote hydrological connectivity that would facilitate the growth of existing and new vegetation that would provide a view of a more lush, diverse expanse of riparian area. Impacts of the Project on aesthetics would be less than significant.

Mitigation Measures

No mitigation is required.

References

Yurok Tribe Design Team. 2019. Yurok Tribe Fisheries Department. Indian Creek Connectivity and Restoration Project Draft 90% Design [Report]. Klamath, CA.

2. **AGRICULTURAL AND FOREST RESOURCES** In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*

agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. **Would the Project:**				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104 (g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☒	☐
e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Refer to Section 1.8 (Table 2) of the Environmental Assessment for determination and rationale.

Discussion of Impacts

a. *Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?*

No impact - No lands designated as Farmland, Unique Farmland, or Farmland of Statewide Importance are present on site. Therefore, none of these lands would be converted to non-agricultural use.

b. *Conflict with existing zoning for agricultural use, or a Williamson Act contract?*

No impact - No lands associated with the Williamson Act are located within the Project site. The nearest lands designated Agricultural Preserve that may operate under a contract with the Williamson Act are located over 2.5 miles west of the Project site near the confluence of Indian Creek with Reading Creek.

c. *Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104 (g))?*

No impact - The Project site's zoning district ("Unclassified" on all four parcels encompassing the Project) would not change. Implementation of the Project would not conflict with current or ongoing uses allowed in parcels immediately adjacent to the Project or within the Indian Creek watershed. The

Project would not conflict with the allowable uses or cause the zoning to change on any existing forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104 (g)) located south of the Project.

d. *Result in the loss of forest land or conversion of forest land to non-forest use?*

The Project would not cause loss of forest land or conversion of forest land to non-forest use. Although the design of the Project calls for approximately 120 logs to be used as large wood structures, the applicant would harvest these trees or collect them from sites previously harvested that are scattered throughout communities in Trinity County such as Weaverville, Douglas City and Hayfork. The Project would not require the loss of forest land or convert forest land to non-forest use and impacts would be less than significant.

e. *Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?*

No Impact - The Project involves changes of the valley surface grade within a concentrated area of Indian Creek and riparian areas associated with Indian Creek. No additional changes in the existing environment would occur that could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

Mitigation Measures

No mitigation is required.

References

Trinity County. General Plan Open Space and Conservation Element.

Yurok Tribe Design Team. 2019. Yurok Tribe Fisheries Department. Indian Creek Connectivity and Restoration Project Draft 90% Design [Report]. Klamath, CA.

3. AIR QUALITY — Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. **Would the Project:**	***Potentially Significant Impact***	***Less Than Significant with Mitigation Incorporated***	***Less Than Significant Impact***	***No Impact***
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute to an existing or Projected air quality violation?	☐	☐	☐	☒
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☒
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Discussion of Impacts

a.-c.

No Impact - The Project is located within the jurisdiction of the North Coast Unified Air Quality Management District (NCUAQMD) and the California Air Resources Board (CARB). Trinity County is listed as "attainment" for all the federal and state ambient air quality standards. There is no air quality plan applicable to the project area, although in 1995, the NCUAQMD prepared a Particulate Matter PM_{10} Attainment Plan draft report in an effort to identify the major contributors of particulate matter within the District to address portions of the District in Humboldt County unable to meet 24-hour particulate standards.

The air quality in Trinity County is generally good. Low population densities, limited industrial and agricultural operations, and minimal traffic congestion support the good air quality. Ambient air quality data are available from the Weaverville air monitoring station (monitored since December, 1994), which is located approximately 17 miles from the project area. Air quality data from this station may not provide a direct reflection of the ambient air quality in the project area but it does provide a good indication of air quality in the general vicinity. Locally, air quality and contributions of greenhouse gases (GHG) to the atmosphere along the Trinity River corridor and associated tributaries is influenced by topographic features, microclimate, and pollutants such as road dust and smoke from wildfires in the summer and wood stoves/fireplaces during cold weather (i.e., particulate matter [PM] 10 microns or less [PM 10] and particulate matter 2.5 microns or less [PM 2.5]).

Operation of heavy equipment on private parcels within and adjacent to the project area occurs periodically and is a source of vehicle emissions. Both the burning of wood and other vegetation and the operation of heavy equipment periodically contribute to a localized increase in pollutants such as PM and GHG. Recurring wildfires throughout the Trinity River watershed periodically result in smoke and ash that drastically increases the PM levels within and adjacent to the project area.

The Project would not conflict with an air quality plan for the area, violate or contribute to any air quality violations, or result in a cumulatively considerable net increase of any criteria air pollutants. Therefore, the Project would have no impact on these aspects of air quality.

d. *Expose sensitive receptors to substantial pollutant concentrations?*

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, although there is one residential property located approximately 400 feet north of the proposed project that would be exposed to temporary changes in air quality.

Restoration activities within the proposed Project would require excavation, grading, and the use of vehicles and heavy equipment within the unpaved Project area, all of which would generate fugitive dust in the project area. Transportation and construction activities would also generate GHG emissions from diesel- and gasoline-powered vehicles and equipment.

The NCUAQMD does not have any formally adopted thresholds of significance for air quality. In order to evaluate the impact of the Indian Creek Project on GHGs, a "carbon foot- print" was developed based on the potential generation of GHGs (primarily carbon dioxide [CO_2]) from project activities[1]. The analysis indicated that the Project would produce approximately 11,000 pounds of CO_2 over the construction period of 17 days. The short-term duration and isolated location of the project would limit exposure to

[1] The Road Construction Emissions Model Version 9.0.0 was used to calculate GHG emissions for combustible fuel and fugitive dust generation.

these emissions and once construction is complete, project impacts on air quality from vehicle emissions would cease. To further reduce production of GHG's, all internal combustion engines utilized during construction operations would be registered and certified under the state portable equipment regulation (Health & Safety Code 41750 through 41755).

An evaluation of construction operations planned to occur on site indicated that 440 pounds of fugitive dust as PM_{10} would be generated. To address the production of fugitive dust during construction, dust control measures would be used to reduce project-related impacts on site and on the residential property approximately 400 feet north of the project. Once rehabilitation activities have been completed, project impacts on air quality from fugitive dust would cease.

Wildland fires also contribute to poor air quality. Due to the high fire hazard and history of equipment-caused fires in Trinity County, construction contractors would be required to follow BLM's and the Forest Service's applicable regulations as well as California Public Resource Code 4428-4442 during dry periods to minimize the potential for the initiation and spread of fires from the work site. Compliance with these federal and state requirements would reduce the potential for emissions due to a wildland fire.

Impacts on air quality would be less than significant with mitigation incorporated for dust abatement.

e. *Create objectionable odors affecting a substantial number of people?*

The odor of vehicle or construction equipment emissions is objectionable to some people. The Project is located 400 feet from the nearest residence, however, and the smell of emissions is unlikely to travel this far. The impact is less than significant.

Mitigation Measures

Impact 3.1 Construction activities associated with the proposed Project could result in an increase in fugitive dust and associated particulate matter (PM10 and PM2.5) levels.

> **Mitigation Measure 3.1a** A dust control program will be implemented to limit fugitive dust and particulate matter emissions. The dust control program will include the following elements as appropriate:
>
> - Inactive construction areas will be watered as needed to ensure dust control.
> - Pursuant to the California Vehicle Code (Section 23114), all trucks hauling soil or other loose material to and from the construction site will be covered or will maintain adequate freeboard to ensure retention of materials within the truck's bed (e.g., ensure 1-2 feet vertical distance between top of load and the trailer).
> - Excavation activities and other soil-disturbing activities will be conducted in phases to reduce the amount of bare soil exposed at any one time. Mulching with weed-free materials will be used to minimize soil erosion.
> - Watering (using equipment and/or manually) will be conducted on all stockpiles, dirt/gravel roads, and exposed or disturbed soil surfaces, as necessary, to reduce airborne dust.
> - All paved access roads, parking areas, and staging areas will be swept (with water sweepers) to prevent sediment trackoff.

Impact 3.2 Construction activities associated with the proposed Project could result in an increase in construction vehicle exhaust emissions.

> **Mitigation Measure 3.2a** Construction operations will comply with NCUAQMD Rule 104 (4.0) Particulate Matter. This compliance could occur by using portable internal combustion engines registered and certified under the state portable equipment regulation (Health & Safety Code 41750 through 41755).

References

Yurok Tribe Design Team. 2019. Yurok Tribe Fisheries Department. Indian Creek Connectivity and Restoration Project Draft 90% Design [Report]. Klamath, CA.

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

Refer to Sections 3.2 (Vegetation) and 3.4 (Wildlife) of the Environmental Assessment.

Discussion of Impacts

a. *Have a substantial adverse effect, either directly or through habitat modifications, on any species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?* and

d. *Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

Refer to Section 3.4 of the Environmental Assessment for a detailed evaluation and discussion of fish resources.

An evaluation of the Project area indicates that habitat for 14 special-status species occurs in the Project area, which consists of the 3,300-foot reach of Indian Creek and associated staging areas. These species include the foothill yellow-legged frog, Coastal giant salamander, western pond turtle, bald eagle, California yellow warbler, yellow-breasted chat, loggerhead shrike, little willow fly catcher, northern spotted owl, Pacific fisher, Townsend's big-eared bat, pallid bat, American badger, and ring-tailed cat.

Based on Project activities and available habitat, the Project is not expected to have an adverse effect on bald eagles, northern spotted owls, Pacific fishers, pallid bats, Townsend's big-eared bats, American badgers, and ring-tailed cats.

The Project area does not encompass any wildlife nursery sites as much of the entire 29.25-acre Project area is devoid of vegetation and provides poor quality wildlife habitat. The Project could temporarily disrupt the movement or migration of fish, although this section of Indian Creek typically becomes dry during the summer and fall months. The Project goals are to re-establish the ability for fish to access this portion of Indian Creek and to improve habitat quality that would encourage use by other wildlife species.

In-channel work may occur, although the priority is to implement the Project during the lowest flows of the year when water historically goes subsurface in this portion of Indian Creek. Nevertheless, in-stream work could occur that may temporarily impact the temporary use of the Project area and movement within the Project area of fish and the following species: foothill yellow-legged frog, Coastal giant salamander, western pond turtle, California yellow warbler, yellow-breasted chat, loggerhead shrike, and little willow fly catcher. Suitable foraging habitat for the northern spotted owl exists south of the Project area, yet it is more than 0.25 miles distant. Incorporating the mitigation measures below would cause the Project to have a less than significant impact on these wildlife species as biologists would survey any areas proposed for in-channel work immediately before construction. Adults and juveniles would be removed and relocated to suitable habitat outside the construction boundary.

The following special-status biological species have the potential to incur potentially significant adverse impacts unless suitable mitigation is incorporated into the proposed Project:

- **Foothill yellow-legged frog (*Rana boylii*)**. Portions of Indian Creek provide suitable habitat for this California Species of Special Concern. Construction related disturbance, especially in-channel work, could result in direct loss of individuals and/or egg masses.
- **Coastal giant salamander** (*Dicamptodon tenebrosus*) Portions of Indian Creek provide suitable habitat for this California Species of Special Concern. Construction related disturbance, especially in-channel work, could result in direct loss of individuals and/or egg masses.
- **Western pond turtle (*Actinemys marmorata marmorata*)**. Indian Creek and adjacent uplands provide suitable habitat for the western pond turtle, a California species of Special Concern. Construction related disturbance, especially in-channel work, could result in direct loss of individuals and/or nests.
- **Little willow flycatcher (*Empidonax traillii brewsteri*)**. Montane riparian vegetation adjacent to Indian Creek provide suitable habitat for the little willow flycatcher, a state listed Endangered Species. Project construction activities could result in the disturbance of a nest if one becomes established in or adjacent to the Project area prior to construction.
- **Loggerhead Shrike (*Lanius ludovicianus*)**. Open montane riparian and montane hardwood-conifer vegetation with scattered shrubs, trees, posts, and other perches provide suitable habitat for the loggerhead shrike, a state Species of Special Concern. Project construction activities could result in the disturbance of a nest if one becomes established in or adjacent to the Project area prior to construction.
- **Yellow-breasted chat (*Icteria virens*)**. The riparian woodlands on and adjacent to the Project site provide suitable nesting and foraging habitat for this state Species of Special Concern. Project construction activities could result in the disturbance of a nest if one becomes established in or adjacent to the Project area prior to construction.
- **California yellow warbler (*Dendroica aestiva brewsteri*)**. The riparian woodlands on and adjacent to the site provide suitable nesting and foraging habitat for this state Species of Special

Concern. Project construction activities could result in the disturbance of a nest if one becomes established in or adjacent to the Project area prior to construction.

The Project would have a less than significant impact on biological resources with mitigation incorporated. Mitigation for the above listed species is described in the "Mitigation Measures" section, below. Mitigation for fish species would be further addressed during the required formal consultation with the California Department of Fish and Wildlife and the National Marine Fisheries Service prior to Project implementation to ensure protection of water quality and any fish species that may occupy the Project area.

b. *Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?* and

c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Refer to Section 1.8 (Table 2, Rare plant species) of the Environmental Assessment for additional discussion.

There are no sensitive natural communities in or adjacent to the Project study area. There are no known rare plant populations found in the Project area. Construction of the Project may result in the temporary loss of riparian vegetation in some portions of the Project, although the removal of mature riparian vegetation would be avoided. Long-term, it is anticipated that the Project would result in the establishment of new riparian vegetation and the proliferation of existing riparian and wetland vegetation as the groundwater table rises. Implementation of the Project includes an extensive revegetation plan (likely to include cottonwood and willow pole plantings harvested on site) that would promote the rapid establishment of new riparian habitat within the Project area. Natural revegetation of native species is one of the stated goals and expected outcomes of the Project hydrological connectivity is re-established and seeds and fine sediment are deposited onto the graded surfaces. Impacts to riparian and wetland habitat would be temporary, therefore, and less than significant.

e. *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

In addition to CEQA and NEPA, the proposed rehabilitation activities are subject to a variety of federal, state, and local statutes, regulations, policies, and other authorities, such as the Clean Water Act, Endangered Species Act, California Fish and Game Code, National Historic Preservation Act, Wild and Scenic Rivers Act, and BLM's Redding Resource Management Plan (RMP) and Record of Decision (June 1993). An addendum to the RMP, the Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl (1994) (Standards and Guidelines), provides survey and manage direction for management of BLM-administered lands within northern spotted owl habitat. The primary responsible and trustee agencies are the U.S. Army Corps of Engineers (USACE), USFWS, National Marine Fisheries Service (NMFS), California Department of Fish and Wildlife (CDFW), the Regional Water Board. Section 404 of the federal Clean Water Act (1972) requires a diagnostic environmental characterization of a proposed Project area to identify vegetative, hydrologic, and soils traits indicative of wetland habitats before a Project begins. The U.S. Army Corps of Engineers (Corps) is authorized to issue permits for the discharge of dredged or fill material into waters of the United States, including wetlands.

Project activities would be required to comply with regulatory requirements of all agencies and impacts to biological resources would be avoided or minimized to a less than significant level.

f. *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

Currently, there are no adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved habitat conservation plans that cover the Project study area.

Mitigation Measures

See Section 3.4 of the Environmental Assessment for a detailed evaluation and discussion of wildlife and fishery resources associated with the Project.

Impact 4.1 Implementation of the Project could harm fish and other aquatic species in the Project area.

Mitigation Measure 4.1a Project implementation shall occur during the late summer low flow period when most of the Project area is expected to have subsurface flow and fish and other aquatic species are not present.

Mitigation Measure 4.1b In Project areas that have surface flow, fish and other aquatic species will be captured and relocated pursuant to conditions of a Scientific Collecting permit obtained from the California Department of Fish and Wildlife and the flow of water will be diverted around individual worksite locations to isolate the location and allow heavy equipment work to take place without species present or additional surface flow entering the location.

Mitigation Measure 4.1c When heavy equipment is entering or placing material in wetted worksite locations from which fish and other aquatic species have been removed, it will be done slowly to allow any fish or other aquatic species previously undetected during relocation efforts to leave the area by moving downstream.

Mitigation Measure 4.1d All water drafting activities will adhere to NMFS, Southwest Region, Water Drafting Specifications (2001) and CDFW Regulations to prevent fish from being entrained.

Impact 4.2 Implementation of the Project could increase erosion potential and lead to elevated turbidity levels in Indian Creek.

Mitigation Measure 4.2a All compacted floodplain areas will be fully decommissioned and subsoiled to improve infiltration, reduce compaction, reduce erosion potential and facilitate native vegetation regrowth.

Mitigation Measure 4.2b To reduce surface erosion potential of floodplain surfaces, roughness will be added in the form of large wood and open areas will be seeded with native grasses and forbs after construction.

Mitigation Measure 4.2c:

Best Management Practices (BMP's), including placement of silt fence, straw wattles, compost socks or other applicable measures, will be used to control off-site movement of sediment.

Impact 4.3 - Construction activities associated with the proposed Project could result in impacts to the state-listed little willow flycatcher (*Empidonax traillii*).

Mitigation Measure 4.3a Grading and other construction activities should be scheduled to avoid the nesting season to the extent possible. The nesting season for this species in Trinity County extends from June 1 to mid-August. If construction occurs outside of the breeding season, no further mitigation is necessary. If the breeding season cannot be completely avoided, then the following measures shall be implemented:

- A qualified biologist shall conduct protocol-level surveys for the species within the Project site and a 250-ft buffer around the site (Attachment 1 *A Willow Flycatcher Survey Protocol for California*). If an active nest is found, a qualified biologist, in consultation with CDFG, shall determine the extent of a construction-free buffer zone to be established around the nest.

Impact 4.4 - Construction activities associated with the proposed Project could result in impacts to California yellow warbler (*Dendroica aestiva brewsteri),* and yellow breasted chat (*Icteria virens)*.

Mitigation Measure 4.4a Grading and other construction activities should be scheduled to avoid the nesting season to the extent possible. The nesting season for these species in Trinity County extends from March 15 through August. If construction occurs outside of the breeding season, no

further mitigation is necessary. If the breeding season cannot be completely avoided, then the following measures shall be implemented:

- A qualified biologist shall conduct a minimum of one pre-construction survey for all three species within the Project site and a 250-ft buffer around the site. The survey will be conducted no more than 15 days prior to the initiation of construction in any given area (the survey may be conducted at the same time as the pre-construction survey for the western pond turtle, foothill yellow-legged frog, and Coastal giant salamander). The pre-construction survey should be used to ensure that no nests of these species within or immediately adjacent to the Project site would be disturbed during Project implementation. If an active nest is found, a qualified biologist, in consultation with CDFW, shall determine the extent of a construction-free buffer zone to be established around the nest.
- If vegetation is to be removed by the Project and all necessary approvals have been obtained, potential nesting substrate (e.g., shrubs and trees) that will be removed by the Project should be removed before the onset of the nesting season, if feasible. This will help preclude nesting and substantially decrease the likelihood of direct impacts. Trees and shrubs shall be cut, but roots and stumps left in place to avoid disturbing the ground during the rainy season.

Impact 4.5 - Construction activities associated with the Proposed Project could result in impacts to the foothill yellow-legged frog (*Rana boylii*) or Coastal giant salamander (*Dicamptodon tenebrosus*).

Mitigation Measure 4.5a The following measures will be implemented to avoid impacts to foothill yellow-legged frog and Coastal giant salamander:

- If any construction in the Indian Creek channel will occur prior to August 1 of any construction season, a pre-construction survey for the foothill yellow-legged frog larvae and/or eggs and Coastal giant salamander larvae and neotenes will be conducted by a qualified biologist. This survey will be conducted within the construction boundary no more than 2 weeks prior to the start of in-stream construction activities. If individuals or eggs are detected, the biologist will relocate them to a suitable location outside of the construction boundary.
- In the event that a foothill yellow-legged frog or Coastal giant salamander is observed within the construction boundary, the contractor will temporarily halt in-stream construction activities until qualified personnel have moved the frog(s) or salamander(s) to a safe location within suitable habitat outside of the construction limits. Planned locations for placement of transferred animals will be downstream of the construction limits and will be reported to the CDFW prior to construction.
- Mitigation measures identified in Section 9 (Hazards and Hazardous Materials) and Section 10 (Hydrology and Water Quality) for addressing erosion and sedimentation and accidental spills will be fully implemented to mitigate for potential indirect impacts to dispersal habitat for the foothill yellow-legged frog and Coastal giant salamander due to sedimentation and accidental spills.

Impact 4.6 Construction activities associated with the Proposed Project could result in impacts to the western pond turtle (*Actinemys marmorata pallida*).

Mitigation Measure 4.6a The following measures will be implemented to avoid impacts to western pond turtles:

- Any Project activities in the aquatic or riparian habitat will be preceded by a pre-construction survey. Surveys will be conducted by a qualified biologist. If a western pond turtle is found

the biologist will move it to appropriate habitat either up or downstream of the Project site. If a pond turtle nest is found, the biologist shall flag the site and determine if construction activities can avoid impacting the nest. If the nest cannot be avoided, it will be excavated and re-buried at a suitable location outside of the construction impact zone by a qualified biologist.

- If a western pond turtle is encountered during construction, activities in the vicinity shall cease until appropriate corrective measures have been implemented (e.g., relocation of the turtle by a qualified biologist to appropriate habitat either up or downstream of the Project area) or it has been determined by the biologist that the turtle will not be harmed. Any trapped, injured, or killed turtles shall be reported immediately to the CDFG.
- Mitigation measures identified in Section 9 (Hazards and Hazardous Materials) and Section 10 (Hydrology and Water Quality) for addressing erosion and sedimentation and accidental spills will be fully implemented to mitigate for potential indirect impacts to dispersal habitat for the western pond turtle due to sedimentation and accidental spills.

References

California Department of Fish and Wildlife. 2020. California Natural Diversity Database, 9-Quad Species Occurrence List accessed online April 16, 2020.

California Department of Fish and Wildlife. 2019. Special Animals List.

Yurok Tribe Design Team. 2019. Yurok Tribe Fisheries Department. Indian Creek Connectivity and Restoration Project Draft 90% Design [Report]. Klamath, CA.

5. CULTURAL RESOURCES — Would the Project:	***Potentially Significant Impact***	***Less Than Significant With Mitigation Incorporated***	***Less Than Significant Impact***	***No Impact***
a) Cause a substantial adverse change in the significance of a historical resource as identified in Section 15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☐	☒

Discussion of Impacts

a,b,c: Refer to Section 3.5 of the EA/IS.

The following mitigation measures for cultural resources appear in Appendix B of the EA/IS:

Mitigation Measures

Impact 5.1 Implementation of the proposed Project could potentially result in disturbance of undiscovered prehistoric or historic resources.

> **Mitigation Measure 5.1a** Prior to initiation of construction or ground-disturbing activities, all construction workers will be alerted to the possibility of discovering cultural resources. This includes prehistoric and/or historic resources. Personnel will be instructed that upon discovery of buried cultural resources, work within 50 feet of the find will be halted and

BLM's designated archaeologist will be consulted. Once the find has been identified, BLM will be responsible for developing a treatment plan for the cultural resource including an assessment of its historic properties and methods for avoiding any adverse effects, pursuant to the PA and in compliance with the NHPA.

Impact 5.2 Implementation of the proposed Project could potentially result in disturbance of undiscovered human remains.

Mitigation Measure 5.2a If human remains are encountered during construction on non-federal lands, work in that area will be halted and the Trinity County Coroner's Office will be immediately contacted. If the remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) will be notified within 24 hours of determination, as required by PRC, Section 5097. The NAHC will notify designated Most Likely Descendants, who will provide recommendations for the treatment of the remains within 24 hours. The NAHC will mediate any disputes regarding treatment of remains. If Native American human remains and associated items are discovered on federal lands, they will be treated according to provisions set forth in the Native American Protection and Repatriation Act (25 USC 3001) as well as Reclamation's Directives and Standards LND 02-01. If the find is determined to be a historical resource or a unique archaeological resource, as defined by CEQA, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or other appropriate mitigation will be made available. Work may continue on other parts of the Project while mitigation for historical or unique archaeological resources takes place.

6. ENERGY — Would the Project:	***Potentially Significant Impact***	***Less Than Significant with Mitigation Incorporated***	***Less Than Significant Impact***	***No Impact***
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

The proposed Project includes the operation of heavy equipment to complete restoration work over approximately six weeks. Energy consumption associated with the Project primarily includes the use of diesel fuel in equipment.

Discussion of Impacts

a. *Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation?*

Project implementation would require the efficient use of fossil fuels as equipment would be fueled on an as-needed basis to avoid unnecessary or excessive fuel costs and lost productivity during fueling. The impact would be less than significant.

b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No local plans exist for renewable energy or energy efficiency. Therefore, the Project would not conflict with any such plan and there would be no impact.

Mitigation Measures

No mitigation is required.

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

Refer to Section 3.3 of the Environmental Assessment.

Geological investigations were performed within the Project area in late March and early April of 2019 to assess the existing site conditions (Yurok Tribe Design Team, 2019). The investigation included excavation of nine test pits upstream from the Indian Creek Road Bridge and installation of piezometers to monitor groundwater levels throughout the upcoming dry season in the summer of 2019.

Discussion of Impacts

a. *Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:*

No Impact -

i) Rupture of a known earthquake fault:

There are no active faults mapped in the Project vicinity. There are no Alquist-Priolo earthquake fault zones identified in close proximity to the Project site. There is no supplemental geologic data to suggest unmapped active faults in the general area. The exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death from the rupture of a known earthquake fault is expected to be less than significant.

ii) Strong seismic ground shaking:

Although there are no known earthquake faults in the Project vicinity, earthquakes have occurred in Trinity County and is generally due to distant seismic sources off the coast of Humboldt County. Seismic shaking potential at the Project site is similar to the potential throughout the region; there is little likelihood that the Project would have a significant impact on seismic ground shaking.

iii) Seismic-related ground failure, including liquefaction:

Liquefaction results from an applied stress on the soil, such as earthquake shaking or other sudden change in stress condition, and is primarily associated with saturated, cohesionless soil layers located close to the ground surface. During liquefaction, soils lose strength and ground failure may occur. This phenomenon is most likely to occur in alluvial (geologically recent, unconsolidated sediments) and stream-channel deposits, especially when the groundwater table is high. Liquefaction is not a significant concern in the Project area as the alluvials would be moved within the Project area where the grade is very low.

iv) Landslides:

The proposed Project site is located on a wide, valley surface with gradually-sloping terrain that lacks the steeper slopes common to landslides. Impacts would be less than significant.

b. *Result in substantial soil erosion or the loss of topsoil?*

Most of the Indian Creek watershed is underlain by Abrams mica schist and Salmon hornblende schist of the Central Metamorphic Terrain (Fraticelli et al. 1987). A small headwater portion of the watershed drains the Shasta Bally batholith, which weathers to produce copious amounts of sandy sediment referred to as decomposed granite that makes up roughly15% of the geology of the watershed upstream of the project reach. The Indian Creek Project site is located in the middle of the watershed, 6.25 miles upstream from the confluence with the Trinity River. The area in which work is planned occupies a relatively wide, flat valley bounded by a bedrock escarpment on the north and to the south by terraces composed of hydraulic mining outwash and occasional bedrock knobs. The valley slope through the work area is fairly constant with an average value of nearly 2% and a standard deviation of 0.0062. Hydraulic mining scars and sluices cut into the bedrock farther upslope on both sides of the valley attest to severe disturbance of the site by historical mining activities. Vast quantities of sediment were washed off the surrounding hillsides and appear to

have buried the pre-settlement valley. The creek later incised into the valley fill, leaving outwash terrace scarps as much as 35 ft high in places.

The Project would not result in substantial soil erosion or loss of topsoil because the Project site is completely within an alluvial basin consisting of highly permeable boulders, cobble, coarse gravel and sand, placed with little or no slope. A small area (<1 acre) of bedrock consisting of Salmon Hornblende Schist will need to be ripped to meet grade, and is essentially non-erodible. Therefore, the impact would be less than significant.

c. *Be located on strata or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?*

The Project, when complete, would comprise a gently sloping (<2%) alluvial plane constructed on bedrock comprised of Salmon Hornblende Schist. Therefore, there would be no impact.

d. *Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?*

Not applicable. The Provisions of the Chapter 18 Soils and Foundations apply to building and foundation systems. There are no buildings within the Project area. Therefore, there would be no impact.

e. *Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?*

The proposed Project does not include the development of any facilities such as septic tanks or alternative wastewater disposal systems. There would be no impact.

f. *Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?*

No known unique paleontological or geological features exist on site, therefore there would be no impact.

Mitigation Measures

Impact 7.1 Construction activities associated with the Project could result in increased erosion and short-term sedimentation of Indian Creek.

Mitigation Measure 7.1a The following measures will be implemented during construction activities:

- Areas where ground disturbance will occur will be identified in advance of construction and limited to only those areas that have been approved by the Yurok Tribe.
- All vehicular construction traffic will be confined to the designated access routes and staging areas.
- Disturbance will be limited to the minimum necessary to complete all rehabilitation activities.
- All supervisory construction personnel will be informed of environmental concerns, permit conditions, and final Project specifications.

Mitigation Measure 7.1b An erosion and sedimentation control plan (SWPPP) will be prepared prior to construction. Measures for erosion control will be prioritized based on proximity to the creek. The Yurok Tribe will provide the SWPPP for review by associated agencies (e.g., BLM, the Regional Water Board, NMFS, and CDFW) upon request. The Project manager will ensure the preparation and implementation of an erosion and sediment control plan prior to the start of construction.

The following measures will be used as a guide to develop this plan:

- Salvage, store, and use the highest quality soil for revegetation.
- Discourage noxious weed competition and control noxious weeds.
- Clear or remove roots from steep slopes immediately prior to scheduled construction.
- Leave drainage gaps in topsoil and spoil piles to accommodate surface water runoff.
- To the fullest extent possible, cease excavation activities during significantly wet or windy weather.
- Use bales, wattles, and/or silt fencing as appropriate.
- Before seeding disturbed soils, work the topsoil to reduce compaction caused by construction vehicle traffic.
- Rip feathered edges (and floodplain surfaces where appropriate) to approximately 18 inches deep. The furrowing of the river's edge will remove plant roots to allow mobilization of the bed, but will also intercept sediment before it reaches the waterway.
- Spoil sites will be located such that they do not drain directly into a surface water feature, if possible. If a spoil site will drain into a surface water feature, catch basins will be constructed to intercept sediment before it reaches the feature. Spoil sites will be graded and vegetated to reduce the potential for erosion.
- Sediment control measures will be in place prior to the onset of the rainy season to ensure that surface water runoff does not occur. Project areas will be monitored and maintained in good working condition until disturbed areas have been seeded and mulched or revegetated in another fashion. If work activities take place during the rainy season, erosion control structures will be in place and operational at the end of each construction day.

Mitigation Measure 7.1c To minimize the potential for increases in turbidity and suspended sediments entering Indian Creek as a result of access routes (e.g., roads), the following protocols will be implemented:

- Keep bare soil to the minimum required by designs. Erosion control devices/measures will be applied to areas where vegetation has been removed to reduce short-term erosion prior to the start of the rainy season.
- Keep runoff from bare soil areas well dispersed. Dispersing runoff keeps sediment on-site and prevents sediment delivery to streams. Direct any concentrated runoff from bare soil areas into natural buffers of vegetation or areas with more gentle slopes where sediment can settle out.
- Disconnect and disperse flow paths, including roadside ditches, that might otherwise deliver fine sediment to stream channels.
- Decompact or rip floodplain areas so that surfaces are permeable and no surface water runoff occurs.

References

Yurok Tribe Design Team. 2019. Yurok Tribe Fisheries Department. Indian Creek Connectivity and Restoration Project Draft 90% Design [Report]. Klamath, CA.

8. GREENHOUSE GAS EMISSIONS — Would the Project:	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Refer to Section 3, Air Quality of this checklist.

Refer to Section 1.8 (Table 2) of the Environmental Assessment.

Discussion of Impacts

Greenhouse gas emissions are discussed in Section 3, Air Quality, above.

Mitigation Measures

See Section 3 Air Quality Mitigation Measures 3.1a and 3.2a.

9. HAZARDS AND HAZARDOUS MATERIALS — Would the Project:	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard for people residing or working in the Project area?	☐	☐	☐	☒

f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
g)	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

Discussion of Impacts

a.,b.

Implementation of the Project could cause contamination of Indian Creek from hazardous spills during construction, although standard best management practices would avoid or minimize the likelihood the spills would occur and the impacts are less than significant.

c.-f.

Not applicable to the Project.

g. *Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?*

The Project design does not propose significant changes to the Project site or surrounding property that would increase wildfire risks, although the operation of heavy equipment during construction may temporarily exacerbate fire risk in the area. To minimize the fire hazard of equipment-caused fire, construction contractors would be required to follow applicable regulations of Public Resource Code 4428-4442 during dry periods to minimize the potential for the initiation and spread of fires from the work site. During Project implementation, one water truck would be on site, with a tank capacity of 8,000 gallons that has hose attachments and a remote-controlled water cannon operable from the cab of the truck which could also be used for fire suppression. Based on conformance with State and County fire safe standards to minimize risks, the Project would result in impacts that are less than significant.

Mitigation Measures

Impact 9.1: Construction of the proposed Project could cause contamination of Indian Creek from hazardous materials spills.

Mitigation Measure 9.1a A spill prevention and containment plan will be prepared in accordance with applicable federal and state requirements.

Mitigation Measure 9.1b The Yurok Tribe will ensure that any construction equipment that will come in contact with Indian Creek will be inspected for leaks daily and immediately prior to entering the flowing channel. External oil, grease, and mud will be removed from equipment.

Mitigation Measure 9.1c Yurok Tribe will ensure that hazardous materials, including fuels, oils, and solvents, not be stored or transferred within 150 feet of the active Indian Creek channel. Areas for fuel storage, refueling, and servicing will be located at least 150 feet from the active river channel or within an adequate secondary fueling containment area. Gas pumps and engines will be stored and maintained on impermeable barriers so that any leaking petroleum products are isolated from the ground. In addition, the construction contractor will be responsible for maintaining spill containment booms onsite at all times during construction operations and/or staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times.

Impact 9.2: Operation of heavy equipment during construction may expose people or structures to wildland fires.

> **Mitigation Measure 9.2a:** Construction contractors would be required to follow applicable regulations of Public Resource Code 4428-4442 during dry periods to minimize the potential for the initiation and spread of fires from the work site.

References

Yurok Tribe Design Team. 2019. Yurok Tribe Fisheries Department. Indian Creek Connectivity and Restoration Project Draft 90% Design [Report]. Klamath, CA.

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

Refer to Section 3.1 of the Environmental Assessment for additional discussion regarding Hydrology.

Discussion of Impacts

a,c.e.

Construction of the proposed Project could result in short-term temporary increases in erosion, sedimentation, turbidity and total suspended solids levels during construction. Mitigation Measures 4.2a, 4.2b, and 4.2c, would avoid or minimize the discharge of sediment to Indian Creek, although the potential for these impacts to occur is most likely if in-channel work is conducted while Indian Creek is flowing, and intermittently for a short duration of time following the first flush and periods of peak flows.

Review of historical flow data indicates that there is a high likelihood that water will run sub-surface during the driest months of the year when construction is planned. However, if surface water is present during the construction window, Project activities could degrade water quality due to hazardous materials such as gasoline or engine oil leaking or spilling from construction equipment that enters Indian Creek. Water quality could also be affected by sediment input as considerable quantities of earth material are mobilized on site as cut or fill and heavy construction equipment operates within the creek channel. Mitigation Measures 4.1b, 7.1b, 9.1a, 9.1b, and 10.1a would be implemented to avoid and minimize the discharge of sediment or hazardous material into Indian Creek if in-water work cannot be avoided.
Water for dust abatement would be sourced on site from Indian Creek. As indicated in Mitigation Measure 4.1d, all water drafting activities will adhere to NMFS, Southwest Region, Water Drafting Specifications (2001) and CDFW Regulations to prevent fish from being entrained. Use of surface water from Indian Creek would be of short duration and used in quantities necessary only to abate dust without creating excess standing water on ground or road surfaces and the impact is expected to less than significant.

Implementation of the Project could alter the flow of Indian Creek in this portion of the stream; rather than flowing subsurface during the driest months of the year, the stream would continue to flow as a surface water and, during the wettest months, flow more slowly in a broader, and shallower pattern over a greater portion of the historical floodplain.

No sustainable groundwater management plan exists for the Indian Creek Watershed. The Project will operate in accordance with the combination of mitigation measures, best management practices and environmental commitments proposed for the Project to protect water quality. and impacts of the Project would be less than significant.

b. *Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?*

The Project is designed to promote hydrological connectivity. Rather than interfere with groundwater recharge, the Project aims to increase recharge and establish consistent recharge during all conditions. Impacts, therefore, would be beneficial and less than significant.

d. *In flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation?*

The location of the proposed Project is within a FEMA-designated Special Flood Hazard Area. The Project is designed to minimize flood risk by spreading the flow of Indian Creek over a large portion of the valley floor, thereby dissipating the energy of flood waters. Preliminary analysis indicates that implementation of the project will not cause flood waters to increase by more than one foot within the project reach.

Mitigation Measures

See Biological Resources Impact 4.1b
See Geology and Soils Impact 7.1b
See Hazards and Hazardous Materials Impact 9.1a and 9.1b.

Impact 10.1a: In-water work could result in substantial erosion or siltation on- or off-site.

> **Mitigation Measure 10.1a:** During in-water work, turbidity will be monitored to remain within criteria established by the North Coast Regional Water Quality Control Board in the Clean Water Act, Section 401 Water Quality Certification obtained for the Project.

References

Yurok Tribe Design Team. 2019. Yurok Tribe Fisheries Department. Indian Creek Connectivity and Restoration Project Draft 90% Design [Report]. Klamath, CA.

11. LAND USE AND PLANNING — Would the Project:		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a)	Physically divide an established community?	☐	☐	☐	☒
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c)	Conflict with any applicable habitat conservation plan or natural communities conservation plan?	☐	☐	☐	☒

Refer to Section 1.8 (Table 2) of the Environmental Assessment.

Discussion of Impacts

a.-c.

No Impact - The proposed Project does not include any activities that conflicts with the Trinity County General Plan or that would create impacts to existing or future land use or planning.

The Project is consistent with the guidance provided by the Northwest Forest Plan for restoration activities in Riparian Reserves (USDA and USDI, 1994).

The Project would have no impacts in regard to land use and planning.

Mitigation Measures

Not applicable.

References

Trinity County. General Plan Land Use Element.

USDA (U.S. Department of Agriculture), and USDI (U.S. Department of the Interior). 1994a. Record of decision for amendments to Forest Service and Bureau of Land Management planning documents within the range of the northern spotted owl: standards and guidelines for management of habitat

for late-successional and old-growth forest related species within the range of the northern spotted owl. U.S. Forest Service and U.S. Bureau of Land Management, Portland, Oregon.

12. MINERAL RESOURCES — Would the Project:	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

Refer to Section 1.8 (Table 2) of the Environmental Assessment.

Discussion of Impacts

a.- b.

No Impact - There are no known mineral claims or resources within the Project area that would be affected. The Project would not impact mineral resources.

Mitigation Measures

No mitigation is required.

13. NOISE -- Would the Project result in:	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?	☐	☐	☐	☒

Refer to Section 1.8 (Table 2) of the Environmental Assessment.

Discussion of Impacts

Noise impacts are those that exceed general plan or other local ordinances developed to provide reasonable control of noise to residences, parks, open spaces, and other specific designated sites. Noise can be generated by a number of sources, including mobile sources such as automobiles, trucks, and airplanes, and stationary sources such as construction sites, machinery, and industrial operations.

The project proposes the re-grading 3,300 feet of the Indian Creek valley bottom to create a laterally-flat valley bottom that slopes downstream at a near-constant gradient. This will include cutting and filling approximately 32,700 cubic yards of material to create the proposed geomorphic grade surface.

Ambient noise sources in the vicinity of the proposed project vary and primarily consist of limited vehicle traffic along Indian Creek Road, limited industrial activities related to timber operations, and commercial activities related to cannabis operations in the valley. These sources contribute to an elevated noise environment in the project area

Trinity County has not adopted a Noise Ordinance. However, the Trinity County General Plan Noise Element provides guidelines and direction for noise sources and attenuation requirements for various uses (Trinity County, 2003). Projects proposed for development within the County will be evaluated to determine potential conformance with the Noise Element and as necessary, specific conditions of approval will be placed on projects. The Noise Element refers to the A-Weighted Sound Level(dBA). A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards utilize A-weighting, as it provides a high degree of correlation with human annoyance and health effects.

The Noise Element identifies all residential uses, schools, medical facilities, churches, and libraries to be noise-sensitive land uses (i.e., sensitive receptors) (Trinity County, 2003). Sensitive noise conditions are typically at night and measured as indoor levels in decibels (dB). The nearest known potential sensitive receptor to the proposed project includes a residence(s) across at the northeastern portion of the project site. No other sensitive receptors are in vicinity of the project. As noted in Section 1.2 (Summary of Proposed Action), the two residences currently located on the adjacent or semi-adjacent parcels to the project site (APN 015-180-10-00 and 015-180-11-00) will be contacted prior to the beginning of construction activities.

Based on a field review by the Planning Department and other agency staff, information provided by the applicant, existing information available to the Planning Department, and observations made on the project site and in the vicinity, the following findings can be made:

a. *Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

Less Than Significant Impact with Mitigation Incorporated

Construction activities associated with the proposed Project would result in noise impacts to nearby residences, although the operation of heavy equipment would be limited to the hours between 7:00 am and 7:00 pm, Monday through Saturday to minimize impacts to less than significant.

b. *Generation of excessive groundborne vibration or groundborne noise levels?*

Ground borne vibrations are usually associated with heavy vehicle traffic and heavy equipment operations. The proposed Project does not include activities that would result in groundborne vibration, such as pile driving or heavy construction equipment. Therefore, there will be no impact. Less than Significant

c. *For a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?*

No Impact -

The proposed Project is not located within the vicinity of a private or public airport or airstrip. No impacts would occur regarding this environmental issue.

Mitigation Measures

Based on the above evaluation, in order for the proposed project to result in a less-than-significant impact on Noise, the following mitigation measure shall be implemented:

Impact 13.1: Construction activities associated with the proposed Project would result in temporary increase in ambient noise impacts to nearby sensitive receptors.

Mitigation Measure 13.1a Construction activities near residential areas will be scheduled between 7:00 a.m. and 7:00 p.m., Monday through Saturday. No construction activities will be scheduled for Sundays, holidays or other hours and days established by the local jurisdiction (i.e., Trinity County). The contractor may submit a request for variances in construction activity hours.

Mitigation Measure 13.1b All construction equipment will be equipped with manufacturer's specified noise muffling devices.

14. POPULATION AND HOUSING — Would the Project:	***Potentially Significant Impact***	***Less Than Significant with Mitigation Incorporated***	***Less Than Significant Impact***	***No Impact***
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion of Impacts

a.- c.

Not applicable. The Project does not include any activities that would involve population growth, the establishment of new homes or businesses, or the replacement of housing.

Mitigation Measures

Not applicable.

15. PUBLIC SERVICES — Would the Project:	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?	☐	☒	☐	☐
Police protection?	☐	☒	☐	☐
Schools?	☐	☒	☐	☐
Parks?	☐	☒	☐	☐
Other public facilities?	☐	☒	☐	☐

Discussion of Impact

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

The Project could cause short-term delays on local roads, particularly on Indian Creek Road, Reading Creek Road and Deerlick Springs Road as equipment is mobilized to and de-mobilized from the Project site. During mobilization of equipment, the applicant would move equipment in a manner that would allow access by emergency service providers at any time necessary.

Mitigation Measures

Impact 15.1 - Implementation of the proposed Project could result in temporary disruption to emergency services, school bus routes, or student travel routes during construction activities.

> **Mitigation Measure 15.1a** The applicant will require that staging and construction work, including temporary road or bridge delays occurs in a manner that allows for access by emergency service providers.

16. RECREATION — Would the Project:	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*

a)	Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b)	Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒
c)	Degrade the quality of recreation activities or impede the use of recreation areas?	☐	☐	☐	☒

Refer to Section 1.8 (Table 2) of the Environmental Assessment.

Discussion of Impacts

a.-c.

No Impact - The Project area does not currently function in a recreational capacity; the Project site lacks the attributes that render other reaches of Indian Creek more appealing for hiking, fishing, and swimming. Fishing is impaired due to the lack of hydrological connectivity that the Project design aims to re-establish. Objectives of the Project would restore lost recreational opportunities within publicly-accessible portions of the Project area.

Mitigation Measures

No mitigation is required.

17. TRANSPORTATION — Would the Project:		***Potentially Significant Impact***	***Less Than Significant with Mitigation Incorporated***	***Less Than Significant Impact***	***No Impact***
a)	Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?	☐	☒	☐	☐
b)	Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c)	Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒

d)	Conflict with an applicable congestion management program, including, but not limited to level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
e)	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
f)	Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
g)	Result in inadequate emergency access?	☐	☒	☐	☐
h)	Conflict with adopted polices, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

Refer to Section 15. Public Service in this checklist for additional discussion.

Discussion of Impacts

a. *Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?*

Implementation of the Project would cause a short-term increase in the amount of traffic on Indian Creek Road, Reading Creek Road or Deerlick Springs Road as construction personnel accesses the Project site on a daily basis. Capacity of these roads would not be exceeded, however, and would last for a relatively short time (less than 8 weeks) during construction. Impacts to traffic increases would be less than significant with the implementation of Mitigation Measure 16.1.

b.-f.

Not applicable.

g. *Result in inadequate emergency access?*

See Section 15. Public Services

Implementation of the Project could result in delays on local roads as equipment is moved to and from the site. As equipment is mobilized to the site and de-mobilized from the site, however, equipment operators will keep local roads open and accessible at all times to emergency service vehicles and the impact would be less than significant with mitigation described in the Public Services section of this checklist.

h.

Not applicable.

Mitigation Measures

See Public Services Impact 15.1

Impact 16.1 - Construction activities would generate short-term increases in vehicle trips.

Mitigation Measure 16.1a Signs will be posted at the local post office in Douglas City and at the intersection of Indian Creek Road and Reading Creek Road prior to Project activities notifying residents and travelers of increased traffic activity on local roads accessing the Project.

18. TRIBAL/CULTURAL RESOURCES — Would the Project:	***Potentially Significant Impact***	***Less Than Significant with Mitigation Incorporated***	***Less Than Significant Impact***	***No Impact***
a) Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☐	☒
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☒	☐

Refer to Section 5., above (Cultural Resources).

Refer to Section 1.8 (Table 2) and Section 3.5 of the Environmental Assessment.

BLM has conducted archaeological investigations for two of the four parcels encompassing the Project area that are under their ownership. The first archaeological work in the Project vicinity was by BLM archaeologist Clark Brott and D.P. Miller who in 1978 surveyed and recorded the Indian Creek townsite (CA-030-004) as an archaeological site. This location is considered potentially eligible for listing on the National Register of Historic Places. They stated the site has both educational and scientific importance and emotional value in terms of pioneer, ancestral, traditional, patriotic, and descendant interests. The southside of the major mining site in the Project vicinity was inventoried by Howard Matzat for a timber sale (Report FY 84-37). The area closest to the Project area, south of the creek, was inventoried by Alden Neel, Eric Ritter, and Max Kalina with the multi-acre Indian Creek Mines site recorded as CA-030-2137. This location could also be eligible for listing on the National Register of Historic Places, perhaps in concert with the townsite. A small inventory in 1984 was conducted above the current paved road (just outside the Project zone). Here was found the unevaluated Freitas Gulch Site (CA-030—233, CA-TRI-1446H), a mining complex of tailings, cabin pad, artifact scatters, workings, old road, and ditch. Also, northeast just outside the

Project area there was a small survey and documentation of an early 20th century structure foundation and reservoir (Indian Creek Reservoir/Pad Site, CA-030-2152). Demonstrably, outside the current channel and flood zone there is a rich legacy of mining and settlement.

The actual area of work (other than access roads and laydown areas) is non-archaeological due to many periods of erosion and deposition. Walks made over portions of the floodplain by BLM archaeologists (Neel and Ritter) yielded no cultural remains. Any artifacts washed into the floodplain would not be in situ. Based on this fact and with well-directed activities outside the floodplain that will be aligned to avoid cultural remains, the Project is determined to have no effect in terms of Section 106 of the National Historic Preservation Act. Under BLM's existing Protocol with the State Historic Preservation Office and the Advisory Council on Historic Preservation, no consultation is necessary with those agencies.

Discussion of Impacts

i. *Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k),*

The site is not eligible for listing on the California Register of Historical Resources.

ii. *A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.*

Trinity County (as lead agency) has determined that there are no resources present that are considered significant, and no additional mitigation or Project modifications are required. Mitigation measures for cultural resources are provided in Section 5, Cultural Resources section in this checklist for development of this Project that are considered to be sufficient to protect unknown future cultural resources that may be found at the Project site.

Mitigation Measures

Refer to Section 5 of this checklist, Cultural Resources Mitigation Measures 5.1a and 5.2a.

19. UTILITIES AND SERVICE SYSTEMS — Would the Project:	***Potentially Significant Impact***	***Less Than Significant with Mitigation Incorporated***	***Less Than Significant Impact***	***No Impact***
a) Require or result in the relocation or construction of new or expanded water or wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☒
b) Have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐

c)	Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's Projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d)	Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☒
e)	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Discussion of Impacts

a. *Require or result in the relocation or construction of new or expanded water or wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?*

No Impact - The Project involves restoring a functional floodplain to a portion of the Indian Creek valley. No additional services will be required to facilitate Project implementation and no additional development or occupancy will result directly from restoration activities after the Project is completed. Thus, there will be no need for utilities and services and no relocation or construction of new or expanded water or wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities will occur. The Project would cause no impact.

b. *Have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years?*

During implementation, watering (using equipment or manual methods) would be conducted on all stockpiles, dirt/gravel roads, and exposed or disturbed soil surfaces for dust abatement. Water trucks would draft water on site from Indian Creek for dust abatement in sufficient quantities to serve the Project while maintaining adequate water quantity and beneficial uses of water to downstream users. Although one of the parcels encompassing the Project has a residence and associated domestic water source, the Project footprint has no existing infrastructure for water (no groundwater well, seep well, and no surface water diversion), and no infrastructure would be developed on site for the Project or as a result of restoration activities because the Project would not create a change in use or occupancy of the site. The duration of drafting water from Indian Creek to facilitate Project activities would be of relatively short duration and in low quantities. Following implementation of the Project, revegetation efforts may include minimal amounts of irrigation that would be dictated by weather conditions and how well plants are becoming established. The impact of the Project would be less than significant.

c. *Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's Projected demand in addition to the provider's existing commitments?*

No Impact - A wastewater treatment provider does not currently serve the Project site. During Project implementation, porta-potties would be used to serve the site short-term. Following implementation, no wastewater service would be needed. The Project would have no impacts in regards to this issue.

d,e: *Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?* And *Comply with federal, state, and local statutes and regulations related to solid waste?*

No Impact - During Project implementation, a relatively minor amount of solid waste would be generated in the form of construction debris. Any solid waste produced on site would be disposed of at the Weaverville Transfer Center. The amount generated would not contribute significantly to the overall amount of solid waste accepted at the transfer station and would not exceed the capacity of the transfer station. The proposed Project would comply with all federal, state, and local statutes and regulations as they relate to solid waste. The impacts of the Project on solid waste would be less than significant.

Mitigation Measures

No mitigation is required.

20. WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:	***Potentially Significant Impact***	***Less Than Significant with Mitigation Incorporated***	***Less Than Significant Impact***	***No Impact***
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☒	☐

Refer to Section 1.8 (Table 2) of the Environmental Assessment.

The proposed Project is located in an area southeast from Douglas City with two designations as identified by the CALFIRE Fire and Resource Assessment Program (FRAP) Fire Hazard Severity Zones in State Responsibility Areas (SRA) (CALFIRE 2007): 1) Very High Fire Hazard Severity Zone (VHFHSZ) in the areas of the Project that are privately owned; and 2) Federal Responsibility Area (FRA) in the portions of the Project that are owned by the BLM. The majority of land in Trinity County has a

designation of VHFHSZ (for both SRA and non-SRA lands) including nearly all of the privately-owned land surrounding the Project for miles.

Discussion of Impacts

a. *Substantially impair an adopted emergency response plan or emergency evacuation plan?*

See Section 15. Public Services – Impact 15.1

Implementation of the Project could result in delays on local roads as equipment is moved to and from the site. As equipment is mobilized to the site and de-mobilized from the site, however, equipment operators will keep local roads open and accessible at all times to emergency service vehicles as described in Mitigation Measure 15.1a.

b, c. *Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?* And *Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?*

The Project design does not propose significant changes to the Project site or surrounding property that would increase wildfire risks, although the operation of heavy equipment may temporarily exacerbate fire risk in the area. To minimize the fire hazard of equipment-caused fire, construction contractors would be required to follow applicable regulations of Public Resource Code 4428-4442 during dry periods to minimize the potential for the initiation and spread of fires from the work site. The Project does not include the addition of new roads, fuel breaks, emergency water sources, power lines or other utilities. During Project implementation, one water truck would be on site, with a tank capacity of 8,000 gallons that has hose attachments and a remote-controlled water cannon operable from the cab of the truck which could also be used for fire suppression. Based on conformance with State and County fire safe standards to minimize risks, the Project will result in impacts that are less than significant.

d. *Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?*

The location of the proposed Project is within a FEMA-designated Special Flood Hazard Area. The Project is designed to minimize flood risk by spreading the flow of Indian Creek over a large portion of the valley floor, thereby dissipating the energy of flood waters. Significant risk of flooding or landslides would be reduced following implementation of the Project and impacts would be less than significant.

Mitigation Measures

Refer to Section 15 of this checklist, Public Services Mitigation Measure 15.1a.

References:

California Public Resources Code, Division 4, Forests, Forestry and Range and Forage Lands. Part 2 Protection of Forest, Range and Forage Lands. Chapter 2, Hazardous Fire Areas [4251-4290.5].

California Public Resources Code, Division 4, Forests, Forestry and Range and Forage Lands. Part 2 Protection of Forest, Range and Forage Lands. Chapter 6, Prohibited Activities [4421-4446].

California Board of Forestry and Fire Protection. *State Responsibility Area Viewer.* [Online]: https://osfm.fire.ca.gov/media/6835/fhszs_map53.pdf. Accessed: April 10, 2020.

March 2002. Trinity County. *Parcel Viewer.* [Online]:http://trinitycounty.maps.arcgis.com/apps/Viewer/index.html?appid=320cf1c1558c43c8b1f2f70c23d35026#. Accessed: March 5, 2020

21. MANDATORY FINDINGS OF SIGNIFICANCE (To be filled out by Lead Agency if required)	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Does the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a Project are considerable when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects)?	☐	☐	☒	☐
c) Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Discussion

a. *Does the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?*

Refer to Sections 1.8, and 3.2, and 3.4 of the Environmental Assessment for additional discussion.

Construction related disturbance, especially in-channel work, could affect air quality, special-status wildlife species and their associated riparian wetland habitat, water quality, and soils. Species that could be affected by the Project are foothill yellow-legged frog, Coastal giant salamander western pond turtle, little willow flycatcher, loggerhead shrike, California yellow warbler, and yellow-breasted chat. Mitigation measures have been incorporated into the proposed Project to address impacts on air quality, affected special-status wildlife species and the associated riparian wetland habitat, water quality, and soils (Appendix B). Cultural resources are not likely to be affected. However, because there is a potential to impact previously undiscovered cultural resources or human remains during Project activities, mitigation measures have been incorporated into the proposed Project to ensure protection of previously undiscovered cultural resources and human remains.

In addition, impacts to Federally-listed species will be avoided or minimized to a level that is less than significant in consultation with NOAA-NMFS for fish and with USFWS for wildlife.

b. *Does the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a Project are considerable when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects)?*

The goal of the Project is to raise groundwater elevations and improve surface water connectivity through a 3,300 ft reach of Indian Creek. The restoration design is expected to shorten the period when low flows present a barrier to anadromous fish passage and would improve ecologic and geomorphic conditions by promoting the establishment of more vigorous riparian vegetation and increasing the residence time of water and sediment in the reach.

The Project would not introduce new development into a previously undeveloped area. The Project site is near resource and rural residential uses, and near the Shasta-Trinity National Forest. All existing land uses would remain the same following Project implementation. Impacts associated with the Project would be limited to the construction phase for the most part and can be fully mitigated for at the Project level. As a result, cumulative impacts are considered to be less than significant.

c. *Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?*

The proposed Indian Creek Connectivity and Restoration Project could result in a variety of impacts on human beings. Potential adverse effects on adjacent residential areas along Indian Creek Road, Reading Creek Road, and Deerlick Springs Road are related to temporary decreases in air quality and water quality; and temporary delays on local roads. Appendix B contains best management practices and mitigation measures that will be implemented to avoid or minimize potentially adverse effects to humans generated by the construction and operation of the proposed Project.

APPENDIX B – Mitigation, Monitoring and Reporting Program

Indian Creek Connectivity and Restoration Project Best Management Practices – Common Construction Criteria and Methods

Introduction

The first part of this document comprises the MMRP for the Indian Creek Connectivity and Restoration Project (the Proposed Project). The purpose of providing the MMRP as an appendix is to facilitate its use as a stand-alone document, which clearly expresses to the reader the mitigation responsibilities of the Yurok Tribe in implementing the Project. The mitigation measures listed herein are required by law or regulation and will be adopted by Trinity County when it issues the Notice of Applicability for the Project. The second part of this document is comprised of Best Management Practices - Description of Common Activities and Construction Criteria and Methods that shall be implemented as part of the Proposed Project. In general, mitigation measures identified in Chapter 3 of the EA/IS correspond to mitigation measures in Table B-1.
Mitigation is defined by the CEQA – Section 15370 as a measure which:

- Avoids the impact altogether by not taking a certain action or parts of an action;
- Minimizes impacts by limiting the degree or magnitude of the action and its implementation;
- Rectifies the impact by repairing, rehabilitating, or restoring the impacted environment;
- Reduces or eliminates the impact over time by preservation and maintenance operations during the life of the Project; and
- Compensates for the impacts by replacing or providing substitute resources or environments.

The mitigation program identified in the MMRP to reduce potential Project impacts consists of mitigation measures, Project design elements, and construction criteria and methods. Mitigation measures provided in this MMRP have been identified in Chapter 3, Affected Environment and Environmental Consequences of the Proposed Project EA/IS, as feasible and effective in mitigating Project-related environmental impacts. This MMRP includes discussion of the following: legal requirements, intent of the MMRP, development and approval process for the MMRP, the authorities and responsibilities associated with the implementation of the MMRP, a description of the mitigation summary table, Project design elements, construction criteria and methods, and resolution of noncompliance complaints.

Legal Requirements

The legal basis for the development and implementation of the MMRP lies within CEQA (including the California PRC). Sections 21002 and 21002.1 of the California PRC state:

- Public agencies are not to approve Projects as proposed if there are feasible alternatives or feasible mitigation measures available that would substantially lessen the significant environmental effects of such Projects.

- Each public agency shall mitigate or avoid the significant effects on the environment of Projects that it carries out or approves whenever it is feasible to do so.

- Section 21081.6 of the California PRC further requires that: the public agency shall adopt a reporting or monitoring program for the changes made to the Project or conditions of Project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during Project implementation.

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

Intent of the Mitigation Monitoring and Reporting Program

The MMRP is intended to satisfy the requirements of CEQA as they relate to the Project. It is anticipated to be used by the Yurok Tribe, BLM, and Trinity County Planning Department staff, participating agencies, Project contractors, and mitigation monitoring personnel during implementation of the Project.

The primary objective of the MMRP is to ensure the effective implementation and enforcement of adopted mitigation measures and permit conditions. The MMRP will provide for monitoring of construction activities as needed, on-site identification and resolution of environmental problems, and proper reporting to lead agency staff.

Development and Approval Process

The timing elements for implementing mitigation measures and the definition of the approval process have been provided in detail through this MMRP to assist staff from the BLM and Trinity County Planning Department by providing the most usable monitoring document possible.

Authorities and Responsibilities

As the Project proponent, the Yurok Tribe will have the primary responsibility for the execution and proper implementation of the MRRP. The Trinity County Planning Department may provide the Yurok Tribe with support, as warranted. The Yurok Tribe will be responsible for the following activities:

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

Summary of Monitoring Requirements

Table B-1, which follows, summarizes the mitigation measures and associated monitoring requirements for the Proposed Project. The mitigation measures are organized by environmental issue area (i.e., Soils, Water Quality, etc.). Table B-1 is composed of the following four columns:

- **Mitigation Measure:** Lists the mitigation measures identified for each significant impact discussed in the Draft EA/IS for the Project.

- **Timing/Implementation:** Indicates at what point in time or Project phase the mitigation measure will need to be implemented.

- **Responsible Parties (tasks):** Documents which agency or entity is responsible for implementing a mitigation measures and what, if any, coordination is required (e.g., approval from Caltrans). If more than one party has responsibility under a given

mitigation measure, the tasks of each individual party is identified parenthetically (e.g., "implementation" or "monitoring").

- **Verification:** Provides spaces to be initialed and dated by the individual responsible for verifying compliance with each specific mitigation measure.

Resolution of Noncompliance Complaints

Any person or agency may file a complaint that states noncompliance with the mitigation measures that were adopted as part of the approval process for the Project. The complaint shall be directed to the BLM, Redding Field Office, 6640 Lockheed Drive, Redding, CA 96002 and to the Trinity County Planning Department at PO Box 2819, in written form, providing detailed information on the purported violation. BLM and the Trinity County Planning Department shall conduct an investigation and determine the validity of the complaint. If noncompliance with a mitigation measure is verified, the Yurok Tribe shall take the necessary action(s) to remedy the violation. The complainant shall receive written confirmation indicating the results of the investigation or the final corrective action that was implemented in response to the specific noncompliance issue.

Best Management Practices - Common Activities and Construction Criteria and Methods

Vegetation Removal and Invasive Species Management

- Remove the minimum amount of vegetation necessary to provide access to activity areas using a combination of manual labor and heavy equipment (i.e., chainsaw, excavator, and vegetation masticator).
- Dispose of removed vegetation by chipping, hauling offsite, burning, burying within spoil areas, or other appropriate methods.
- Protect vegetation designated for preservation within clearing limits. Vegetation outside the clearing limits would be preserved and protected.
- Require equipment that will be used on the Project site to be cleaned prior to starting work and after leaving the Project site. Equipment will be inspected to ensure that it is free of plant part as well as soils, mud, or other debris that may carry weed seeds.
- Monitor the Project site for up to 3 years after construction for the presence of new invasive species infestations or growth of existing invasive species infestation. If any populations of noxious or non-native invasive species are reported, treatments would follow BLM, Redding Field Office standard operating procedures.
- Use weed free materials (rock, fill, straw, mulch, seed) for restoration or erosion control purposes where needed. No rice straw will be used in riparian areas.

Water Use

Water would be used on site, in accordance with the following:

- Dust abatement water would be obtained from Indian Creek. When drafting from the creek, pump intakes would be in conformance with criteria established by NMFS and CDFW to prevent impacts to aquatic organisms. Make-up water pumped from the creek would pass through a screen at the inlet with maximum 3/32-inch openings and a maximum intake velocity of 0.8 fps.

Roadway Approaches

Use of local roads will be minimized. Once mobilized to the Project site, heavy equipment that is hauling excavated materials will remain within the Project area rather than use local roads to access all portions of the Project. If necessary, to use local roads, traffic control measures would be utilized to avoid conflicts with the traveling public.

Rights-of-Way/Easements

Prior to construction, formal agreements would be made between the applicant, land managers for BLM, and private landowners whose property would be affected. These agreements would clarify the terms and conditions under which the Yurok Tribe would work on private property.

Construction Criteria and Methods

Construction Process Overview

- Vegetation removal would occur in compliance with all regulatory requirements. An expected August 15 start date for clearing and grubbing of vegetation would allow completion of nesting by avian species.

- Where available, existing roads would be used to access the activity areas. New access roads and haul routes would be constructed when necessary and restored to a stable condition in accordance with landowner requirements at the completion of the Project.
- Excavation of the site, in accordance with Project design, will balance cut and fill ratios to achieve planar geomorphology (stage-0).
- When specified, finer grained materials (e.g., sand) excavated from riverine activity areas may be stockpiled for use at upland or other riverine activity areas.
- Any riverine treatment areas (e.g., constructed floodplain surfaces) that have been compacted from construction activities would be ripped to a depth of approximately 18 inches. The furrows developed by this ripping would ensure that most storm water runoff is retained and filtered on-site so that there is little or no construction-related turbidity. This action would effectively control the release of storm water runoff and turbidity from the site and reduce the need for use of post-construction sediment-control measures (e.g., silt fences, straw waddles).
- The timing for work adjacent to the wetted channels may be affected by Indian Creek flows. If the flow is low when construction starts, but it is anticipated that flows would increase before the floodplain can be excavated to final grade, earthwork would occur at the lower elevations (adjacent to Indian Creek) first and at the higher floodplain elevations last.
- In-channel activities are anticipated to occur during the low flow period, August 15 to September 30, or as required to remain in compliance with permit terms, or per the Biological Opinion issued by NMFS to allow mobilization of in-channel materials during low flows or when the stream channel is dry.
- Measures will be taken (e.g., sediment plug, sandbags) to isolate wetted work areas from flowing water. If necessary, pumps will be used to dewater these wetted areas to inhibit any sediment from becoming entrained in Indian Creek streamflow. If necessary, the Yurok Tribe will remove materials used to isolate wetted areas after they have been constructed.
- Final grading would occur as necessary for all activity areas.
- Demobilization of construction equipment and site clean-up would be accomplished consistent with all permit requirements and all mitigation requirements.
- Revegetation would take place following final grading and would occur in constructed floodplain surfaces. The Project is designed and will be implemented to achieve no net loss in riparian vegetation (within the Project site boundaries) from planting and natural revegetation consistent with the Project's Revegetation Plan.

In-channel Construction

- As much vegetation as practicable will be left intact along the Indian Creek channel to provide an immediate source of roughness, act as a viable seed source for the following spring, and provide habitat for animals.
- Project activities that require heavy equipment to work in wetted areas will be done in a manner that allows the equipment to work from dry surfaces while performing the wetted area task to the extent practical.

- Native coarse material may be used to temporarily redirect flow around wetted work areas and to create elevated dry surfaces from which to work. Efforts will be made to remove fish and other aquatic species out of harm's way in accordance with approved permits from the California Department of Fish and Wildlife. Flow will be redirected around 2etted areas in a slow enough manner (hours to days) to allow volitional fish or other aquatic species passage downstream away from the planned work area.

Traffic Control/Detour

Short-term traffic control is expected and would be in conformance with the following requirements established by the appropriate jurisdictional authority for mobilization and demobilization of heavy equipment or wide-load vehicles:

- The Yurok Tribe would coordinate with jurisdictional agencies to identify specific requirements that shall be included for use of existing roadways and haul routes. Requirements may include seasonal or other limitations or restrictions, payment of excess size and weight fees, and posting of bonds conditioned upon repair of damage.
- Temporary construction access may be required; access routes shall be of a width and load-bearing capacity to provide unimpeded traffic for construction purposes.

Staging Areas

Staging areas and storage facilities would be used throughout the duration of the Project activities. Some short-term staging and equipment storage and parking would be needed in the activity areas as the Project is implemented.

Air Pollution and Dust Control

Efforts would be made to minimize air pollution and reduce greenhouse gas emissions related to construction operations. The Yurok Tribe requires that the Project comply with all applicable air pollution control rules, regulations, ordinances, and statutes. In addition, equipment operators would be given educational material about fuel efficiency and the benefits of using vehicles powered by alternative energy sources to enhance awareness of global warming issues. Recycling bins will be used for on-site waste materials.

Fire Protection and Prevention

Due to the fire hazard of operating heavy equipment, construction operations would be required to follow applicable regulations of Public Resource Code 4428-4442 during dry periods to minimize the potential for the initiation and spread of fires from the work site.

Water Pollution Prevention

The Yurok Tribe would implement water pollution control measures that conform to applicable and appropriate permits. Equipment operators will use extreme care to prevent construction dirt, debris, storm water run-off, and miscellaneous byproducts from entering Indian Creek. Some key water pollution control measures that would be implemented are listed below:

- Every reasonable precaution would be exercised and BMPs would be implemented to protect Indian Creek from being polluted by fuels, oils, petroleum byproducts, and other harmful materials and shall conduct and schedule operations to avoid or minimize muddying and silting of the creek. Care shall be exercised to preserve roadside vegetation beyond the limits of construction.
- Construction equipment would be cleaned of dirt and grease prior to any in-channel activities. All construction equipment would be inspected daily and maintained to ensure

that fuel or lubricants do not contaminate Indian Creek. Spill containment kits would be onsite at all times and, where feasible, berms or other containment methods would be kept in place around the work areas when performing in-channel work.

- Water pollution control work is intended to provide prevention, control, and abatement of water pollution in Indian Creek, and would consist of constructing those facilities that may be shown on the plans.
- Furrowing of riparian areas that have been compacted during construction activity is expected to minimize or stop delivery of storm water runoff to Indian Creek.
- Before starting any work on the Project, the Yurok Tribe would develop an agency-approved SWPPP to effectively control water pollution during construction of the Project. The SWPPP would show the schedule for the erosion control work and for all water pollution control measures the Yurok Tribe proposes to take in connection with construction of the Project to minimize the effects of the operations on adjacent streams and other bodies of water. The Yurok Tribe would not perform any clearing and grubbing or earthwork on the Project until the SWPPP has been accepted by responsible agencies.
- Oily or greasy substances originating from the Yurok Tribe's operations would not be allowed to enter, or be placed where they would later enter, a live stream, soil, or groundwater.

Table B-1 **Mitigation Measure**	**Timing/Implementation**	**Responsible Parties**	**Verification (date / initials)**
1. Aesthetics (EA/IS Section 1.8 Scenic Resources)			
Impact 1.1 Implementation of the proposed Project could result in the degradation and/or obstruction of a scenic view from a public view.			
No mitigation is necessary; impact would be less than significant			
2. Agricultural and Forest Resources (EA/IS Section 1.8 Farmlands, Forestry Resources and Woodland Products)			
Impact 2.1 Project implementation could result in the loss of forest resources.			
No mitigation is necessary; impact would be less than significant			
3. Air Quality (EA/IS Section 1.8 Air Quality)			
Impact 3.1 Construction activities associated with the proposed Project could result in an increase in fugitive dust and associated particulate matter (PM_{10} and $PM_{2.5}$) levels.			
Mitigation Measure 3.1a - The Yurok Tribe will implement a dust control program to limit fugitive dust and particulate matter emissions. The dust control program will include the following elements as appropriate: • Inactive construction areas will be watered as needed to ensure dust control. • Pursuant to the California Vehicle Code (Section 23114), all trucks hauling soil or other loose material to and from the construction site will be covered or will maintain adequate freeboard to ensure retention of materials within the truck's bed (e.g., ensure 1-2 feet vertical distance between top of load and the trailer). • Excavation activities and other soil-disturbing activities will be conducted in phases to reduce the amount of bare soil exposed at any one time. Mulching with weed-free materials will be used to minimize soil erosion. • Watering (using equipment and/or manually) will be conducted on all stockpiles, dirt/gravel roads, and exposed or disturbed soil surfaces, as necessary, to reduce airborne dust.	During construction	Yurok Tribe	

Table B-1 **Mitigation Measure**	**Timing/Implementation**	**Responsible Parties**	**Verification (date / initials)**
• All paved access roads, parking areas, and staging areas will be swept (with water sweepers), as required by the Yurok Tribe. • Paved roads will be swept (with water sweepers) if visible soil material is carried onto adjacent private and public roads, as required by the Yurok Tribe. • All ground-disturbing activities with the potential to generate dust will be suspended when winds exceed 20 mph, as directed by the NCUAQMD. • The Yurok Tribe or its contractor will designate a person to monitor dust control and to order increased watering as necessary to prevent transport of dust offsite. This person will also respond to citizen complaints.			
Impact 3.2 Construction activities associated with the proposed Project could result in an increase in construction vehicle exhaust emissions.			
Mitigation Measure 3.2a - The Yurok Tribe will comply with NCUAQMD Rule 104 (4.0) Particulate Matter. This compliance could occur by using portable internal combustion engines registered and certified under the state portable equipment regulation (Health & Safety Code 41750 through 41755).	During construction	Yurok Tribe	
Impact 3.3 Construction activities would generate short-term and localized fugitive dust, gas, and diesel emissions, and smoke that could affect adjacent residences.			
Mitigation Measure 3.3a – The Yurok Tribe will ensure that a notice is posted at/adjacent to the project site that contains a phone number for the public to contact for concerns related to air quality.	Before construction		
4. Biological Resources (EA/IS Sections 3.2 Vegetation and 3.4 Wildlife)			
Impact 4.1 Implementation of the Project could harm fish in the Project area			

Table B-1 **Mitigation Measure**	**Timing/Implementation**	**Responsible Parties**	**Verification (date / initials)**
Mitigation Measure 4.1a - Project implementation shall occur during the late summer low flow period when most of the Project area is expected to have subsurface flow and fish and other aquatic species are not present.	During construction	Yurok Tribe	
Mitigation Measure 4.1b - In Project areas that have surface flow, fish and other aquatic species will be captured and relocated pursuant to conditions of a Scientific Collecting Permit obtained from the California Department of Fish and Wildlife and the flow of water will be diverted around individual worksite locations to isolate the location and allow heavy equipment work to take place without species present or additional surface flow entering the location.	During construction	Yurok Tribe	
Mitigation Measure 4.1c - When heavy equipment is entering or placing material in wetted worksite locations from which fish and other aquatic species have been removed, it will be done slowly to allow any fish or other aquatic species previously undetected during relocation effort to leave the area by moving downstream.	During construction	Yurok Tribe	
Mitigation Measure 4.1d - All water drafting activities will adhere to NMFS, Southwest Region, Water Drafting Specifications (2001) and CDFW Regulations to prevent fish from being entrained.	During construction	Yurok Tribe	
Impact 4.2 Implementation of the Project could increase erosion potential and lead to elevated turbidity levels in Indian Creek			
Mitigation Measure 4.2a - All compacted floodplain areas will be fully decommissioned and subsoiled to improve infiltration, reduce compaction, reduce erosion potential and facilitate native vegetation regrowth.	During and following construction	Yurok Tribe	
Mitigation Measure 4.2b - To reduce surface erosion potential of floodplain surfaces, roughness will be added in the form of large wood and open areas will be seeded with native grasses and forbs after construction.	During and following construction	Yurok Tribe	
Mitigation Measure 4.2c - Best Management Practices (BMP's), including placement of silt fence, straw wattles, compost socks or other applicable measures, will be used to control off-site movement of sediment.	Before, during and following construction	Yurok Tribe	
Impact 4.3			

Table B-1 **Mitigation Measure**	**Timing/Implementation**	**Responsible Parties**	**Verification (date / initials)**
Construction activities associated with the proposed Project could result in impacts to the little willow flycatcher (*Empidonax traillii*).			
Mitigation Measure 4.3a - Grading and other construction activities should be scheduled to avoid the nesting season to the extent possible. The nesting season for this species in Trinity County extends from June 1 to mid-August. If construction occurs outside of the breeding season, no further mitigation is necessary. If the breeding season cannot be completely avoided, then the following measures shall be implemented: • A qualified biologist shall conduct protocol-level surveys for the species within the Project site and a 250-ft buffer around the site (Attachment 1 A Willow Flycatcher Survey Protocol for California). If an active nest is found, a qualified biologist, in consultation with CDFG, shall determine the extent of a construction-free buffer zone to be established around the nest.	Before and during construction	Yurok Tribe	
Impact 4.4 Construction activities associated with the proposed Project could result in impacts to California yellow warbler (*Dendroica aestiva brewsteri*), and yellow breasted chat (*Icteria virens*).			
Mitigation Measure 4.4a - Grading and other construction activities should be scheduled to avoid the nesting season to the extent possible. The nesting season for these species in Trinity County extends from March 15 through August. If construction occurs outside of the breeding season, no further mitigation is necessary. If the breeding season cannot be completely avoided, then the following measures shall be implemented: • A qualified biologist shall conduct a minimum of one pre-construction survey for all three species within the Project site and a 250-ft buffer around the site. The survey should be conducted no more than 15 days prior to the initiation of construction in any given area (the survey may be conducted at the same time as the pre-construction survey for the western pond turtle,foothill yellow-legged frog, and Coastal giant salamander). The pre-construction survey should be used to ensure that no nests of these species within or immediately adjacent to the Project site would be disturbed during Project implementation. If an active nest is found, a qualified biologist, in consultation with CDFW, shall	Before and during construction	Yurok Tribe	

Table B-1 **Mitigation Measure**	**Timing/Implementation**	**Responsible Parties**	**Verification (date / initials)**
determine the extent of a construction-free buffer zone to be established around the nest. • If vegetation is to be removed by the Project and all necessary approvals have been obtained, potential nesting substrate (e.g., shrubs and trees) that will be removed by the Project should be removed before the onset of the nesting season, if feasible. This will help preclude nesting and substantially decrease the likelihood of direct impacts. Trees and shrubs shall be cut, but roots and stumps left in place to avoid disturbing the ground during the rainy season.			
Impact 4.5 Construction activities associated with the Proposed Project could result in impacts to the foothill yellow-legged frog (*Rana boylii*) and Coastal giant salamander (*Dicamptodon tenebrosus)*.			
Mitigation Measure 4.5a - The following measures will be implemented to avoid impacts to foothill yellow-legged frog and Coastal giant salamander: • If any construction in the Indian Creek channel will occur prior to August 1 of any construction season, a pre-construction survey for the foothill yellow-legged frog larvae and/or eggs and Coastal giant salamander larvae and neotenes will be conducted by a qualified biologist. This survey will be conducted within the construction boundary no more than 2 weeks prior to the start of in-stream construction activities. If individuals or eggs are detected, the biologist will relocate them to a suitable location outside of the construction boundary. • In the event that a foothill yellow-legged frog or Coastal giant salamander is observed within the construction boundary, the contractor will temporarily halt in-stream construction activities until qualified personnel have moved the frog(s) or	Before and during construction	Yurok Tribe	

Table B-1 **Mitigation Measure**	**Timing/Implementation**	**Responsible Parties**	**Verification (date / initials)**
salamander(s) to a safe location within suitable habitat outside of the construction limits. Planned locations for placement of transferred animals will be downstream of the construction limits and will be reported to the CDFW prior to construction. • Mitigation measures identified in Section 9 (Hazards and Hazardous Materials) and Section 10 (Hydrology and Water Quality) for addressing erosion and sedimentation and accidental spills will be fully implemented to mitigate for potential indirect impacts to dispersal habitat for the foothill yellow-legged frog and Coastal giant salamander due to sedimentation and accidental spills. •			
Impact 4.6 Construction activities associated with the Proposed Project could result in impacts to the western pond turtle (*Actinemys marmorata pallida*).			
Mitigation Measure 4.6a - The following measures will be implemented to avoid impacts to western pond turtles: • Any Project activities in the aquatic or riparian habitat will be preceded by a pre-construction survey. Surveys will be conducted by a qualified biologist. If a western pond turtle is found the biologist will move it to appropriate habitat either up or downstream of the Project site. If a pond turtle nest is found, the biologist shall flag the site and determine if construction activities can avoid impacting the nest. If the nest cannot be avoided, it will be excavated and re-buried at a suitable location outside of the construction impact zone by a qualified biologist. • If a western pond turtle is encountered during construction, activities in the vicinity shall cease until appropriate corrective measures have been implemented (e.g., relocation of the turtle by a qualified biologist to appropriate habitat either up or downstream of the Project area) or it has been determined by the	Before and during construction	Yurok Tribe	

Table B-1 **Mitigation Measure**	**Timing/Implementation**	**Responsible Parties**	**Verification (date / initials)**
biologist that the turtle will not be harmed. Any trapped, injured, or killed turtles shall be reported immediately to the CDFW. • Mitigation measures identified in Section 9 (Hazards and Hazardous Materials) and Section 10 (Hydrology and Water Quality) for addressing erosion and sedimentation and accidental spills will be fully implemented to mitigate for potential indirect impacts to dispersal habitat for the western pond turtle due to sedimentation and accidental spills.			
5. Cultural Resources (EA/IS Section 3.5 Cultural Resources)			
Impact 5.1 Implementation of the proposed Project could potentially result in disturbance of undiscovered prehistoric or historic resources.			
Mitigation Measure 5.1a - Prior to initiation of construction or ground-disturbing activities, all construction workers will be alerted to the possibility of discovering cultural resources. This includes prehistoric and/or historic resources. Personnel will be instructed that upon discovery of buried cultural resources, work within 50 feet of the find will be halted and BLM's designated archaeologist will be consulted. Once the find has been identified, BLM will be responsible for developing a treatment plan for the cultural resource including an assessment of its historic properties and methods for avoiding any adverse effects, pursuant to the PA and in compliance with the NHPA.	Before and during construction	All parties	
Impact 5.2 Implementation of the proposed Project could potentially result in disturbance of undiscovered human remains.			
Mitigation Measure 5.2a - If human remains are encountered during construction on non-federal lands, work in that area will be halted and the Trinity County Coroner's Office will be immediately contacted. If the remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) will be notified within 24 hours of determination, as required by PRC, Section 5097. The NAHC will notify designated Most Likely Descendants, who will provide recommendations for the treatment of the remains within 24 hours. The NAHC will mediate	During construction	All parties	

Table B-1 **Mitigation Measure**	**Timing/Implementation**	**Responsible Parties**	**Verification (date / initials)**
any disputes regarding treatment of remains. If Native American human remains and associated items are discovered on federal lands, they will be treated according to provisions set forth in the Native American Protection and Repatriation Act (25 USC 3001) as well as Reclamation's Directives and Standards LND 02-01. If the find is determined to be a historical resource or a unique archaeological resource, as defined by CEQA, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or other appropriate mitigation will be made available. Work may continue on other parts of the Project while mitigation for historical or unique archaeological resources takes place.			
6. Energy			
No mitigation is necessary; impact would be less than significant			
7. Geology and Soils (EA/IS Section 3.3)			
Impact 7.1 Construction activities associated with the Proposed Project could result in increased erosion and short-term sedimentation of Indian Creek.			
Mitigation Measure 7.1a - The Yurok Tribe will implement the following measures during construction activities: • Areas where ground disturbance will occur will be identified in advance of construction and limited to only those areas that have been approved by the Yurok Tribe. • All vehicular construction traffic will be confined to the designated access routes and staging areas. • Disturbance will be limited to the minimum necessary to complete all rehabilitation activities. • All supervisory construction personnel will be informed of environmental concerns, permit conditions, and final Project specifications.	Measures implemented at the start of construction	Yurok Tribe	
Mitigation Measure 7.1b - The Yurok Tribe will prepare an erosion and sedimentation control plan (SWPPP). Measures for erosion control will be prioritized based on proximity to the creek. The Yurok Tribe will provide the SWPPP for review by associated agencies (e.g., BLM, the Regional Water Board, NMFS, and CDFW) upon request. The Yurok Tribe's Project	SWPPP Measures implemented at the start of construction	Yurok Tribe	

Table B-1 **Mitigation Measure**	**Timing/Implementation**	**Responsible Parties**	**Verification (date / initials)**
manager will ensure the preparation and implementation of an erosion and sediment control plan prior to the start of construction. The following measures will be used as a guide to develop this plan: • Salvage, store, and use the highest quality soil for revegetation. • Discourage noxious weed competition and control noxious weeds. • Clear or remove roots from steep slopes immediately prior to scheduled construction. • Leave drainage gaps in topsoil and spoil piles to accommodate surface water runoff. • To the fullest extent possible, cease excavation activities during significantly wet or windy weather. • Use bales, wattles, and/or silt fencing as appropriate. • Before seeding disturbed soils, work the topsoil to reduce compaction caused by construction vehicle traffic. • Rip feathered edges (and floodplain surfaces where appropriate) to approximately 18 inches deep. The furrowing of the river's edge will remove plant roots to allow mobilization of the bed, but will also intercept sediment before it reaches the waterway. • Spoil sites will be located such that they do not drain directly into a surface water feature, if possible. If a spoil site will drain into a surface water feature, catch basins will be constructed to intercept sediment before it reaches the feature. Spoil sites will be graded and vegetated to reduce the potential for erosion. • Sediment control measures will be in place prior to the onset of the rainy season to ensure that surface water runoff does not occur. Project areas will be monitored and maintained in good working condition until disturbed areas have been seeded and mulched or revegetated in another fashion. If work activities take place during the rainy season, erosion control structures will be in place and operational at the end of each construction day.			
Mitigation Measure 7.1c - To minimize the potential for increases in turbidity and suspended sediments entering Indian Creek as a result of access routes (e.g., roads), the Yurok Tribe will implement the following protocols: • Keep bare soil to the minimum required by designs. Erosion control	Duration of Project	Yurok Tribe	

Table B-1 **Mitigation Measure**	**Timing/Implementation**	**Responsible Parties**	**Verification (date / initials)**
devices/measures will be applied to areas where vegetation has been removed to reduce short-term erosion prior to the start of the rainy season. • Keep runoff from bare soil areas well dispersed. Dispersing runoff keeps sediment on-site and prevents sediment delivery to streams. Direct any concentrated runoff from bare soil areas into natural buffers of vegetation or areas with more gentle slopes where sediment can settle out. • Disconnect and disperse flow paths, including roadside ditches, that might otherwise deliver fine sediment to stream channels. • Decompact or rip floodplain areas so that surfaces are permeable and no surface water runoff occurs.			
8. Greenhouse Gas Emissions (EA/IS Section 1.8 Farmlands, Forestry Resources and Woodland Products)			
See Air Quality Impacts 3.1, 3.2, and 3.3			
9. Hazards and Hazardous Materials			
Impact 9.1 Construction of the proposed Project could cause contamination of Indian Creek from hazardous materials spills.			
Mitigation Measure 9.1a - A spill prevention and containment plan will be prepared in accordance with applicable federal and state requirements.	Spill Prevention Plan in place before construction begins	Yurok Tribe	
Mitigation Measure 9.1b - The Yurok Tribe will ensure that any construction equipment that will come in contact with Indian Creek will be inspected for leaks daily and immediately prior to entering the flowing channel. External oil, grease, and mud will be removed from equipment.	All equipment inspected and cleaned at the start of each day beginning on	Yurok Tribe	
Mitigation Measure 9.1c - Yurok Tribe will ensure that hazardous materials, including fuels, oils, and solvents, not be stored or transferred within 150 feet of the active Indian Creek channel. Areas for fuel storage, refueling, and servicing will be located at least 150 feet from the active river channel or within an adequate secondary fueling containment area. Gas pumps and engines will be stored and maintained on impermeable barriers so that any leaking petroleum products are isolated from the ground. In addition, the construction contractor will be responsible for	Before and during construction	Yurok Tribe	

Table B-1 **Mitigation Measure**	**Timing/Implementation**	**Responsible Parties**	**Verification (date / initials)**
maintaining spill containment booms onsite at all times during construction operations and/or staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times.			
Impact 9.2 Operation of heavy equipment during construction may expose people or structures to wildland fires.			
Mitigation Measure 9.2a - Construction contractors would be required to follow applicable regulations of Public Resource Code 4428-4442 during dry periods to minimize the potential for the initiation and spread of fires from the work site.	During construction	Yurok Tribe	
10. Hydrology and Water Quality			
See Biological Resources Impact 4.2 **See Geology and Soils Impact 7.1** **See Hazards and Hazardous Materials Impact 9.1**			
Impact 10.1a In-water work could result in substantial erosion or siltation on- or off-site.			
Mitigation Measure 10.1a - During in-water work, turbidity will be monitored to remain within criteria established by the North Coast Regional Water Quality Control Board in the Clean Water Act, Section 401 Water Quality Certification obtained for the Project.	During construction	Yurok Tribe	
11. Land Use Planning			
No mitigation is necessary; no impacts would occur			
12. Mineral Resources			
No mitigation is necessary; no impacts would occur			
13. Noise			
Impact 13.1 Construction activities associated with the proposed Project would result in noise impacts to nearby sensitive receptors.			
Mitigation Measure 13.1a - Construction activities near residential areas will be scheduled between 7:00 a.m. and 7:00 p.m., Monday through	During construction	Yurok Tribe	

Table B-1 **Mitigation Measure**	**Timing/Implementation**	**Responsible Parties**	**Verification (date / initials)**
Saturday. No construction activities will be scheduled for Sundays or other hours and days established by the local jurisdiction (i.e., Trinity County). The contractor may submit a request for variances in construction activity hours, as needed.			
Mitigation Measure 13.1b - The Yurok Tribe will require that all construction equipment be equipped with manufacturer's specified noise muffling devices.	During construction	Yurok Tribe	
14. Population and Housing			
No mitigation is necessary; impact would be less than significant			
15. Public Services			
Impact 15.1 Implementation of the proposed Project could result in temporary disruption to emergency services, school bus routes, or student travel routes during construction activities.			
Mitigation Measure 15.1a - The applicant will require that staging and construction work, including temporary road or bridge delays occurs in a manner that allows for access by emergency service providers.	During construction	Yurok Tribe	
16. Recreation			
No mitigation is necessary; impact would be less than significant			
17. Transportation			
Impact 16.1 Construction activities would generate short-term increases in vehicle trips.			
Mitigation Measure 16.1a - The Yurok Tribe will post signs at the local post office in Douglas City and at the intersection of Indian Creek Road and Reading Creek Road prior to Project activities notifying travelers of increased traffic activity on local roads accessing the Project.	Before construction		
18. Tribal/Cultural Resources			
See Cultural Resources Impacts 5.1 and 5.2			
19. Utilities and Service Systems			

Table B-1 **Mitigation Measure**	**Timing/Implementation**	**Responsible Parties**	**Verification (date / initials)**
No mitigation is necessary; impact would be less than significant			
20. Wildfire			
See Hazards and Hazardous Materials Impacts 9.1 and 9.2 **See Public Services Impacts 15.1**			

APPENDIX C – Aquatic Conservation Strategy Consistency Evaluation

Indian Creek Connectivity and Restoration Project

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Federal Lead Agency for NEPA
U.S. Department of Interior – Bureau of Land
Management Redding Field Office

APPENDIX C

Indian Creek Connectivity and Restoration Project Aquatic Conservation Strategy Consistency Evaluation

The Aquatic Conservation Strategy was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. A goal of this strategy is to maintain a "natural" disturbance regime. In addition, management activities must comply with nine objectives that are included in the strategy and any associated standards and guidelines. A variety of tactics to accomplish these goals and objectives are incorporated into four primary components. These components are: Riparian Reserves, Key Watersheds, Watershed Analysis, and Watershed Restoration. According to the Record of Decision [ROD] for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (USDA and USDI, 1994a), these four components, along with Late Successional Reserves, are designed to operate together to maintain and restore the productivity and resiliency of riparian and aquatic ecosystems.

Riparian Reserves

The ROD defined Riparian Reserves as “portions of watersheds where riparian-dependent resources receive primary emphasis and where special standards and guidelines apply”. Riparian Reserves include those portions of a watershed directly coupled to streams, ponds, lakes, and wetlands - that is, the portions of a watershed required for maintaining hydrologic, geomorphic, and ecologic processes that directly affect standing and flowing water (ROD pgs. B-12 and B- 13).

The Watershed Analysis made no final recommendations to adjust Riparian Reserve widths for the streams in the watershed, retaining the initial reserve widths (based on site potential tree height) from the ROD for all streams.

During the analysis for the Indian Creek Floodplain Enhancement Project, no reductions of Riparian Reserve widths along any streams were proposed. However, treatments were proposed within Riparian Reserves in the Project area to meet the purpose and need of the Project and attain Aquatic Conservation Strategy objectives.

Watershed and habitat management, and fish and wildlife management activities are allowed within Riparian Reserves as outlined in the following standards and guidelines from the ROD.

- *WR-1. Design and implement watershed restoration Projects in a manner that promotes long-term ecological integrity of ecosystems, conserves the genetic integrity of native species, and attains Aquatic Conservation Strategy objectives.*
- *FW-1. Design and implement fish and wildlife habitat restoration and enhancement activities in a manner that contributes to attainment of Aquatic Conservation Strategy objective*

Standards and Guidelines WR-1 and FW-1 in the ROD provide direction on the design and implementation of restoration activities in Riparian Reserves. Restoration related activities proposed within Riparian Reserves in the Project area include the redistribution of sediment, haul and placement of LWM, creation of new pond habitat, construction of temporary roads for equipment access, and planting, and rehabilitation of disturbed areas. The Project was designed to promote the long-term ecological integrity of the ecosystem, conserve the genetic integrity of native species and contribute to the attainment of Aquatic Conservation Strategy objectives.

Key Watersheds

The Northwest Forest Plan created an overlay of Key Watersheds that are intended to provide refugia for at-risk stocks of anadromous salmonids and resident fish species. Refugia are a cornerstone of the conservation strategy for these species, consisting of watersheds that provide high quality habitat or are expected to provide habitat. Two different levels of protection, or tiers, are identified (ROD page B19). In key watersheds, completion of a watershed analysis is required prior to most management activities. The Indian Creek watershed is not designated as a Key Watershed, and as such, standards and guidelines for Key Watersheds are not applicable.

Watershed Analysis

A watershed analysis was completed for the Mainstem Trinity River in 1995 and the Indian Creek watershed was included in the analysis area (BLM, 1995).

Watershed Restoration

The Mainstem Trinity River Watershed Analysis (WA) prepared for the Redding BLM in 1995 characterized the watershed in terms of past and current conditions, and a synthesis discussion was provided to guide development of management proposals to maintain and restore watershed conditions.

The WA included management recommendations that would reduce sediment delivery to the mainstem Trinity River from tributary streams with highly granitic soils. The Indian Creek watershed was one of eight tributary streams identified and was determined to account for 7.8% of the total sediment contribution to the Trinity River in the WA area. The Indian Creek Floodplain Enhancement Project would cause granitic soils to deposit within the newly constructed floodplain area and reduce the amount of granitic soils delivered to the mainstem Trinity River. The Project has also been specifically designed to restore natural hydrologic processes and facilitate reestablishment of native plant communities within the Project reach.

The WA specifically states that sediment reduction Projects in tributaries that restore natural hydrologic processes and facilitate natural revegetation of native plant communities are the preferred treatment. The Project is therefore consistent with the Mainstem Trinity River WA watershed restoration recommendations.

Aquatic Conservation Strategy Objectives

The above section highlights the consistency of the Project with the four components of the Aquatic Conservation Strategy. The management objective for Riparian Reserves is to acquire desired characteristics needed to attain Aquatic Conservation Strategy (ACS) Objectives as directed in the Northwest Forest Plan. This section will outline how the Project is consistent with the nine objectives.

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

Restoration activities will occur in Riparian Reserves in the Project area and are designed to place key riverine processes in Indian Creek on a path towards sustainable recovery.

Primary shade and wood recruitment zones will be protected and existing high quality habitat within the Project reach will be maintained. Additional well-shaded side channel habitat will be made available by hydrologically reconnecting the floodplain. Approximately 120 pieces of large wood (12- 36’’ dbh) will be placed in-stream and throughout the floodplain, adding surface roughness, slowing and dividing flows,

encouraging sediment deposition and pool formation.
The objective is to restore the distribution, diversity and complexity of habitat for native aquatic and terrestrial species to historic levels.

<u>Objective #2</u> - Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

Implementation of the Project will restore spatial and temporal connectivity to Indian Creek floodplain by aggrading an approximately 1900 ft. long section of incised stream channel. The aggradation of the currently incised stream channel will restore hydrologic connectivity to the floodplain at a range of flows throughout the year. The Project will increase the temporal extent of longitudinal aquatic habitat connectivity as the duration of sub-surface stream flows are reduced or eliminated. Implementation will improve drainage network connections to floodplain and side channel habitat for aquatic and riparian dependent species.

<u>Objective #3</u> - Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

All proposed treatments were designed to restore the long-term physical integrity of the aquatic system. All Project activities minimize the use of ground disturbing equipment in and around streams to designated routes and treatment areas and provide for retention of the limited streamside vegetation that is contributing to the stability of banks and channels.

Existing vegetation, consisting primarily of Cottonwood trees and willows, will be left intact to provide shade, a source of roughness, soil stability, and a source of native seed stock. Cuttings will be harvested from existing vegetation and planted throughout the site to accelerate revegetation of the Project area

The Project includes the addition of large wood throughout the floodplain, which will impact the physical integrity of the system by increasing the system's ability to store and sort gravels, thus adding to the stability and complexity of the system.

<u>Objective #4</u> – Maintain and restore water quality necessary to support healthy riparian, aquatic and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

Implementation of the Project will immediately restore floodplain connectivity and hyporheic exchange, leading to a system more capable of maintaining water temperatures during periods of increased air temperature. Near stream vegetation in the treated areas will be maintained in order to preserve stream shading.

Implementation of the Project will also increase hyporheic exchange in the system by spreading flows across the floodplain, reducing velocities and encouraging sediment collection and sorting. An increase in fine sediment storage leads to increased hyporheic exchange and a greater capacity to maintain water temperatures as it moves through the system.

Where sediment redistribution activities are proposed, stream temperatures will not be meaningfully increased as the Project will be implemented during late summer when stream flows will be sub-surface and not prone to solar influence. Further, the addition of large wood will improve gravel storage and pool formation by the following summer which, in turn, will increase hyporheic exchange and improves cold water influx to the channels.

<u>Objective #5</u> – Maintain and restore the sediment regime under which aquatic ecosystems evolve. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

All proposed treatments were designed to restore the long-term physical integrity of the aquatic system, as discussed above under ACS Objective #3. These design elements will also provide protection to water quality from the introduction of sediment into streams and resulting effects on stream turbidity.

All proposed restoration activities were designed with turbidity mitigation in mind. All restoration activities follow BMP guidelines and minimize the use of ground disturbing equipment in and around streams. When in-stream work is required, flows will be diverted and equipment will work in a dry channel. Turbidity will be visually monitored during Project activities and if turbidity standards are exceeded then work will be stopped until the turbidity dissipates.

<u>Objective #6</u> – Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration and spatial distribution of peak, high, and low flows must be protected.

In-stream flows following implementation of the Project will more closely resemble naturally occurring flows in many ways. The Project will likely have insignificant effects on the timing and magnitude of in-stream flows. However, one of the Project goals is to reconnect the historic floodplain, increasing spatial distribution of flows, reducing velocities and increasing surface roughness in the form of large down wood. The result will be a system that is more capable of storing flood flows and increasing the duration of surface flow.

<u>Objective #7</u> – Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.

Implementation of the Project seeks to restore the variability, and duration of floodplain inundation and water table elevation in the Project area. Historically, much of the Project area was a wide depositional zone that was frequently inundated at a range of flows. Historic gold mining resulted in this area being buried by coarse aggregate which has led to channel incision, a disconnected floodplain and a lowered water table throughout the Project area. Implementation of this Project will aggrade the incised channel and reconnect the floodplain at a range of flows, inundating areas and creating new wetlands and enhancing existing wetlands. The resulting system will more closely resemble historic conditions.

<u>Objective #8</u> - Maintain and restore the species compositions and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distribution of coarse woody debris sufficient to sustain physical complexity and stability.

The Project will allow for Indian Creek to connect with the constructed floodplain and create side channels, which will lead to a higher water table throughout the year in the Project area. The higher water table will lead to an increase in riparian species diversity and structural complexity and accelerate tree growth. Implementation of this alternative will include the placement of large wood, greatly increasing surface roughness, physical complexity and system stability.

Aquatic habitats currently characterized as simplified will be expected to improve in substrate storage and habitat complexity over time thus improving their ability to meet aquatic life history needs at the site scale.

The active restoration proposed in the Project area will have localized short term effects (1 year) on species composition in sediment redistribution areas while vegetation reestablishes. Project activities include the rehabilitation and replanting of approximately of areas disturbed during restoration activities. The long-term effects in these areas will be highly beneficial to species composition and structural diversity of riparian plant communities in the treatment areas.

Constructed wetlands and floodplain areas that are critical to nutrient filtering will be hydrologically connected in this alternative. Near-stream gaps from sediment redistribution and large wood input will help improve the nutritional quality of organic matter delivered to streams and allow for increased primary productivity.

In summary, the Project will help to accelerate attainment of ACS Objectives regarding native plant communities.

Objective #9 – Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.

The purpose and need of the proposed Project are directly related to restoring habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species.

The purpose of the Project is threefold: restore to the extent practicable the physical, chemical, and biological processes that maintain a healthy, diverse, and resilient floodplain ecosystem; restore a hydrologically connected, well-functioning, complex channel network and floodplain; and increase habitat availability, diversity, and quality for ESA-Threatened coho salmon and other native aquatic and riparian species, including Chinook salmon, Pacific lamprey, and steelhead.

There is a need to restore this alluvial valley of Indian Creek because: (1) existing conditions are severely degraded, (2) the Project area presents unique potential to restore high value floodplain habitat, (3) and we are guided to restore aquatic and riparian habitat based on the Northwest Forest Plan, Endangered Species Act Recovery Plans, and other important guiding documents.

This Project seeks to restore impaired stream processes and place Indian Creek on a path towards sustainable recovery by aggrading the incised main stem channel, reconnecting the floodplain and creating side channels, and placing large wood. The resulting system will result in a more complex, dynamic and well-distributed habitat suitable for native plant, invertebrate and vertebrate riparian-dependent species.

APPENDIX D – BLM Sensitive Species List

Indian Creek Connectivity and Restoration Project

Special Status Plants in California, Including BLM Designated Sensitive Species

Plants Known to Occur on BLM Lands in One or More Field Offices

SCIENTIFIC NAME	COMMON NAME	FAMILY	TYPE OF PLANT	FEDERAL STATUS	STATE STATUS	BLM STATUS	CA RARE PLANT RANK
Abronia umbellata var. breviflora	pink sand-verbena	Nyctaginaceae	VASC			BLMS	1B.1
Abronia villosa var. aurita	chaparral sand-verbena	Nyctaginaceae	VASC			BLMS	1B.1
Acanthoscyphus parishii var. goodmaniana	Cushenberry oxytheca	Polygonaceae	VASC	FE			1B.1
Acmispon argyraeus var. multicaulis	scrub lotus	Fabaceae	VASC			BLMS	1B.3
Acmispon haydonii	pygmy lotus	Fabaceae	VASC			BLMS	1B.3
Agave utahensis var. eborispina	Ivory-spined agave	Agavaceae	VASC			BLMS	1B.3
Agrostis blasdalei	Blasdale's bent grass	Poaceae	VASC			BLMS	1B.2
Agrostis hooveri	Hoover's bent grass	Poaceae	VASC			BLMS	1B.2
Agrostis lacuna-vernalis	vernal pool bent grass	Poaceae	VASC			BLMS	1B.1
Allium hickmanii	Hickman's onion	Alliaceae	VASC			BLMS	1B.2
Allium howellii var. sanbenitense	San Benito onion	Alliaceae	VASC			BLMS	1B.3
Allium jepsonii	Jepson's onion	Alliaceae	VASC			BLMS	1B.2
Allium marvinii	Yucaipa onion	Alliaceae	VASC			BLMS	1B.2
Allium sharsmithiae	Sharsmith's onion	Alliaceae	VASC			BLMS	1B.3
Allium shevockii	Spanish Needle onion	Alliaceae	VASC			BLMS	1B.3
Allium tuolumnense	Rawhide Hill onion	Alliaceae	VASC			BLMS	1B.2
Ambrosia pumila	San Diego ambrosia	Asteraceae	VASC	FE			1B.1
Amsinckia lunaris	bent-flowered fiddleneck	Boraginaceae	VASC			BLMS	1B.2
Arabis mcdonaldiana	McDonald's rock-cress	Brassicaceae	VASC	FE	SE		1B.1
Arctostaphylos bakeri subsp. sublaevis	The Cedars manzanita	Ericaceae	VASC		SR	BLMS	1B.2
Arctostaphylos canescens subsp. sonomensis	Sonoma canescent manzanita	Ericaceae	VASC			BLMS	CBR
Arctostaphylos hookeri subsp. hookeri	Hooker's manzanita	Ericaceae	VASC			BLMS	1B.2
Arctostaphylos manzanita ssp. elegans	Konocti manzanita	Ericaceae	VASC			BLMS	1B.3
Arctostaphylos montereyensis	Toro manzanita	Ericaceae	VASC			BLMS	1B.2
Arctostaphylos morroensis	Morro manzanita	Ericaceae	VASC	FT			1B.1
Arctostaphylos myrtifolia	Ione manzanita	Ericaceae	VASC	FT			1B.2
Arctostaphylos nissenana	Nissenan manzanita	Ericaceae	VASC			BLMS	1B.2
Arctostaphylos otayensis	Otay manzanita	Ericaceae	VASC			BLMS	1B.2
Arctostaphylos pajaroensis	Pajaro manzanita	Ericaceae	VASC			BLMS	1B.1
Arctostaphylos pilosula	Santa Margarita manzanita	Ericaceae	VASC			BLMS	1B.2
Arctostaphylos pumila	sandmat manzanita	Ericaceae	VASC			BLMS	1B.2
Arctostaphylos rainbowensis	rainbow manzanita	Ericaceae	VASC			BLMS	1B.1

Type of Plant: BRYO = Bryophyte; FUNG = Fungus; LICH = Lichen; VASC = Vascular plant; Federal Status: FE = Federally Endangered, FT = Federally Threatened, FC = Federal Candidate, FP = Proposed for Federal Listing, FD = Delisted from Federal ESA; State Status: SE = State Endangered, ST = State Threatened, SR = State Rare; California Rare Plant Rank: 1A = Plants Presumed Extinct in CA, 1B = Plants Rare, Threatened, or Endangered in CA and Elsewhere, 2 = Plants Rare, Threatened, or Endangered in CA, but More Common Elsewhere, 3 = Plants About Which More Information is Needed, 4 = Plants of Limited Distribution – a Watch List; Decimals Following the CA Rare Plant Rank Numbers: x.1 = Seriously Endangered in CA, x.2 = Fairly Endangered in CA, x.3 = Not Very Endangered in CA

Plants Known to Occur on BLM Lands in One or More Field Offices

SCIENTIFIC NAME	COMMON NAME	FAMILY	TYPE OF PLANT	FEDERAL STATUS	STATE STATUS	BLM STATUS	CA RARE PLANT RANK
Arctostaphylos rudis	sand mesa manzanita	Ericaceae	VASC			BLMS	1B.2
Arctostaphylos standfordiana ssp. raichei	Raiche's manzanita	Ericaceae	VASC			BLMS	1B.1
Astragalus agrestis	field milk-vetch	Fabaceae	VASC			BLMS	2.B2
Astragalus albens	Cushenberry milk-vetch	Fabaceae	VASC	FE			1B.1
Astragalus anxius	Ash Valley milk-vetch	Fabaceae	VASC			BLMS	1B.3
Astragalus argophyllus var. argophyllus	silverleaf milk-vetch	Fabaceae	VASC			BLMS	2B.2
Astragalus atratus var. mensanus	Darwin Mesa milk-vetch	Fabaceae	VASC			BLMS	1B.1
Astragalus bernardinus	San Bernardino Milk-Vetch	Fabaceae	VASC			BLMS	1B.2
Astragalus cimae var. sufflatus	inflated Cima milk-vetch	Fabaceae	VASC			BLMS	1B.3
Astragalus deanei	Dean's milk-vetch	Fabaceae	VASC			BLMS	1B.1
Astragalus douglasii var. perstrictus	Jacumba milk-vetch	Fabaceae	VASC			BLMS	1B.2
Astragalus ertterae	Walker Pass milk-vetch	Fabaceae	VASC			BLMS	1B.3
Astragalus funereus	black milk-vetch	Fabaceae	VASC			BLMS	1B.2
Astragalus hornii var. hornii	Horn's milk-vetch	Fabaceae	VASC			BLMS	1B.1
Astragalus jaegerianus	Lane Mtn. milk-vetch	Fabaceae	VASC	FE			1B.1
Astragalus johannis-howellii	Long Valley milkvetch	Fabaceae	VASC		SR	BLMS	1B.2
Astragalus lemmonii	Lemmon's milk-vetch	Fabaceae	VASC			BLMS	1B.2
Astragalus lentiformis	lens-pod milk-vetch	Fabaceae	VASC			BLMS	1B.2
Astragalus lentiginosus var. coachellae	Coachella Valley milk-vetch	Fabaceae	VASC	FE			1B.2
Astragalus lentiginosus var. kernensis	Kern Plateau milk-vetch	Fabaceae	VASC				1B.2
Astragalus lentiginosus var. piscinensis	Fish Slough milk-vetch	Fabaceae	VASC	FT			1B.1
Astragalus leucolobus	Big Bear Valley woolypod	Fabaceae	VASC			BLMS	1B.2
Astragalus magdalenae var. peirsonii	Peirson's milk-vetch	Fabaceae	VASC	FT	SE		1B.2
Astragalus mojavensis var. hemigyrus	curved-pod milkvetch	Fabaceae	VASC			BLMS	1B.1
Astragalus monoensis	Mono milk-vetch	Fabaceae	VASC		SR	BLMS	1B.2
Astragalus nyensis	Nye milk-vetch	Fabaceae	VASC			BLMS	1B.1
Astragalus oocarpus	San Diego milk-vetch	Fabaceae	VASC			BLMS	1B.2
Astragalus oophorus var. lavinii	Lavin's milk-vetch	Fabaceae	VASC			BLMS	1B.2
Astragalus pseudiodanthus	Tonopah milk-vetch	Fabaceae	VASC			BLMS	1B.2
Astragalus pulsiferae var. pulsiferae	Pulsifer's milk-vetch	Fabaceae	VASC			BLMS	1B.2
Astragalus pycnostachyus var. pycnostachyus	coastal marsh milk-vetch	Fabaceae	VASC			BLMS	1B.2
Astragalus rattanii var. jepsonianus	Jepson's milk-vetch	Fabaceae	VASC			BLMS	1B.2
Astragalus shevockii	Shevock's milk-vetch	Fabaceae	VASC			BLMS	1B.3
Astragalus tiehmii	Tiehm's milk-vetch	Fabaceae	VASC			BLMS	

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Astragalus tricarinatus	triple-ribbed milk-vetch	Fabaceae	VASC	FE			1B.2
Atriplex argentea var. longitrichoma	Pahrump orache	Chenopodiaceae	VASC			BLMS	1B.1
Atriplex cordulata var. cordulata	heart-leaved saltbush	Chenopodiaceae	VASC			BLMS	1B.2
Atriplex coronata var. vallicola	Lost Hills crownscale	Chenopodiaceae	VASC			BLMS	1B.2
Baccharis vanessae	Encinitas coyotebrush	Asteraceae	VASC	FT	SE		1B.1
Balsamorhiza lanata	woolly balsamroot	Asteraceae	VASC			BLMS	1B.2
Balsamorhiza macrolepis	big-scale balsamroot	Asteraceae	VASC			BLMS	1B.2
Berberis harrisoniana	Kofa Mountain barberry	Berberidaceae	VASC			BLMS	1B.2
Berberis nevinii	Nevin's barberry	Berberidaceae	VASC	FE	SE		1B.1
Bloomeria clevelandii	San Diego goldenstar	Themidaceae	VASC			BLMS	1B.1
Boechera bodiensis	Bodie Hills rock cress	Brassicaceae	VASC			BLMS	1B.3
Boechera lincolnensis	Lincoln rock cress	Brassicaceae	VASC			BLMS	2B.3
Brodiaea filifolia	thread-leaved brodiaea	Themidaceae	VASC	FT	SE		1B.1
Brodiaea matsonii	Sulphur Creek brodiaea	Themidaceae	VASC			BLMS	1B.1
Brodiaea orcuttii	Orcutt's brodiaea	Themidaceae	VASC			BLMS	1B.1
Brodiaea rosea ssp. rosea	Indian Valley brodiaea	Themidaceae	VASC		SE	BLMS	3.1
Bryoria pseudocapillaris	horsehair lichen	Parmeliaceae	LICH			BLMS	3.2
Bryoria spiralifera	twisted horsehair lichen	Parmeliaceae	LICH			BLMS	1B.1
Bryoria tortuosa	yellow-twist horsehair	Parmeliaceae	LICH			BLMS	
Buxbaumia viridis	green bug moss	Buxbaumiaceae	BRYO			BLMS	2.2
California macrophylla	round-leaved filaree	Geraniaceae	VASC				
Calochortus dunnii	Dunn's mariposa lily	Liliaceae	VASC		SR	BLMS	1B.2
Calochortus excavatus	Inyo mariposa	Liliaceae	VASC			BLMS	1B.1
Calochortus greenei	Greene's mariposa	Liliaceae	VASC			BLMS	1B.2
Calochortus palmeri var. munzii	San Jacinto mariposa lily	Liliaceae	VASC			BLMS	1B.2
Calochortus palmeri var. palmeri	Palmer's mariposa lily	Liliaceae	VASC			BLMS	1B.2
Calochortus raichei	The Cedars fairy-lantern	Liliaceae	VASC			BLMS	1B.2
Calochortus striatus	alkali mariposa lily	Liliaceae	VASC			BLMS	1B.2
Calochortus westonii	Shirley Meadows star-tulip	Liliaceae	VASC			BLMS	1B.2
Calyptridium parryi var. hesseae	Santa Cruz Mountains pussypaws	Montiaceae	VASC			BLMS	1B.1
Calystegia collina subsp. tridactylosa	three-fingered morning-glory	Convolvulaceae	VASC			BLMS	1B.2
Calystegia purpurata subsp. saxicola	coastal bluff morning-glory	Convolvulaceae	VASC			BLMS	1B.2
Calystegia stebbinsii	Stebbins' morning glory	Convolvulaceae	VASC	FE	SE		1B.1
Calystegia vanzuuklae	Van Zuuk's morning-glory	Convolvulaceae	VASC			BLMS	1B.3

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Monday, November 25, 2019 Page 3 of 15

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SCIENTIFIC NAME	COMMON NAME	FAMILY	TYPE OF PLANT	FEDERAL STATUS	STATE STATUS	BLM STATUS	CA RARE PLANT RANK
Camissonia benitensis	San Benito evening-primrose	Onagraceae	VASC	FT			1B.1
Camissoniopsis hardhamiae	Hardham's evening-primrose	Onagraceae	VASC			BLMS	1B.2
Campanula californica	swamp harebell	Campanulaceae	VASC			BLMS	1B.2
Campanula exigua	chaparral harebell	Campanulaceae	VASC			BLMS	1B.2
Carex obispoensis	San Luis Obispo sedge	Cyperaceae	VASC			BLMS	1B.2
Carex xerophila	chaparral sedge	Cyperaceae	VASC			BLMS	1B.2
Carlquistia muirii	Muir's raillardella	Asteraceae	VASC			BLMS	1B.3
Castilleja ambigua subsp. insalutata	pink Johnny-nip	Orobanchaceae	VASC			BLMS	1B.1
Castilleja ambigua var. humboldtiensis	Humboldt Bay owl's-clover	Orobanchaceae	VASC			BLMS	1B.2
Castilleja campestris subsp. succulenta	succulent owl's clover	Orobanchaceae	VASC	FT	SE		1B.2
Castilleja mendocinensis	Mendocino Coast paintbrush	Orobanchaceae	VASC			BLMS	1B.2
Castilleja rubicundula subsp. rubicundula	pink creamsacs	Orobanchaceae	VASC			BLMS	1B.2
Caulanthus californicus	California jewelflower	Brassicaceae	VASC	FE	SE		1B.1
Caulanthus lemmonii	Lemmon's jewelflower	Brassicaceae	VASC			BLMS	1B.2
Ceanothus confusus	Rincon Ridge ceanothus	Rhamnaceae	VASC			BLMS	1B.2
Ceanothus cyaneus	Lakeside ceanothus	Rhamnaceae	VASC			BLMS	1B.2
Ceanothus ferrisiae	coyote ceanothus	Rhamnaceae	VASC	FE			1B.1
Ceanothus hearstiorum	Hearst's ceanothus	Rhamnaceae	VASC		SR	BLMS	1B.2
Ceanothus otayensis	Otay Mountain ceanothus	Rhamnaceae	VASC			BLMS	1B.2
Ceanothus roderickii	Pine Hill ceanothus	Rhamnaceae	VASC	FE	SR		1B.2
Centromadia parryi subsp. congdonii	Congdon's tarplant	Asteraceae	VASC			BLMS	1B.1
Centromadia parryi subsp. parryi	pappose tarplant	Asteraceae	VASC			BLMS	1B.2
Chaenactis carphoclinia var. peirsonii	Peirson's pincushion	Asteraceae	VASC			BLMS	1B.3
Chaenactis parishii	Parish's chaenactis	Asteraceae	VASC			BLMS	1B.3
Chaenactis suffrutescens	Shasta chaenactis	Asteraceae	VASC			BLMS	1B.3
Chlorogalum grandiflorum	Red Hills soaproot	Agavaceae	VASC			BLMS	1B.2
Chlorogalum pomeridianum var. minus	dwarf soaproot	Agavaceae	VASC			BLMS	1B.2
Chloropyron maritimum ssp. maritimum	salt marsh bird's-beak	Orobanchaceae	VASC			BLMS	1B.2
Chloropyron maritimum subsp. palustre	Pt. Reyes birds-beak	Orobanchaceae	VASC			BLMS	1B.2
Chloropyron tecopense	Tecopa bird's-beak	Orobanchaceae	VASC			BLMS	1B.2
Choiromyces venosus	hypogeous truffle	Tuberaceae	FUNG			BLMS	
Chorizanthe biloba var. immemora	Hernandez spineflower	Polygonaceae	VASC			BLMS	1B.2
Chorizanthe blakleyi	Blakley's spineflower	Polygonaceae	VASC			BLMS	1B.3
Chorizanthe breweri	Brewer's spineflower	Polygonaceae	VASC			BLMS	1B.3

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Chorizanthe parryi var. parryi	Parry's spineflower	Polygonaceae	VASC			BLMS	1B.1
Chorizanthe polygonoides var. longispina	long-spined spineflower	Polygonaceae	VASC			BLMS	1B.2
Chorizanthe pungens var. pungens	Monterey spineflower	Polygonaceae	VASC	FT			1B.2
Chorizanthe rectispina	straight-awned spineflower	Polygonaceae	VASC			BLMS	1B.3
Chorizanthe xanti var. leucotheca	white-bracted spineflower	Polygonaceae	VASC			BLMS	1B.2
Cirsium occidentale var. compactum	compact cobwebby thistle	Asteraceae	VASC			BLMS	1B.2
Cirsium rhothophilum	surf thistle	Asteraceae	VASC		ST	BLMS	1B.2
Clarkia australis	Small's southern clarkia	Onagraceae	VASC			BLMS	1B.2
Clarkia biloba ssp. Brandegeeae	Brandegee's clarkia	Onagraceae	VASC				4.2
Clarkia borealis subsp. arida	Shasta clarkia	Onagraceae	VASC			BLMS	1B.1
Clarkia borealis subsp. borealis	northern clarkia	Onagraceae	VASC			BLMS	1B.3
Clarkia delicata	delicate clarkia	Onagraceae	VASC			BLMS	1B.2
Clarkia gracilis subsp. albicaulis	white-stemmed clarkia	Onagraceae	VASC			BLMS	1B.2
Clarkia mosquinii	Mosquin's clarkia	Onagraceae	VASC			BLMS	1B.1
Clarkia rostrata	beaked clarkia	Onagraceae	VASC			BLMS	1B.3
Clarkia springvillensis	Springville clarkia	Onagraceae	VASC	FT	SE		1B.2
Clinopodium chandleri	San Miguel savory	Lamiaceae	VASC			BLMS	1B.2
Clitocybe subditopoda	'little brown mushroom'	Tricholomataceae	FUNG			BLMS	
Comarostaphylis diversifolia subsp. diversifolia	summer holly	Rhamnaceae	VASC			BLMS	1B.2
Cordylanthus eremicus ssp. kernensis	Kern Plateau bird's-beak	Orobanchaceae	VASC			BLMS	1B.3
Cordylanthus rigidus subsp. littoralis	seaside bird's-beak	Orobanchaceae	VASC		SE	BLMS	1B.1
Croton wigginsii	Wiggins' croton	Euphorbiaceae	VASC		SR	BLMS	2B.2
Cryptantha crinita	silky cryptantha	Boraginaceae	VASC			BLMS	1B.2
Cryptantha dissita	serpentine cryptantha	Boraginaceae	VASC			BLMS	1B.2
Cryptantha excavata	deep-scarred cryptantha	Boraginaceae	VASC			BLMS	1B.3
Cryptantha mariposae	Mariposa cryptantha	Boraginaceae	VASC			BLMS	1B.3
Cryptantha schoolcraftii	Schoolcraft's cryptantha	Boraginaceae	VASC			BLMS	2B.2
Cryptantha spithamaea	Red Hills cryptantha	Boraginaceae	VASC			BLMS	1B.3
Cusickiella quadricostata	Bodie Hills cusickiella	Brassicaceae	VASC			BLMS	1B.2
Cylindr fosbergii	pink teddy-bear cholla	Cactaceae	VASC			BLMS	1B.3
Cylindropuntia californica var. californica	snake cholla	Cactaceae	VASC			BLMS	1B.1
Cylindropuntia munzii	Munz cholla	Cactaceae	VASC			BLMS	1B.3
Cymopterus deserticola	desert cymopterus	Apiaceae	VASC			BLMS	1B.2
Cymopterus ripleyi var. saniculoides	Ripley's cymopterus	Apiaceae	VASC			BLMS	1B.2

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Cypripedium fasciculatum	clustered lady's slipper	Orchidaceae	VASC			BLMS	4.2
Cypripedium montanum	mountain lady's slipper	Orchidaceae	VASC			BLMS	4.2
Dalea ornata	ornate dalea	Fabaceae	VASC			BLMS	2B.1
Dedeckera eurekensis	July gold	Polygonaceae	VASC		SR	BLMS	1B.3
Deinandra floribunda	Tecate tarplant	Asteraceae	VASC			BLMS	1B.2
Deinandra halliana	Hall's tarplant	Asteraceae	VASC			BLMS	1B.1
Deinandra mohavensis	Mojave tarplant	Asteraceae	VASC		SE	BLMS	1B.3
Delphinium californicum ssp. interius	Hospital Canyon larkspur	Ranunculaceae	VASC			BLMS	1B.2
Delphinium purpusii	Kern County Larkspur	Ranunculaceae	VASC			BLMS	1B.3
Delphinium recurvatum	recurved larkspur	Ranunculaceae	VASC			BLMS	1B.2
Delphinium umbraculorum	umbrella larkspur	Ranunculaceae	VASC			BLMS	1B.3
Dendriscocaulon intricatulum	northern moon shrub	Lobariaceae	LICH			BLMS	
Dendrocollybia racemosa	no common name	Tricholomataceae	FUNG			BLMS	
Dermocybe humboldtensis	'little green mushroom'	Cortinariaceae	FUNG			BLMS	
Dieteria asteroides var. lagunensis	Mount Laguna aster	Asteraceae	VASC		SR	BLMS	2B.1
Diplacus mohavensis	Mojave monkeyflower	Phrymaceae	VASC			BLMS	1B.2
Diplacus pulchellus	yellow-lip pansy monkeyflower	Phrymaceae	VASC			BLMS	1B.2
Dodecahema leptoceras	slender-horned spineflower	Polygonaceae	VASC	FE	SE		1B.1
Draba carnosula	Mt. Eddy draba	Brassicaceae				BLMS	1B.3
Dudleya abramsii ssp. affinis	San Bernardino Mountains dudleya	Crassulaceae	VASC			BLMS	1B.2
Dudleya abramsii subsp. murina	mouse-gray dudleya	Crassulaceae	VASC			BLMS	1B.3
Dudleya saxosa subsp. saxosa	Panamint dudleya	Crassulaceae	VASC			BLMS	1B.3
Dudleya variegata	variegated dudleya	Crassulaceae	VASC			BLMS	1B.2
Dudleya viscida	sticky dudleya	Crassulaceae	VASC			BLMS	1B.2
Echinocereus engelmannii var. howei	Howe's hedgehog cactus	Cactaceae	VASC			BLMS	1B.1
Enceliopsis covillei	Panamint daisy	Asteraceae	VASC			BLMS	1B.2
Entoloma nitidum	'indigo entoloma'	Entolomataceae	FUNG			BLMS	
Entosthodon kochii	Koch's cord moss	Funariaceae	BRYO			BLMS	1B.3
Eremalche kernensis	Kern mallow	Malvaceae	VASC	FE			1B.1
Eriastrum brandegeeae	Brandegee's eriastrum	Polemoniaceae	VASC			BLMS	1B.1
Eriastrum densifolium subsp. sanctorum	Santa Ana River woolystar	Polemoniaceae	VASC	FE	SE		1B.1
Eriastrum harwoodii	Harwood's eriastrum	Polemoniaceae	VASC			BLMS	1B.2
Eriastrum luteum	yellow-flowered eriastrum	Polemoniaceae	VASC			BLMS	1B.2

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Monday, November 25, 2019 Page 6 of 15

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Enicameria cuneata var. macrocephala	Laguna Mountains goldenbush	Asteraceae	VASC				
Enicameria fasciculata	Eastwood's goldenbush	Asteraceae	VASC			BLMS	1B.1
Erigeron aequifolius	Hall's daisy	Asteraceae	VASC			BLMS	1B.3
Erigeron blochmaniae	Blochman's leafy daisy	Asteraceae	VASC			BLMS	1B.2
Erigeron parishii	Parish's daisy	Asteraceae	VASC	FT			1B.1
Erigeron serpentinus	serpentine daisy	Asteraceae	VASC			BLMS	1B.3
Eriodictyon altissimum	Indian Knob mountainbalm	Boraginaceae	VASC	FE	SE		1B.1
Eriogonum apricum var. apricum	Ione buckwheat	Polygonaceae	VASC	FE	SE		1B.1
Eriogonum bifurcatum	forked buckwheat	Polygonaceae	VASC			BLMS	1B.2
Eriogonum cedrorum	The Cedars buckwheat	Polygonaceae	VASC			BLMS	1B.3
Eriogonum contiguum	Reveal's buckwheat	Polygonaceae	VASC			BLMS	2B.3
Eriogonum crosbyae	Crosby's buckwheat	Polygonaceae	VASC			BLMS	
Eriogonum eremicola	Wildrose Canyon buckwheat	Polygonaceae	VASC			BLMS	1B.3
Eriogonum heermannii var. occidentale	western Heermann's buckwheat	Polygonaceae	VASC			BLMS	1B.2
Eriogonum hoffmannii var. hoffmannii	Hoffmann's buckwheat	Polygonaceae	VASC			BLMS	1B.3
Eriogonum hoffmannii var. robustius	robust Hoffmann's buckwheat	Polygonaceae	VASC			BLMS	1B.3
Eriogonum kelloggii	Red Mountain buckwheat	Polygonaceae	VASC		SE	BLMS	1B.2
Eriogonum kennedyi var. pinicola	Kern buckwheat	Polygonaceae	VASC			BLMS	1B.1
Eriogonum mensicola	Pinyon Mesa buckwheat	Polygonaceae	VASC			BLMS	1B.3
Eriogonum microthecum var. panamintense	Panamint Mountains buckwheat	Polygonaceae	VASC			BLMS	1B.3
Eriogonum microthecum var. schoolcraftii	Schoolcraft's wild buckwheat	Polygonaceae	VASC			BLMS	1B.2
Eriogonum nervulosum	Snow Mtn. buckwheat	Polygonaceae	VASC			BLMS	1B.2
Eriogonum nortonii	Pinnacles buckwheat	Polygonaceae	VASC			BLMS	1B.3
Eriogonum nudum var. murinum	mouse buckwheat	Polygonaceae	VASC			BLMS	1B.2
Eriogonum ovalifolium var. vineum	Cushenberry buckwheat	Polygonaceae	VASC	FE			1B.1
Eriogonum prociduum	prostrate buckwheat	Polygonaceae	VASC			BLMS	1B.2
Eriogonum prociduum	prostrate buckwheat	Polygonaceae	VASC			BLMS	1B.2
Eriogonum temblorense	Temblor buckwheat	Polygonaceae	VASC			BLMS	1B.2
Eriogonum thornei	Thorne's buckwheat	Polygonaceae	VASC		SE	BLMS	1B.2
Eriophyllum mohavense	Barstow woolly-sunflower	Asteraceae	VASC			BLMS	1B.2
Eryngium spinosepalum	spiny-sepaled button-celery	Apiaceae	VASC			BLMS	1B.2
Erysimum concinnum	bluff wallflower	Brassicaceae	VASC			BLMS	1B.2
Erysimum menziesii	Menzies' wallflower	Brassicaceae	VASC	FE	SE		1B.1

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Erythranthe calcicola	limestone monkeyflower	Phrymaceae	VASC			BLMS	1B.3
Erythranthe inflatula	ephemeral monkeyflower	Phrymaceae	VASC			BLMS	1B.2
Erythranthe rhodopetra	Red Rock Canyon monkeyflower	Phrymaceae	VASC			BLMS	1B.1
Erythronium tuolumnense	Tuolumne fawn-lily	Liliaceae	VASC			BLMS	1B.2
Eschscholzia lemmonii ssp. kernensis	Tejon poppy	Papaveraceae	VASC			BLMS	1B.1
Eschscholzia minutiflora subsp. twisselmannii	Red Rock poppy	Papaveraceae	VASC			BLMS	1B.2
Atriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	VASC			BLMS	1B.2
Euphorbia jaegeri	Orocopia Mountains spurge	Euphorbiaceae	VASC			BLMS	1B.1
Euphorbia ocellata subsp. rattanii	Stony Creek spurge	Euphorbiaceae	VASC			BLMS	1B.2
Fremontodendron decumbens	Pine Hill flannelbush	Malvaceae	VASC	FE	SR		1B.2
Fremontodendron mexicanum	Mexican flannelbush	Malvaceae	VASC	FE	SR		1B.1
Fritillaria falcata	talus fritillary	Liliaceae	VASC			BLMS	1B.2
Fritillaria gentneri	Gentner's fritillaria	Liliaceae	VASC	FE			1B.1
Fritillaria pluriflora	adobe-lily	Liliaceae	VASC			BLMS	1B.2
Fritillaria viridea	San Benito fritillary	Liliaceae	VASC			BLMS	1B.2
Galium angustifolium ssp. borregoense	Borrego bedstraw	Rubiaceae	VASC		SR	BLMS	1B.3
Galium angustifolium ssp. jacinticum	San Jacinto Mountains bedstraw	Rubiaceae	VASC			BLMS	1B.3
Galium angustifolium subsp. onycense	Onyx Peak bedstraw	Rubiaceae	VASC			BLMS	1B.3
Galium californicum subsp. sierrae	El Dorado bedstraw	Rubiaceae	VASC	FE	SR		1B.2
Galium glabrescens subsp. modocense	Modoc bedstraw	Rubiaceae	VASC			BLMS	1B.2
Galium hardhamiae	Hardham's bedstraw	Rubiaceae	VASC			BLMS	1B.3
Galium hilendiae subsp. kingstonense	Kingston bedstraw	Rubiaceae	VASC			BLMS	1B.3
Galium serpenticum subsp. scotticum	Scott Mtn. bedstraw	Rubiaceae	VASC			BLMS	1B.2
Gentiana setigera	Mendocino gentian	Gentianaceae	VASC			BLMS	1B.2
Gilia millefoliata	dark-eyed gilia	Polemoniaceae	VASC			BLMS	1B.2
Gilia tenuiflora subsp. arenaria	sand gilia	Polemoniaceae	VASC	FE	ST		1B.2
Githopsis tenella	delicate bluecup	Campanulaceae	VASC			BLMS	1B.3
Glossopetalon pungens	pungent glossopetalon	Crossosomataceae	VASC			BLMS	1B.2
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	VASC		SE	BLMS	1B.2
Grimmia torneii	Toren's grimmia	Grimmiaceae	BRYO			BLMS	1B.3
Grimmia vaginulata	vaginulate grimmia	Grimmiaceae	BRYO			BLMS	1B.1
Grindelia fraxinipratensis	Ash Meadows gum-plant	Asteraceae	VASC	FT			1B.2
Grindelia hallii	San Diego gumplant	Asteraceae	VASC			BLMS	1B.2

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Monday, November 25, 2019 Page 8 of 15

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SCIENTIFIC NAME	COMMON NAME	FAMILY	TYPE OF PLANT	FEDERAL STATUS	STATE STATUS	BLM STATUS	CA RARE PLANT RANK
Gymnopilus punctifolius	'blue-green gymnopilus'	Cortinariaceae	FUNG			BLMS	
Harmonia hallii	Hall's harmonia	Asteraceae	VASC			BLMS	1B.2
Harmonia stebbinsii	Stebbins's harmonia	Asteraceae	VASC			BLMS	1B.2
Helianthus niveus subsp. tephrodes	Algodones Dunes sunflower	Asteraceae	VASC		SE	BLMS	1B.2
Helianthus winteri	Winter's sunflower	Asteraceae	VASC			BLMS	1B.2
Hesperevax sparsiflora subsp. brevifolia	short-leaved evax	Asteraceae	VASC			BLMS	1B.2
Hesperidanthus jaegeri	Jaeger's hesperidanthus	Brassicaceae	VASC			BLMS	1B.2
Hesperocyparis forbesii	Tecate cypress	Cupressaceae	VASC			BLMS	1B.1
Hesperocyparis nevadensis	Piute cypress	Cupressaceae	VASC			BLMS	1B.2
Hesperocyparis pygmaea	pygmy cypress	Cupressaceae	VASC			BLMS	1B.2
Hesperolinon adenophyllum	glandular western flax	Linaceae	VASC			BLMS	1B.2
Hesperolinon bicarpellatum	two-carpellate western flax	Linaceae	VASC			BLMS	1B.2
Hesperolinon drymarioides	drymaria-like western flax	Linaceae	VASC			BLMS	1B.2
Hesperolinon sharsmithiae	Sharsmith's western flax	Linaceae	VASC			BLMS	1B.2
Hesperolinon tehamense	Tehama County western flax	Linaceae	VASC			BLMS	1B.3
Heterodermia leucomelos	ciliate strap-lichen	Physciaceae	LICH			BLMS	
Heuchera brevistaminea	Laguna Mountains alumroot	Saxifragaceae	VASC			BLMS	1B.3
Horkelia bolanderi	Bolander's horkelia	Rosaceae	VASC			BLMS	1B.2
Horkelia parryi	Parry's horkelia	Rosaceae	VASC			BLMS	1B.2
Horkelia truncata	Ramona horkelia	Rosaceae	VASC			BLMS	1B.3
Hosackia crassifolia var. otayensis	Otay Mountain lotus	Fabaceae	VASC			BLMS	1B.1
Hulsea californica	San Diego sunflower	Asteraceae	VASC			BLMS	1B.3
Hydropus marginellus	'little brown mushroom'	Tricholomataceae	FUNG			BLMS	
Iris hartwegii ssp. columbiana	Tuolumne iris	Iridaceae	VASC			BLMS	1B.2
Iris munzii	Munz's iris	Iridaceae	VASC			BLMS	1B.3
Isocoma menziesii var. decumbens	decumbent goldenbush	Asteraceae	VASC			BLMS	1B.2
Ivesia aperta var. aperta	Sierra Valley ivesia	Rosaceae	VASC			BLMS	1B.2
Ivesia jaegeri	Jaeger's ivesia	Rosaceae	VASC			BLMS	1B.3
Ivesia kingii var. kingii	alkali ivesia	Rosaceae	VASC			BLMS	2B.2
Ivesia paniculata	Ash Creek ivesia	Rosaceae	VASC			BLMS	1B.2
Ivesia patellifera	Kingston Mtns. ivesia	Rosaceae	VASC			BLMS	1B.3
Ivesia rhypara var. rhypara	grimy ivesia	Rosaceae	VASC			BLMS	
Ivesia webberi	Webber's ivesia	Rosaceae	VASC	FT			1B.1
Juncus leiospermus var. leiospermus	Red Bluff dwarf rush	Juncaceae	VASC			BLMS	1B.1

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Juncus luciensis	Santa Lucia dwarf rush	Juncaceae	VASC			BLMS	1B.2
Kaernefeltia californica	seaside thornbush	Parmeliaceae	LICH			BLMS	
Lagophylla diabolensis	Diablo Range hare-leaf	Asteraceae	VASC			BLMS	1B.2
Lasthenia californica subsp. macrantha	perennial goldfields	Asteraceae	VASC			BLMS	1B.2
Lasthenia conjugens	Contra Costa goldfields	Asteraceae	VASC	FE			1B.1
Lasthenia glabrata subsp. coulteri	Coulter's goldfields	Asteraceae	VASC			BLMS	1B.1
Layia carnosa	beach layia	Asteraceae	VASC	FE	SE		1B.1
Layia discoidea	rayless tidytips	Asteraceae	VASC			BLMS	1B.1
Layia heterotricha	pale-yellow layia	Asteraceae	VASC			BLMS	1B.1
Layia munzii	Munz's tidy-tips	Asteraceae	VASC			BLMS	1B.2
Layia septentrionalis	Colusa layia	Asteraceae	VASC			BLMS	1B.2
Legenere limosa	legenere	Campanulaceae	VASC			BLMS	1B.1
Lepechinia ganderi	Gander's pitcher-sage	Lamiaceae	VASC			BLMS	1B.3
Lepidium jaredii subsp. album	Panoche pepper-grass	Brassicaceae	VASC			BLMS	1B.2
Lepidium jaredii subsp. jaredii	Jared's pepper-grass	Brassicaceae	VASC			BLMS	1B.2
Leptosiphon floribundus ssp. hallii	Santa Rosa Mountains leptosiphon	Polemoniaceae	VASC			BLMS	1B.3
Leptosiphon serrulatus	Madera leptosiphon	Polemoniaceae	VASC			BLMS	1B.2
Leptosyne hamiltonii	Mt. Hamilton coreopsis	Asteraceae	VASC			BLMS	1B.2
Lessingia glandulifera var. tomentosa	Warner Springs lessingia	Asteraceae	VASC			BLMS	1B.1
Leucogaster citrinus	'yellow false truffle'	Leucogastraceae	FUNG			BLMS	
Lewisia cantelovii	Cantelow's lewisia	Portulacaceae	VASC			BLMS	1B.2
Lewisia cotyledon var. heckneri	Heckner's lewisia	Portulacaeae	VASC			BLMS	1B.2
Lewisia disepala	Yosemite lewisia	Montiaceae	VASC			BLMS	1B.2
Lilium maritimum	coast lily	Liliaceae	VASC			BLMS	1B.1
Limnanthes alba subsp. parishii	Parish's meadowfoam	Limnanthaceae	VASC		SE	BLMS	1B.2
Linanthus maculatus subsp. emaculatus	Jacumba Mountains linanthus	Polemoniaceae	VASC			BLMS	1B.1
Linanthus maculatus subsp. maculatus	Little San Bernardino Mtns. linanthus	Polemoniaceae	VASC			BLMS	1B.2
Lobaria oregana	Oregon lettuce lung	Lobariaceae	LICH			BLMS	
Loeflingia squarrosa var. artemisiarum	Sagebrush loeflingia	Caryophyllaceae	VASC			BLMS	2B.2
Lomatium congdonii	Congdon's lomatium	Apiaceae	VASC			BLMS	1B.2
Lomatium ravenii var. ravenii	Raven's lomatium	Apiaceae	VASC			BLMS	1B.3
Lomatium roseanum	adobe lomatium	Apiaceae	VASC			BLMS	1B.2
Lomatium shevockii	Owens Peak lomatium	Apiaceae	VASC			BLMS	1B.3

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Monday, November 25, 2019 Page 10 of 15

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Lupinus duranii	Mono Lake lupine	Fabaceae	VASC			BLMS	1B.2
Lupinus excubitus var. medius	Mountain Springs bush lupine	Fabaceae	VASC			BLMS	1B.3
Lupinus magnificus var. hesperius	McGee Meadows lupine	Fabaceae	VASC			BLMS	1B.3
Lupinus magnificus var. magnificus	Panamint Mtns. lupine	Fabaceae	VASC			BLMS	1B.2
Lupinus sericatus	Cobb Mountain lupine	Fabaceae	VASC			BLMS	1B.2
Lupinus spectabilis	shaggyhair lupine	Fabaceae	VASC			BLMS	1B.2
Lupinus uncialis	lilliput lupine	Fabaceae	VASC			BLMS	2B.2
Madia radiata	showy golden madia	Asteraceae	VASC			BLMS	1B.1
Malacothamnus aboriginum	Indian Valley bush-mallow	Malvaceae	VASC			BLMS	1B.2
Malacothamnus hallii	Hall's bush-mallow	Malvaceae	VASC			BLMS	1B.2
Malacothamnus palmeri var. involucratus	Carmel Valley bush-mallow	Malvaceae	VASC			BLMS	1B.2
Malacothamnus palmeri var. lucianus	Arroyo Seco bush-mallow	Malvaceae	VASC			BLMS	1B.2
Menodora spinescens var. mohavensis	Mojave menodora	Oleaceae	VASC			BLMS	1B.2
Mentzelia inyoensis	Inyo blazing star	Loasaceae	VASC			BLMS	1B.3
Mentzelia polita	polished blazing star	Loasaceae	VASC			BLMS	1B.2
Microseris paludosa	marsh microseris	Asteraceae	VASC			BLMS	1B.2
Mielichhoferia shevockii	Shevock's copper moss	Mielichhoferiaceae	BRYO			BLMS	1B.2
Mimulus filicaulis	slender-stemmed monkeyflower	Phrymaceae	VASC			BLMS	1B.2
Mimulus norrisii	Kaweah monkeyflower	Phrymaceae	VASC			BLMS	1B.3
Mimulus pictus	Calico monkeyflower	Phrymaceae	VASC			BLMS	1B.2
Mimulus shevockii	Kelso Creek monkeyflower	Phrymaceae	VASC			BLMS	1B.2
Monardella beneolens	sweet-smelling monardella	Lamiaceae	VASC			BLMS	1B.3
Monardella boydii	Boyd's monardella	Lamiaceae	VASC			BLMS	1B.2
Monardella eremicola	Clark Mountain monardella	Lamiaceae	VASC			BLMS	1B.3
Monardella hypoleuca subsp. lanata	felt-leaved monardella	Lamiaceae	VASC			BLMS	1B.2
Monardella linoides subsp. oblonga	Tehachapi monardella	Lamiaceae	VASC			BLMS	1B.3
Monardella palmeri	Palmer's monardella	Lamiaceae	VASC			BLMS	1B.2
Monardella robisonii	Robison monardella	Lamiaceae	VASC			BLMS	1B.3
Monardella stoneana	Jennifer's monardella	Lamiaceae	VASC			BLMS	1B.2
Monardella undulata subsp. crispa	crisp monardella	Lamiaceae	VASC			BLMS	1B.2
Monardella undulata subsp. undulata	San Luis Obispo monardella	Lamiaceae	VASC			BLMS	1B.2
Monolopia congdonii	San Joaquin woolly threads	Asteraceae	VASC	FE			1B.2
Mycena quinaultensis	'little brown mushroom'	Tricholomataceae	FUNG			BLMS	
Nama demissa var. covillei	Coville's purple mat	Namaceae	VASC			BLMS	1B.3

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Navarretia leucocephala ssp. Pauciflora	few-flowered navarretia	Polemoniaceae	VASC	FE	ST	BLMS	1B.1
Navarretia nigelliformis subsp. radians	shining navarretia	Polemoniaceae	VASC			BLMS	1B.2
Navarretia paradoxiclara	Patterson's navarretia	Polemoniaceae	VASC			BLMS	1B.3
Navarretia paradoxinota	Porter's navarretia	Polemoniaceae	VASC			BLMS	1B.3
Navarretia prostrata	prostrate vernal pool navarretia	Polemoniaceae	VASC				1B.1
Navarretia rosulata	Marin County navarretia	Polemoniaceae	VASC			BLMS	1B.2
Navarretia setiloba	Plute Mountains navarretia	Polemoniaceae	VASC			BLMS	1B.1
Nemacladus calcaratus	Chimney Creek nemacladus	Campanulaceae	VASC			BLMS	1B.2
Nitrophila mohavensis	Amargosa niterwort	Amaranthaceae	VASC	FE	SE		1B.1
Opuntia basilaris var. brachyclada	short-joint beavertail	Cactaceae	VASC			BLMS	1B.2
Orcuttia inaequalis	San Joaquin Valley orcutt grass	Poaceae	VASC	FT	SE		1B.1
Orcuttia tenuis	slender orcutt grass	Poaceae	VASC	FT	SE		1B.1
Oreocarya roosiorum	bristlecone cryptantha	Boraginaceae	VASC		SR	BLMS	1B.2
Oreonana vestita	woolly mountain-parsley	Apiaceae	VASC			BLMS	1B.3
Packera eurycephala var. lewisrosei	cut-leaved ragwort	Asteraceae	VASC			BLMS	1B.2
Packera ganderi	Gander's butterweed	Asteraceae	VASC		SR	BLMS	1B.2
Packera layneae	Layne's butterweed	Asteraceae	VASC	FT	SR		1B.2
Palafoxia arida var. gigantea	giant Spanish needle	Asteraceae	VASC			BLMS	1B.3
Pannaria rubiginosa	petaled mouse	Pannariaceae	LICH			BLMS	
Paronychia ahartii	Ahart's paronychia	Caryophyllaceae	VASC			BLMS	1B.1
Pedicularis centranthera	dwarf lousewort	Orobanchaceae	VASC			BLMS	2B.3
Pediomelum castoreum	Beaver Dam breadroot	Fabaceae	VASC			BLMS	1B.2
Penstemon albomarginatus	white-margined beardtongue	Plataginaceae	VASC			BLMS	1B.1
Penstemon bicolor subsp. roseus	rosy two-toned beardtongue	Plataginaceae	VASC			BLMS	1B.1
Penstemon fruticiformis var. amargosae	Death Valley beardtongue	Plantaginaceae	VASC			BLMS	1B.3
Penstemon janishiae	Janish's beardtongue	Plantaginaceae	VASC			BLMS	2B.2
Penstemon newberryi var. sonomensis	Sonoma beardtongue	Plantaginaceae	VASC			BLMS	1B.3
Penstemon stephensii	Stephens' beardtongue	Plantaginaceae	VASC			BLMS	1B.3
Penstemon sudans	Susanville beardtongue	Plantaginaceae	VASC			BLMS	1B.2
Penstemon sudans	Susanville beardtongue	Plantaginaceae	VASC			BLMS	1B.3
Pentachaeta exilis subsp. aeolica	slender pentachaeta	Asteraceae	VASC			BLMS	1B.2
Perityle inyoensis	Inyo rock daisy	Asteraceae	VASC			BLMS	1B.2
Petalonyx thurberi subsp. gilmanii	Death Valley sandpaper-plant	Loasaceae	VASC			BLMS	1B.3

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Phacelia greenei	Scott Valley phacelia	Boraginaceae	VASC			BLMS	1B.2
Phacelia inundata	playa phacelia	Boraginaceae	VASC			BLMS	1B.3
Phacelia inyoensis	Inyo phacelia	Boraginaceae	VASC			BLMS	1B.2
Phacelia monoensis	Mono County phacelia	Boraginaceae	VASC			BLMS	1B.1
Phacelia nashiana	Charlotte's phacelia	Boraginaceae	VASC			BLMS	1B.2
Phacelia novenmillensis	Nine Mile Canyon phacelia	Boraginaceae	VASC			BLMS	1B.2
Phacelia parishii	Parish's phacelia	Boraginaceae	VASC			BLMS	1B.1
Phacelia perityloides var. jaegeri	Jaeger's phacelia	Hydrophyllaceae	VASC			BLMS	1B.1
Phacelia phacelioides	Mount Diablo phacelia	Boraginaceae	VASC			BLMS	1B.2
Phaeocollybia californica	California phaeocollybia	Cortinariaceae	FUNG			BLMS	
Phaeocollybia olivacea	olive phaeocollybia	Cortinariaceae	FUNG			BLMS	
Phaeocollybia piceae	'spruce phaeocollybia'	Cortinariaceae	FUNG			BLMS	
Phaeocollybia scatesiae	no common name	Cortinariaceae	FUNG			BLMS	
Phaeocollybia spadicea	spadicea phaecollybia	Cortinariaceae	FUNG			BLMS	
Pholisma sonorae	sand food	Boraginaceae	VASC			BLMS	1B.2
Piperia yadonii	Yadon's rein orchid	Orchidaceae	VASC	FE			1B.1
Plagiobothrys chorisianus var. chorisianus	Choris' popcornflower	Boraginaceae	VASC			BLMS	1B.2
Plagiobothrys parishii	Parish's popcornflower	Boraginaceae	VASC			BLMS	1B.1
Poa sierrae	Sierra blue grass	Poaceae	VASC			BLMS	1B.3
Polyctenium williamsiae	Williams's combleaf	Brassicaceae	VASC			BLMS	1B.2
Polygonum polygaloides subsp. esotericum	Modoc County knotweed	Polygonaceae	VASC			BLMS	1B.1
Potentilla basaltica	Black Rock potentilla	Rosaceae	VASC	FC		BLMS	1B.3
Ptilidium californicum	Pacific fuzzwort	Ptilidiaceae	BRYO			BLMS	4.3
Puccinellia simplex	California alkali grass	Poaceae	VASC			BLMS	1B.2
Pyrrocoma lucida	sticky pyrrocoma	Asteraceae	VASC			BLMS	1B.2
Quercus dumosa	Nuttall's scrub oak	Fagaceae	VASC			BLMS	1B.1
Ramalina pollinaria	dusty ramalina	Ramalinaceae	LICH			BLMS	
Ramaria amyloidea	'pinkish coral mushroom'	Ramariaceae	FUNG			BLMS	
Ramaria aurantisiccescens	'yellow coral mushroom'	Ramariaceae	FUNG			BLMS	
Ramaria largentii	'orange coral mushroom'	Ramariaceae	FUNG			BLMS	
Ribes tularense	Sequoia gooseberry	Grossulariaceae	VASC			BLMS	1B.3
Rupertia hallii	Hall's rupertia	Fabaceae	VASC			BLMS	1B.2
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	VASC			BLMS	1B.2
Saltugilia latimeri	Latimer's woodland-gilia	Polemoniaceae	VASC			BLMS	1B.2

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SCIENTIFIC NAME	COMMON NAME	FAMILY	TYPE OF PLANT	FEDERAL STATUS	STATE STATUS	BLM STATUS	CA RARE PLANT RANK
Salvia greatae	Orocopia sage	Lamiaceae	VASC			BLMS	1B.3
Sarcodon fuscoindicum	violet hedgehog	Bankeraceae	FUNG			BLMS	
Sedum laxum subsp. eastwoodiae	Red Mountain stonecrop	Crassulaceae	VASC			BLMS	1B.2
Sedum obtusatum subsp. paradisum	Canyon Creek stonecrop	Crassulaceae	VASC			BLMS	1B.3
Senecio clevelandii var. heterophyllus	Red Hills ragwort	Asteraceae	VASC			BLMS	1B.2
Sidalcea covillei	Owens Valley checkerbloom	Malvaceae	VASC		SE	BLMS	1B.1
Sidalcea keckii	Keck's checkerbloom	Malvaceae	VASC	FE			1B.1
Sidalcea malviflora ssp. purpurea	purple-stemmed checkerbloom	Malvaceae	VASC			BLMS	1B.2
Sidalcea robusta	Butte County checkerbloom	Malvaceae	VASC			BLMS	1B.2
Silene campanulata subsp. campanulata	Red Mountain catchfly	Caryophyllaceae	VASC		SE	BLMS	4.2
Sparassis crispa	cauliflower mushroom	Sparassidaceae	FUNG			BLMS	
Spathularia flavida	fairy fan	Cudoniaceae	FUNG			BLMS	
Sphaeralcea rusbyi var. eremicola	Rusby's desert-mallow	Malvaceae	VASC			BLMS	1B.2
Stenotus lanuginosus var. lanuginosus	woolly stenotus	Asteraceae	VASC			BLMS	2B.2
Stipa exigua	little ricegrass	Poaceae	VASC			BLMS	2B.3
Streptanthus albidus ssp. peramoenus	most beautiful jewelflower	Brassicaceae	VASC				1B.2
Streptanthus brachiatus subsp. brachiatus	Socrates Mine jewel-flower	Brassicaceae	VASC			BLMS	1B.2
Streptanthus brachiatus subsp. hoffmanii	Freed's jewel-flower	Brassicaceae	VASC			BLMS	1B.2
Streptanthus campestris	southern jewel-flower	Brassicaceae	VASC			BLMS	1B.3
Streptanthus cordatus var. piutensis	Piute Mountains jewel-flower	Brassicaceae	VASC			BLMS	1B.2
Streptanthus hesperidis	green jewelflower	Brassicaceae	VASC			BLMS	1B.2
Streptanthus insignis ssp. lyonii	Arburua Ranch jewelflower	Brassicaceae	VASC			BLMS	1B.2
Streptanthus morrisonii subsp. elatus	Three Peaks jewel-flower	Brassicaceae	VASC			BLMS	1B.2
Streptanthus morrisonii subsp. kruckebergii	Kruckeberg's jewel-flower	Brassicaceae	VASC			BLMS	1B.2
Streptanthus morrisonii subsp. morrisonii	Morrison's jewel-flower	Brassicaceae	VASC			BLMS	1B.2
Streptanthus oliganthus	Masonic Mountain jewel-flower	Brassicaceae	VASC			BLMS	1B.2
Streptanthus vernalis	early jewel-flower	Brassicaceae	VASC			BLMS	1B.2
Stylocline citroleum	oil neststraw	Asteraceae	VASC			BLMS	1B.1
Tetracoccus dioicus	Parry's tetracoccus	Euphorbiaceae	VASC			BLMS	1B.2
Thelypodium howellii var. howellii	Howell's thelypodium	Brassicaceae	VASC			BLMS	1B.2
Trifolium buckwestiorum	Santa Cruz clover	Fabaceae	VASC			BLMS	1B.1
Trifolium jokerstii	Butte County golden clover	Fabaceae	VASC			BLMS	1B.2
Trifolium kingii subsp. dedeckerae	DeDecker's clover	Fabaceae	VASC			BLMS	1B.3

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Monday, November 25, 2019 Page 14 of 15

Plants Known to Occur on BLM Lands in One or More Field Offices

SCIENTIFIC NAME	COMMON NAME	FAMILY	TYPE OF PLANT	FEDERAL STATUS	STATE STATUS	BLM STATUS	CA RARE PLANT RANK
Trifolium polyodon	Pacific Grove clover	Fabaceae	VASC		SR	BLMS	1B.1
Triteleia boioides ssp. cooki			VASC			BLMS	1B.3
Triteleia piutensis	Piute Mountains triteleia	Themidaceae	VASC			BLMS	1B.1
Tropidocarpum californicum	Kings gold	Brassicaceae	VASC			BLMS	1B.1
Usnea longissima	long beard lichen	Parmeliaceae	LICH			BLMS	4.2
Vaccinium shastense subsp. shastense	Shasta huckleberry	Ericaceae	VASC			BLMS	1B.3
Verbena californica	Red Hills vervain	Verbenaceae	VASC	FT	ST		1B.1
Vermilacinia cephalota	powdery fog lichen	Ramalinaceae	LICH			BLMS	
Viola pinetorum ssp. grisea	grey-leaved violet	Violaceae	VASC			BLMS	1B.2
Wyethia reticulata	El Dorado mule ears	Asteraceae	VASC			BLMS	1B.2
Xylorhiza cognata	Mecca-aster	Asteraceae	VASC			BLMS	1B.2
Xylorhiza orcuttii	Orcutt's woody aster	Asteraceae	VASC			BLMS	1B.2
Zeltnera namophila	spring-loving centaury	Gentianaceae	VASC	FT			

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Special Status Plants in California, Including BLM Designated Sensitive Species

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SCIENTIFIC NAME	COMMON NAME	FAMILY	TYPE OF PLANT	FEDERAL STATUS	STATE STATUS	BLM STATUS	CA RARE PLANT RANK
Atriplex pacifica	South Coast saltscale	Chenopodiaceae	VASC			BLMS	1B.2
Acanthomintha ilicifolia	San Diego thornmint	Lamiaceae	VASC	FT	SE		1B.1
Acmispon rubriflorus	red-flowered bird's-foot trefoil	Fabaceae	VASC			BLMS	1B.1
Albatrellus caeruleoporus	blue-pored polypore	Albatrellaceae	FUNG			BLMS	
Albatrellus ellisii	greening goat's foot	Albatrellaceae	FUNG			BLMS	
Albatrellus flettii	blue-capped polypore	Albatrellaceae	FUNG			BLMS	
Allium munzii	Munz's onion	Alliaceae	VASC	FE	ST		1B.1
Ancistrocarphus keilii	Santa Ynez groundstar	Asteraceae	VASC			BLMS	1B.1
Anisocarpus scabriidus	scabrid alpine tarplant	Asteraceae	VASC			BLMS	1B.3
Arctostaphylos cruzensis	Arroya de La Cruz manzanita	Ericaceae	VASC			BLMS	1B.2
Arctostaphylos glandulosa ssp. gabrielensis	Gabilan Mountains manzanita	Ericaceae	VASC			BLMS	1B.2
Arctostaphylos klamathensis	Klamath manzanita	Ericaceae	VASC			BLMS	1B.2
Arctostaphylos luciana	Santa Lucia manzanita	Ericaceae	VASC			BLMS	1B.2
Arctostaphylos pechoensis	Pecho manzanita	Ericaceae	VASC			BLMS	1B.2
Aristocapsa insignis	Indian Valley spineflower	Polygonaceae	VASC			BLMS	1B.2
Astragalus agnicidus	Humboldt milk-vetch	Fabaceae	VASC		SE	BLMS	1B.1
Astragalus brauntonii	Braunton's milk-vetch	Fabaceae	VASC	FE			1B.1
Astragalus pachypus var. jaegeri	Jaeger's bush milk-vetch	Fabaceae	VASC			BLMS	1B.1
Astragalus pulsiferae var. suksdorfii	Suksdorf's milk-vetch	Fabaceae	VASC			BLMS	1B.2
Astragalus tener var. ferrisiae	Ferris's milk-vetch	Fabaceae	VASC			BLMS	1B.1
Astragalus webberi	Webber's milk-vetch	Fabaceae	VASC			BLMS	1B.2
Atriplex cordulata var. erecticaulis	Earlimart orache	Chenopodaceae	VASC			BLMS	1B.2
Atriplex coronata var. notatior	San Jacinto Valley crownscale	Chenopodiaceae	VASC	FE			1B.1
Atriplex parishii	Parish's brittlescale	Chenopodiaceae	VASC			BLMS	1B.1
Atriplex subtilis	subtle orache	Chenopodaceae	VASC			BLMS	1B.2
Balsamorhiza sericea	silky balsamroot	Asteraceae	VASC			BLMS	1B.3
Boechera serpenticola	Serpentine Rockcress	Brassicaceae	VASC			BLMS	1B.2
Boletus haematinus	red-pored bolete	Boletaceae	FUNG			BLMS	
Brodiaea insignis	Kaweah brodiaea	Themidaceae	VASC		SE	BLMS	1B.2
Calochortus clavatus var. avius	Pleasant Valley mariposa lily	Liliaceae	VASC			BLMS	1B.2
Calochortus clavatus var. gracilis	slender mariposa lily	Liliaceae	VASC			BLMS	1B.2
Calochortus fimbriatus	late-flowered mariposa lily	Liliaceae	VASC			BLMS	1B.3

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Monday, November 25, 2019 Page 1 of 7

Plants Not Currently Known but Suspected to Occur on BLM Lands in One or More Field Offices

SCIENTIFIC NAME	COMMON NAME	FAMILY	TYPE OF PLANT	FEDERAL STATUS	STATE STATUS	BLM STATUS	CA RARE PLANT RANK
Calochortus longebarbatus var. longebarbatus	long-haired star-tulip	Liliaceae	VASC			BLMS	1B.2
Calochortus monanthus	Shasta River mariposa	Liliaceae	VASC			BLMS	1A
Calochortus obispoensis	San Luis mariposa lily	Liliaceae	VASC			BLMS	1B.2
Calochortus persistens	Siskiyou mariposa lily	Liliaceae	VASC	FC	SR	BLMS	1B.2
Calochortus simulans	La Panza mariposa lily	Liliaceae	VASC			BLMS	1B.3
Calycadenia hooveri	Hoover's calycadenia	Asteraceae	VASC			BLMS	1B.3
Calycadenia micrantha	small-flowered calycadenia	Asteraceae	VASC			BLMS	1B.2
Calycadenia villosa	dwarf calycadenia	Asteraceae	VASC			BLMS	1B.1
Calyptridium pulchellum	Mariposa pussypaws	Montiaceae	VASC	FT			1B.1
Camissonia integrifolia	Kern River evening-primrose	Onagraceae	VASC			BLMS	1B.3
Campanula sharsmithiae	Sharsmith's harebell	Campanulaceae	VASC			BLMS	1B.2
Campanula shetleri	Castle Crags harebell	Campanulaceae	VASC			BLMS	1B.3
Carex klamathensis	Klamath sedge	Cyperaceae	VASC			BLMS	1B.2
Carex saliniformis	deceiving sedge	Cyperaceae	VASC			BLMS	1B.2
Carex saliniformis	deceiving sedge	Cyperaceae	VASC			BLMS	1B.2
Carpenteria californica	tree-anemone	Hydrangeaceae	VASC		ST	BLMS	1B.2
Castilleja densiflora subsp. obispoensis	Obispo Indian paintbrush	Orobanchaceae	VASC			BLMS	1B.2
Castilleja gleasoni	Mt. Gleason Indian paintbrush	Orobanchaceae	VASC		SR	BLMS	1B.2
Ceanothus divergens	Calistoga ceanothus	Rhamnaceae	VASC			BLMS	1B.2
Centromadia pungens ssp. laevis	smooth tarplant	Asteraceae	VASC			BLMS	1B.1
Chaenactis glabriuscula var. orcuttiana	Orcutt's pincushion	Asteraceae	VASC			BLMS	1B.1
Chamaesyce hooveri	Hoover's spurge	Euphorbiaceae	VASC	FT			1B.2
Chlorogalum purpureum var. purpureum	purple amole	Agavaceae	VASC	FT			1B.1
Chloropyron molle subsp. hispidum	hispid bird's-beak	Orobanchaceae	VASC			BLMS	1B.1
Chorizanthe robusta var. robusta	robust spineflower	Polygonaceae	VASC	FE			1B.1
Cirsium ciliolatum	Ashland thistle	Asteraceae	VASC		SE	BLMS	2B.1
Cirsium crassicaule	slough thistle	Asteraceae	VASC			BLMS	1B.1
Cirsium fontinale var. campylon	Mt. Hamilton thistle	Asteraceae	VASC			BLMS	1B.2
Cirsium fontinale var. obispoense	Chorro Creek bog thistle	Asteraceae	VASC	FE	SE		1B.2
Cirsium occidentale var. lucianum	Cuesta Ridge thistle	Asteraceae	VASC			BLMS	1B.2
Cirsium scariosum var. loncholepis	La Graciosa thistle	Asteraceae	VASC	FE	ST		1B.1
Clarkia amoena ssp. whitneyi	Whitney's farewell-to-spring	Onagraceae	VASC			BLMS	1B.1
Clarkia mildrediae subsp. mildrediae	Mildred's clarkia	Onagraceae	VASC			BLMS	1B.3
Clarkia temblorensis subsp. callentensis	Vasek's clarkia	Onagraceae	VASC			BLMS	1B.1

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Monday, November 25, 2019 Page 2 of 7

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SCIENTIFIC NAME	COMMON NAME	FAMILY	TYPE OF PLANT	FEDERAL STATUS	STATE STATUS	BLM STATUS	CA RARE PLANT RANK
Clavariadelphus ligula	strap coral	Gomphaceae	FUNG			BLMS	
Clavulina castanopes var. lignicola	'hairy-stemmed coral'	Clavulinaceae	FUNG			BLMS	
Collinsia antonina	San Antonio collinsia	Plantaginaceae	VASC			BLMS	1B.2
Collinsia multicolor	San Francisco collinsia	Plantaginaceae	VASC			BLMS	1B.2
Cordyceps ophioglossoides	truffle eater	Clavicipitaceae	FUNG			BLMS	
Cordylanthus nidularius	Mt. Diablo bird's-beak	Orobanchaceae	VASC		SR	BLMS	1B.1
Cordylanthus tenuis subsp. pallescens	pallid bird's-beak	Orobanchaceae	VASC			BLMS	1B.2
Cryptantha clokeyi	Clokey's cryptantha	Boraginaceae	VASC			BLMS	1B.2
Cryptantha ganderi	Gander's cryptantha	Boraginaceae	VASC			BLMS	1B.1
Deinandra arida	Red Rock tarplant	Asteraceae	VASC			BLMS	1B.2
Deinandra conjugens	Otay tarplant	Asteraceae	VASC	FT	SE		1B.1
Deinandra increscens subsp. villosa	Gaviota tarplant	Asteraceae	VASC	FE	SE		1B.1
Deinandra minthornii	Santa Suzana tarplant	Asteraceae	VASC		SR	BLMS	1B.2
Delphinium hesperium subsp. cuyamaceae	Cuyamaca larkspur	Ranunculaceae	VASC		SR	BLMS	1B.2
Delphinium parryi ssp. eastwoodiae	Eastwood's larkspur	Ranunculaceae	VASC			BLMS	1B.2
Delphinium parryi subsp. blochmaniae	dune larkspur	Ranunculaceae	VASC			BLMS	1B.2
Dithyrea maritima	beach spectaclepod	Brassicaceae	VASC		ST	BLMS	1B.1
Dudleya blochmaniae ssp. blochmaniae	Blochman's dudleya	Crassulaceae	VASC			BLMS	1B.1
Dudleya multicaulis	many-stemmed dudleya	Crassulaceae	VASC			BLMS	1B.2
Epilobium nivium	Snow Mountain willowherb	Onagraceae	VASC			BLMS	1B.1
Epilobium oreganum	Oregon fireweed	Onagraceae	VASC			BLMS	1B.2
Epilobium siskiyouense	Siskiyou fireweed	Onagraceae	VASC			BLMS	1B.3
Ericameria gilmanii	Gilman's goldenbush	Asteraceae	VASC			BLMS	1B.3
Ericameria palmeri var. palmeri	Palmer's goldenbush	Asteraceae	VASC			BLMS	1B.1
Erigeron calvus	bald daisy	Asteraceae	VASC			BLMS	1B.1
Erigeron maniopotamicus	Mad River fleabane daisy		VASC			BLMS	1B.2
Erigeron multiceps	Kern River daisy	Asteraceae	VASC			BLMS	1B.2
Erigeron supplex	supple daisy	Asteraceae	VASC			BLMS	1B.2
Erigeron uncialis var. uncialis	limestone daisy	Asteraceae	VASC			BLMS	1B.2
Eriogonum alexanderae	Alexander's buckwheat	Polygonaceae	VASC			BLMS	1B.1
Eriogonum butterworthianum	Butterworth's buckwheat	Polygonaceae	VASC		CR	BLMS	1B.3
Eriogonum umbellatum var. ahartii	Ahart's buckwheat	Polygonaceae	VASC			BLMS	1B.2
Eriogonum umbellatum var. glaberrimum	green buckwheat	Polygonaceae	VASC			BLMS	1B.3
Eriogonum ursinum var. erubescens	blushing wild buckwheat	Polygonaceae	VASC			BLMS	1B.3

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Monday, November 25, 2019 Page 3 of 7

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Eryngium aristulatum var. parishii			VASC	FE	CE		1B.1
Erysimum ammophilum	coast wallflower	Brassicaceae	VASC			BLMS	1B.2
Erythranthe marmorata	Stanislaus monkeyflower	Phrymaceae	VASC			BLMS	1B.1
Erythronium citrinum var. roderickii	Scott Mtn. fawn lily	Liliaceae	VASC			BLMS	1B.3
Eschscholzia rhombipetala	diamond-petaled California poppy	Papaveraceae	VASC			BLMS	1B.1
Euphorbia platysperma	flat-seeded spurge	Euphorbiaceae	VASC			BLMS	1B.2
Fritillaria brandegeei	Greenhorn fritillary	Liliaceae	VASC			BLMS	1B.3
Fritillaria ojaiensis	Ojai fritillary	Liliaceae	VASC			BLMS	1B.2
Fritillaria striata	striped adobe-lily	Liliaceae	VASC		ST	BLMS	1B.1
Galium californicum subsp. primum	Alvin Meadow bedstraw	Rubiaceae	VASC			BLMS	1B.2
Galium grande	San Gabriel bedstraw	Rubiaceae	VASC			BLMS	1B.2
Galium serpenticum subsp. warnerense	Warner Mtns. bedstraw	Rubiaceae	VASC			BLMS	1B.2
Gilia capitata ssp. pacifica	Pacific gilia	Polemoniaceae	VASC			BLMS	1B.2
Harmonia doris-nilesiae	Niles's harmonia	Asteraceae	VASC			BLMS	1B.1
Helianthella castanea	Diablo rock-rose	Asteraceae	VASC			BLMS	1B.2
Hesperolinon breweri	Brewer's dwarf flax	Linaceae	VASC			BLMS	1B.2
Hesperolinon didymocarpum	Lake County dwarf flax	Linaceae	VASC		SE	BLMS	1B.2
Heterotheca shevockii	Shevock's golden-aster	Asteraceae	VASC			BLMS	1B.3
Horkelia cuneata var. puberula	mesa horkelia	Rosaceae	VASC			BLMS	1B.1
Horkelia hendersonii	Henderson's horkelia	Rosaceae	VASC			BLMS	1B.1
Horkelia marinensis	Point Reyes horkelia	Rosaceae	VASC			BLMS	1B.2
Horkelia tenuiloba	thin-lobed horkelia	Rosaceae	VASC			BLMS	1B.2
Ivesia longibracteata	Castle Crags ivesia	Rosaceae	VASC			BLMS	1B.3
Ivesia pickeringii	Pickering's ivesia	Rosaceae	VASC			BLMS	1B.2
Ivesia sericoleuca	Plumas ivesia	Rosaceae	VASC			BLMS	1B.2
Layia jonesii	Jones' layia	Asteraceae	VASC			BLMS	1B.2
Layia leucopappa	Comanche Point layia	Asteraceae	VASC			BLMS	1B.1
Lepidium flavum var. felipense	Borrego Valley pepper-grass	Brassicaceae	VASC			BLMS	1B.2
Leptosiphon nuttallii subsp. howellii	Mt. Tedoc linanthus	Polemoniaceae	VASC			BLMS	1B.3
Lilium occidentale	western lily	Liliaceae	VASC	FE	SE		1B.1
Limnanthes bakeri	Baker's meadowfoam	Limnanthaceae	VASC		SR	BLMS	1B.1
Limnanthes floccosa subsp. bellingeriana	Bellinger's meadowfoam	Limnanthaceae	VASC			BLMS	1B.2
Limnanthes floccosa subsp. californica	Butte County meadowfoam	Limnanthaceae	VASC	FE	SE		1B.1
Linanthus bernardinus	Pioneertown linanthus	Polemoniaceae	VASC			BLMS	1B.2

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Monday, November 25, 2019 Page 4 of 7

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SCIENTIFIC NAME	COMMON NAME	FAMILY	TYPE OF PLANT	FEDERAL STATUS	STATE STATUS	BLM STATUS	CA RARE PLANT RANK
Linanthus orcuttii	Orcutt's linanthus	Polemoniaceae	VASC			BLMS	1B.3
Lomatium observatorium	Mt. Hamilton lomatium	Apiaceae	VASC			BLMS	1B.2
Lupinus citrinus var. citrinus	orange lupine	Fabaceae	VASC			BLMS	1B.2
Lupinus citrinus var. deflexus	Mariposa lupine	Fabaceae	VASC		ST	BLMS	1B.2
Lupinus ludovicianus	San Luis Obispo County lupine	Fabaceae	VASC			BLMS	1B.2
Malacothrix saxatilis var. arachnoidea	Carmel Valley malacothrix	Asteraceae	VASC			BLMS	1B.2
Mentzelia tridentata	creamy blazing star	Loasaceae	VASC			BLMS	1B.3
Mimulus gracilipes	slender-stalked monkerflower	Phrymaceae	VASC			BLMS	1B.2
Monardella hypoleuca ssp. intermedia	intermediate monardella	Lamiaceae	VASC			BLMS	1B.3
Monardella macrantha ssp. hallii	Hall's monardella	Lamiaceae	VASC			BLMS	1B.3
Monardella nana subsp. leptosiphon	San Felipe monardella	Lamiaceae	VASC			BLMS	1B.2
Monardella pringlei	Pringle's monardella	Lamiaceae	VASC			BLMS	1A
Monardella sinuata subsp. nigrescens	northern curly-leaved monardella	Lamiaceae	VASC			BLMS	1B.2
Monardella venosa	veiny monardella	Lamiaceae	VASC			BLMS	1B.1
Navarretia leucocephala subsp. bakeri	Baker's navarretia	Polemoniaceae	VASC			BLMS	1B.1
Nemacladus secundiflorus var. robbinsii	Robbins' nemacladus	Campanulaceae	VASC			BLMS	1B.2
Nemacladus twisselmannii	Twisselmann's nemacladus	Campanulaceae	VASC		SR	BLMS	1B.2
Neviusia cliftonii	Shasta snow-wreath	Rosaceae	VASC			BLMS	1B.2
Nolina interrata	Dehesa nolina, bear grass	Ruscaceae	VASC		SE	BLMS	1B.1
Oenothera wolfii	Wolf's evening-primrose	Onagraceae	VASC			BLMS	1B.1
Opuntia basilaris var. treleasei	Bakersfield cactus	Cactaceae	VASC	FE	SE		1B.1
Orcuttia californica	California orcutt grass	Poaceae	VASC	FE	SE		1B.1
Orcuttia pilosa	hairy orcutt grass	Poaceae	VASC	FE	SE		1B.1
Oreostemma elatum	tall alpine aster	Asteraceae	VASC			BLMS	1B.2
Orthocarpus pachystachyus	Shasta orthocarpus	Orobanchaceae	VASC			BLMS	1B.1
Orthodontium gracile	slender thread moss	Bryaceae	BRYO			BLMS	
Panicum acuminatum var. thermale	Geyser's panicum	Poaceae	VASC		SE	BLMS	1B.2
Penstemon filiformis	thread-leaved beardtongue	Plantaginaceae	VASC			BLMS	1B.3
Penstemon personatus	closed-throated beardtongue	Plantaginaceae	VASC			BLMS	1B.2
Perityle villosa	Hanaupah rock daisy	Asteraceae	VASC			BLMS	1B.3
Phacelia cookei	Cooke's phacelia	Boraginaceae	VASC			BLMS	1B.1
Phacelia insularis var. continentis	North Coast phacelia	Hydrophyllaceae	VASC			BLMS	1B.2
Phacelia leonis	Siskiyou phacelia	Boraginaceae	VASC			BLMS	1B.3

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Plants Not Currently Known but Suspected to Occur on BLM Lands in One or More Field Offices

SCIENTIFIC NAME	COMMON NAME	FAMILY	TYPE OF PLANT	FEDERAL STATUS	STATE STATUS	BLM STATUS	CA RARE PLANT RANK
Phacelia mustelina	Death Valley round-leaved phacelia	Boraginaceae	VASC			BLMS	1B.3
Phaeocollybia pseudofestiva	no common name	Cortinariaceae	FUNG			BLMS	
Phlox hirsuta	Yreka phlox	Polemoniaceae	VASC	FE	SE		1B.2
Piperia candida	white-flowered rein orchid	Orchidaceae	VASC			BLMS	1B.3
Plagiobothrys uncinatus	hooked popcorn-flower	Boraginaceae	VASC			BLMS	1B.2
Pleuropogon hooverianus	Hoover's semaphore grass	Poaceae	VASC		ST	BLMS	1B.1
Poa diaboli	Diablo Canyon blue grass	Poaceae	VASC			BLMS	1B.2
Polyozellus multiplex	blue chanterelle	Thelephoraceae	FUNG			BLMS	
Pseudobahia peirsonii	Tulare pseudobahia	Asteraceae	VASC	FT	SE		1B.1
Puccinellia howellii	Howell's alkali-grass	Poaceae	VASC			BLMS	1B.1
Puccinellia parishii	Parish's alkali-grass	Poaceae	VASC			BLMS	1B.1
Raillardella pringlei	showy raillardella	Asteraceae	VASC			BLMS	1B.2
Ramaria cyaneigranosa	'pinkish coral mushroom'	Ramariaceae	FUNG			BLMS	
Rhynchospora californica	California beaked-rush	Cyperaceae	VASC			BLMS	1B.1
Ribes cantharifome	Moreno currant, San Diego currant	Grossulariaceae	VASC			BLMS	1B.3
Rorippa columbiae	Columbia yellow cress	Brassicaceae	VASC			BLMS	1B.2
Sabulina howellii	Howell's sandwort	Caryophyllaceae	VASC			BLMS	1B.3
Sabulina stolonifera	Scott Mtn. sandwort	Caryophyllaceae	VASC			BLMS	1B.3
Sanicula saxatilis	rock sanicle	Apiaceae	VASC		SR	BLMS	1B.2
Scutellaria bolanderi ssp. austromontana	southern mountains skullcap	Lamiaceae	VASC			BLMS	1B.2
Sedum albomarginatum	Feather River stonecrop	Crassulaceae	VASC			BLMS	1B.2
Sidalcea hickmanii subsp. anomala	Cuesta Pass checkerbloom	Malvaceae	VASC		SR	BLMS	1B.2
Sidalcea hickmanii subsp. parishii	Parish's checkerbloom	Malvaceae	VASC		SR	BLMS	1B.2
Sidalcea malviflora subsp. patula	Siskiyou checkerbloom	Malvaceae	VASC			BLMS	1B.2
Sidalcea oregana subsp. eximia	coast checkerbloom	Malvaceae	VASC			BLMS	1B.2
Silene occidentalis subsp. longistipitata	long-stiped campion	Caryophyllaceae	VASC			BLMS	1B.2
Smilax jamesii	English Peak greenbriar	Smilacaceae	VASC			BLMS	1B.3
Sowerbyella rhenana	stalked orange peel fungus	Pyrenemataceae	FUNG			BLMS	
Streptanthus albidus subsp. albidus	Metcalf Canyon jewel-flower	Brassicaceae	VASC	FE			1B.1
Streptanthus callistus	Mount Hamilton jewel-flower	Brassicaceae	VASC			BLMS	1B.3
Streptanthus glandulosus subsp. hoffmannii	Hoffmann's jewel-flower	Brassicaceae	VASC			BLMS	1B.3
Streptanthus morrisonii subsp. hirtiflorus	Dorr's Cabin jewel-flower	Brassicaceae	VASC			BLMS	1B.2
Stylocline masonii	Mason neststraw	Asteraceae	VASC			BLMS	1B.1

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Sulcaria isidiifera	splitting yarn lichen	Alectoriaceae	LICH			BLMS	1B.1
Symphotrichum greatae	Greata's aster	Asteraceae	VASC			BLMS	1B.3
Symphyotrichum defoliatum	San Bernardino aster	Asteraceae	VASC			BLMS	1B.2
Teloschistes flavicans	orangebush lichen	Teloschistaceae	LICH			BLMS	
Tetraphis geniculata	bent-kneed four-tooth moss	Tetraphidaceae	BRYO			BLMS	
Thermopsis californica var. semota	velvety false lupine	Fabaceae	VASC			BLMS	1B.2
Thysanocarpus rigidus	Ridge Fringepod	Brassicaceae	VASC			BLMS	1B.2
Tortula californica	California screw-moss	Pottiaceae	BRYO			BLMS	1B.2
Trifolium siskiyouense	Siskiyou clover	Fabaceae	VASC			BLMS	1B.1

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Special Status Animals in California, Including BLM Designated Sensitive Species

	COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS	STATE STATUS	BLM STATUS	OTHER STATUS
Mammals						
	Amargosa vole	Microtus californicus scirpensis	FE	SE		
	California leaf-nosed bat	Macrotus californicus			BLMS	SSC
	California wolverine	Gulo gulo				
	Cave myotis	Myotis velifer			BLMS	SSC
	Desert bighorn sheep	Ovis canadensis nelsoni			BLMS	SF
	Fisher	Pekania pennanti	FC	SC	BLMS	SSC
	Fringed myotis	Myotis thysanodes			BLMS	
	Giant kangaroo rat	Dipodomys ingens	FE	SE		
	Gray Wolf	Canis lupus	FE			
	Long-eared myotis	Myotis evotis			BLMS	
	Mohave ground squirrel	Xerospermophilus mohavensis		ST	BLMS	
	Monterey dusky-footed woodrat	Neotoma macrotis luciana			BLMS	
	Nelson's antelope squirrel	Ammospermophilus nelsoni		ST	BLMS	
	Owens Valley vole	Microtus californicus vallicola			BLMS	
	Pallid bat	Antrozous pallidus			BLMS	SSC
	Palm Springs little pocket mouse	Perognathus longimembris bangsi			BLMS	
	Palm Springs round-tailed ground squirrel	Xerospermophilus tereticaudus chlorus	FC		BLMS	SSC
	Peninsular Bighorn sheep	Ovis canadensis nelsoni (Pensiluar)	FE			
	Point arena mountain beaver	Aplodontia rufa nigra	FE			
	Pygmy rabbit	Brachylagus idahoensis			BLMS	
	San bernadino kangaroo rat	Dipodomys merriami parvus	FE			
	San Joaquin kit fox	Vulpes macrotis mutica	FE	ST		
	San Joaquin pocket mouse	Perognathus inornatus			BLMS	
	Short-nosed kangaroo rat	Dipodomys nitratoides brevinasus			BLMS	
	Sierra Nevada bighorn sheep	Ovis canadensis sierrae	FE	SE		SF
	Sierra Nevada Red fox	Vulpes vulpes necator				
	Small-footed myotis	Myotis ciliolabrum			BLMS	
	Southern sea otter	Enhydra lutris nereis	FT			
	Spotted bat	Euderma maculatum			BLMS	SSC
	Steller sea-lion	Eumetopias jubatus				
	Stephens' kangaroo rat	Dipodomys stephensi	FE	ST		
	Tipton kangaroo rat	Dipodomys nitratoides nitratoides	FE	SE		
	Townsend's big-eared bat	Corynorhinus townsendii			BLMS	SSC
	Tulare grasshopper mouse	Onychomys torridus tularensis			BLMS	
	Western mastiff-bat	Eumops perotis californicus			BLMS	SSC
	White-eared pocket mouse	Perognathus alticola			BLMS	
	Yellow-eared pocket mouse	Perognathus mollipilosus xanthonotus			BLMS	
	Yuma myotis	Myotis yumanensis			BLMS	
Birds						
	American peregrine falcon	Falco peregrinus anatum				
	Arizona bell's vireo	Vireo bellii arizonae		SE	BLMS	
	Ashy storm-petrel	Oceanodroma homochroa			BLMS	SSC

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Monday, November 25, 2019 Page 1 of 4

	COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS	STATE STATUS	BLM STATUS	OTHER STATUS
	Bald eagle	Haliaeetus leucocephalus	FD	SE	BLMS	EA
	Bank swallow	Riparia riparia		ST	BLMS	
	Bendire's thrasher	Toxostoma bendirei			BLMS	SSC
	Brown pelican	Pelecanus occidentalis californicus	FD	SD	BLMS	SF
	Burrowing owl	Athene cunicularia			BLMS	SSC
	California black rail	Laterallus jamaicensis coturniculus		ST	BLMS	SF
	California condoe	Gymnogyps californianus	FE			
	California Least tern	Sternula antillarum browni	FE			
	California spotted owl	Strix occidentalis occidentalis			BLMS	SSC
	Coastal California gnatcatcher	Polioptila californica californica	FT			
	Crissal thrasher	Toxostoma crissale			BLMS	
	Elf owl	Micrathene whitneyi		SE	BLMS	
	Fork-tailed storm-petrel	Oceanodroma furcata			BLMS	SSC
	Gila woodpecker	Melanerpes uropygialis		SE	BLMS	
	Gilded flicker	Colaptes chrysoides		SE	BLMS	
	Golden eagle	Aquila chrysaetos			BLMS	EA
	Gray vireo	Vireo vicinior			BLMS	SSC
	Greater sage-grouse	Centrocercus urophasianus	FC		BLMS	SSC
	Greater sandhill crane	Antigone canadensis tabida		ST	BLMS	SF
	Inyo California towhee	Melozone crissalis eremophilus	FT	SE		
	Least Bell's vireo	Vireo bellii pusillus	FE	SE		
	Lucy's warbler	Oreothlypis luciae			BLMS	SSC
	Marbled murrelet	Brachyramphus marmoratus	FT			
	Mountain plover	Charadrius montanus			BLMS	SSC
	Northern goshawk	Accipiter gentilis			BLMS	SSC
	San Joaquin Le Conte's thrasher	Toxostoma lecontei			BLMS	SSC
	Southwestern willow flycatcher	Empidonax traillii extimus	FE	SE		
	Swainson's hawk	Buteo swainsoni		ST	BLMS	
	Tricolored blackbird	Agelaius tricolor			BLMS	SSC
	Western snowy plover	Charadrius alexandrinus nivosus	FT			
	Western yellow-billed cuckoo	Coccyzus americanus occidentalis	FC	SE	BLMS	
	White-tailed kite	Elanus leucurus			BLMS	SF
	Xantus' murrelet	Synthliboramphus scrippsi	FC	ST	BLMS	
	Yuma clapper rail	Rallus obsoletus yumanensis	FE	ST		SF
Reptiles						
	Barefoot banded gecko	Coleonyx switaki		ST	BLMS	
	Blunt-nosed leopard lizard	Gambelia sila	FE	SE		SF
	California mountain kingsnake	Lampropeltis zonata (pulchra)			BLMS	
	Coachella Valley fringe-toed lizard	Uma inornata	FT	SE		
	Coast horned lizard	Phrynosoma blainvillii			BLMS	
	Colorado Desert fringe-toed lizard	Uma notata			BLMS	
	Coronado skink	Plestiodon skiltonianus interparietalis			BLMS	
	Desert tortoise	Gopherus agassizii	FT	ST		
	Flat-tailed horned lizard	Phrynosoma mcallii			BLMS	
	Gila monster Banded	Heloderma suspectum cinctum			BLMS	
	Mojave fringe-toed lizard	Uma scoparia			BLMS	

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Monday, November 25, 2019 Page 2 of 4

	COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS	STATE STATUS	BLM STATUS	OTHER STATUS
	Northern sagebrush lizard	Sceloporus graciosus graciosus			BLMS	
	Panamint alligator lizard	Elgaria panamintina			BLMS	
	Two-striped garter snake	Thamnophis hammondii			BLMS	
	Western pond turtle	Emys marmorata			BLMS	
Amphibians						
	Arroyo toad	Anaxyrus californicus	FE			
	Black toad	Anaxyrus exsul		ST	BLMS	SF
	California Red-Legged frog	Rana draytonii	FT			
	California tiger salamander	Ambystoma californiense	FT	SC		SSC
	Couch's spadefoot toad	Scaphiopus couchii			BLMS	
	Desert slender salamander	Batrachoseps major aridus	FE	SE		
	Foothill yellow-legged frog	Rana boylii			BLMS	
	Inyo Mountains slender salamander	Batrachoseps campi			BLMS	
	Limestone salamander	Hydromantes brunus		ST	BLMS	SF
	Lowland leopard frog	Lithobates yavapaiensis			BLMS	
	Oregon spotted frog	Rana pretiosa	FC		BLMS	
	Shasta salamander	Hydromantes shastae			BLMS	
	Sierra Nevada Yellow-Legged frog	Rana sierrae	FE			
	Southern Mountain Yellow-Legged frog	Rana muscosa	FE			
	Tehachapi slender salamander	Batrachoseps stebbinsi			BLMS	
	Western spadefoot toad	Spea hammondii			BLMS	
	Yellow-blotched salamander	Ensatina eschscholtzii croceator			BLMS	
Fish						
	Amargosa River pupfish	Cyprinodon nevadensis amargosae			BLMS	
	Amargosa speckled dace	Rhinichthys osculus ssp. 1			BLMS	
	Bonytail	Gila elegans	FE			
	Central Valley spring-run chinook salmon	Oncorhynchus tshawytscha (Central Valley Spring-	FT	ST		
	Coho salmon	Oncorhynchus kisutch (Southern Oregon / Norther	FT			
	Coho salmon - central California coast	Oncorhynchus kisutch (Central California Coast ES	FE	SE		
	Colorado pikeminnow	Ptychocheilus lucius	FE	SE		SF
	Cow head tui chub	Gila bicolor vaccaceps			BLMS	
	Desert pupfish	Cyprinodon macularius	FE	SE		
	Green Sturgeon	Acipenser medirostris	FT			
	Lahontan cutthroat trout	Oncorhynchus clarkii henshawi	FT			
	Longfin smelt	Spirinchus thaleichthys				
	Lost River sucker	Deltistes luxatus	FE	SE		SF
	Modoc sucker	Catostomus microps		SE		SF
	Mojave tui chub	Siphateles bicolor mohavensis	FE	SE		SF
	Owens pupfish	Cyprinodon radiosus	FE	SE		SF
	Owens speckled dace	Rhinichthys osculus ssp. 2			BLMS	
	Owens tui chub	Siphateles bicolor snyderi	FE	SE		
	Pacific lamprey	Entosphenus tridentatus			BLMS	
	Razorback sucker	Xyrauchen texanus	FE	SE		SF
	Red Hills roach	Lavinia symmetricus ssp. 3			BLMS	
	Rough sculpin	Cottus asperrimus		ST	BLMS	
	Sacramento River winter-run chinook salmon	Oncorhynchus tshawytscha (Sacramento River Wi	FE	SE		

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	COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS	STATE STATUS	BLM STATUS	OTHER STATUS
	Santa ana sucker	Catostomus santaanae	FT			
	Shortnose sucker	Chasmistes brevirostris	FE	SE		SF
	Steelhead	Oncorhynchus mykiss irideus (Southern California	FE			
	Steelhead	Oncorhynchus mykiss irideus (Central Valley DPS)	FT			
	Steelhead	Oncorhynchus mykiss irideus (South-Central Califo	FT			
	Steelhead	Oncorhynchus mykiss irideus (Central California C	FT			
	Steelhead	Oncorhynchus mykiss irideus (Northern California	FT			
	Tidewater gobey	Eucyclogobius newberryi	FE			
	Unarmored threespine stickleback	Gasterosteus aculeatus williamsoni	FE	SE		SF
	Wall Canyon sucker	Catostomus murivallis			BLMS	
	Warner sucker	Catostomus warnerensis	FT			
Insects						
	Behren's Silverspot butterfly	Speyeria zerene behrensii	FE			
	Carson Wandering skipper	Pseudocopaeodes eunus obscurus	FE			
	Casey's june beetle	Dinacoma caseyi	FE			
	Ciervo aegialian scarab beetle	Aegialia concinna			BLMS	
	Kern primrose sphinx moth	Euproserpinus euterpe	FT			
	Oregon Silverspot butterfly	Speyeria zerene hippolyta	FT			
	Quino checkerspot butterfly	Euphydryas editha quino	FE			
	San Joaquin dune beetle	Coelus gracilis			BLMS	
	Silverspot butterflymyrtle's	Speyeria zerene myrtleae	FE			
	Smith's blue butterfly	Euphilotes enoptes smithi	FE			
	Thorne's hairstreak butterfly	Callophrys thornei			BLMS	
	Valley elderberry longhorn beetle	Desmocerus californicus dimorphus	FT			
Arachnids						
	Shoshone Cave whip-scorpion	Hubbardia shoshonensis			BLMS	
Crustaceans						
	Longhorn fairy shrimp	Branchinecta longiantenna	FE			
	Riverside fairy shrimp	Streptocephalus woottoni	FE			
	San diego fairy shrimp	Branchinecta sandiegoensis	FE			
	Shasta crayfish	Pacifastacus fortis	FE	SE		
	Vernal pool fairy shrimp	Branchinecta lynchi	FT			
	Vernal pool tadpole shrimp	Lepidurus packardi	FE			
Snails						
	Hirsute Sierra sideband snail	Monadenia mormonum hirsuta			BLMS	
	Keeled sideband snail	Monadenia circumcarinata			BLMS	
	Tuolumne sideband snail	Monadenia tuolumneana			BLMS	

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Monday, November 25, 2019 Page 4 of 4

BLM, REDDING FIELD OFFICE SPECIAL STATUS PLANTS

Scientific Name	Common Name	Plant Type	Family	Federal Status	State Status	BLM Status	CNPS Rare Plant Rank (2019)	Suspected/Known In Redding FO
Balsamorhiza lanata	woolly balsamroot	Vascular	Asteraceae			BLMS	1B.2	K
Balsamorhiza macrolepis	big-scale balsamroot	Vascular	Asteraceae			BLMS	1B.2	K
Brodiaea matsonii	Sulphur Creek brodiaea	Vascular	Themidaceae			BLMS	1B.1	K
Brodiaea rosea ssp. rosea	Indian Valley brodiaea	Vascular	Themidaceae		SE	BLMS	3.1	K
Bryophyteria tortuosa	yellow-twist horsehair	Lichen	Parmeliaceae	S&M		BLMS		K
Calochortus greenei	Greene's mariposa	Vascular	Liliaceae			BLMS	1B.2	K
Chaenactis suffrutescens	Shasta chaenactis	Vascular	Asteraceae			BLMS	1B.3	K
Chlorogalum pomeridianum var. minus	dwarf soaproot	Vascular	Agavaceae			BLMS	1B.2	K
Clarkia borealis subsp. arida	Shasta clarkia	Vascular	Onagraceae			BLMS	1B.1	K
Clarkia borealis subsp. borealis	northern clarkia	Vascular	Onagraceae			BLMS	1B.3	K
Clarkia gracilis subsp. albicaulis	white-stemmed clarkia	Vascular	Onagraceae			BLMS	1B.2	K
Clarkia mosquinii	Mosquin's clarkia	Vascular	Onagraceae			BLMS	1B.1	K
Cryptantha crinita	silky cryptantha	Vascular	Boraginaceae			BLMS	1B.2	K
Cypripedium fasciculatum	clustered lady's slipper	Vascular	Orchidaceae	S&M		BLMS	4.2	K
Cypripedium montanum	mountain lady's slipper	Vascular	Orchidaceae	S&M		BLMS	4.2	K
Dendriscocaulon intricatulum	northern moon shrub	Lichen	Lobariaceae	S&M		BLMS		K
Eriastrum brandegeeae	Brandegee's eriastrum	Vascular	Polemoniaceae			BLMS	1B.1	K
Euphorbia ocellata subsp. rattanii	Stony Creek spurge	Vascular	Euphorbiaceae			BLMS	1B.2	K
Fritillaria gentneri	Gentner's fritillaria	Vascular	Liliaceae	FE			1B.1	K
Galium serpenticum subsp. scotticum	Scott Mtn. bedstraw	Vascular	Rubiaceae			BLMS	1B.2	K
Gratiola heterosepala	Boggs Lake hedge-hyssop	Vascular	Plantaginaceae		SE	BLMS	1B.2	K
Harmonia stebbinsii	Stebbins's harmonia	Vascular	Asteraceae			BLMS	1B.2	K
Hesperolinon tehamense	Tehama County western flax	Vascular	Linaceae			BLMS	1B.3	K
Juncus leiospermus var. leiospermus	Red Bluff dwarf rush	Vascular	Juncaceae			BLMS	1B.1	K
Legenere limosa	legenere	Vascular	Campanulaceae			BLMS	1B.1	K
Lewisia cotyledon var. heckneri	Heckner's lewisia	Vascular	Portulacaeae			BLMS	1B.2	K
Orcuttia tenuis	slender orcutt grass	Vascular	Poaceae	FT	SE		1B.1	K
Packera eurycephala var. lewisrosei	cut-leaved ragwort	Vascular	Asteraceae			BLMS	1B.2	K
Paronychia ahartii	Ahart's paronychia	Vascular	Caryophyllaceae			BLMS	1B.1	K
Phacelia greenei	Scott Valley phacelia	Vascular	Boraginaceae			BLMS	1B.2	K
Rupertia hallii	Hall's rupertia	Vascular	Fabaceae			BLMS	1B.2	K
Sagittaria sanfordii	Sanford's arrowhead	Vascular	Alismataceae			BLMS	1B.2	K
Sedum obtusatum subsp. paradisum	Canyon Creek stonecrop	Vascular	Crassulaceae			BLMS	1B.3	K
Sidalcea robusta	Butte County checkerbloom	Vascular	Malvaceae			BLMS	1B.2	K
Trifolium jokerstii	Butte County golden clover	Vascular	Fabaceae			BLMS	1B.2	K
Vaccinium shastense subsp. shastense	Shasta huckleberry	Vascular	Ericaceae			BLMS	1B.3	K
Acmispon rubriflorus	red-flowered bird's-foot trefoil	Vascular	Fabaceae			BLMS	1B.1	S
Allium jepsonii	Jepson's onion	Vascular	Alliaceae			BLMS	1B.2	S
Amsinckia lunaris	bent-flowered fiddleneck	Vascular	Boraginaceae			BLMS	1B.2	S
Anisocarpus scabridus	scabrid alpine tarplant	Vascular	Asteraceae			BLMS	1B.3	S
Arctostaphylos klamathensis	Klamath manzanita	Vascular	Ericaceae			BLMS	1B.2	S
Astragalus rattanii var. jepsonianus	Jepson's milk-vetch	Vascular	Fabaceae			BLMS	1B.2	S
Astragalus tener var. ferrisiae	Ferris's milk-vetch	Vascular	Fabaceae			BLMS	1B.1	S
Balsamorhiza sericea	silky balsamroot	Vascular	Asteraceae			BLMS	1B.3	S
Boechera serpenticola	Serpentine Rockcress	Vascular	Brassicaceae			BLMS	1B.2	S
Buxbaumia viridis	green bug moss	Bryophyte	Buxbaumiaceae	S&M		BLMS	2.2	S
Calochortus longebarbatus var. longebarbatus	long-haired star-tulip	Vascular	Liliaceae			BLMS	1B.2	S
Calochortus monanthus	Shasta River mariposa	Vascular	Liliaceae			BLMS	1A	S
Calochortus persistens	Siskiyou mariposa lily	Vascular	Liliaceae	FC	SR	BLMS	1B.2	S
Campanula shetleri	Castle Crags harebell	Vascular	Campanulaceae			BLMS	1B.3	S
Carex klamathensis	Klamath sedge	Vascular	Cyperaceae			BLMS	1B.2	S
Castilleja rubicundula subsp. rubicundula	pink creamsacs	Vascular	Orobanchaceae			BLMS	1B.2	S
Chamaesyce hooveri	Hoover's spurge	Vascular	Euphorbiaceae	FT			1B.2	S

Scientific Name	Common Name	Plant Type	Family	Federal Status	State Status	BLM Status	CNPS Rare Plant Rank (2019)	Suspected/Known In Redding FO
Cirsium ciliolatum	Ashland thistle	Vascular	Asteraceae		SE	BLMS	2B.1	S
Clarkia mildrediae subsp. mildrediae	Mildred's clarkia	Vascular	Onagraceae			BLMS	1B.3	S
Cordylanthus tenuis subsp. pallescens	pallid bird's-beak	Vascular	Orobanchaceae			BLMS	1B.2	S
Dendrocollybia racemosa	no common name	Fungi	Tricholomataceae	S&M		BLMS		S
Draba carnosula	Mt. Eddy draba	Vascular	Brassicaceae			BLMS	1B.3	S
Epilobium oreganum	Oregon fireweed	Vascular	Onagraceae			BLMS	1B.2	S
Epilobium siskiyouense	Siskiyou fireweed	Vascular	Onagraceae			BLMS	1B.3	S
Eriogonum umbellatum var. ahartii	Ahart's buckwheat	Vascular	Polygonaceae			BLMS	1B.2	S
Eriogonum ursinum var. erubescens	blushing wild buckwheat	Vascular	Polygonaceae			BLMS	1B.3	S
Erythranthe inflatula	ephemeral monkeyflower	Vascular	Phrymaceae			BLMS	1B.2	S
Erythronium citrinum var. roderickii	Scott Mtn. fawn lily	Vascular	Liliaceae			BLMS	1B.3	S
Fritillaria pluriflora	adobe-lily	Vascular	Liliaceae			BLMS	1B.2	S
Harmonia doris-nilesiae	Niles's harmonia	Vascular	Asteraceae			BLMS	1B.1	S
Horkelia hendersonii	Henderson's horkelia	Vascular	Rosaceae			BLMS	1B.1	S
Ivesia longibracteata	Castle Crags ivesia	Vascular	Rosaceae			BLMS	1B.3	S
Ivesia pickeringii	Pickering's ivesia	Vascular	Rosaceae			BLMS	1B.2	S
Layia septentrionalis	Colusa layia	Vascular	Asteraceae			BLMS	1B.2	S
Leptosiphon nuttallii subsp. howellii	Mt. Tedoc linanthus	Vascular	Polemoniaceae			BLMS	1B.3	S
Lewisia cantelovii	Cantelow's lewisia	Vascular	Portulacaceae			BLMS	1B.2	S
Limnanthes floccosa subsp. bellingeriana	Bellinger's meadowfoam	Vascular	Limnanthaceae			BLMS	1B.2	S
Limnanthes floccosa subsp. californica	Butte County meadowfoam	Vascular	Limnanthaceae	FE	SE		1B.1	S
Monardella venosa	veiny monardella	Vascular	Lamiaceae			BLMS	1B.1	S
Navarretia leucocephala subsp. bakeri	Baker's navarretia	Vascular	Polemoniaceae			BLMS	1B.1	S
Neviusia cliftonii	Shasta snow-wreath	Vascular	Rosaceae			BLMS	1B.2	S
Orcuttia pilosa	hairy orcutt grass	Vascular	Poaceae	FE	SE		1B.1	S
Orthocarpus pachystachyus	Shasta orthocarpus	Vascular	Orobanchaceae			BLMS	1B.1	S
Packera layneae	Layne's butterweed	Vascular	Asteraceae	FT	SR		1B.2	S
Penstemon filiformis	thread-leaved beardtongue	Vascular	Plantaginaceae			BLMS	1B.3	S
Penstemon personatus	closed-throated beardtongue	Vascular	Plantaginaceae			BLMS	1B.2	S
Phacelia cookei	Cooke's phacelia	Vascular	Boraginaceae			BLMS	1B.1	S
Phacelia leonis	Siskiyou phacelia	Vascular	Boraginaceae			BLMS	1B.3	S
Phaeocollybia californica	California phaeocollybia	Fungi	Cortinariaceae	S&M		BLMS		S
Phaeocollybia olivacea	olive phaeocollybia	Fungi	Cortinariaceae	S&M		BLMS		S
Phaeocollybia spadicea	spadicea phaecollybia	Fungi	Cortinariaceae	S&M		BLMS		S
Phlox hirsuta	Yreka phlox	Vascular	Polemoniaceae	FE	SE		1B.2	S
Ptilidium californicum	Pacific fuzzwort	Bryophyte	Ptilidiaceae	S&M		BLMS	4.3	S
Puccinellia howellii	Howell's alkali-grass	Vascular	Poaceae			BLMS	1B.1	S
Raillardella pringlei	showy raillardella	Vascular	Asteraceae			BLMS	1B.2	S
Rhynchospora californica	California beaked-rush	Vascular	Cyperaceae			BLMS	1B.1	S
Rorippa columbiae	Columbia yellow cress	Vascular	Brassicaceae			BLMS	1B.2	S
Sabulina howellii	Howell's sandwort	Vascular	Caryophyllaceae			BLMS	1B.3	S
Sabulina stolonifera	Scott Mtn. sandwort	Vascular	Caryophyllaceae			BLMS	1B.3	S
Sedum albomarginatum	Feather River stonecrop	Vascular	Crassulaceae			BLMS	1B.2	S
Silene occidentalis subsp. longistipitata	long-stiped campion	Vascular	Caryophyllaceae			BLMS	1B.2	S
Smilax jamesii	English Peak greenbriar	Vascular	Smilacaceae			BLMS	1B.3	S
Sowerbyella rhenana	stalked orange peel Fungius	Fungi	Pyrenemataceae	S&M		BLMS		S
Spathularia flavida	fairy fan	Fungi	Cudoniaceae	S&M		BLMS		S
Trifolium siskiyouense	Siskiyou clover	Vascular	Fabaceae			BLMS	1B.1	S

APPENDIX E – Compliance with Standards and

Guidelines for Survey & Manage Species
Indian Creek Connectivity and Restoration Project

The Indian Creek Connectivity Project is consistent with court orders relating to the Survey and Manage mitigation measure of the Northwest Forest Plan, as incorporated into BLM's 1993 Redding Resource Management Plan and the 1995 Shasta-Trinity National Forest LRMP.

On December 17, 2009, the U.S. District Court for the Western District of Washington issued an order in *Conservation Northwest, et al. v. Rey*, No. 08-1067 (W.D. Wash.) (Coughenour, J.), granting Plaintiffs' motion for partial summary judgment and finding a variety of NEPA violations in the BLM and USFS 2007 ROD eliminating the Survey and Manage mitigation measure. Judge Coughenour deferred issuing a remedy in his December 17, 2009, order until further proceedings and did not enjoin the BLM from proceeding with Projects. Plaintiffs and Defendants entered into settlement negotiations that resulted in the 2011 Survey and Manage Settlement Agreement, adopted by the District Court on July 6, 2011.

The Ninth Circuit Court of Appeals issued an opinion on April 25, 2013, that reversed the District Court for the Western District of Washington's approval of the 2011 Survey and Manage Settlement Agreement. The case is now remanded back to the District Court for further proceedings. This means that the December 17, 2009, District Court order which found NEPA inadequacies in the 2007 analysis and records of decision removing Survey and Manage is still valid.

Previously, in 2006, the District Court (Judge Pechman) had invalidated the agencies' 2004 RODs eliminating Survey and Manage due to NEPA violations. Following the District Court's 2006 ruling, parties to the litigation had entered into a stipulation exempting certain categories of activities from the Survey and Manage standard (hereinafter "Pechman exemptions").

Judge Pechman's Order from October 11, 2006 directs: "Defendants shall not authorize, allow, or permit to continue any logging or other ground-disturbing activities on Projects to which the 2004 ROD applied unless such activities are in compliance with the 2001 ROD (as the 2001 ROD was amended or modified as of March 21, 2004), except that this order will not apply to:

A. Thinning Projects in stands younger than 80 years old;
B. Replacing culverts on roads that are in use and part of the road system, and removing culverts if the road is temporary or to be decommissioned;
C. Riparian and stream improvement Projects where the riparian work is riparian planting, obtaining material for placing in-stream, and road or trail decommissioning; and where the stream improvement work is the placement large wood, channel and floodplain reconstruction, or removal of channel diversions; and
D. The portions of Project involving hazardous fuel treatments where prescribed fire is applied.

Any portion of a hazardous fuel treatment Project involving commercial logging will remain subject to the survey and management requirements except for thinning of stands younger than 80 years old under subparagraph a. of this paragraph. Following the District Court's December 17, 2009 ruling, the Pechman exemptions still remained in place. The BLM reviewed the EA/IS for the Indian Creek site in consideration of both the December 17, 2009 partial summary judgment and Judge Pechman's October 11, 2006 order. Because this site is the focus of a riparian and stream improvement Project where the

riparian work is riparian planting, obtaining material for placing in-stream, and road or trail decommissioning; and where the stream improvement work is the placement large wood, channel and floodplain reconstruction, or removal of channel diversions, the BLM has made the determination that this Project meets Exemption C of the Pechman Exemptions (October 11, 2006 Order), and therefore may still proceed even if the District Court sets aside or otherwise enjoins use of the 2007 Survey and Manage ROD since the Pechman exemptions would remain valid in such case.