UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2004/00190 (NLAA)
2004/00188 (LAA)

April 20, 2004

Karyn L. Wood
Forest Supervisor, Wallowa-Whitman National Forest
1550 Dewey Ave.
P.O. Box 97814
Baker City, OR 97814

Re: Endangered Species Act Section 7 Formal and Informal Consultation and Magnuson-Stevens Fishery and Conservation Management Act Essential Fish Habitat Consultation on the Effects of Projects in the Grande Ronde Assessment Area Biological Assessment, Upper Grande Ronde River Subbasin, Union County, Oregon

Dear Ms. Wood:

Enclosed is a document prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act on the effects of projects included in the Upper Grande Ronde Assessment Area Biological Assessment. These projects will be carried out by the Wallowa-Whitman National Forest (WWNF). This document will serve as NOAA Fisheries' concurrence on the projects that the WWNF has determined are "not likely to adversely affect " (NLAA) Snake River (SR) spring/summer chinook salmon (*Oncorhynchus tshawytscha*) and SR steelhead (*O. mykiss*).

This document also contains a biological opinion that will address the projects that the WWNF has determined are "likely to adversely affect" (LAA) SR spring/summer chinook salmon and SR steelhead. NOAA Fisheries concludes in the biological opinion that the proposed actions are not likely to jeopardize SR spring/summer chinook salmon nor SR steelhead nor adversely modify designated critical habitat for SR spring summer chinook salmon. As required by section 7, NOAA Fisheries also includes reasonable and prudent measures with non-discretionary terms and conditions that NOAA Fisheries believes are reasonable and appropriate to minimize the impact of incidental take associated with these actions.

This document also serves as consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations at 50 CFR Part 600. The Upper Grande Ronde River subbasin has been designated as EFH for chinook salmon and coho salmon (*O. kisutch*). Section 305(b)(4)(B) of the MSA requires Federal agencies to provide a detailed written response to NOAA Fisheries within 30-days after receiving these recommendations. If the response is inconsistent with the recommendations, the action agency must explain why the recommendations will not be

followed, including the justification for any disagreements over the effects of the action and the recommendations.

If you have any questions regarding this consultation please contact Eric Murray of my staff in the Eastern Oregon Branch of the Oregon State Habitat Office, at 541.975.1835, ext. 222.

Sincerely,

for Michael R Crouse

D. Robert Lohn
Regional Administrator

cc: Marisa Meyer, USFWS
Karen Haines, WWNF
Jeff Zakel, ODFW

Endangered Species Act - Section 7 Consultation
Biological Opinion

&

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Projects in the Grande Ronde Assessment Area Biological Assessment
Snake River Spring/Summer Chinook Salmon and Snake River Steelhead
Upper Grande Ronde River Subbasin
Union County, Oregon

Agency:	USDA Forest Service
Consultation Conducted By:	National Marine Fisheries Service, Northwest Region
Date Issued:	April 20, 2004
Issued by:	for Michael R Crouse _____ D. Robert Lohn Regional Administrator
Refer to:	**2004/00188 (LAA)** **2004/00190 (NLAA)**

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1. INTRODUCTION

The Endangered Species Act (ESA) of 1973 (16 USC 1531-1544), as amended, establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with NOAA's National Marine Fisheries Service (NOAA Fisheries) and U.S. Fish and Wildlife Service (together "Services"), as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated critical habitats. This biological opinion (Opinion) is the product of an interagency consultation pursuant to section 7(a)(2) of the ESA and implementing regulations 50 CFR 402.

The analysis also fulfills the essential fish habitat (EFH) requirements under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (section 305(b)(2)).

The USDA Forest Service Wallowa Whitman National Forest (WWNF) proposes to carry out the projects included in the Upper Grande Ronde River Assessment Area (UGRAA) Biological Assessment. The administrative record for this consultation is on file at the Oregon State Habitat Office.

1.1 Background and Consultation History

NOAA Fisheries received a letter requesting formal ESA section 7 consultation on the projects included in the Upper Grande Ronde River Assessment Area Biological Assessment on February 23, 2004. A complete biological assessment (BA) and EFH assessment for this project were also received at this time and consultation was initiated. Early consultation for this project followed the process described in the *Streamlining Consultation Procedures Under Section 7 of the Endangered Species Act* (USDA Forest Service, NOAA Fisheries, Bureau of Land Management, and U.S. Fish and Wildlife Service 1999). As such, NOAA Fisheries reviewed drafts of the BA and provided comments before final submission.

The UGRAA BA contains projects within the Upper Grande Ronde River subbasin to be carried out by the WWNF. The WWNF has determined that some of these projects are "not likely to adversely affect" (NLAA) Snake River (SR) spring/summer chinook salmon or SR steelhead. The NLAA actions are expected to have insignificant, discountable, or beneficial effects on SR spring/summer chinook salmon and SR steelhead and their habitat. This document will serve as NOAA Fisheries' concurrence on the NLAA actions, with concurrence based on the information provided in the BA and developed during consultation with the WWNF. The WWNF has determined that the remaining projects are "likely to adversely affect" (LAA) SR spring/summer

chinook salmon and SR steelhead. The LAA projects will be the subject of the Opinion contained in this document. The objective of this Opinion is to determine whether the LAA projects included in the UGRAA BA are likely to jeopardize the continued existence of SR spring/summer chinook salmon or SR steelhead or modify designated critical habitat for SR spring/summer chinook salmon.

The objective of the EFH consultation is to determine whether the projects included in the UGRAA BA may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects on EFH resulting from the action.

1.2 Proposed Action

Proposed actions are defined in the Services' consultation regulations (50 CFR 402.02) as "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas." Because the WWNF proposes to carry out the projects included in the UGRAA BA that may affect listed resources, it must consult under ESA section 7(a)(2) and MSA section 305(b)(2).

1.2.1 Forest Management

Mount Emily Fuels Reduction Project

The WWNF proposes to carry out the Mount Emily Fuels Reduction Project (MEFRP) on 7,158 acres of WWNF land in three watersheds: Phillips/Willow Creek (84), Grande Ronde River/Hilgard (87), and Grande Ronde/Imbler (17). The MEFRP involves harvest of trees under 21 inches in diameter at breast height (dbh) on 1,847 acres. Approximately one mile of temporary road is planned for this activity, but the road will be fully obliterated after use. No harvest of trees or road construction will occur in Riparian Habitat Conservation Areas[1] (RHCAs). No fish-bearing streams are in the project area, but some tributaries of fish-bearing streams are present (PACFISH category III and IV streams) (USDA and USDI 1995).

Additionally, smaller diameter trees with little commercial value will be felled and either scattered or piled for burning. This activity will not take place in RHCAs. Prescribed burning is proposed for 3,000 acres of the project area over the next five years. A maximum of 2,000 acres would be burned in one year. Three hundred and seven of the acres to be burned are in RHCAs. Before burning, these areas would be non-commercially thinned (trees cut by chainsaw), with this material placed in piles for burning. The piles would then be burned two to five years later.

[1] Riparian Habitat Conservation Area (RHCA) - Portions of watersheds where riparian dependent resources receive primary emphasis, and management activities are subject to specific standards and guidelines. RHCAs include traditional riparian corridors, wetlands, intermittent headwater streams, and other areas where proper ecological functioning is crucial to maintenance of the stream's water, sediment, woody debris and nutrient delivery systems. (U.S.D.A. and U.S.D.I 1995)

In addition to the pile burning, underburning is planned for these 307 acres. No direct ignition of fire would occur in RHCAs, but low and moderate intensity fire would be allowed to back into these areas. Planned conservation measures for this portion of the project include:

- Prescribed fire in RHCAs will be reviewed by a hydrologist or fish biologist to ensure that Riparian Management Objectives[2] (RMOs) are sustained or improved.
- In areas where livestock grazing occurs, rest from grazing will occur until vegetation in burned areas recovers. WWNF specialists will determine when this has occurred.
- A minimum 25-foot no-cut buffer will be implemented on all PACFISH class III streams where non-commercial thinning is planned in RHCAs.
- A minimum 10-foot no-cut buffer will be implemented on all PACFISH class IV streams where non-commercial thinning is planned in RHCAs.
- Tree mortality is limited to 5% of trees greater than 8 inches dbh and soil disturbance is limited to 10%.

Some road improvements are proposed as part of MEFRP. Approximately 2.5 miles of Forest Road 500 will be reconstructed to improve drainage, reduce erosion, and reduce sedimentation. Reconstruction will consist of spot rocking, grading, and drainage improvements. The proposed drainage improvements will include the installation of seven culverts; three in PACFISH class IV streams, two in class III streams, and two ditch relief culverts. All of the culvert installations are in subwatershed 87c (Upper Five Points Creek). No ESA-listed salmonids are present in the areas where culvert replacements will occur. The closest downstream location of SR steelhead or SR spring/summer chinook salmon is 0.6 miles from a proposed culvert installation site. The culverts will be installed during the Oregon Department of Fish and Wildlife (ODFW) in- water work window for this area, July 10 to October 15. At this time, PACFISH class III streams will be at base flow and class IV streams will be dry.

The WWNF has determined that the MEFRP is NLAA SR steelhead and SR chinook salmon. This determination is based on the absence of these fish in the action area and the fact that sediment generated from the proposed activities is not expected to reach areas where fish are present downstream from the proposed activities. The BA states that the drainages downstream of the project area are heavily forested and contain adequate levels of large woody debris to trap and retain sediment generated by the proposed activities. No permanent roads are proposed as part of this project and temporary roads will be obliterated in the same season, as use is completed. The harvest of trees will not result in an increase of equivalent clear cut acres (ECA) beyond 15% in any subwatershed except subwatershed 17E (Wright Slough). Subwatershed 17E is 97% private land that has undergone heavy timber harvest in the past few years. The MEFRP will increase ECA in this watershed from 20.8 to 21.8, but this is not expected to have any

[2] Riparian Management Objectives (RMOs) - Quantifiable measures of stream- and stream-side conditions that define good anadromous fish habitat, and serve as indicators against which attainment, or progress toward attainment, of the (riparian) goals will be measured (USDA and USDI 1995).

effects on stream flow in the watershed because the condition of forested acres, riparian areas, and stream habitat in this subwatershed are primarily controlled by private management. The WWNF expects that the proposed MEFRP will reduce the probability of future severe wildfires in the project area. No adverse effects on peak or base flows of streams in these watersheds is expected as a result of harvest.

1.2.2 Transportation Management

North Fork Catherine Creek Bridge

The WWNF proposes to replace a bridge crossing the North Fork of Catherine Creek on Forest Road 7787. The abutments of the new bridge will be placed outside the bankfull width. Riprap will be placed on the stream side of both abutments and will run from the abutment to the bankfull width of the stream channel. Cofferdams along the stream margins will isolate the work area. ESA-listed fish are not expected to be trapped by this work isolation of shallow water areas, and thus no fish salvage is planned. Appendix M of the BA lists design criteria for the bridge replacement. Planned conservation measures include:

- All work will be conducted during the ODFW in-water work period.
- Erosion control plans and measures will be in place at all times during culvert replacements.
- A pollution and erosion control plan and spill prevention control and containment plan will be developed for each culvert replacement.
- Upon completion of each culvert replacement, sites will be revegetated with native plants.
- The bridge will be sized to accommodate a 100-year flood event.
- Placed riprap will not impinge on the bankfull width or decrease the channel capacity.
- Fish passage will be maintained during construction.

The WWNF has determined that the replacement of the North Fork Catherine Creek Bridge is LAA SR steelhead and SR spring/summer chinook salmon.

Culvert Replacements

The WWNF proposes to replace five culverts that are not properly functioning (Table 1). Replacing the culverts will require the use of heavy equipment and work area isolation. Road fill will be excavated around the culverts to just above the wetted perimeter of the stream. The work area will be isolated from the actively flowing stream with sandbags or a cofferdam. The old culvert will be removed and a properly sized culvert, bottomless arch, or bridge will be installed.

Heavy machinery will operate primarily from the road prism and stream crossings will be made at designated sites. Only the margins of the stream will be isolated, so fish passage will not be blocked. Appendix M of the BA lists design criteria for the culvert replacement. Planned conservation measures include:

- Conducting all work during the ODFW in-water work period.
- Erosion control plans and measures will be in place at all times during culvert replacements.
- A pollution and erosion control plan and spill prevention control and containment plan will be developed for each culvert replacement.
- Upon completion of each culvert replacement, sites will be revegetated with native plants.

The WWNF has determined that the replacement of these culverts is LAA SR steelhead and SR spring/summer chinook salmon.

Table 1. Location of Culvert Replacements

Stream	Subwatershed
Muir Creek	85I (Grande Ronde River Mile 194)
North Fork Limber Jim Creek	85J (Limber Jim Creek)
Dark Canyon Creek	86B (Dark Canyon Creek)
East Fork of Burnt Corral Creek	86F (Burnt Corral Creek)
Waucup Creek	86J (Upper Meadow Creek)

1.2.3 Watershed Restoration

Dark Canyon Intermittent Stream Restoration

Two intermittent stream channels, tributaries to Dark Canyon Creek, have been captured by old skid trails and are actively eroding and contributing sediment to Dark Canyon Creek. The WWNF proposes to reroute the streams into their original channels, recontour portions of the skid trails, and add large woody material to capture and retain sediment. This work would be accomplished by hand or with a tracked excavator when these channels are dry. The WWNF has determined that this project is NLAA SR steelhead and SR spring/summer chinook salmon.

Dark Canyon Large Wood Addition

The WWNF proposes to place thirty whole trees in Dark Canyon Creek to replace large woody debris that was removed from this creek in past years. Trees, placed by a tracked excavator, will be obtained from an upland area. The excavator will operate from the streambank and will not cross the stream. No cabling will be used to hold the trees in place. The WWNF has determined that this project is NLAA SR steelhead and SR spring/summer chinook salmon.

1.2.4 Recreation Management

Beaver Creek Campground

The WWNF proposes to relocate the Beaver Creek Campground in subwatershed 16C (Beaver Creek, Mile 11). The existing site is in an area that was recently designated as roadless, therefore, the campground must be moved. The new campground site will be cleared and some areas will be hardened with gravel. The new site is in a flat area outside of RHCAs. No generation of sediment that could reach streams is expected.

The use of the existing dispersed campsites have resulted in trampled streambanks, compacted soils, and reduced stream shade along Beaver Creek. A primitive road also runs along Beaver Creek. The WWNF proposes to obliterate these campsites and the road by ripping or scarifying the soil and then planting native riparian vegetation. The BA states that the amount of sediment generated by this activity that could reach Beaver Creek will be minimal because the area is flat and soil infiltration rates will be higher after the ripping or scarifying. Weed-free mulch and sediment barriers will be used, if necessary, to control erosion.

The WWNF has determined that the relocation and obliteration of the existing Beaver Creek campground is NLAA SR steelhead and SR spring/summer chinook salmon. The WWNF expects only minimal amounts of sediment, below levels that cause adverse effects on salmonids or their habitat, to reach Beaver Creek. The conditions of riparian areas along Beaver Creek are expected to be improved by this proposed project.

2. ENDANGERED SPECIES ACT

2.1 Concurrence on NLAA Activities

The WWNF has determined that the MEFRP, Dark Canyon intermittent stream restoration, Dark Canyon large wood addition, construction of the Beaver Creek Campground alternate site, and obliteration of dispersed campgrounds along Beaver Creek are NLAA SR steelhead and SR spring/summer chinook salmon.

NOAA Fisheries concurs with the NLAA determinations made by the WWNF. Concurrence is based on the following considerations: (1) The proposed activities will not result in the degradation of any aquatic habitat element essential for the survival and recovery of SR steelhead and SR spring/summer chinook salmon; (2) the ongoing and proposed activities will not prevent or retard the attainment of RMOs; and (3) the ongoing and proposed activities will not result in take of SR steelhead or SR spring/summer chinook salmon. Therefore, the NLAA actions are expected to have insignificant, discountable, or beneficial effects on SR steelhead and SR spring/summer chinook salmon and their habitat

2.2 Biological Opinion

The WWNF has determined that the North Fork Catherine Creek bridge replacement and the five identified culvert replacements are LAA SR steelhead and SR spring/summer chinook salmon. These activities are the subject of this Opinion.

2.2.1 Biological Information

SR Steelhead

The SR steelhead evolutionarily significant unit (ESU) was listed as threatened on August 18, 1997 (62 FR43937). The SR spring/summer chinook salmon ESU was listed as threatened on April 22, 1992 (57 FR 14653). Protective regulations for SR steelhead were issued under section 4(d) of the ESA on July 10, 2000 (65 FR 42422). Biological information for SR steelhead is found in Busby et al. (1996). Recent counts of upstream migration at Lower Granite Dam show at least some short-term improvement in the numbers of adults returning to spawn. The Grande Ronde River is one of the principal basins in the Snake River drainage contributing to salmon and steelhead production. Interim abundance targets for SR steelhead are found in Table 2.

Table 2. Interim Abundance Targets for Snake River Steelhead in the Grande Ronde River Spawning Aggregation (Adapted from NOAA 2003)

ESU/Spawning Aggregations*	Interim Abundance Targets	Interim Productivity Objectives
Snake River Steelhead ESU		Snake River ESU steelhead populations are currently well below recovery levels. The geometric mean Natural Replacement Rate (NRR) will therefore need to be greater than 1.0.
Grande Ronde		
Lower Grande Ronde	2600	
Joseph Creek	1400	
Middle Fork	2000	
Upper Mainstem	4000	
Imnaha	2700	

*Population in bold is addressed in this Opinion

The SR steelhead ESU contains portions of southeastern Washington, northeastern Oregon, and north/central Idaho. The environmental conditions within this ESU are generally drier and warmer than in other steelhead ESUs. The SR steelhead run is considered a summer run based upon adult upstream migration. The adults enter the Columbia River in the summer, migrating upriver until they spawn in the spring between March and May. Runs found in the Grande Ronde system are generally A-run fish, or fish that have spent one year in the ocean.

There are very few annual estimates of steelhead returns throughout the Snake River Basin. Returns over the Lower Granite Dam were low during the 1990s, however run estimates in the Grande Ronde and Imnaha have improved since the 1990s (NOAA 2003). The long-term population trends have remained negative, while the short-term population trends for the ESU have improved in comparison to the time frame analyzed in the last status review (NOAA 2003). The median long-term population growth rate (λ) is 0.998 based upon the assumption that only natural-origin spawners are returned from wild stock (NOAA 2003). The short-term λ based on the same assumption is 1.013 (NOAA 2003). Assuming that both hatchery and wild fish contribute to the natural production in proportion to their numbers, the long-term λ is 0.733 and short-term λ is 0.753 (NOAA 2003). In spite of the recent increases in numbers, the majority of populations in the ESU with abundance data are still well below the interim abundance targets (Table 1).

Important features of the adult spawning, juvenile rearing, and adult and migratory habitat for this species are: Substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food (juvenile only), riparian vegetation, space, and safe passage conditions. (Bjornn and Reiser, 1991; NOAA Fisheries, 1996b; Spence *et al.*, 1996). The habitat features that the proposed projects may affect are: Substrate, water quality, water temperature, water velocity, cover/shelter, food, riparian vegetation and safe passage conditions.

Snake River Spring/Summer Chinook

SR spring/summer chinook enter the Columbia River in late February and early March. The fish hold in cool, deep pools until the late summer and early fall when they return to their native streams and begin spawning. The eggs incubate through the fall and winter and emergence begins in the early winter and late spring. Juvenile SR spring/summer chinook exhibit a stream-type life history. The fish will rear for one year in fresh water before they migrate out to the ocean in the spring of their second year. The fish generally return from the ocean after two or three years. Interim abundance targets for SR chinook salmon are provided in Table 3.

Several factors contribute to the decline of SR spring/summer chinook salmon. Habitat loss from hydroelectric development, habitat degradation from land use activities, and impacts from hatcheries are all responsible for the decline of the stocks. Recent abundance for the ESU has increased. The geometric mean return of naturally-reproducing spawners from 1997 to 2001, was 3,700, which is well below the interim abundance targets for the ESU. The 2001 run was estimated to be 17,000 naturally-reproducing spawners (NOAA 2003). The short-term and long-term productivity estimates (λ) are still well below the interim productivity target for the ESU (Table 3). The Grande Ronde and Imnaha Rivers had the greatest increase in λ for the short term. ODFW estimates the number of adult SR chinook spawners in the Upper Grande Ronde River for 2003 to be approximately 290 fish (Keniry 2003). Within the Grande Ronde River subbasin, riparian and instream habitat degradation have severely affected SR spring/summer chinook salmon production potential.

Table 3. Interim Abundance and Productivity Targets for SR Spring/Summer Chinook in Oregon (adapted from NOAA 2003)

ESU/Spawning Aggregations*	Interim Abundance Target	Interim Productivity Target
Snake River Spring/Summer Chinook		"For delisting to be considered, the eight year (approximately two generation) geometric mean cohort replacement rate of a listed species must exceed 1.0 during the eight years before delisting. For spring/summer chinook salmon, this goal must be met for 80% of the index areas available for natural cohort replacement rate estimation." (Proposed Snake River Recovery Plan; NMFS 1995)
Grande Ronde River	2000	
Imnaha	2500	

*The population in bold is addressed in this Opinion

2.2.2 Evaluating the Proposed Action

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). In conducting analyses of habitat-altering actions under section 7 of the ESA, NOAA Fisheries uses the following steps: (1) Consider the status and biological requirements of the species; (2) evaluate the relevance of the environmental baseline in the action area to the species' current status; (3) determine the effects of the proposed or continuing action on the species; (4) consider cumulative effects; and (5) determine whether the proposed action, in light of the above factors, is likely to appreciably reduce the likelihood of species survival in the wild or adversely modify its critical habitat. In completing this step of the analysis, NOAA Fisheries determines whether the action under consultation, together with all cumulative effects when added to the environmental baseline, is likely to jeopardize the continued existence of the ESA-listed species or result in adverse modification of designated critical habitat or both.

2.2.3 Biological Requirements

The first step NOAA Fisheries uses when applying ESA section 7(a)(2) to the listed ESUs considered in this Opinion is to define the species' biological requirements within the action area. Biological requirements are population characteristics necessary for the listed ESUs to survive and recover to naturally-reproducing population sizes, at which time protection under the

ESA would become unnecessary. The listed species' biological requirements may be described as characteristics of the habitat, population or both (McElhany *et al.* 2000). Interim abundance targets for the SR steelhead and SR spring /summer chinook are represented in Table 1 and 2.

The projects will occur within designated critical habitat for the SR chinook salmon ESU. Freshwater critical habitat can include all waterways, substrates, and adjacent riparian areas below longstanding, natural impassable barriers (*i.e.*, natural waterfalls in existence for at least several hundred years) and dams that block access to former habitat.

Essential features of critical habitat for the listed species are: (1) Substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) water velocity, (6) cover/shelter, (7) food (juvenile only), (8) riparian vegetation, (9) space, and (10) safe passage conditions. For this consultation, the essential features that function to support successful adult and juvenile migration, adult holding, spawning, incubation, rearing, and growth and development to adulthood include substrate, water quality, water temperature, cover/shelter, and riparian vegetation. All of these essential features of critical habitat are included in the Matrix of Pathways and Indicators (MPI) (NOAA Fisheries 1996).

2.2.4 Environmental Baseline

The environmental baseline is an analysis of the effects of past and ongoing human-caused and natural factors leading to the current status of the species or its habitat and ecosystem within the action area. The "action area" is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR 402.02). The action area for this consultation are the following watersheds in the Upper Grande Ronde River subbasin: (1) Lookingglass Creek, (2) Grande Ronde River-Imbler, (3) Indian-Clark Creeks, (4) Catherine Creek, (5) Beaver-Rock Creeks, (6) Ladd-McAllister-Spring Creeks, (7) Phillips-Willow Creeks, (8) Upper Grande Ronde River, (9) Meadow Creek, (10) Grande Ronde River-Hilgard.

In general, the environment for listed species in the Columbia River Basin (CRB), including those that migrate past or spawn upstream from the action area, has been dramatically affected by the development and operation of the Federal Columbia River Power System (FCRPS). Storage dams have eliminated mainstem spawning and rearing habitat, and have altered the natural flow regime of the Snake and Columbia Rivers, decreasing spring and summer flows, increasing fall and winter flow, and altering natural thermal patterns. Power operations cause fluctuation in flow levels and river elevations, affecting fish movement through reservoirs, disturbing riparian areas and possibly stranding fish in shallow areas as flows recede. The four dams in the migration corridor of the Columbia River kill or injure a portion of the smolts passing through the area. The low velocity movement of water through the reservoirs behind the dams slows the smolts' journey to the ocean and enhances the survival of predatory fish (Independent Scientific Group 1996, National Research Council 1996). Formerly complex mainstem habitats in the Columbia, Snake, and Willamette Rivers have been reduced, for the most part, to single channels, with floodplains reduced in size, and off-channel habitats

eliminated or disconnected from the main channel (Sedell and Froggatt 1984; Independent Scientific Group 1996; and Coutant 1999). The amount of large woody debris in these rivers has declined, reducing habitat complexity and altering the rivers' food webs (Maser and Sedell 1994).

Other human activities that have degraded aquatic habitats or affected native fish populations in the CRB include stream channelization, elimination of wetlands, construction of flood control dams and levees, construction of roads (many with impassable culverts), timber harvest, splash dams, mining, water withdrawals, unscreened water diversions, agriculture, livestock grazing, urbanization, outdoor recreation, fire exclusion/suppression, artificial fish propagation, fish harvest, and introduction of non-native species (Henjum *et al.* 1994; Rhodes *et al.* 1994; National Research Council 1996; Spence *et al.* 1996; and Lee *et al.* 1997). In many watersheds, land management and development activities have: (1) Reduced connectivity (*i.e.*, the flow of energy, organisms, and materials) between streams, riparian areas, floodplains, and uplands; (2) elevated fine sediment yields, degrading spawning and rearing habitat; (3) reduced large woody material that traps sediment, stabilizes streambanks, and helps form pools; (4) reduced vegetative canopy that minimizes solar heating of streams; (5) caused streams to become straighter, wider, and shallower, thereby reducing rearing habitat and increasing water temperature fluctuations; (6) altered peak flow volume and timing, leading to channel changes and potentially altering fish migration behavior; and (7) altered floodplain function, water tables and base flows (Henjum *et al.* 1994; McIntosh *et al.* 1994; Rhodes *et al.* 1994; Wissmar *et al.* 1994; National Research Council 1996; Spence *et al.* 1996; and Lee *et al.* 1997).

To address problems inhibiting salmonid recovery in CRB tributaries, the Federal resource and land management agencies developed the *All H Strategy* (Federal Caucus 2000). Components of the *All H Strategy* commit these agencies to protecting and restoring habitat.

Environmental baseline conditions within the action area were evaluated for the subject actions at the watershed scale. The results of this evaluation, based on the MPI described in *Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NOAA Fisheries 1996), follow. This method assesses the current condition of instream, riparian, and watershed factors that collectively provide properly functioning aquatic habitat essential for the survival and recovery of the species.

The WWNF provided extensive information on the environmental baseline of the Upper Grande Ronde River subbasin in the BA. Hydrologic Unit Codes (HUC) for the watersheds in the UGRAA are provided in Table 3. Information for the condition of pathways and indicators in the MPI (slightly modified) is provided in Table 4.

In general, the Upper Grande Ronde River subbasin is a highly disturbed riverine system degraded by past and present timber harvest, mining, livestock grazing, flood control, and withdrawal of water for irrigation (Wissmar *et al.* 1994, McIntosh *et al.* 1994). Recent insect infestations and wildfires have also contributed to degraded conditions in riparian areas throughout the subbasin.

Table 4. Names and HUCs for Watersheds in the UGRAA

Watershed Name	**5th Field HUC**
Lookingglass Creek	1706010406
Grande Ronde River-Imbler	1706010417
Indian-Clark Creeks	1706010411
Catherine Creek	1706010412
Beaver-Rock Creeks	1706010416
Ladd-McAllister-Spring Creeks	1706010419
Phillips-Willow Creeks	1706010484
Upper Grande Ronde River	1706010485
Meadow Creek	1706010486
Grande Ronde River-Hilgard	1706010487

Table 5. Condition of Pathways and Indicators for Subwatersheds in the UGRAA. Numbers are the Last Two Digits of the 5th Field HUC and letters are the Forest Service Regional Ecosystem Office (REO) Codes for Subwatersheds.

Pathways and Indicators	Functioning Appropriately	Functioning at Risk	Not Properly Functioning
Temperature (spawning)	12 b,k,l 85 b,c,g,k	85 j	11 b-f 12 f,h,i,j,m,n,p,q 16 a,b,c,d,f,g,h,i 19 e 84 b-j 85 a,d,e,f,h,i 86 a-j 87 a-g
Temperature (rearing)	06 b,e,f,h,j	06 a,d,i	06 c,g
Sediment/Turbidity/Substrate Embeddedness		11 c,e 12 b, k-n 84 i 85 g,j,k 87 c	11 b,d,f 12 f,h,i,j,p,q 16 a-d, f-i 19 e 84 b-e,g,h 85 a-f, h,i,l 86 a-j 87 a,b,d,e,f,g
Chemical Contaminants/Nutrients	11 b-f 12 b,f,h-q 16 a-d, f-i 19 e 84 b-e,g,h,i 85 a-l 86 a-j 87 b-g	87a	
Physical Barriers	06 a,b,e,f 11 c-f 12 f-q 16 b,f-i 19 e 84 g,h 85 a-l 86 a-j 87 b-f	06 c,d,g,h,i,j 84 b,cd,e,i	11 b,f 12 b 16 a,c,d 19 e 85 c 87 g

Pathways and Indicators	Functioning Appropriately	Functioning at Risk	Not Properly Functioning
Large Woody Material	06 a,b,d,j 11 b-e 12 b,f,h,m,n,p,q 16 c,d 84 d,h 85 b-e, g-k 86 b,c,h,i,j 87 a,b,c,e,f	06 g,h,i 11 f 12 j,k,l 16 a,b,f,g,h,i 84 c,e,i 85 f 86 a,d 87 g	06 c,e,f 12 i 19 e 84 b,g 85 a,l 86 e,f,g 87 d
Pool Frequency	06 c,d 11 b,c 12 a,b,h,i,p,q 16 d 84 c,d 85 b,c,d,e,f,i,k,l 86 b,c,h,i,j	12 k-n 16 i 85 a,h,j 86 a,d,g 87, b,e,g	06 a,b,e-j 11 d,e,f 12 f,j 16 a,b,c,f,g,h 19 e 84 b,i,g,h 85 g 86 e,f 87 a,c,d,f
Pool Quality/Large Pools	06 a,c,d,h,i 84 b,i	06 b,e,f,g,j 11 c,e,f 16 b,c,d,i 84 c,e,g,h 85 c,g,i,k,l 87 a,b,c	11 b,d 12 b,f,h,i,j,k,l,m,n,p,q 16 a,b,c,f,g,h 19 e 84 b,i,g,h 85 g 86 e,f 87 a,c,d,f
Off-Channel Habitat	06 a-,j 7 a,b 11 e,f 12 b,f,k,l,m,n 16 b,c,d 19 e 84 b-i 85 a,b,d,e,g,h,i 86 b-f, h,i 87 a,c,d,f	11 b,c 12 i,j 16 a,f,g,h,i 85 c,g,j,k,l 86 a 87 b, e, g	11 d 12 h,p,q 86 g
Refugia	11 e,f 12 b,f,k,l,m,n 16 b,c,d 19 e 84 b,c,d,e,g,h,i 85 a,b,d,e,f,h,i 86 b,c,d,e,f,h,i,j 87 a,c,d,f	11 b,c 12 i,j 16 a,f,g,h,i 85 c,g,h,i 86 a 87 b,e,g	11 d 12 h,p,q 86 g

Pathways and Indicators	Functioning Appropriately	Functioning at Risk	Not Properly Functioning
Width/Depth Ratios	06 a-j 11 b 12 i 16 d,g,i 19 e 84 b-e,i 85 a,c,d,g,h,j,k,l 86 c	11 c,e 12 j 16 a-c 85 i 86 a,b,e,f,g-j	11 d,f 12 b,f,h,k,l,m,n,p,q 16 b,f,h 84 g,h 85 b,e,f 86 d 87 a-g
Streambank Condition	11 e,f 16 c,d 85 c,k,l 87 c	12 b,f,h,i,j,k,l,m,n,p,q 16 b,f 19 e 84 e 85 a,b,d,e-j 86 a-j	11 b,c,d, 16 a,g,h,i, 84 b,c,d,g,h,i 87 a,b,e,f,g
Floodplain Condition	11 e,f 12 b,f,k,l,m,n 16, b,c,d 19 e 84 b,d,e,h,i 85 a,b,d,e,f,h,i 86 b-f, h,i,j 87 a,c,d,f	11 b,c 12 i,j 16 a,f,g,h,i 84 c,g 85 c,g,j,k,l 86 a 87 b,e,g	11 d 12 h,p,q 86 g
Road Density/Location/ Drainage Network Increase	11 a 12 a,c,d,e,g,n,o,p 16 c,e 17 b-e 19 a,b,c,d,f 84 f,g,h,i 85 l	06 b,c,j 17 a,b 11 b,d 12 h,m,q 16 d,h 86 a,e 87 c 84 f,g	06 a,d,e,g,h,i 11 c,e,f 12 b,f,i,j,k,l 16 a,b,f,g,i 19 e 84 a,b,c,d,e,i 85 a-k 86 b,c,d,f,g,h,i,j 87 a,b,d,e,f,g
Disturbance History/Peak/Base Flows	17 b 11 b,c,d,e,f 12 b,f,i,k,m,n,p,q 16 a-d, f-i 19 e 84 b,d,f,g,h 85 e 87 a,c	06 f 17 a,b 11 b,d 12 h,m,q 16 d,h 86 a,e 87 c 84 f,g	06 a,d,e,g,h,i 11 c,e,f 12 b,f,i,j,k,l 16 a,b,f,g,i 19 e 84 a,b,c,d,e,i 85 a,b,c,d,f,g,h,i,j,k 86 a,b,c,d,f,g,h,i,j 87 a,b,d-g
RCHAs	All others	12 h, p, q 85 a,e,i 86 e	87 a,f

Pathways and Indicators	Functioning Appropriately	Functioning at Risk	Not Properly Functioning
Disturbance Regime	11 f 12 f,k,n 85 a,e,i 86 e	all others	

2.2.5 Effects of the Proposed Actions

Effects of the action are defined as "the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with the action, that will be added to the environmental baseline" (50 CFR 402.02). Direct effects occur at the Project site and may extend upstream or downstream based on the potential for affecting the value of habitat for meeting the species' biological requirements. Indirect effects are defined in 50 CFR 402.02 as "those that are caused by the proposed action and are later in time, but still are reasonably certain to occur." They include the effects on listed species or habitat of future activities that are induced by the proposed action and that occur after the action is completed. "Interrelated actions are those that are part of a larger action and depend on the larger action for their justification" (50 CFR 402.02). "Interdependent actions are those that have no independent utility apart from the action under consideration" (50 CFR 402.02).

Activities Involving In-water Work

The WWNF has determined that the proposed bridge and culvert replacement actions are LAA SR steelhead and SR spring/summer chinook. Activities involving in-water and near water construction will cause short-term adverse habitat effects and potentially result in harassment or harm of SR steelhead and SR chinook salmon juveniles. Due to the timing of the instream construction activities, adult SR steelhead and spring/summer chinook salmon will not be present in the work areas.

The construction activities proposed as part of this project will require instream operation of heavy machinery and exposure of large areas of bare soil. This will produce sediment plumes sufficient to cause harm and harassment of any listed anadromous salmonids present during construction activities and potentially during subsequent high flow events. Potential effects include mortality from exposure to suspended sediments (turbidity) or contaminants, and behavioral changes resulting from elevated turbidity level (Sigler *et al.* 1984, Berg and Northcote 1985, Whitman *et al.* 1982, Gregory and Levings 1998), during in-water construction.

Suspended sediment and turbidity influences on fish reported in the literature range from beneficial to detrimental. Elevated total suspended solids (TSS) conditions have been reported to enhance cover conditions, reduce piscivorus fish/bird predation rates, and improve survival. Elevated TSS conditions have also been reported to cause physiological stress, reduce growth, and adversely affect survival. Of key importance in considering the detrimental effects of TSS on fish are the frequency and the duration of the exposure, not just the TSS concentration.

Behavioral avoidance of turbid waters may be one of the most important effects of suspended sediments (DeVore *et al.* 1980, Birtwell *et al.* 1984, Scannell 1988). Salmonids have been observed to move laterally and downstream to avoid turbid plumes (McLeay *et al.* 1984, 1987, Sigler *et al.* 1984, Lloyd 1987, Scannell 1988, Servizi and Martens 1991). Juvenile salmonids tend to avoid streams that are chronically turbid, such as glacial streams or those disturbed by human activities, unless the fish need to traverse these streams along migration routes (Lloyd *et al.* 1987).

Fish that remain in turbid, or elevated TSS, waters experience a reduction in predation from piscivorus fish and birds (Gregory and Levings 1998). In systems with intense predation pressure, this provides a beneficial trade-off (*e.g.*, enhanced survival) with the cost of potential physical effects (*e.g.*, reduced growth). Turbidity levels of about 23 Nephalometric Turbidity Units (NTU) have been found to minimize bird and fish predation risks (Gregory 1993). Exposure duration is a critical determinant of the occurrence and importance of physical or behavioral effects (Newcombe and MacDonald 1991). Salmonids have evolved in systems that periodically experience short-term pulses (days to weeks) of high suspended sediment loads, often associated with flood events, and are adapted to such high pulse exposures. Adult and larger juvenile salmonids may be little affected by the high concentrations of suspended sediments that occur during storm and snowmelt runoff episodes (Bjornn and Reiser 1991). However, research shows that chronic exposure can cause physiological stress responses that can increase maintenance energy and reduce feeding and growth (Redding *et al.* 1987, Lloyd 1987, Servizi and Martens 1991).

Turbidity, at moderate levels, has the potential to adversely affect primary and secondary productivity, and at high levels, has the potential to injure and kill adult and juvenile fish, and may also interfere with feeding (Spence *et al.* 1996). Newly-emerged salmonid fry may be vulnerable to even moderate amounts of turbidity (Bjornn and Reiser 1991). Other behavioral effects on fish, such as gill flaring and feeding changes, have been observed in response to pulses of suspended sediment (Berg and Northcote 1985). Fine, redeposited sediments also have the potential to adversely affect primary and secondary productivity (Spence *et al.* 1996), and to reduce incubation success (Bell 1991) and cover for juvenile salmonids (Bjornn and Reiser 1991).

Increased sedimentation may lead to increased embeddedness of spawning substrates downstream of the project. Increases in fine sediment causes a decrease in the interstial spaces between gravel substrate important for salmonid spawning. Increases in substrate embeddedness impair production of aquatic insects and block refugia for young salmonids (Rinne 1990). A general reduction of the quality of salmonid spawning and rearing habitat available occurs in these circumstances. Salmonid survival at early life stages has been directly linked to the amount of surface fines in stream substrates (EPA 1993). Juvenile salmonids are dependent on clean substrate for cover, especially for over-winter survival (EPA 1993). Successful salmonid reproduction requires clean gravels with low fine sediment content for egg incubation and alevin emergence (Spence *et al.* 1996). A pulse of fine sediments can also entomb active redds, killing pre-emergent alevins and eggs.

Instream work scheduled for these projects will take place during the in-water window for the area, July 1 to October 31. Due to the typically low flows present in the individual project areas during this time, sedimentation rates are expected to be minimal. SR steelhead spawn in the spring and emergence of alevins will occur before implementation of the LAA projects. SR spring/summer chinook spawning occur a considerable distance from the project sites. Minimal amounts of sediment from the proposed activities would reach active SR spring/summer chinook redds. However, some sedimentation of substrates, primarily in stream reaches used to by SR steelhead for spawning and rearing, will occur. Disturbance of riparian vegetation will result from operation of heavy machinery near the stream and could lead to decreased shade, increased water temperatures, and decreased streambank stability until riparian vegetation is re-established.

There is the potential for fuel or other contaminant spills associated with use of heavy equipment in or near the stream. Operation of the back-hoes, excavators, and other equipment requires the use of fuel, lubricants, *etc.*, which, if spilled into the channel of a waterbody or into the adjacent riparian zone, can injure or kill aquatic organisms. Petroleum-based contaminants, such as fuel, oil, and some hydraulic fluids, contain poly-cyclic aromatic hydrocarbons (PAHs), which can be acutely toxic to salmonids at high levels of exposure and can also cause chronic lethal and acute and chronic sublethal effects to aquatic organisms (Neff 1985). Because the potential for chemical contamination should be localized and brief, the probability of direct mortality is negligible. In-water work timing during the preferred in-water period of July 1 through October 1, will minimize the risk from chemical contamination during in-water work activities. Fish passage is expected to be improved at the culvert replacement sites.

2.2.6 Cumulative Effects

"Cumulative effects" are defined in 50 CFR 402.02 as those effects of "future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation."

Private timber harvests in Oregon are regulated by the Oregon Forest Practices Act. These regulations for private timber harvest and road building are less restrictive than those on National Forests. Timber harvest on private lands in the Upper Grande Ronde subbasin has generally increased in recent years. The BA describes the adverse cumulative effects from proposed private timber harvests as high. The BA states, "The lack of complete regulations and enforcement of existing regulations on private land timber harvests increases the likelihood of cumulative adverse effects".

Water withdrawal for irrigation and livestock grazing are likely to occur at present levels for the foreseeable future. Between 1990 and 2000, the population of Union County increased by

3.9%.[3] Thus, NOAA Fisheries assumes that future private and state actions will continue within the action area, but at increasingly higher levels as population density climbs. Most future actions by the state of Oregon are described in the Oregon Plan for Salmon and Watershed measures, which includes a variety of programs designed to benefit salmon and watershed health.

2.2.7 Conclusion

NOAA Fisheries concludes that, when the effects of the subject actions addressed in this Opinion are added to the environmental baseline and cumulative effects occurring in the action area, they are not likely to jeopardize the continued existence of SR steelhead and SR spring/summer chinook salmon. The actions will also not result in adverse modification of designated critical habitat for SR chinook salmon.

NOAA Fisheries' conclusions are based on the following considerations: (1) All instream work will occur during the in-water work window for this area, and instream work will be limited to the amount described in the BA; (2) all disturbed soils will be replanted with native vegetation; and (3) a net increase in fish habitat access will result from the proposed action. Thus, the proposed action is not expected to impair properly functioning habitats, appreciably reduce the functioning of already impaired habitats, or retard the long-term progress of impaired habitats toward proper functioning condition essential to the long-term survival and recovery at the population or ESU scale.

2.2.8 Reinitiation of Consultation

As provided in 50 CFR 402.16, reinitiation of formal consultation is required if: (1) The amount or extent of taking specified in the incidental take statement is exceeded, or is likely to be exceeded; (2) new information reveals (effects) of the action may affect listed species in a way not previously considered; (3) the action is modified in a way that causes an effect on listed species that was not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operation causing such take must cease, pending conclusion of the reinitiated consultation. This Opinion will expire five years after the date issued. Any activities not completed by that date will need to be consulted on again. To reinitiate consultation, the WWNF must contact the Habitat Conservation Division of NOAA Fisheries, Oregon State Habitat Office and refer to NOAA Fisheries Nos.: **2004/00188** (for the LAA activities) or **2004/00190** (for the NLAA activities).

[3] U.S. Census Bureau, State and County Quickfacts, Coos County, Oregon. Available at: http://quickfacts.census.gov/qfd/states/41/41061.html

2.3 Incidental Take Statement

The ESA at section 9 [16 USC 1538] prohibits take of endangered species. The prohibition of take is extended to threatened anadromous salmonids by section 4(d) rule [50 CFR 223.203]. Take is defined by the statute as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" [16 USC 1532(19)]. Harm is defined by regulation as "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavior patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering" [50 CFR 222.102]. Harass is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering" [50 CFR 17.3]. Incidental take is defined as "takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant" [50 CFR 402.02]. The ESA at section 7(o)(2) removes the prohibition from any incidental taking that is in compliance with the terms and conditions specified in a section 7(b)(4) incidental take statement [16 USC 1536].

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

2.3.1 Amount or Extent of the Take

The proposed action is reasonably certain to result in incidental take of juvenile SR steelhead and SR chinook salmon. NOAA Fisheries is reasonably certain the incidental take described here will occur because: (1) The listed species are known to occur in the action area; and (2) the proposed action is likely to cause impacts significant enough to cause death or injury, or impair feeding, breeding, migrating, or sheltering for the listed species.

Some level of incidental take of juvenile SR steelhead and SR spring/summer chinook salmon is expected during instream work. The temporary increase in sediment and turbidity is expected to cause fish to avoid disturbed areas of the stream, both within and downstream from the project area. There is a possibility that sediment generated from the proposed activities will reduce the survival of eggs or alevins found in SR spring/summer chinook salmon redds downstream of the project sites. Death or sublethal effects could occur if toxicants are introduced into the water. Take in the form of behavior modification (avoidance) is expected from riparian disturbance caused by the proposed project. This take is expected to be reduced as newly-planted riparian vegetation is established and loose soil is stabilized.

Because of the inherent biological characteristics of aquatic species such as SR steelhead and SR spring/summer chinook salmon, take attributable to this action cannot be quantified by the number of fish harmed, harassed, or killed. In instances such as these, NOAA Fisheries

designates a quantified habitat surrogate. The amount of habitat to be disturbed is an area approximately 100 feet by 10 feet of disturbed streambanks on both sides of the river at each of the culvert and bridge replacements sites. Take caused by the proposed action could continue downstream to the extent of the turbidity plume generated, approximately one mile.

In addition, incidental take is expected if a work area isolation and fish relocation operation is conducted. No adult SR steelhead or adult SR spring/summer chinook salmon are expected to be captured. The number of fish captured should be approximately 20 juvenile SR steelhead or SR spring/summer chinook salmon. Th number of fish killed by the work area isolation and relocation should not exceed three individuals.

2.3.2 Effect of Take

In this Opinion, NOAA Fisheries determines that this level of anticipated take is not likely to result in jeopardy to SR steelhead or SR spring/summer chinook.

2.3.3 Reasonable and Prudent Measures

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to minimize the impact of incidental taking on the above species. The WWNF, in respect to their proposed or ongoing activities addressed in this Opinion, shall:

1. Avoid or minimize the amount and extent of take resulting from general construction activities, riparian disturbance, and in-water work required to complete the proposed actions addressed in this Opinion.

2. Avoid or minimize the likelihood of incidental take from contaminant leaks and spills associated with the use of heavy equipment into and within watercourses.

3. Monitor the effects of the proposed action to determine the actual projects' effects on listed fish (50 CFR 402.14 (i)(3)). Monitoring should detect adverse effects of the proposed action, assess the actual levels of incidental take in comparison with anticipated incidental take documented in the Opinion, and detect circumstances where the level of incidental take is exceeded.

2.3.4 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the actions must be implemented in compliance with the following terms and conditions, which implement the reasonable and prudent measures described above for each category of activity. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure #1 (general construction, riparian disturbance, and in-water work), the WWNF shall ensure that:

a. Minimum area. Confine construction impacts to the minimum area necessary to complete the Project.

b. Timing of in-water work. Work below the bankfull elevation[4] will be completed using the most recent in-water work period (presently July 1 to October 31), as appropriate for the Project area, unless otherwise approved in writing by NOAA Fisheries.

c. Cessation of work. Cease Project operations under high flow conditions that may result in inundation of the Project area, except for efforts to avoid or minimize resource damage.

d. Preconstruction activity. Complete the following actions before significant[5] alteration of the Project area.

   i. Marking. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.

   ii. Emergency erosion controls. Ensure that a supply of sediment control materials (*e.g.*, silt fence, straw bales)[6] for emergency erosion control are onsite.

   iii. Temporary erosion controls. All temporary erosion controls will be in-place and appropriately installed downslope of Project activity within the riparian area until site restoration is complete.

   iv. General erosion control. Practices will be carried out to prevent erosion and sedimentation associated with access roads, stream crossings, drilling sites, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations, staging areas, and road decommissioning.

   v. Inspection of erosion controls. During construction, monitor instream turbidity and inspect all erosion controls daily during the rainy season and weekly during the dry season, or more often as necessary, to ensure the erosion controls are working adequately.[7]

      (1) If monitoring or inspection shows that the erosion controls are ineffective, mobilize work crews immediately to make repairs, install replacements, or install additional controls as necessary.

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[4] 'Bankfull elevation' means the bank height inundated by a 1.5 to 2-year average recurrence interval and may be estimated by morphological features such average bank height, scour lines and vegetation limits.

[5] 'Significant' means an effect can be meaningfully measured, detected or evaluated.

[6] When available, certified weed-free straw or hay bales will be used to prevent introduction of noxious weeds.

[7] 'Working adequately' means that Project activities do not increase ambient stream turbidity by more than 10% above background 100 feet below the discharge, when measured relative to a control point immediately upstream of the turbidity causing activity.

(2) Remove sediment from erosion controls once it has reached 1/3 of the exposed height of the control.

e. Heavy Equipment. When heavy equipment will be used, the equipment selected will have the least adverse effects on the environment (*e.g.*, minimally-sized, low ground pressure equipment).

f. Site preparation. Conserve native materials for site restoration.
   i. If possible, leave native materials where they are found.
   ii. If materials are moved, damaged or destroyed, replace them with a functional equivalent during site restoration.
   iii. Stockpile any large wood,[8] native vegetation, weed-free topsoil, and native channel material displaced by construction for use during site restoration.

g. Earthwork. Complete earthwork (including drilling, excavation, dredging, filling and compacting) as quickly as possible.
   i. Site stabilization. Stabilize all disturbed areas following any break in work unless construction will resume within four days.
   ii. Source of materials. Obtain boulders, rock, woody materials and other natural construction materials used for the Project outside the riparian area.

h. Pesticides. Take of ESA-listed species caused by any aspect of pesticide use is not included in the exemption to the ESA take prohibitions provided by this incidental take statement. Pesticide use must be evaluated in an individual consultation, although mechanical or other methods may be used to control weeds and unwanted vegetation.

i. Fertilizer. Do not apply surface fertilizer within 50 feet of any stream channel.

j. Isolation of in-water work area. If adult or juvenile SR steelhead or SR spring/summer chinook salmon are reasonably certain to be present, completely isolate the work area from the active flowing stream using inflatable bags, sandbags, sheet pilings, or similar materials, unless otherwise approved in writing by NOAA Fisheries.

k. Capture and release. Before and intermittently during pumping to isolate an in-water work area, attempt to capture and release fish from the isolated area using trapping, seining, electrofishing, or other methods as are prudent to minimize risk of injury.
   i. The entire capture and release operation must be conducted or supervised by a fishery biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed fish.
   ii. Do not use electrofishing if water temperatures exceed 18°C.

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[8] For purposes of this Opinion only, 'large wood' means a tree, log, or rootwad big enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and otherwise support aquatic habitat function, given the slope and bankfull channel width of the stream in which the wood occurs. See, Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995 (www.odf.state.or.us/FP/RefLibrary/LargeWoodPlacemntGuide5-95.doc).

iii. If electrofishing equipment is used to capture fish, comply with NOAA Fisheries' electrofishing guidelines.[9]

iv. Handle ESA-listed fish with extreme care, keeping fish in water to the maximum extent possible during seining and transfer procedures to prevent the added stress of out-of-water handling.

v. Transport fish in aerated buckets or tanks.

vi. Release fish into a safe release site as quickly as possible, and as near as possible to capture sites.

vii. Do not transfer ESA-listed fish to anyone except NOAA Fisheries personnel, unless otherwise approved in writing by NOAA Fisheries.

viii. Obtain all other Federal, state, and local permits necessary to conduct the capture and release activity.

ix. Allow NOAA Fisheries or its designated representative to accompany the capture team during the capture and release activity, and to inspect the team's capture and release records and facilities.

2. To implement reasonable and prudent measure #2 (pollution control), the WWNF shall ensure that:

a. Pollution Control Plan. Prepare and carry out a pollution and erosion control plan to prevent pollution caused by surveying or construction operations. The plan must be available for inspection on request by NOAA Fisheries.

i. Plan Contents. The pollution and erosion control plan will contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.

(1) The name and address of the party(s) responsible for accomplishment of the pollution and erosion control plan.

(2) Practices to confine, remove and dispose of excess concrete, cement, grout, and other mortars or bonding agents, including measures for washout facilities.

(3) A description of any regulated or hazardous products or materials that will be used for the Project, including procedures for inventory, storage, handling, and monitoring.

(4) A spill containment and control plan with notification procedures, specific cleanup and disposal instructions for different products, quick response containment and cleanup measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.

(5) Practices will be carried out to prevent construction debris from dropping into any stream or waterbody, and to remove any

[9] National Marine Fisheries Service, *Backpack Electrofishing Guidelines* (December 1998) (http://www.nwr.noaa.gov/1salmon/salmesa/pubs/electrog.pdf).

material that does drop with a minimum disturbance to the streambed and water quality.

ii. Vehicle and material staging. Store construction materials, and fuel, operate, maintain and store vehicles as follows.

(1) To reduce the staging area and potential for contamination, ensure that only enough supplies and equipment to complete a specific job will be stored on-site.

(2) Complete vehicle staging, cleaning, maintenance, refueling, and fuel storage in a vehicle staging area placed outside of any riparian areas, unless otherwise approved in writing by NOAA Fisheries.

(3) Inspect all vehicles operated within an riparian areas daily for fluid leaks before leaving the vehicle staging area. Repair any leaks detected in the vehicle staging area before the vehicle resumes operation. Document inspections in a record that is available for review on request by NOAA Fisheries.

(4) Before operations begin and as often as necessary during operation, steam clean all equipment that will be used below bankfull elevation until all visible external oil, grease, mud, and other visible contaminants are removed.

(5) Diaper all stationary power equipment (*e.g.*, generators, cranes, stationary drilling equipment) operated within any riparian area to prevent leaks, unless suitable containment is provided to prevent potential spills from entering any stream or waterbody.

b. Floating Boom. An oil-absorbing, floating boom whenever surface water is present.

c. Construction discharge water. Treat all discharge water created by construction (*e.g.*, concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) as follows:

i. Water quality. Design, build and maintain facilities to collect and treat all construction discharge water using the best available technology applicable to site conditions. Provide treatment to remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

ii. Discharge velocity. If construction discharge water is released using an outfall or diffuser port, velocities may not exceed 4 feet per second, and the maximum size of any aperture may not exceed one inch.

iii. Pollutants. Do not allow pollutants including green concrete, contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 24 hours to contact any wetland or the two-year floodplain.

3. To implement reasonable and prudent measure #3 (monitoring), the WWNF shall:

a. Reporting. Within one year of Project completion, the WWNF will submit a monitoring report to NOAA Fisheries with the following information describing

the WWNF's success in meeting the terms and conditions contained in this Opinion. A Forest-wide monitoring report that includes the following information may be used for this report

In either case, include the following information:

i. Project identification
   (1) Project name.
   (2) Type of activity.
   (3) Project location, by 6th field HUCs and by latitude and longitude as determined from the appropriate USGS 7-minute quadrangle map.
   (4) WWNF contact person.
   (5) Starting and ending dates for work completed.

ii. Photo documentation. Photos of habitat conditions at the project and any compensation site(s), before, during, and after project completion.[10]
   (1) Include general views and close-ups showing details of the project and Project area, including pre and post construction.
   (2) Label each photo with date, time, project name, photographer's name, and a comment about the subject.

iii. Other data. Additional project-specific data, as appropriate.
   (1) Work cessation. Dates work ceased due to high flows, if any.
   (2) Fish screen. Evidence of compliance with NOAA Fisheries' fish screen criteria.
   (3) Pollution control. A summary of pollution and erosion control inspections, including any erosion control failure, contaminant release, and correction effort.
   (4) Site preparation.
      (a) Total cleared area – riparian and upland.
      (b) Total new impervious area.
   (5) Streambank protection.
      (a) Type and amount of materials used.
      (b) Project size – one bank or two, width and linear feet.
   (6) Site restoration. Photo or other documentation that site restoration performance standards were met.
   (7) Long-term habitat loss. The same elements apply as for monitoring site restoration.

b. Effectiveness monitoring. Gather any other data or analyses the WWNF deems necessary or helpful to complete an assessment of habitat trends in stream and riparian conditions as a result of this project. The WWNF may use existing monitoring efforts for this purpose if those efforts can provide information specific to the objective of identifying habitat trends.

[10] Relevant habitat conditions may include characteristics of channels, eroding and stable streambanks in the Project area, riparian vegetation, water quality, flows at base, bankfull and over-bankfull stages, and other visually discernable environmental conditions at the Project area, and upstream and downstream of the Project.

c. Lethal take. If a sick, injured, or dead specimen of a threatened or endangered species is found, the finder must notify the Vancouver Field Office of NOAA Fisheries Law Enforcement at (360) 418-4246. The finder must take care in handling sick or injured specimens to ensure effective treatment, and in handling dead specimens to preserve biological material in the best possible condition for later analysis of cause of death. The finder also has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not disturbed unnecessarily.

d. Report submission. Submit a copy of the report to the Oregon State Habitat Office of NOAA Fisheries.

Oregon State Director
Habitat Conservation Division
National Marine Fisheries Service
Attn: 2004/00190 & 00188
525 NE Oregon Street
Portland, OR 97232

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

3.1 Background

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NOAA Fisheries on activities that would adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of EFH: "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;

- NOAA Fisheries shall provide conservation recommendations for any Federal or state Activity that may adversely affect EFH;

- Federal agencies shall, within 30 days after receiving conservation recommendations from NOAA Fisheries, provide a detailed response in writing to NOAA Fisheries regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NOAA Fisheries, the Federal agency shall explain its reason for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.2 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Pacific salmon: Chinook (*Oncorhynchus tshawytscha*); coho (*O. kisutch*); and Puget Sound pink salmon (*O.gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*e.g.*, natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based on this information.

3.3 Proposed Actions

The proposed action is detailed above in section 1.2 of the ESA portion of this Opinion. The action area includes watersheds within the Upper Grande Ronde River subbasin. This area has been designated as EFH for various life stages of chinook and coho salmon.

3.4 Effects of Proposed Action

The effects on chinook and coho salmon habitat are the same as those for SR steelhead and SR spring/summer chinook and are described in detail in section 2.2.1 of this document. The proposed action may result in short-term adverse effects on a variety of habitat parameters. These adverse effects are:

1. Riparian disturbance from accessing construction area and construction activities performed from the bank.

2. Increased sedimentation from instream construction activities.

3.5 Conclusion

NOAA Fisheries believes that the proposed action will adversely affect EFH for chinook salmon and coho salmon.

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that may adversely affect EFH. In addition to conservation measures proposed for the project by the WWNF, NOAA Fisheries recommends the following conservation measures:

1. Minimum area. Confine construction impacts to the minimum area necessary to complete the Project.
2. Timing of in-water work. Completed work below the bankfull elevation[11] should occur during the most recent in-water work period, July 1 to October 31, as appropriate for the Project area, unless otherwise approved in writing by NOAA Fisheries.
3. Cessation of work. Cease Project operations under high flow conditions that may result in inundation of the Project area, except for efforts to avoid or minimize resource damage.
4. Preconstruction activity. Complete the following actions before significant[12] alteration of the Project area.
    a. Marking. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.
    b. Emergency erosion controls. Ensure that a supply of sediment control materials (*e.g.*, silt fence, straw bales)[13] for emergency erosion control are onsite.
    c. Temporary erosion controls. All temporary erosion controls will be in place and appropriately installed downslope of Project activity within the riparian area until site restoration is complete.
    d. General erosion control. Carry out practices to prevent erosion and sedimentation associated with access roads, stream crossings, drilling sites, construction sites,

[11] 'Bankfull elevation' means the bank height inundated by a 1.5 to 2-year average recurrence interval and may be estimated by morphological features such average bank height, scour lines and vegetation limits.

[12] 'Significant' means an effect can be meaningfully measured, detected or evaluated.

[13] When available, certified weed-free straw or hay bales will be used to prevent introduction of noxious weeds.

borrow pit operations, haul roads, equipment and material storage sites, fueling operations, staging areas, and road decommissioning.

e. Inspection of erosion controls. During construction, monitor instream turbidity and inspect all erosion controls daily during the rainy season and weekly during the dry season, or more often as necessary, to ensure the erosion controls are working adequately.[14]

i. If monitoring or inspection shows that the erosion controls are ineffective, mobilize work crews immediately to make repairs, install replacements, or install additional controls as necessary.

ii. Remove sediment from erosion controls once it has reached 1/3 of the exposed height of the control.

5. Heavy Equipment. Restrict use of heavy equipment as follows.

i. Choice of equipment. When heavy equipment will be used, the equipment selected will have the least adverse effects on the environment (*e.g.*, minimally-sized, low ground pressure equipment).

6. Site preparation. Conserve native materials for site restoration.

a. If possible, leave native materials where they are found.

b. If materials are moved, damaged or destroyed, replace them with a functional equivalent during site restoration.

c. Stockpile any large wood,[15] native vegetation, weed-free topsoil, and native channel material displaced by construction for use during site restoration.

7. Earthwork. Complete earthwork (including drilling, excavation, dredging, filling and compacting) as quickly as possible.

a. Site stabilization. Stabilize all disturbed areas following any break in work unless construction will resume within four days.

b. Source of materials. Obtain boulders, rock, woody materials and other natural construction materials used for the Project outside the riparian area.

8. Pesticides and Fertilizers. Do not apply surface fertilizer or pesticides within 100 feet of any stream channel.

9. Pollution Control Plan. Prepare and carry out a pollution and erosion control plan to prevent pollution caused by surveying or construction operations. The plan must be available for inspection on request by NOAA Fisheries.

a. Plan Contents. The pollution and erosion control plan should contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.

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[14] 'Working adequately' means that Project activities do not increase ambient stream turbidity by more than 10% above background 100 feet below the discharge, when measured relative to a control point immediately upstream of the turbidity causing activity.

[15] For purposes of this Opinion only, 'large wood' means a tree, log, or rootwad big enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and otherwise support aquatic habitat function, given the slope and bankfull channel width of the stream in which the wood occurs. See, Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995 (www.odf.state.or.us/FP/RefLibrary/LargeWoodPlacemntGuide5-95.doc).

i. The name and address of the party(s) responsible for accomplishment of the pollution and erosion control plan.
ii. Practices to confine, remove and dispose of excess concrete, cement, grout, and other mortars or bonding agents, including measures for washout facilities.
iii. A description of any regulated or hazardous products or materials that will be used for the Project, including procedures for inventory, storage, handling, and monitoring.
iv. A spill containment and control plan with notification procedures, specific cleanup and disposal instructions for different products, quick response containment and cleanup measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.
v. Practices to prevent construction debris from dropping into any stream or waterbody, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.

b. Vehicle and material staging. Store construction materials, and fuel, operate, maintain and store vehicles as follows.
i. To reduce the staging area and potential for contamination, ensure that only enough supplies and equipment to complete a specific job will be stored on-site.
ii. Complete vehicle staging, cleaning, maintenance, refueling, and fuel storage in a vehicle staging area placed outside of any riparian areas.
iii. Inspect all vehicles operated within an riparian areas daily for fluid leaks before leaving the vehicle staging area. Repair any leaks detected in the vehicle staging area before the vehicle resumes operation.
iv. Before operations begin and as often as necessary during operation, steam clean all equipment that will be used below bankfull elevation until all visible external oil, grease, mud, and other visible contaminants are removed.
v. Diaper all stationary power equipment (*e.g.*, generators, cranes, stationary drilling equipment) operated within any riparian area to prevent leaks, unless suitable containment is provided to prevent potential spills from entering any stream or waterbody.

c. Floating Boom. An oil-absorbing, floating boom should be onsite whenever surface water is present.

d. Construction discharge water. Treat all discharge water created by construction (*e.g.*, concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) as follows:

e. Water quality. Design, build and maintain facilities to collect and treat all construction discharge water using the best available technology applicable to site conditions. Provide treatment to remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

f. Discharge velocity. If construction discharge water is released using an outfall or diffuser port, velocities should not exceed 4 feet per second, and the maximum size of any aperture should not exceed one inch.

g. Pollutants. Do not allow pollutants including green concrete, contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 24 hours to contact any wetland or the two-year floodplain.

3.7 Statutory Response Requirement

The MSA (section 305(b)) and 50 CFR 600.920(j) requires the WWNF to provide a written response to NOAA Fisheries' EFH conservation recommendations within 30 days of its receipt of this letter. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on EFH. If the response is inconsistent with NOAA Fisheries' conservation recommendations, the WWNF shall explain its reasons for not following the recommendations.

3.8 Supplemental Consultation

The WWNF must reinitiate EFH consultation with NOAA Fisheries if either the action is substantially revised, or new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920). This EFH consultation expires five years after the signature date on the cover of this document. The WWNF must consult again regarding any addressed activities not completed by that day.

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