Salt Timber Harvest and Fuels Hazard Reduction Project

Fisheries Report

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for:
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Introduction

Purpose and Need for Action

For a detailed description of the proposed action, as well as the purpose and need for that action, please refer to the Salt Project Environmental Impact Statement (USDAFS 2008) and Fisheries Biological Assessment/Biological Evaluation (USDAFS 2008). For this project, the specific resource objectives regarding fisheries and other aquatic organisms are to minimize impacts to aquatic habitats and improve stand health and function in Riparian Reserves (RRs). A summary of the proposed action is provided below (Table 1-1).

Table 1-1. Summary of Proposed Action Treatment Acres.

Silvicultural Prescription	Acres Proposed for Harvest
Green Tree Retention	27
Shelterwood Thinning	31
Intermediate Thinning	963*
Hand Fuel Treatment	14
Precommercial Thin	481**
Intermediate Thinning in Shaded Fuel Break	103
Total Treatment Acres	**1619**

* Includes an estimated 41 acres of Riparian Reserve. ** Includes approximately 60 acres of Riparian Reserve.

Three tenths of a mile of temporary road would be constructed to access units and would be obliterated when the project is completed. Approximately 17.1 miles of road will be reconstructed, 5 miles would be maintained, and 13.8 miles would be decommissioned after this project's vegetation treatments are completed.

Overview of Issues Addressed

The following fisheries issues were identified from the input received during the scoping process for this project:

Issue #1 Thinning within RRs may have unintended effects on the watershed, fisheries and wildlife.

Response: The project is designed to meet the requirements and objectives outlined in the Aquatic Conservation Strategy (ACS). Watershed and site analysis has been completed and Riparian Reserve (RR) boundaries were determined. Project design within the designated RRs follows all applicable standards and guidelines in order to achieve ACS objectives. Alternative 3 was developed in part to address this issue. Alternative 3 does not include thinning in RRs.

Issue Indicator: To analyze potential effects of thinning within riparian reserves the measurable changes in fish habitat (pool depth, channel form, and temperature) were assessed and compared between alternatives.

Alternatives

The alternatives and proposed action were developed by the Forest Service in response to the purpose and need for action as described in the Salt Timber Harvest and Fuels Hazard Reduction Project Environmental Impact Statement (USDAFS 2008). Alternative 3 was developed in part to

address the concern over thinning in RRs. All applicable design features and mitigation measures are included following the alternative descriptions.

Alternative 1: No Action

This alternative consists of no activity at the current time and would allow existing conditions/trends to remain. This alternative is analyzed to provide a point of reference against which the other alternatives may be evaluated. This alternative does not meet the purpose and need for action and does not address the recommendations and findings of the Middle Hayfork – Salt Creek Watershed Analysis (URS Greiner Woodward Clyde, 2000) or, the Salt Creek Roads Analysis (USDAFS 2007).

Alternative 2: Proposed Action

This alternative would include the harvest of approximately 9.4 mmbf. of timber on 1619 acres. Treatments implemented during this harvest are shown in Table 1. Methods used to accomplish this harvest, separated by approximate acres per method, are as follows; helicopter yarding – 138 acres and ground-based yarding – 986 acres.

Forty one acres of intermediate thinning would occur within intermittent or ephemeral stream RRs to create RRs that are more resistant to drought, insect attacks and fire, which would enhance desired riparian vegetation structure and composition, maintaining or improving Aquatic Conservation Strategy objectives described in the Northwest Forest Plan. These thinning treatments would adhere to strict resource protection measures, including an equipment exclusion zone (See resource protection measures in Section 2.4). See Appendix E for a full evaluation of how these treatments specifically address the nine Aquatic Conservation Strategy Objectives.

Alternative 3

This alternative would include the harvest of approximately 3.3 mmbf. of timber on 1,415 acres. Treatments implemented during this harvest, separated by approximate acres per treatment, are as follows; intermediate thin – 881 acres, shelterwood – 30 acres, shaded fuel break thin – 100 acres, hand fuel treatment 14 acres and precommercial thin – 421 acres. Methods used to accomplish this harvest, separated by approximate acres per method, are as follows; helicopter yarding – 134 acres and ground-based yarding – 877 acres.

Alternative 3 will not treat regeneration harvest – green tree retention Units 37 and 40, will retain 60% canopy closure in all intermediate thinning, hand thinning, and shaded fuel break thinning, will not treat in RRs and will not construct any temporary roads

Project Design Features

The following features should be followed during project design to alleviate negative impacts to aquatic resources:

Resource Protection Measure	Units	Alt.
Aquatics and Soils		
All applicable Best Management Practices are included in Appendix C of the EIS	All units	2 & 3
No full bench skid trails would be constructed. Skid trails, when possible, would be located on ridge tops, flat benches, or existing skid trails to minimize soil displacement and enhance drainage.	All ground based units	2 & 3
For all ground-based operations skid trails the distance between skid trails will be a minimum of 100' measured center to center, except where converging. All material would be skidded with the leading end clear of the ground.	All ground based units	2 & 3
Access to skid trails that intersect Forest Roads would be blocked with available material (either large wood or boulders).	All ground based units	2 & 3
Excess activity created slash and existing surface fuels would be machined piled or masticated on slopes less than 35% and hand piled or lopped and scattered on slopes greater than 35%. All piles, except those designated for retention, would be burned.	Units where biomass will not be removed 4, 5, 11, 12, 17, 18, 20, 21, 22, 32, 33A, 33B, 33C, 36, 37, 40, 45	2 & 3
Masticated material will be kept to a depth of 3 inches or less OR if the masticated material will be burned it will be burned in the spring (moist soil conditions).	Units where biomass will not be removed, 4, 5, 11, 12, 17, 18, 20, 21, 22, 32, 33A, 33B, 33C, 36, 37, 40, 45	2 & 3
Track line machines generally restricted to slopes <35%. Endlining will be used in those areas where skid trails may exceed 35%. Skid trails located on small inclusions of steep areas exceeding 35% would be covered with woody material larger than 9" to divert flow off the trail [C6.602 or equivalent].	All ground based units.	2 & 3
New or reconstructed landings would be shaped to disperse drainage and direct run-off away from watercourses at the time of construction. Rock armoring and/or silt fences with straw bales may be used as necessary to direct water to areas of suitable drainage and to capture sediment (all materials must be provided from weed-free sources). All new landing fill slopes and road fill slopes (>100 sq. ft) would be mulched and the mulch would be maintained throughout the life of the project [C6.602 or equivalent].		
Any landings used during wet weather would be adequately rocked to prevent erosion [See Shasta-Trinity National Forest Wet Weather/Winter Operating Procedures (WWOPs)].		
When heavy equipment such as a harvester is used off a designated skid trail in the specified units (due to fine textured soils), limit the number of passes to 1 and no more than 2 passes, over the same piece of ground.		
Locate water drafting sites to minimize adverse effects on stream channel stability, sedimentation, and in-stream flows needed to maintain riparian resources, channel conditions, and fish habitat. If water drafting occurs in coho slamon critical habitat (there is no critical habitat within the project area so this would occur outside of the project area) the National Marine Fisheries Service water drafting specifications will be adhered to.	All units Miles outside of project area before reaching critical habitat : Ditch Gulch - 0.4 miles; West Fork - 1.2 mi.; Salt Creek - 1.4 miles	2 & 3

Resource Protection Measure	Units	Alt.
Riparian Reserves		
Perennial and Non-perennial: No treatment or equipment within any of the riparian reserves.	All units	3
Perennial: No thinning and no equipment in perennial stream riparian reserves. Riparian reserves for perennial streams for this project are 300 feet for fish bearing streams and 225 feet for non-fish bearing streams.	1, 2C, 4, 5	2
Non-Perennial Streams: The non-perennial riparian reserve is defined for this project as a protection zone 150 feet wide measured along the slope from the high watermark up the hillslope. ▪ At least 60% of overstory canopy remains after thinning. ▪ Designate/approve Riparian Reserve crossings in coordination with the fisheries biologist and/or hydrologist. ▪ Equipment will be excluded from operating on active or potentially active landslides and thinning will be prescribed by a geoscientist. ▪ Selective commercial thinning within RRs, adjacent to EEZs, would be accomplished through a combination of mechanical operations and hand thinning. ▪ Hazard trees within RRs must be dropped and retained on site if > 16" dbh. Handpiles of thinned fuels would be placed outside of EEZs and burned in the riparian reserve in a manner that leaves at least 50% of the localized area unburned at any given time. In addition, hand piles would be placed in a checkerboard pattern whenever possible (not one pile directly above another). ▪ When fuels treatments involve area ignition, use backing fire in RRs. There would be no ignition within RRs associated with understory burning; however, fire would be allowed to creep into riparian areas.	1, 2A, 2B, 2C, 3, 4, 5, 7, 9B, 10, 11, 12, 13, 21, 25A, 26, 32, 33A, 36, 45	2
Equipment Exclusion Zone: No equipment and no thinning allowed within the equipment exclusion zone (EEZ). The EEZ is a portion of the riparian reserve defined for this project as the area that extends 50 feet (slope distance) from the high watermark on slopes >30% and extends 25 feet (slope distance) on slopes <30% OR extends to the inner gorge , which ever is greater.	All units	2
Erosion Control Measures		
Seed all appropriate decommissioned roads, temporary roads, landings, and primary skid trails with native grass seed and non-persistent cereal grains. Mulch all seeded areas with certified weed-free straw.	All units.	
Dedicate no more that 15 percent of a harvest unit to primary skid trails and landings.	All units	2 & 3
Decommissioning of roads may include removing culverts, ripping road surfaces, out-sloping to maintain hill slope hydrology (hydrologic connectivity) as well as other measures to meet site-specific needs. The goal is to control surface runoff, erosion, and mass failure. Seed (with native grass seed and non-persistent cereal grains), and mulch on selected roads.	Decommissioned roads	2 & 3
Minimize soil erosion by water-barring primary skid trails, mulching with straw or fine woody material (achieve 75 percent or more cover) the last 50 feet of the feeders that go into the primary skid trails where they enter landings or roads.	All ground based units	
At the end of project activities, a layer of ground cover should occur over at least 50% of the activity area.	All ground based units	2 & 3
Contour Rip (with winged subsoiler to 18 inches deep) and mulch, all temporary roads, skid roads and landings and regeneration units identified by the project soil scientist.		
Reuse existing primary skid trails and landings whenever possible.	All ground based units	
Slash and existing surface fuels must be hand piled or lopped and scattered on slopes greater than 35 percent.	All ground based units	

Resource Protection Measure	Units	Alt.
Ground-based mechanical equipment will only operate in these specified units (fine-textured soils, non-rocky) when the soils are dry down to 8 inches.	2A, 2B, 2C, 6, 7, 9A, 9B, 10, 11, 13, 14, 17, 18, 25A, 25B, 25C, 25D, 25E, 26, 30A, 30B, 40.	2 & 3
Geologically Sensitive Areas		
All geologically sensitive areas **including unstable or potentially unstable areas** have been field-verified by the project geologist and are excluded from proposed project activities through individual unit layout, prescription, and road location modification.	All units.	

Northwest Forest Plan Standards and Guidelines Applicable to this Project

Timber Management

TM-1. Prohibit timber harvest, including fuelwood cutting, in RRs, except as described below. RR acres shall not be included in calculations of the timber base.

c. Apply silvicultural practices for RRs to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics needed to attain Aquatic Conservation Strategy Objectives.

Roads Management

RF-2. For each planned or existing road, Meet Aquatic Conservation Strategy Objectives by:

a. minimizing road and landing locations in RRs.

b. completing watershed analysis (including appropriate geotechnical analysis) prior to construction of any new roads or landings in RRs.

c. preparing road design criteria, elements, and standards that govern construction and reconstruction.

d. preparing operation and maintenance criteria that govern road operation maintenance and management.

e. minimizing disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow.

f. restricting side casting as necessary to prevent the introduction of sediment to streams.

g. avoiding wetlands entirely when constructing new roads.

RF-3. Determine the influence of each road on the Aquatic Conservation Strategy objectives through watershed analysis. Meet Aquatic Conservation Strategy objectives by:

a. reconstructing roads and associated features that pose a substantial risk.

b. prioritizing reconstruction based on current and potential impact to riparian resources and the ecological value of the riparian resources affected.

c. closing and stabilizing, or obliterating and stabilizing roads based on the ongoing and potential effects to Aquatic Conservation Strategy objectives and considering short-term and long-term transportation needs.

RF-5. Minimize sediment delivery to stream from roads. Outsloping of the roadway surface is preferred, except where outsloping would increase sediment delivery to streams or where outsloping is unfeasible or unsafe. Route road drainage away from potentially unstable channels, fills, and hillslope.

RF-6. Develop and implement a Road Management Plan or a Transportation Management Plan that will meet the Aquatic Conservation Strategy objectives. As a minimum, this plan shall include provisions for the following activities:

a. inspections and maintenance during storm events.

b. inspections and maintenance after storm events.

c. road operation and maintenance, giving high priority to identifying and correcting road drainage problems that contribute to degrading riparian resources.

d. traffic regulation during wet periods to prevent damage to riparian resources.

e. establish the purpose of each road by developing road management objectives.

Fire/Fuels Management

FM-1. Design fuel treatment and fire suppression strategies, practices, and activities to meet Aquatic Conservation Strategy objectives, and to minimize disturbance of riparian ground cover and vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuels management activities could be damaging to long-term ecosystem function.

Affected Environment

Existing Condition

The Salt Creek watershed has a drainage area of 124.3 mi^2. A dendritic channel network drains the watershed. Major tributaries in the Salt Creek 5th field watershed include Philpot Creek, Ditch Gulch, Dobbins Gulch, Salt Gulch and Deer Gulch. There are approximately 54.9 miles of perennial streams, 84.4 miles of intermittent streams, and 157.8 miles of ephemeral streams in the watershed. Annual precipitation ranges from approximately 70 inches in the highest elevations to less than 40 inches at lowest elevations in the Hayfork Valley. Most precipitation falls as rain below the 4,000 feet elevation and as snow above 4,000 feet, although a winter long snow pack does not occur below about 5,500 feet elevation (URS Greiner Woodward Clyde 2000).

Headwater streams within the Salt Creek Watershed serve generally as transport channels and are characterized by high stream gradients (10+ %) and steep sideslopes (70+ %). Large woody debris and sediment have relatively low residence times in these areas, as these materials are readily moved downstream during high flow events. These channels generally lack suitable amounts of fish habitat needed for spawning and rearing and natural fish passage is often limited by gradient and highly fluctuating flows.

Salt Creek, above its confluence with Hayfork Creek supports a limited run of KMP steelhead (USDAFS, unpublished data). Upper Hayfork Creek (above the confluence with Salt Creek) currently supports anadromous runs of Klamath Mountain Province (KMP) steelhead (*Oncorhynchus mykiss*), Pacific lamprey (*Lampetra tridentata*), and a remnant run of UKTR Chinook salmon (*O. tshawytscha*). Historically, spring Chinook salmon utilized the lower reaches of Salt Creek, Big Creek, Tule Creek, and East Fork Hayfork Creek (PWA, 1994), but no appreciable number of Chinook are believed to use Salt Creek currently.

There are no proposed units in riparian reserves of perennial streams in the project area. Intermediate thinning units adjacent to perennial streams, but outside of the riparian reserves, include Units 1, 2C, 5 and 12 near Ditch Gulch, and Units 25A and 26 near Cold Creek. Seven old plantation thinning units are also adjacent to the perennial stream riparian reserves.

TES, Sensitive Species, MIS

The following section is based largely on existing information. Middle Hayfork – Salt Creek Watershed Analysis (URS Greiner Woodward Clyde, 2000) was used as a source document for this discussion. A current federal endangered and threatened species list (Table 3-1) for the project area (Dubakella Mtn., Wildwood, and Smoky Ck. quads) was obtained 10 January 2007 from the U.S. Fish and Wildlife Service, Arcata Field Office website (available at http://www.fws.gov/cno/arcata). A sensitive species list was created using the latest revision of the Forest Service Region 5, Regional Forester's sensitive species list (Table 3-2).

The Shasta-Trinity National Forest LRMP (USDAFS 1995) uses the concept of a single Management Indicator Species (MIS) to represent groups of species. All MIS fish species identified by the Shasta-Trinity National Forest were addressed (Table 3-3).

Critical Habitat and Essential Fish Habitat

There is no coho salmon critical habitat or essential fish habitat (EFH) in the Salt project area. The distance downstream, outside of the project area, to critical habitat or EFH ranges from 0.4 miles to 1.4 miles as displayed in Table 3-1. The distance from the project area to occupied habitat ranges from 28 miles to 32 miles.

Table 3-1: Summary of SONCC coho salmon designated critical habitat relative to Salt project analysis area and currently occupied coho salmon habitat (Hayfork Creek, near Corral Creek confluence).

Stream Name	Miles From Analysis Area to CH/EFH	Miles From Upstream CH/EFH Boundary to Occupied Habitat **
Ditch Gulch	0.4	28.2
West Fork (Salt Creek)*	1.2	31.8
Salt Creek	1.4	32.2

* West Fork is confluent with Salt Creek 0.8 miles below upper CH boundary. ** Includes reaches of Hayfork Creek below the confluence with each respective stream

The Trinity River and tributaries contain suitable habitat for anadromous fishes. The National Marine Fisheries Service designated critical habitat for coho salmon on May 5, 1999. Critical habitat includes all stream reaches accessible to anadromous fishes, regardless of the presence or absence of coho salmon. The Magnuson-Stevens Fishery Conservation Management Act, as amended by the Sustainable Fisheries Act of 1996 (public Law 104-297), designates Essential Fish Habitat (EFH) for commercially valuable fish species as those waters and substrate

necessary to fish for spawning, breeding, feeding, and growth to maturity. The Trinity River and tributaries contain EFH for coho salmon (*O. kisutch)* and chinook salmon (*O. tshawytscha*).

Based upon the assumption that accepted planning and implementation methods are correctly implemented throughout the course of project implementation, it is my determination that this project may have insignificant affects to individuals but is not likely to trend towards negative population-level impacts to any of the aquatic species mentioned above.

Table 3-2. Summary of federal endangered and threatened aquatic species that may occur in or be affected by the Salt Timber Harvest and Fuels Hazard Reduction Project.

Species	Species Status	Present In Action Area: Habitat Or Detections	Effects Determination	Reasons Or Mitigation For No Effect
Southern Oregon Northern California Coast (SONCC) coho salmon	T	Habitat	May affect/ Not likely to adversely affect	Operate only during minimal surface flow, control project sediment

Table 3-3. Summary of Forest Service sensitive aquatic species that may occur in or be affected by the Salt Timber Harvest and Fuels Hazard Reduction Project.

Species	Species Status	Present In Action Area: Habitat or Detections	Effects Determination	Reasons or Mitigation for No Effect
California floater	S	No	No effect	No suitable habitat
Klamath mts. Province steelhead	S	No	No effect	No suitable habitat
Montain peaclam	S	No	No effect	No suitable habitat
Rough Sculpin	S	No	No effect	No suitable habitat
Hardhead minnow	S	No	No effect	No suitable habitat
McCloud River redband trout	S	No	No effect	No suitable habitat
Upper Klamath/Trinity Chinook spring-run	S	No	No effect	No suitable habitat
Upper Trinity River Chinook fall-run	S	No	No effect	No suitable habitat
Nugget pebblesnail	S	No	No effect	No suitable habitat
Scalloped Juga	S	No	No effect	No suitable habitat
California Floater	S	No	No effect	No suitable habitat
Montane Peaclam	S	No	No effect	No suitable habitat

Table 3-4. Summary of Shasta-Trinity National Forest Management Indicator Fish Species

Species	Assemblage	Present in Action Area: Habitat or Detections	Effects Determination	Reasons or Mitigation for No Effect
Winter-run steelhead	Anadromous	Habitat	May affect/ Not likely to adversely affect	Operate only during minimal surface flow, control project sediment
Spring-run Chinook salmon	Anadromous	Habitat	May affect/ Not likely to adversely affect	Operate only during minimal surface flow, control project sediment
Summer steelhead	Anadromous	Habitat	May affect/ Not likely to adversely affect	Operate only during minimal surface flow, control project sediment
Rainbow trout	Inland Coldwater	Habitat	May affect/ Not likely to adversely affect	Operate only during minimal surface flow, control project sediment
Largemouth bass	Inland Warmwater	No	No effect	No suitable habitat

Survey and Manage Species

The project is not within the range or does not contain suitable habitat for any aquatic survey and manage species suspected to occur on the Shasta-Trinity National Forest (Everest, L. Personal Communication 2008).

Environmental Consequences

Methodology

Field reconnaissance was conducted in the late spring of 2008 by a TEAMS hydrologist/Soils Scientist. Stream drainages within the proposed project area were evaluated. Literature reviews, field notes, Forest monitoring reports, Geographical Information System (GIS) data, and professional judgment were used to support report conclusions. Field notes and photographs are in the project file.

Sediment delivery modeling was conducted by the Project hydrologist using the Forest Service interface for the Water Erosion Prediction Project computer model, known more commonly as WEPP. Modeling was conducted for both the no action (existing condition) and proposed action alternatives. These results were then used to present a comparison of potential effects, for each alternative.

The model incorporates input of five elements: climate, soil texture, local topography, residual plant community and residual surface cover to derive erosion estimates. At best, the accuracy the predicted erosion rates are, ±50% (Elliot, et.al, 2000). The accuracy of predicted erosion numbers is highly variable as well as being very dependant on precipitation. The greatest utility of the model is that it allows comparison between alternatives (Elliot, et.al, 2000). Copies of the modeling results are found in the project's file. Please see the project file documenting assumptions used in WEPP modeling (Fryxell, 2008).

Modeling was also conducted to evaluate existing and potential project-related changes in existing cumulative effects, using the Equivalent Roaded Area (ERA) model, as required in the

Region 5 Soil and Water Conservation Handbook, Chapter 50 (USDA Forest Service, 1990, Amendment 2). Thresholds of Concern, established by the Forest, were used in this analysis.

Spatial and Temporal Context for Effects Analysis

Effects Analysis – The unit of measure to analyze cumulative effects of threatened fish, MIS fish, fish habitat and RR's is the proper functioning condition of subwatersheds based on Watershed Condition Class (WCC). The condition of individual watersheds is highly indicative of the instream (fish and fish habitat) and near stream (RR's) conditions that exist within that watershed. The WCC score (which ranges from I to III, with I representing a properly functioning condition) is a derivative of the cumulative watershed effects modeling/analysis that is completed during the hydrologic analysis of a watershed. Site visit and instream survey results have been used to validate the cumulative watershed effects model.

Bounding the Effects

Geographic Boundary – Cumulative effects to threatened and MIS fish, fish habitat and RR's are addressed by 7th field subwatershed. Two 7th field subwatersheds are included in this analysis: Ditch Gulch - Salt Gulch and Upper Salt Creek- Hayfork Creek subwatersheds (HUC 18010212040102 and 18010212040101). The 7th field subwatershed scale is the most appropriate to analyze effects to threatened and MIS fish, fish habitat and RR's because smaller subwatersheds (i.e. 8th field or smaller) are often too small to support fish at the population level and larger watersheds (i.e. 6th field or larger) are often so large that localized project effects are diluted to the point they can no longer be effectively analyzed.

Spatial Boundary/Time Frame – Impacts to vegetation from the Salt project are expected to last approximately 20 years for thinning units and 20 – 30 years for regeneration with green tree retention and shelterwood with green tree retention cutting areas and 10 years in the fuel break thinning unit. Stream habitat recovery often lags 5-10 years behind vegetation recovery. The maximum time frame considered in this analysis is 35-40 years.

Connected Actions, Past, Present, and Foreseeable Activities Relevant to Cumulative Effects Analysis

Table 4-1. Watershed Condition Class (WCC) values for the 7th field subwatersheds in the Salt Project for each alternative.

7th Field Subwatershed	Existing – Alternative 1	Alternative 2	Alternative 3
	WCC	WCC	WCC
Upper Salt Creek – Hayfork Creek	I	I	I
Ditch Gulch – Salt Gulch	I	II	II

Past activities in both the Upper Salt Creek-Hayfork Creek and Ditch Gulch-Salt Gulch watersheds include timber harvest (clearcuts, salvage and thinning), grazing, transmission lines, and pipelines.

In the Upper Salt Creek-Hayfork Creek watershed recorded timber harvest has occurred from 1968-2004 and site preparation has occurred from 1982-1995. Grazing allotments within the project area include Salt Creek (3,348 acres), Post Creek (305 acres) and the Wildwood allotment (950 acres). In the Ditch Gulch-Salt Gulch watershed timber harvest has occurred from 1981-

2004 and site preparation has occurred from 1982-1995. There is only one allotment within the watershed, and that is Post Creek (4,677 acres).

In the Upper Salt Creek-Hayfork Creek watershed 101 acres were burned in 1987 in an unnamed fire. No information was available at the time of this report being written regarding fire severity. In 2008 the Telephone wildfire burned predominantly at low and moderate severities and was considered as part of the ERA analysis in the hydrology section as well as the watershed condition class (WCC) analysis in table 4-1. In the Ditch Gulch-Salt Gulch watershed there is no recorded fire activity since 1910. No disturbed acreage was noted in regards to mining or cultural treatments in either watershed. In support of these past management activities roads have been built.

Currently in the Upper Salt Creek-Hayfork Creek watershed the overall road density is 3.9 mi/mi^2 and in the Ditch Gulch-Salt Gulch watershed the overall road density is 6.6 mi/mi^2.See further discussion in the project Hydrology Analysis.

A foreseeable activity within the cumulative effects analysis area is the Hayfork Forest Health #2 project, which is being analyzed as a categorical exclusion. It will be located in T31N R11 W, Sections 26, 25 and 30. Consultation with the designated contact indicated that only 14 acres, located in Section 30, would fall within the analysis boundary. The Westside Plantation Thinning project is anticipated to thin plantations within Ditch Gulch – Salt Gulch 7th Code HUC watersheds and the Roadside Hazard Tree project will remove hazard trees from areas burned along existing roads. The Westside Watershed Restoration Project, a foreseeable activity will decommission roads, in Ditch Gulch – Salt Gulch 7th Code HUC watersheds, that currently pose risks to water quality and watershed resources and that are not necessary for public or administrative access, including approximately 5.1 miles of short road segments within the Salt project area.

Effects to TES and MIS Fish and Assemblages

This section will incorporate existing information, in conjunction with professional opinion to describe the environmental consequences of the alternatives considered. All anticipated effects (direct, indirect and cumulative) of each alternative will be evaluated for TES fish – SONCC coho salmon (*O. kisutch*, Federally Threatened), MIS fish – winter/summer steelhead (*O. mykiss*) and spring Chinook salmon (*O. tshawytscha*), fish habitat and RRs.

Management indicator assemblage habitat associations selected for analysis due to the presence of suitable habitat that could be impacted by the project include riparian and aquatic habitat. The analysis includes discussion on effects to riparian reserves which represents riparian habitat. MIS fish listed in Table 3 serve as a representative of the aquatic habitat assemblage and are discussed in the effects section of the analysis.

Additional TES and MIS Fish Analysis and Documentation – The alternatives have been evaluated for their projected effects on Southern Oregon Northern California Coast (SONCC) coho salmon (*O. kisutch*). The SONCC coho salmon Evolutionarily Significant Unit is listed as Threatened under the Endangered Species Act. In addition, a detailed fishery Biological Assessment (BA) has been prepared to review the project proposals in sufficient detail to determine if the actions are likely to adversely affect the threatened species or its designated critical habitat or Essential Fish Habitat. The BA has been prepared in accordance with legal requirements set forth under section 7 of the Endangered Species Act (ESA) (19 U.S.C. 1536 (c)), and follows the standards established in Forest Service Manual direction (FSM 2672.42).

The alternatives have also been evaluated for their projected effects on Winter/Summer-Run Steelhead and non-anadromous Rainbow Trout (*O. mykiss*) and Spring-Run Chinook Salmon (*O. tshawytscha*), which are Management Indicator Species in the Shasta-Trinity LRMP.

Alternative 1 – No Action

Direct Effects

No direct effects on TES or MIS fish since no activities will occur.

Indirect Effects

Some indirect effects on TES and MIS fish may occur if this alternative is chosen. Although no new activities would be initiated, the chance of aquatic ecosystem altering wildfire will continue to increase. Large fires have impacted many areas within the South Fork and Mainstem Trinity River Basins in the recent past, these events have illustrated the ability of fire to damage large areas of riparian and fish habitat.

Alternative 2

Direct Effects

No direct effects to TES or MIS fish will occur. There are no aspects of the project that will occur in streams where anadromous fish are present. Water drafting outside of the project area is the only aspect of the project that may occur in critical fish habitat. There are several good water drafting sites located within the Salt project area so drafting outside the project area is not anticipated (Paulo 2008). Within the project area water drafting sites will be located to minimize adverse effects on stream channel stability, sedimentation, and in-stream flows to maintain riparian resources, channel conditions, and fish habitat. If, for any reason, drafting outside the project area in critical habitat did occur, National Marine Fisheries Service water drafting specifications would be followed (NMFS 2001). Project Design Elements, Mitigation Measures and RR specifications and restrictions will eliminate direct effects to resident Rainbow trout in the limited section of Ditch Gulch that they currently occupy. Units are located at least 300 feet away from perennial streams that may support fish.

Indirect Effects

Short-term impacts from increased turbidity due to ground disturbing activities are possible. WEPP modeling indicates that there is a potential for 1.9 tons of sediment per acre per year, caused by project activities in Alternative 2 (0.3 tons per acre due to harvest activities and 1.6 tons per acre due to temporary road construction) (Fryxell 2008).

These potential sedimentation numbers are a “maximum potential situation” and would not be expected to occur or reach streams because modeling did not consider implementation of BMPs and resource protection measures (Fryxell 2008). These potential impacts have been greatly reduced through project design elements. Any runoff would have to pass through the duff-litter, forbs and shrubs of the riparian reserve. Monitoring of 130 harvest units on the Bitterroot National Forest found no evidence that sediment moved into the riparian buffer areas during or after harvest providing support to the assessment that sediment is not expected to reach streams.

Ground disturbance associated with road reconstruction and decommissioning could result in short term increased sediment generation and turbidity where these activities involve stream crossings.

The proximity of the project area to the currently occupied habitats of SONCC coho and spring-run Chinook salmon in the South Fork Trinity River basin (28.2 and 11.2 stream miles, respectively) and extremely limited use of the Salt Creek 5th field watershed by winter-run steelhead, highly limits the possibility of any measurable impacts from increased turbidity and any subsequent sedimentation on anadromous fish individuals and/or populations. Short-term turbidity increases and sedimentation, if they do occur, may impact resident Rainbow trout within and directly downstream (within 0.5 mi.) of the activity. These impacts (negative impacts on fry emergence and decreased pool complexity via sedimentation) are expected to be limited in intensity and duration (no more than 3 seasons following implementation), so that no measurable population-level impact will occur. Long-term benefits of 45.9 tons of sediment, annually from road system improvements and improved drainage are expected to occur.

Alternative 3

Direct Effects

Similar to the analysis for Alternative 2, no direct effects to TES or MIS fish will occur.

Indirect Effects

Indirect effects from Alternative 3 would be analogous to those from Alternative 2, except:

- Sediment production associated with temporary roads would not occur as none are proposed in Alternative 3 (0 tons of sediment in Alternative 3 compared to 1.6 tons per acre in Alternative 2).
- Potential impacts from harvesting would be slightly less (0.2 tons per acre in Alternative 3 vs. 0.3 tons per acre in Alternative 2) as there are 173 fewer acres proposed for harvest. This difference totals 0.01 % of the project area. As a result, any potential difference in effects between alternatives would be un-measurable (Fryxell 2008).

Effects on Fish Habitat and Riparian Reserves

The Salt Timber Harvest and Fuels Hazard Reduction Project, Fisheries Biological Assessment/Biological Evaluation (USDAFS 2008) includes an in depth analysis of Essential Fish Habitat (EFH) and RRs. The results of those analyses are summarized to address this effects analysis.

Alternative 1 – No Action

Direct Effects

No direct effects on fish habitat and RR's since no activities will occur.

Indirect Effects

Some indirect effects to fish habitat and RR's may occur if this alternative is chosen. Although no new activities would be initiated, the chance of aquatic ecosystem altering wildfire will continue to increase. Large fires have impacted many areas within the South Fork and Mainstem

Trinity River Basins in the recent past, these events have illustrated the ability of fire to damage large areas of riparian and fish habitat.

Alternative 2

Direct Effects

The RR thinning activities associated with these alternatives will lead to a reduced number of trees in stands that are currently overstocked (estimated 41 acres affected in intermediate thinning units and 60 acres in plantation thinning units). No activities are proposed in stream channels, therefore no direct effects to fish habitat will occur.

Indirect Effects

Riparian reserve thinning would occur only on ephemeral and intermittent streams. Intermittent streams generally flow only during the wet season (50% of the time or less) and ephemeral streams flow generally for a short time after extreme storms and the channel is usually not well defined. These streams do not support fish, and are not wetted in the summer. Short-term impacts from increased turbidity due to ground disturbing activities are possible. These impacts have been greatly reduced through project design elements. No riparian reserve thinning activities or equipment will be allowed within the equipment exclusion zone. The equipment exclusion zone extends 50 feet (slope distance) from the high watermark on slopes greater than 30% and extends 25 feet on slopes less than 30%. Implementation of equipment exclusion zones are expected to provide sediment filter strips which would prevent any measurable sediment increases entering a given drainage. Riparian reserve crossings will be approved by a fisheries biologist and/or hydrologist, minimizing the potential for channel impacts. Project resource protection measures state that prescribed fire ignitions would not be set within Riparian Reserves, but would be allowed to back burn into these areas. Burning would take place under cool and moist conditions, minimizing burn intensity to soils and the potential for sediment generation. Since there would be no measurable sediment increases there would be no change to pool depth, or channel form.

Preliminary GIS analysis determined that existing road densities within the project area, within 300ft of streams is 6.0 mi/mi^2 in the Ditch Gulch-Salt Creek watershed and 2.5 mi/mi^2 in the Upper Salt Creek-Hayfork Creek watershed. After project completion and implementation of road decommissioning, road densities within 300 ft of streams would drop to 4.9 mi/mi^2, and 2.3 mi/mi^2, respectively, for each watershed, reducing the amount of sediment available to drainage networks within the project area. As a result, long-term benefits from road system improvements and improved drainage are expected to occur.

RR indirect effects are expected to be very localized (i.e. the microclimate scale) and may include slight reductions in humidity and slight increases in temperature due to increased sunlight, however; these impacts would not affect fish because fish are not present in these streams and no water is in these streams in the summer when water temperature is of concern. These effects are expected to be limited in intensity (very localized in area and degree) and duration (small openings in the canopy will begin to close in within the first season following implementation). Short and long-term benefits will result from lowering the risk of severe fire events within RR's. Long-term positive effects will occur because thinned timber stands in the riparian reserve will be healthier and will have increased growth. Riparian reserves outside of riparian reserve thinning units (approximately 650 acres) will not be affected (neutral effects) by the project.

Alternative 3

Direct Effects

There is no RR thinning or activity proposed in stream channels under Alternative 3, therefore no direct effects will occur to RRs or fish habitat.

Indirect Effects

No treatments would occur within RRs associated with intermittent and ephemeral streams. While no disturbance associated with mechanical or hand treatments would occur, in areas beyond Equipment Exclusion Zones, but within the minimum RR width, existing potential for increased wildfire severity would remain. Any impacts to the RR, due to wildfire, would be expected to be greater than if Alternative 2 was implemented. This is because under Alternative 2, BMPs and project specific resource protection measures would both be implemented, and these measures are expected to be effective in preventing or limiting any impacts, to acceptable levels (Fryxell 2008).

Cumulative Effects

Alternative 1

Timber harvest, grazing, road construction and road maintenance have all contributed cumulatively to habitat degradation in addition to natural events including wildland fires and unstable geology. Both of the 7th field subwatersheds are in WCC I currently, but the Ditch Gulch – Salt Gulch subwatershed is close to a WCC II. The incremental effects of past management, when added to this alternative will maintain the current WCC for each subwatershed, unless a wildland fire event occurs in one or more of the subwatersheds

Alternatives 2 & 3

Timber harvest, grazing, road construction and road maintenance have all contributed cumulatively to habitat degradation in addition to natural events including wildland fires and unstable geology. Sediment is the most common factor determined to be at risk or not properly functioning in the subject watersheds. Foreseeable future harvest, Hayfork Forest Health #2, Westside plantation thinning and the Roadside hazard tree removals, are not anticipated to contribute significantly to sediment levels because road construction are not anticipate for these projects.

Both action alternatives would decommission 13.8 miles of road. Decommission could produce short-term increase in sedimentation at stream crossings. WEPP: Road modeling indicated that decommissioning would reduce sediment input into streams by 22.9-68.9 tons per year annually over the long-term. Considered cumulatively with the roads in the area that would be decommissioned with the Westside Watershed Restoration project there would be short-term increases in sedimentation with a long-term cumulative reduction of sediment and improvement in water quality, by reducing existing levels of road-related surface runoff and sediment. Not only would water quality be improved locally, these reductions would also improve channel condition and perhaps aquatic habitat. Implementation of either alternative would not affect existing conditions in the TMDL limited segment of the South Fork of the Trinity River, located an estimated nine miles downstream of the project boundary (Fryxell 2008).

The incremental effects of past management, when added to these alternatives will change the current WCC for the Ditch Gulch – Salt Gulch subwatershed from WCC I to WCC II.

Watersheds in condition class II may exhibit an unstable drainage network. Physical, chemical, and biologic conditions suggest that soil, aquatic, and riparian systems are at risk in being able to support beneficial uses.

The incremental effects of the past, present and reasonable foreseeable actions added to the Salt project will result in some increase in cumulative effects to fish habitat. These cumulative effects are expected to be short-term increases in turbidity and sediment levels (5- 10 years), particularly at road / stream crossings where road decommissioning occurs. Some watershed recovery is expected over longer time periods (over 10 years) from Alternative 2 because thinning treatments will increase RR function and health and the regeneration of vegetation that will follow all treatment types involved in the Salt project, and from both action alternatives due to long-term reduction in sedimentation due to road decommissioning.

Conclusion

Both of the 7th field subwatersheds are in WCC I currently, but the Ditch Gulch –Salt Gulch subwatershed is close to a WCC II. No active restoration is proposed with Alternative 1. When combined with the effects from the foreseeable future action of watershed restoration, slight improvements to fish habitat and fish populations may occur over the long-term. Under Alternative 1 the risk of wildfire remains high and continues to pose a threat to the health of the watershed and aquatic ecosystems. The WCC for the Ditch Gulch – Salt Gulch and Upper Salt Creek – Hayfork Creek subwatersheds would not change as a result of this alternative.

Alternative 2 includes thinning activities in RRs and both Action Alternatives include Road Maintenance/Upgrade activities that will benefit fish, fish habitat and RR's. Increases in turbidity and sediment levels over the short-term are expected (5- 10 years). Some watershed recovery is expected under Alternative 2 over longer time periods (over 10 years) because thinning treatments will increase RR function and health and the regeneration of vegetation that will follow all treatment types involved in the Salt project. The WCC for Upper Salt Creek – Hayfork Creek would not change, but the WCC for Ditch Gulch – Salt Gulch would change from I to II in the short-term however, over the long term, watershed condition would be expected to be improved, and existing levels of cumulative effects reduced, in both action alternatives, due to the decommissioning of roads

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

Shasta-Trinity Forest Plan: The Salt Thinning Project is consistent with the Standards and Guidelines in the Forest Plan for the Shasta-Trinity National Forest (STNF) (USDA Forest Service 1995).

Tribal Trust Resources: Implementation of the Salt Project will not adversely affect any Native American subsistence or commercial fishery.

Consistency with Aquatic Conservation Strategy Objectives for the selected alternative: The Record of Decision Amending Resource Management Plans for Seven Bureau of Land Management Districts and Land and Resource Management Plans for Nineteen Forests Within the Range of the Northern Spotted Owl - Decision to Clarify Provisions Relating the Aquatic Conservation Strategy (March 2004) describes findings that must be made regarding the Aquatic Conservation Strategy. The record for a project in a RR must: 1.describe existing conditions, including important physical and biological components 2. describe the effect of the project on existing conditions and 3. demonstrate that in designing and assessing the project the decision

maker considered and used, as appropriate, any relevant information from applicable watershed analysis. A Biological Assessment was prepared for this project which discusses effects to the RR. Appendix D of the EIS summarizes the Project's consistency with the Aquatic Conservation Strategy Objectives.

Endangered Species Act Section 7 Consultation: Project compliance and consultation requirements under the ESA will utilize the Alternative Consultation Agreement (ACA). Project designation as supporting the National Fire Plan (NFP) is authorized by Hayfork District Ranger, Donna F. Harmon (Appendix A of Salt Fisheries BA/BE, USDAFS 2007).

Irreversible/Irretrievable Effects

There are no irreversible or irretrievable commitments of resources that may result from the alternatives with respect to fisheries resources.

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