Pondo Fire Salvage Project
Soils and Watershed Input

Signature: /s/Oswaldo Angulo 12/04/2017

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Restrictions/Design Features

- 20N67—Construct 7 rolling dips, reconstruct 3 waterbars, and clean out a ditch relief culvert.
- 20N67A—Fix slide on road. The rest of the road has no hydrological issues.
- UC200615-03—Remove culvert at stream crossing. Half the road fill is gone at outlet.
- 20N54—Construct one low water crossing. Construct 10 rolling dips and reconstruct 6 waterbars.
- UC200623-01—Reconstruct 7 waterbars.
- 22N24X—Clean inlet and outlet of 21 culvert stream crossings. Construct 2 forded stream crossings, 7 critical dips and 19 rolling dips.
- 20N94X—Road is in good working condition. No major hydrological issue. Survey found 27 working dips with leadoff ditches. Recommend maintaining these drainage features functioning properly after salvage is done.
- All skid trails and temporary roads will have waterbars as erosion control features.
- Adhere to FS-990a National Best Management Practices for Water Quality Management on National Forest System Lands, Volume 1: National Core BMP Technical Guide (April 2012), in particular:
    - Mechanical Vegetation Management Activities: Veg 1-4 (especially Veg -3, Aquatic Management Zones), 6, and 8; pgs. 128-140.
- Adhere to R5 FSH 2509.22 Soil and Water Conservation Handbook, Chapter 10 Water Quality Management Handbook, Amendment # 2509.22-2011-1 (Dec 05, 2011). In particular, BMPs 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.8, 1.9, 1.10, 1.11, 1.12, 1.13, 1.14, 1.15, 1.16, 1.17, 1.19, 1.20, 1.21, 2.2, 2.3, 2.4, 2.5, 2.6, 2.8, 2.11, 5.1, 5.2, 5.4, and 5.6.
- More design specific design features are located in project appendix that contains all the resources' design features/mitigations. Below are some of the most crucial for soils and watershed.
    - See Table 1 for the RCA Heavy Equipment Exclusion Zone
    - Limiting Operating Period (LOP) (BMP 1-5, BMP 1-13) for soil moisture.
        - Conduct ground based harvest operations when soil is dry; that is, in the spring when soil moisture in the upper 8 inches is not sufficient to allow a soil sample to be squeezed and hold its shape, or will crumble when the hand is tapped. In the summer and early fall after storm event(s) when soil moisture between 2-8 inches in depth is not sufficient to allow a soil sample to be squeezed and hold its shape, or will crumble when the hand is tapped. Work on streams should occur during low flow (late summer)
    - Lop and scatter broken tops and limbs throughout the project boundary to increase the effective soil cover. Minimize the amount of slash that goes to landings instead use material for effective soil cover. Concentrate effort on steeper slopes and areas along the riparian corridor. Re-use existing landings and skid trails where possible (BMP 1-12).
    - Fuel outside of riparian areas. 300 feet on perennial and 150 feet on seasonal flowing streams.

- BMP 2.11 (Equipment Refueling and Servicing) will prevent fuels, lubricants, cleaners, and other harmful materials from discharging into nearby surface waters or infiltrating through soils to contaminate groundwater resources.

Table 1. RCA Heavy Equipment Exclusion Zone Widths and Slope Restrictions

Riparian Conservation Area Type	Equipment Exclusion Zone Width (Feet)	Heavy Equipment Slope Restrictions	RCA Buffer that Slope Restrictions Apply to
Perennial and Intermittent Streams	75 feet from edge of feature or to edge of riparian vegetation, whichever is greater. No yarding within the these buffers simply fell them towards the streams in they are hazardous.	25 percent	300 feet for Pernnial Streams; 150 feet for intermittent streams.
Ephemeral Stream	50 feet from edge of feature or to edge of riparian vegetation, whichever is greater. No yarding within the these buffers simply fell them towards the streams in they are hazardous.	25 percent	150 feet
Ponds	25 feet from high water mark. No yarding within the these buffers simply fell them towards the streams in they are hazardous.	25 percent	

Soil Analysis

The soils analysis looked at the soils hydrologic function and ability to support plant growth. The indicators and measures used for the analysis are listed in Table 2. The qualitative analysis will disclose the existing condition and compare that to the proposed activities. The project has identified specific Best Management Practices (BMPs) and mitigations identified in the restrictions/design features section of this document and in the design feature appendix.

Table 2 Soil Function Check List Used for Soil Affects Analysis

Soil Function	Indicator & Measure
Soil Hydrologic Functions	Soil Stability & Percent Effective Soil Cover
Support for Plant Growth	Surface Organic Matter & Percent Fine Organic Matter
Support for Plant Growth and Soil Hydrologic Functions	Soil Structure and Macro-porosity & Percent Compaction

Existing Condition

Percent effective soil cover, percent fine organic matter, and percent compaction is unknown since soil surveys weren't conducted. Based on field reconnaissance on October 4-5, 2017 and November 6, 2017 effective soil cover and fine organic matter will not be meeting standard and guidelines. Soils will continue to erode as the first rains and winter happen in the project. According to the Ponderosa Burned-

Area Report the burn severity varied from low to high. The reported acreage are 1,620 for low, 88 for moderate and 1,642 for high. Units 1 and 2 had generally areas of high and moderate burn severity while unit 3 had very low to low burn severity with pockets of moderate severity.

Proposed Action

Direct, Indirect, and Cumulative Effects

Percent Effective Soil Cover, Percent Fine Organic Matter, & Percent Compaction

The proposed salvage of the dead and hazardous trees is not going to negatively affect the effective soil cover and percent fine organic matter because of the various design features and mitigations of project. The broken tops and limbs of the trees will be lopped and scatter to improve overall effective soil cover and organic matter. The amount of slash that goes to landings will be minimized instead the material would be used for effective soil cover in order to promote soil stability. The slash placement will be prioritized on steeper slopes, areas along the riparian corridor, and skid trails. The percent increase in effective soil cover and organic matter is hard to predict but it would be an improvement from the existing condition and will help will soil stability and future soil nutrients.

Trees within RCAs that are felled will be felled away from the channel and end-lined. Grooves and bare soil created by end-lining will be mitigated with hand-built water bars and/or slash placement. Trees within the equipment exclusion zone will be simply fell towards the streams and contribute to down large woody debris. Units 1 and 2 had generally areas of high and moderate burn severity while unit 3 had very low to low burn severity with pockets of moderate severity.

To minimize the amount of soil disturbance logging systems will have to have to use existing landings and skid trials plus restrict the use of any heavy equipment to 35 percent slope outside of RCAs, and 25 percent within RCAs. These design features will help with minimize the amount of compaction and displacement of soil. The LOP for soil moisture will be strictly enforced to ensure that compaction and displacement does not occur. Mechanical site preparation in the future will have to adhere to the same design features as the salvage and hazard tree aspects of the project, and will not cause any significant effects to the soils hydrologic function and ability to support plant growth.

The proposed salvage of the dead and hazardous trees is not going to negatively affect the soil hydrologic function and the soils ability to support plant growth because the design features are intended to improve the short and long term soil functions.

Hydrology Analysis

The SNFPA ROD describes management direction for riparian areas and water resources located on Plumas National Forest System lands. The ROD identifies goals for aquatic, riparian, and meadow ecosystems and associated species known as Aquatic Management Strategy (AMS) goals. The ROD includes six Riparian Conservation Objectives (RCOs) and more than thirty standards and guidelines to be implemented for designated Riparian Conservation Areas (RCAs). The RCOs were created as a strategy as to achieve the AMS goals. The AMS goals are: (1) Water Quality, (2) Species Viability, (3)

Plant and Animal Community Diversity, (4) Special Habitats, (5) Watershed Connectivity, (6) Floodplains and Water Tables, (7) Watershed Condition, (8) Streamflow Patterns and Sediment Regimes, (9) Stream Banks and Shorelines.

Designation of appropriate widths of RCAs is an integral element of the riparian area management. The standard and guide for Riparian Conservation Area (RCA) widths suggested by the ROD are described below.

- Perennial Streams: 300 feet on each side of the stream, measured from the bank full edge of the stream
- Seasonally Flowing Streams (includes intermittent and ephemeral streams): 150 feet on each side of the stream, measured from the bank full edge of the stream
- Special Aquatic Features or Perennial Streams with Riparian Conditions extending more than 150 feet from edge of streambank or Seasonally Flowing streams with riparian conditions extending more than 50 feet from edge of streambank: 300 feet from edge of feature or riparian vegetation, whichever width is greater

RCA widths mentioned above may be adjusted at the project level if a landscape analysis has been completed and a site-specific Riparian Conservation Objectives (RCO) analysis demonstrates a need for different widths which did occur for this project. The adjusted widths are listed and described in Table 1.

Direct and Indirect Effects

A direct effect of the proposed action is that effective soil cover will be increased because the broken tops and limbs of the felled trees will be left in place or redistributed in RCAs and steeper locations of the project. Increasing the effect soil cover is improvement over the existing condition where little to no effective soil cover is present to effectively stop erosion. The amount of increased soil cover is hard to predict and there is a probability that we won't be able be able to achieve a minimum 50 percent effective soil cover but still would be an improvement. An indirect effect of implementing the project is that erosion and the amount of sediment entering the steams and into Lake Oroville will be qualitatively lower.

Where end-lining occurs there will be a possibility that the soil may be gouged out and where the soil forms a path for concentrated runoff, the installation of cross drains or raking over the over gouged out area will be done by hand tools. End-lining should not cause any water quality concerns. The design features and BMPs are intended to project the water quality while moving forward with the projects intent to remove salvage and hazardous conifers. One example is that having a LOP on soil moisture and limiting the number of passes a rubber-tired skidder has over the same piece of ground in RCAs will be reducing the possibility of channelized flow while still increasing effective soil cover by leaving the broken tops and limbs. The implementation of the project is not expected to cause any direct and indirect significant negative effects to the waters of the municipal watersheds.

Cumulative Effects

The Cumulative Watershed Effects (CWE) analysis is based on the guidance from the Forest Service Handbook FSH 2509.22-Soil and Water Conservation, Region 5 Amendment (USDA Forest Service 1988). Effects may be either beneficial or adverse and are a result of combined effects of multiple management activities within a watershed. Beneficial uses for waters in the project are identified below the RCO analysis. Alterations to watershed hydrology are believed to be the most probable mechanism for initiating these effects to aquatic habitat (USDA Forest Service 1988). The Region 5 Forest Service Handbook amendment utilizes conceptual site disturbance coefficients called equivalent roaded acres (ERA) to track changes in the hydrologic functioning of watersheds. ERA coefficients are used to compare the effect of management activities (e.g. timber harvest or pile burning) to the effect of a road in terms of altering surface runoff patterns and timing. The sum of these coefficients represents the percentage of watershed in road surface that would produce the same effects as the existing or planned distribution of management activities (Berg et al, 1996).

Watersheds and stream channels have a natural capacity to absorb various levels of land disturbance without major adjustment to their function and condition. However, there is point where additive or synergistic effects of land use activities would cause a watershed to become highly susceptible to cumulative effects. This upper estimate of watershed "tolerance" to land use is described as the threshold of concern (TOC). When the sum of disturbances exceeds the TOC, water quality may be impaired for established beneficial uses, such as aquatic habitat. Stream channels and water quality can deteriorate to the point where adjacent riparian areas and wetlands become severely damaged.

Project level TOCs are estimated by considering the sensitivity of each analyzed watershed. Natural watershed sensitivity is an estimate of a watershed's ability to absorb land use impacts without increasing the effects of cumulative impacts to unacceptably high levels (USDA Forest Service 1988). For this project, the TOC has been conservatively set at 14 percent across all project specific watersheds. The ERA total of each watershed, expressed as a percentage of the watershed area, is compared to the TOC and reported as a fraction (percent) of the TOC. ERA totals in the range of 90 to 99 percent of TOC are considered to be approaching TOC, while those that are 100 percent or greater equal or exceed the TOC. The TOC does not represent an exact level of disturbance where cumulative watershed effects will begin to occur. Rather, it serves as an indicator of increased risk of significant adverse cumulative effects occurring within a watershed. If a watershed is approaching or above the TOC, a more thorough analysis of the activities planned within the watershed is necessary.

Based on professional judgment the watersheds in which the project work falls in are assumed to be over TOC under existing condition. The proposed project will increase the percent TOC from less than 1 percent to 7 percent across the delineated watersheds. The proposed action does increase the percent TOC for the ERA model but that is insignificant because the ERA model is a tool to identify areas that may have significant adverse cumulative effects. Close inspection of the watersheds in particular the streams that fall within the proposed project have little to no effective soil cover which makes the streams susceptible to erosion which could negatively impact the beneficial uses (beneficial uses are identified in RCO analysis below) in these municipal watersheds. The implementation of this project is not going to

cause any significant cumulative effects to the watersheds relative to the existing condition because of the BMPs and specific design features to improve effective soil cover in RCAs. These features are designed to improve the existing condition by trying to minimize the amount of erosion that would affect the beneficial uses. The fact that the watersheds are over TOC means that an additional step of monitoring will occur. The goal of forensic monitoring is to monitor the project in the winter for "potential or actual sources of sediment in a timely manner so that rapid corrective action may be taken where feasible and appropriate (CRWQCB 2017 pg. 6)."

Riparian Conservation Objective (RCO) Analysis

The following narrative documents the analytical basis for and evaluation of the Pondo Fire Salvage Project conducted during the environmental analysis to determine:

- Consistency with the riparian conservation areas (RCAs) and riparian conservation objectives (RCOs) at the project level
- Implications to critical aquatic refuges (CARs) and the aquatic management strategy (AMS) goals at the landscape scale

The first section identifies the aquatic management strategy (AMS) goals representing endpoints toward which management moves watershed processes and functions, habitats, attributes and populations. Moving ecological conditions toward these goals are aimed at restoring and maintaining the physical, chemical and biological integrity of the regions' waters as mandated by the Clean Water Act and will support the Forest Service's mission to provide habitat for riparian and aquatic-dependent species under the National Forest Management Act, Organic Act, and Endangered Species Act. Critical aquatic refuges (CARs) are subwatersheds (generally ranging from 10,000 to 40,000 acres) supporting known locations of threatened, endangered or sensitive species, highly vulnerable populations of native plant or animal species, or localized populations of rare native aquatic- or riparian-dependent plant or animal species.
The second section of this document describes RCAs and CARs as a set of land allocations that delineate aquatic, riparian, and meadow habitats, which are to be managed consistent with the following RCOs and associated standards and guidelines. The RCO analysis will address how the treatment within the land designation of RCAs and CARs will represent an incremental step to achieving AMS goals.

Aquatic Management Strategy (AMS) Goals

#1: Water Quality: Maintain and restore water quality to meet goals of the Clean Water Act and Safe Drinking Water Act, providing water that is fishable, swimmable and suitable for drinking after normal treatment,.
#2: Species Viability: Maintain and restore habitat to support viable populations of native and desired non-native plant, invertebrate, and vertebrate riparian-dependent species. Prevent new introductions of invasive species. Where invasive species are adversely affecting the viability of native species, work cooperatively with appropriate State and Federal wildlife agencies to reduce impacts to native populations.
#3: Plant and Animal Community Diversity: Maintain and restore the species composition and structural diversity of plant and animal communities in riparian areas, wetlands and meadows to provide desired habitats and ecological functions.
#4: Special Habitats: Maintain and restore the distribution and health of biotic communities in special aquatic habitats (such as springs, seeps, vernal pools, fens, bogs, and marshes) to perpetuate their unique functions and biological diversity.

#5: Watershed Connectivity: Maintain and restore spatial and temporal connectivity for aquatic and riparian species within and between watersheds to provide physically, chemically and biologically unobstructed movement for their survival, migration and reproduction.
#6: Floodplains and Water Tables: Maintain and restore the connections of floodplains, channels, and water tables to distribute flood flows and sustain diverse habitats.
#7: Watershed Condition: Maintain and restore soils with favorable infiltration characteristics and diverse vegetative cover to absorb and filter precipitation and to sustain favorable conditions of stream flows.
#8: Streamflow Patterns and Sediment Regimes: Maintain and restore in-stream flows sufficient to sustain desire conditions of riparian, aquatic, wetland, and meadow habitats and keep sediment regimes as close as possible to those with which aquatic and riparian biota evolved.
#9: Stream Banks and Shorelines: Maintain and restore the physical structure and condition of stream banks and shorelines to minimize erosion and sustain desired habitat diversity.

Allowable Treatment within Riparian Conservation Areas (RCAs):

Refer to Table 1.

Riparian Conservation Objectives (RCOs):

The following Standards and Guidelines for Riparian Conservation Areas and Critical Aquatic Refuges marked with an X were evaluated during the environmental analysis and considered prior to decision making. The Standard and Guidelines marked with an N/A were considered, but deemed not applicable to this project.

Standards and Guidelines for Riparian Conservation Areas and Critical Aquatic Refuges

X	91	Designate riparian conservation area (RCA) widths as described in Part B of this appendix. The RCA widths displayed in Part B may be adjusted at the project level if a landscape analysis has been completed and a site-specific RCO analysis demonstrates a need for different widths. The removal of salvage and hazardous conifers within RCAs will occur and one of the benefits of modifying the buffer treatments as indicated in Table 1 is that ground cover is anticipated to increase which will help with erosion.
X	92	Evaluate new proposed management activities within CARs and RCAs during environmental analysis to determine consistency with the riparian conservation objectives at the project level and the AMS goals for the

		landscape. Ensure that appropriate mitigation measures are enacted to (1) minimize the risk of activity-related sediment entering aquatic systems and (2) minimize impacts to habitat for aquatic- or riparian-dependent plant and animal species. The implementation of BMPs will help minimize the impact to water quality during the implementation of the projects. A LOP on soils will help limit compaction and degradation the habitat. The broken tops and limbs of the felled conifers will be left on the ground. If the slash is brought to the landings then it will be redistributed to along RCAs and on steeper slopes.
N/A	93	Identify existing uses and activities in CARs and RCAs during landscape analysis. At the time of permit reissuance, evaluate and consider actions needed for consistency with RCOs.
N/A	94	As part of project-level analysis, conduct peer reviews for projects that propose ground-disturbing activities in more than 25 percent of the RCA or more than 15 percent of a CAR.

Standards and Guidelines Associated with Riparian Conservation Objective (RCO) #1: Ensure that identified beneficial uses for the water body are adequately protected. Identify the specific beneficial uses for the project area, water quality goals from the Regional Basin Plan, and the manner in which the standards and guidelines will protect the beneficial uses. (RCO#1 is linked to the following AMS goals: #1: Water Quality; #2: Species Viability; #7: Watershed Condition)

Identified beneficial uses:

Beneficial uses are defined under California State law, in order protect against quality degradation of water resources and to meet state water quality objectives. The USDA Forest Service is required to protect and enhance existing and potential beneficial uses during water quality planning (California Regional Water Quality Control Board [CRWQCB], 1998, revised 2007). Beneficial uses of surface water bodies, including those that may be affected by activities on the PNF are listed in Chapter 2 of the Basin Plan (CRWQCB 1998, revised 2007). Existing and potential beneficial uses are defined for the tributaries that feed into Lake Oroville. All streams within the Pondo Fire Salvage Project analysis flow into Lake Oroville. The defined existing beneficial uses are identified below.

1. Municipal and domestic water supply include the uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
2. Agricultural supply includes the uses of water for farming, horticulture, or ranching including, but not limited to, irrigation (including leaching of salts), stock watering, or support of vegetation for range grazing.
3. Hydropower generation includes the uses of water for hydropower generation.
4. Water contact recreation includes uses of water for recreational activities involving body contact with

water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skiing and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.

5. Non-contact water recreation includes uses of water for recreational activities involving proximity to water, but where there is generally no body contact with water, nor any likelihood of ingestion of water. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

6. Warm freshwater habitat includes uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

7. Cold freshwater habitat include uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

8. Wildlife habitat includes uses of water that support terrestrial or wetland ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats or wetlands, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

9. Spawning, reproduction, and/or early development include uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

X	95	For waters designated as "Water Quality Limited" (Clean Water Act Section 303(d)), participate in the development of Total Maximum Daily Loads (TMDLs) and TMDL Implementation Plans. Execute applicable elements of completed TMDL Implementation Plans. Lake Oroville is 303d listed for mercury and PCBs (polychlorinated biphenyls). The proposed activities are not expecting to contribute to TMDLs for mercury and PCBs.
X	96	Ensure that management activities do not adversely affect water temperatures necessary for local aquatic- and riparian-dependent species assemblages. The proposed project will treat areas that were burned in the Ponderosa Fire. The canopy cover decreased in the in the RCAs in particular units 1 and 2. The proposed project will decrease the canopy cover in the RCAs but won't be significant. Treatments are designed to increase effective soil cover and hazard trees within the no equipment exclusion zone will be felled towards the streams to increase down large woody debris. Proposed activities are not anticipated to increase stream temperatures for local aquatic- and riparian-dependent species assemblages because of the size and location of the project (primarily ridgetop and headwaters) and tree mortality don't influence the stream temperatures.

N/A	97	Limit pesticide applications to cases where project level analysis indicates that pesticide applications are consistent with riparian conservation objectives.
N/A	98	Within 500 feet of known occupied sites for the California red-legged frog, Cascades frog, Yosemite toad, foothill yellow-legged frog, mountain yellow-legged frog, and northern leopard frog, design pesticide applications to avoid adverse effects to individuals and their habitats.
X	99	Prohibit storage of fuels and other toxic materials within RCAs and CARs except at designated administrative sites and sites covered by a Special Use Authorization. Prohibit refueling within RCAs and CARs unless there are no other alternatives. Ensure that spill plans are reviewed and up-to-date National Core BMP Road-10 and Region 5 BMP 2.11—Equipment Refueling and Servicing will prevent fuels, lubricants, cleaners, and other harmful materials from discharging into nearby surface waters or infiltrating through soils to contaminate groundwater resources. All refueling and servicing will be 300 feet for perennial and 150 feet for seasonal flowing streams.

Standards and Guidelines Associated with RCO #2: Maintain or restore: (1) the geomorphic and biological characteristics of special aquatic features, including lake, meadows, bogs, fens, wetlands, vernal pools, springs; (2) streams, including in stream flows; and (3) hydrologic connectivity both within and between watersheds to provide for the habitat needs of aquatic-dependent species. (RCO #2 is linked to the following AMS goals: #2: Species Viability; #3: Plant and Animal Community Diversity; #4: Special Habitats; #5: Watershed Connectivity; #6: Floodplains and Water Tables; #8 Streamflow Patterns and Sediment Regimes; #9Streambanks and Shorelines).

X	100	Maintain and restore the hydrologic connectivity of streams, meadows, wetlands, and other special aquatic features by identifying roads and trails that intercept, divert, or disrupt natural surface and subsurface water flow paths. Implement corrective actions where necessary to restore connectivity. In order to restore connectivity the following corrective actions were identified. • UC200615-03—Remove culvert at stream crossing. Half the road fill is gone at outlet. • 20N54—Construct one low water crossing. • 22N24X—Clean inlet and outlet of 21 culvert stream crossings. Construct 2 forded stream crossings and 7 critical dips. Other corrective issues were identified and are listed as design features in the beginning of analysis. These

		corrective issues are to fix drainage issues on roads that don't resolve hydrologic connectivity.
X	101	Ensure that culverts or other stream crossings do not create barriers to upstream or downstream passage for aquatic-dependent species. Locate water drafting sites to avoid adverse effects to in stream flows and depletion of pool habitat. Where possible, maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows, wetlands, and other special aquatic features. The majority of the stream crossings the streams are ephemeral. One stream crossing was an intermittent stream. The intermittent stream crossing has an outlet drop of approximately 3 feet and is potential a barrier for aquatic dependent species. Addressing barriers for aquatic-dependent species was out the scope of the project.
N/A	102	Prior to activities that could adversely affect streams, determine if relevant stream characteristics are within the range of natural variability. If characteristics are outside the range of natural variability, implement mitigation measures and short-term restoration actions needed to prevent further declines or cause an upward trend in conditions. Evaluate required long-term restoration actions and implement them according to their status among other restoration needs.
N/A	103	Prevent disturbance to stream banks and natural lake and pond shorelines caused by resource activities (for example, livestock, off-highway vehicles, and dispersed recreation) from exceeding 20 percent of stream reach or 20 percent of natural lake and pond shorelines. Disturbance includes bank sloughing, chiseling, trampling, and other means of exposing bare soil or cutting plant roots. This standard does not apply to developed recreation sites, sites authorized under Special Use Permits and designated off-highway vehicle routes.
N/A	104	In stream reaches occupied by, or identified as "essential habitat" in the conservation assessment for, the Lahonton and Paiute cutthroat trout and the Little Kern golden trout, limit stream bank disturbance from livestock to 10 percent of the occupied or "essential habitat" stream reach. (Conservation assessments are described in the record of decision.) Cooperate with State and Federal agencies to develop stream bank disturbance standards for threatened, endangered, and sensitive species. Use the regional stream bank assessment protocol. Implement corrective action where disturbance limits have been exceeded.

N/A	105	At either the landscape or project-scale, determine if the age class, structural diversity, composition, and cover of riparian vegetation are within the range of natural variability for the vegetative community. If conditions are outside the range of natural variability, consider implementing mitigation and/or restoration actions that will result in an upward trend. Actions could include restoration of aspen or other riparian vegetation where conifer encroachment is identified as a problem.
N/A	106	Cooperate with Federal, Tribal, State and local governments to secure in stream flows needed to maintain, recover, and restore riparian resources, channel conditions, and aquatic habitat. Maintain in stream flows to protect aquatic systems to which species are uniquely adapted. Minimize the effects of stream diversions or other flow modifications from hydroelectric projects on threatened, endangered, and sensitive species.
N/A	107	For exempt hydroelectric facilities on national forest lands, ensure that special use permit language provides adequate in stream flow requirements to maintain, restore, or recover favorable ecological conditions for local riparian- and aquatic-dependent species.
Standard and Guideline Associated with RCO #3: Ensure a renewable supply of large down logs that: (1) can reach the stream channel and (2) provide suitable habitat within and adjacent to the RCA. (RCO #3 is linked to the following AMS Goals: #2: Species Viability; #3: Plant and Animal Community Diversity)		
X	108	Determine if the level of coarse large woody debris (CWD) is within the range of natural variability in terms of frequency and distribution and is sufficient to sustain stream channel physical complexity and stability. Ensure proposed management activities move conditions toward the range of natural variability. Whatever CWD that existed prior to the Ponderosa Fire the majority got consumed, in particular units 1 and 2 which burned hotter than unit 3. The dead salvage trees that that will be left in place due to slope restrictions, natural topographic barriers, and economic reasons will be future CWD. Trees that are felled within the no equipment exclusion zone will actually add to CWD.
Standards and Guidelines Associated with RCO #4: Ensure that management activities, including fuels reduction actions, within RCAs and CARs enhance or maintain physical and biological characteristics associated with aquatic- and riparian-dependent species. (RCO #4 is linked to the following AMS Goals: #2: Species Viability, #7: Watershed Condition)		
N/A	109	Within CARs, in occupied habitat or "essential habitat" as identified in conservation assessments for threatened, endangered, or sensitive species, evaluate the appropriate role, timing, and extent of prescribed fire. Avoid direct lighting within riparian vegetation; prescribed fires may back into riparian vegetation areas.

		Develop mitigation measures to avoid impacts to these species whenever ground-disturbing equipment is used.
X	110	Use screening devices for water drafting pumps. (Fire suppression activities are exempt during initial attack.) Use pumps with low entry velocity to minimize removal of aquatic species, including juvenile fish, amphibian egg masses and tadpoles, from aquatic habitats.
N/A	111	Design prescribed fire treatments to minimize disturbance of ground cover and riparian vegetation in RCAs. In burn plans for project areas that include, or are adjacent to RCAs, identify mitigation measures to minimize the spread of fire into riparian vegetation. In determining which mitigation measures to adopt, weigh the potential harm of mitigation measures, for example fire lines, against the risks and benefits of prescribed fire entering riparian vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could be damaging to habitat or long-term function of the riparian community.
X	112	Post-wildfire management activities in RCAs and CARs should emphasize enhancing native vegetation cover, stabilizing channels by non-structural means, minimizing adverse effects from the existing road network, and carrying out activities identified in landscape analyses. Post-wildfire operations shall minimize the exposure of bare soil. Slash (broken tops and limbs, etc.) will be scattered throughout the project boundary to increase the effective soil cover. The amount of slash that goes to landings will be minimal because the material will be used for soil cover. The scattering of the slash will be concentrated on steeper slopes and areas along the riparian corridor. In order to minimize adverse effects from existing road network the corrective actions were identified. • UC200615-03—Remove culvert at stream crossing. Half the road fill is gone at outlet. • 20N54—Construct one low water crossing. • 22N24X—Clean inlet and outlet of 21 culvert stream crossings. Construct 2 forded stream crossings and 7 critical dips. Other corrective issues were identified and are listed as design features in the beginning of analysis. These

		corrective issues are to fix drainage issues on roads that don't resolve hydrologic connectivity.
	113	Allow hazard tree removal within RCAs or CARs. Allow mechanical ground disturbing fuels treatments; salvage harvest or commercial fuel wood cutting within RCAs or CARs when the activity is consistent with RCOs. Utilize low ground pressure equipment, helicopters, over the snow logging, or other non-ground disturbing actions to operate off of existing roads when needed to achieve RCOs. Ensure that existing roads, landings, and skid trails meet Best Management Practices. Minimize the construction of new skid trails or roads for access into RCAs for fuel treatments, salvage harvest, commercial fuel wood cutting, or hazard tree removal. The construction of new skid trails will be limited throughout the project in particular within the RCAs and will adhere to BMPs. Existing roads, landings, and skid trails are designed to meet BMPS. The removal of salvage and hazardous trees will occur within the RCAs. The operation of heavy equipment will be limited to the buffers identified in Table 1 and a 25 percent slope restriction.
N/A	114	As appropriate, assess and document aquatic conditions following the Regional Stream Condition Inventory protocol prior to implementing ground disturbing activities within suitable habitat for California red-legged frog, Cascades frog, Yosemite toad, foothill and mountain yellow-legged frogs, and northern leopard frog.
N/A	115	During fire suppression activities, consider impacts to aquatic- and riparian-dependent resources. Where possible, locate incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities outside of RCAs or CARs. During pre-suppression planning, determine guidelines for suppression activities, including avoidance of potential adverse effects to aquatic- and riparian-dependent species as a goal.
N/A	116	Identify roads, trails, OHV trails and staging areas, developed recreation sites, dispersed campgrounds, special use permits, grazing permits, and day use sites during landscape analysis. Identify conditions that degrade water quality or habitat for aquatic and riparian-dependent species. At the project level, evaluate and consider actions to ensure consistency with standards and guidelines or desired conditions.

Standards and Guidelines Associated with RCO #5: Preserve, restore, or enhance special aquatic features, such as meadows, lakes, ponds, bogs, fens, and wetlands, to provide the ecological conditions and processes needed to recover or enhance the viability of species that rely on these areas. (RCO #5 is linked to the following AMS goals: #1: Water Quality, #2 Species Viability, #3 Plant and Animal Community Diversity, #4 Special Habitats: #7: Watershed condition; #9: Stream Banks and Shorelines)

N/A	117	Assess the hydrologic function of meadow habitats and other special aquatic features during range management analysis. Ensure that characteristics of special features are, at a minimum, at Proper Functioning Condition, as defined in the appropriate Technical Reports (or their successor publications): (1) "Process for Assessing PFC" TR 1737-9 (1993), "PFC for Lotic Areas" USDI TR 1737-15 (1998) or (2) "PFC for Lentic Riparian-Wetland Areas" USDI TR 1737-11 (1994).
N/A	118	Prohibit or mitigate ground-disturbing activities that adversely affect hydrologic processes that maintain water flow, water quality, or water temperature critical to sustaining bog and fen ecosystems and plant species that depend on these ecosystems. During project analysis, survey, map, and develop measures to protect bogs and fens from such activities as trampling by livestock, pack stock, humans, and wheeled vehicles. Criteria for defining bogs and fens include, but are not limited to, presence of: (1) sphagnum moss (Spagnum spp.), (2) mosses belonging to the genus Meessia, and (3) sundew (Drosera spp.) Complete initial plant inventories of bogs and fens within active grazing allotments prior to re-issuing permits.
N/A	119	Locate new facilities for gathering livestock and pack stock outside of meadows and riparian conservation areas. During project-level planning, evaluate and consider relocating existing livestock facilities outside of meadows and riparian areas. Prior to re-issuing grazing permits, assess the compatibility of livestock management facilities located in riparian conservation areas with riparian conservation objectives.
N/A	120	Under season-long grazing: • For meadows in early seral status: limit livestock utilization of grass and grass-like plants to 30 percent (or minimum 6-inch stubble height). • For meadows in late seral status: limit livestock utilization of grass and grass-like plants to a maximum of 40 percent (or minimum 4-inch stubble height). Determine ecological status on all key areas monitored for grazing utilization prior to establishing utilization levels. Use Regional ecological scorecards and range plant list in range handbooks to determine ecological status. Analyze meadow ecological status every 3 to 5 years. If meadow ecological status is determined to be moving in a downward trend, modify or suspend grazing. Include ecological status data in a spatially explicit Geographical Information System database. Under intensive grazing systems (such as rest-rotation and deferred rotation) where meadows are receiving a period of rest, utilization levels can be higher than the levels described above if the meadow is maintained in late seral status and meadow-associated species are not being impacted. Degraded meadows (such as that in early seral status requires total rest from grazing until they have recovered

		and have moved to mid- or late seral status.
N/A	121	Limit browsing to no more than 20 percent of the annual leader growth of mature riparian shrubs and no more than 20 percent of individual seedlings. Remove livestock from any area of an allotment when browsing indicates a change in livestock preference from grazing herbaceous vegetation to browsing woody riparian vegetation.
Standard and Guideline Associated with RCO #6: Identify and implement restoration actions to maintain, restore or enhance water quality and maintain, restore, or enhance habitat for riparian and aquatic species. (RCO # 6 is linked to all AMS goals)		
N/A	122	Recommend restoration practices in: (1) areas with compaction in excess of soil quality standards, (2) areas with lowered water tables, or (3) areas that are either actively down cutting or that have historic gullies. Identify other management practices, for example, road building, recreational use, grazing, and timber harvests, that may be contributing to the observed degradation.
Standards and Guidelines for Critical Aquatic Refuges		
N/A	123	Determine which critical aquatic refuges or areas within critical aquatic refuges are suitable for mineral withdrawal. Propose these areas for withdrawal from location and entry under U.S. mining laws, subject to valid existing rights, for a term of 20 years.
N/A	124	Approve mining-related plans of operation if measures are implemented that contribute toward the attainment or maintenance of aquatic management strategy goals.

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