

Endangered Species Act -Section 7
Consultation

**BIOLOGICAL AND CONFERENCE
OPINION**

Bureau of Land Management Activities Affecting
Oregon Coast Coho Salmon and Oregon Coast Steelhead

Agency: Bureau of Land Management,
Coos Bay District; Medford District; Roseburg District

Consultation Conducted By: National Marine Fisheries Service,
Northwest Region

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I. BACKGROUND

The Coos Bay, Medford, and Roseburg Bureau of Land Management (BLM) District Offices submitted May 25 and June 20, 2000, letters requesting formal consultation for a number of proposed activities that were determined likely to adversely affect Oregon Coast (OC) coho salmon (*Oncorhynchus kisutch*) and OC steelhead (*O. mykiss*). Biological assessments (BA) addressing potential effects to these species accompanied the May 25 and June 20, 2000, letters. The BAs describe the environmental baseline and effects of actions in the Umpqua River basin which may have short-term adverse effects on OC coho salmon and OC steelhead and their habitat, but which are expected to provide long-term beneficial effects.

The OC coho salmon evolutionarily significant unit (ESU) was listed by the National Marine Fisheries Service (NMFS) as threatened under the Endangered Species Act (ESA) on August 10, 1998 (63 FR 42587). Critical habitat for this species was designated on February 16, 2000 (65 FR 7764). NMFS determined that a listing under the ESA was not warranted for the OC steelhead ESU (March 19, 1998, 63 FR 13347). However, this species continues to be a candidate for listing due to various risk factors and its status will continue to be monitored by NMFS.

Because of the candidate status of OC steelhead, NMFS has considered the BLM's effects determinations for this species simultaneously with OC coho salmon in this consultation. This is because NMFS adopted a habitat-based jeopardy analysis in its March 18, 1997, biological opinion for Land and Resource Management Plans of several National Forests and Resource Management Plans of several BLM Districts (hereafter referred to as the LRMP/RMP Opinion). NMFS (1999) further describes this approach. Furthermore, OC steelhead habitat is substantially overlapped by that of OC coho salmon in these proposed actions. Individual OC coho salmon and OC steelhead would likely to be similarly affected by actions which may directly injure or cause changes to the behavior of these fish.

Coos Bay, Medford, and Roseburg District BLM personnel made the effects determinations in the BAs following procedures described in NMFS (1996). The short-term effects of the actions proposed in the BAs were evaluated by BLM biologists at the site scale using criteria based upon the biological requirements of OC coho salmon and OC steelhead and other potentially affected anadromous salmonids. Compliance with the Aquatic Conservation Strategy (ACS) objectives of the Northwest Forest Plan (NFP) (USDA and USDI 1994) was also analyzed for those activities which would result in substantial effects to riparian or aquatic habitat. BLM biologists also evaluated the likely effects of the proposed actions on the watershed scale, and in the long term, in the context of watershed processes. The Level 1 streamlined consultation teams for the relevant BLM Districts have defined *long term* for ESA consultation purposes as about a decade, while short-term effects would occur over a shorter duration, most typically a few months to a few years. The Level 1 streamlined consultation team members for the BLM Districts and NMFS reviewed the BLM's effect determinations and documentation of ACS consistency for the subject actions on July 6 and 10, 2000. The team members concurred on the BLM's effect determinations and ACS consistency analyses.

This document serves as a biological opinion for OC coho salmon and as a conference opinion for OC steelhead. The objective of this biological opinion (Opinion) is to determine whether the proposed actions are likely to jeopardize the continued existence of OC coho salmon and OC steelhead, or destroy or adversely modify designated critical habitat for OC coho salmon. This consultation is undertaken pursuant to section 7(a)(2) of the ESA and its implementing regulations, 50 CFR Part 402.

II. PROPOSED ACTION

The proposed actions analyzed in this Opinion include road maintenance, upgrade, renovation, and decommissioning projects; culvert replacement and modification projects; aquatic and riparian habitat restoration projects; a storm damage road repair project; and in-stream surveys for fisheries, wildlife, hydrology, and engineering. The BLM made *likely to adversely affect* (LAA) determinations for at least one individual action in each of the categories above, although NMFS emphasizes that many of the proposed actions under each category are in fact *not likely to adversely affect* (NLAA) OC coho salmon and OC steelhead or their habitat, or are likely to have no effect on these species or their habitat. This is true even when the individual actions are proposed to occur in proximity to water bodies. The Roseburg BLM requested consultation on LAA pump chance maintenance, but this activity will be addressed by NMFS in a separate document.

Road maintenance actions proposed by the BLM would occur in each of the fifth field hydrologic unit codes¹ (HUC) of the Umpqua River basin in which the BLM manages Federal lands, although not every road maintained by the BLM in the Umpqua River basin has the potential to affect OC coho salmon or its critical habitat. The 23 fifth field HUCs (which will be considered *watersheds* for consultation purposes) in which road maintenance is proposed to occur are listed in Table 1 of the June 20, 2000, BA; the other proposed actions described and analyzed in the BLM BAs would also occur in one or more of these 23 watersheds. Environmental Assessments (EAs) and other documentation were appended to the BLM's BA and have detailed information on the proposed actions, but brief summaries are provided below.

Road Maintenance. Maintenance is proposed during calendar year 2000 on hundreds of miles of roads under BLM control in the Umpqua Basin. Although the BLM mentions in the June 20, 2000, cover letter that the actions described in the BA would occur in the 2000 and 2001 fiscal years, NMFS declines to analyze the effects of road maintenance beyond the end of the 2000 calendar year. This is because a multiple-year programmatic consultation which includes road maintenance is currently being

¹Stream drainages can be arranged in nested hierarchies, in which a large drainage is composed of smaller drainages. The BLM uses a system in which these drainages are numbered in a computer data base for analytical purposes. The numerical identifier of a particular drainage in this data base (which is located in a specific column or *field* in the data base) is called its hydrologic unit code, or HUC. This HUC increases with decreasing drainage area, thus a fourth field HUC (such as the Main Umpqua River) is composed of several fifth field HUCs (such as the Middle Umpqua River, Mill Creek, etc.) and so on. The NFP determined that the scale for Watershed Analyses should be 20 to 200 square miles, which often corresponds to a fifth field HUC.

developed by Umpqua River basin Level 1 team members and should be completed within the next few months.

Road maintenance is performed to maintain road safety, control and/or prevent road erosion and sedimentation, and to maintain or restore hydrologic function. Road maintenance consists of cleaning ditchlines to maintain proper road drainage, grading the road surface to maintain a crown and a smooth running surface, cleaning culvert catch basins, removing slide material from the road surface and ditchlines, replacing crossdrain culverts, brushing and limbing of overhanging vegetation and movement of downed trees from the road prism, and other similar activities. Road maintenance would usually be performed with trucks and other heavy equipment, but would not include operation of this equipment within stream channels. Culvert replacement and improvement is sometimes categorized as road maintenance, but will be separately covered in this consultation. The BLM would implement a number of mitigation measures to minimize the effects of road maintenance on fish and fish habitat, including the specific Best Management Practices (BMPs) for road maintenance listed in the BAs to reduce the likelihood and intensity of sedimentation, erosion, and introduction of contaminants.

Road Upgrade, Renovation, and Decommissioning Projects. While the definitions of these types of projects tend to vary between administrative units, all of the projects in this category would remove or lessen the effects of existing roads on hydrologic and sediment regimes. Actions potentially associated with these projects include bridge and culvert removal, removal of asphalt and gravel, subsoiling or ripping of road surfaces, outsloping, waterbarring, fill removal, sidecast pullback, revegetating with native species and placement of large woody material (LWM) and/or boulders, and roadway barricading to exclude vehicular traffic. The BLM usually uses the term “full decommission” to describe a project which would nearly completely remove the effects of the road and would close it to vehicular use, while “renovation” and “storm-proofing” usually imply improved hydrologic and sediment functioning but with continuing or future vehicular use. Depending on the circumstances, the degree of treatment often falls somewhere between full decommissioning and renovation. The BLM proposes in their BAs to decommission more than 20 miles of road and to renovate, storm-proof, or otherwise rehabilitate more than 50 miles of existing road in eight subwatersheds in the Umpqua River basin in the course of four separate projects. These projects would all begin during 2000, but may extend into 2001 or later, depending on funding and other considerations. Similar to road maintenance, the BLM would implement a number of mitigation measures to minimize the effects of the proposed actions on fish and fish habitat, including the implementation of specific BMPs to reduce the likelihood and intensity of sedimentation, erosion, and introduction of contaminants.

Culvert Replacement and Modification Projects. Culverts which pass streams under roads often are full or partial barriers to upstream passage for adult and juvenile anadromous salmonids, and so reduce the amount of habitat available for these species to use. Barriers to fish passage develop when the outlets of culverts become perched many feet above the surface of the stream, when the stream bottom erodes, or when steel culverts eventually rust out and collapse; while other culverts were originally installed in a position that prevents or deters upstream fish passage. In addition, some undersized culverts are replaced in fish-bearing and fishless streams because of the potential for the transmission of large amounts of sediment in the stream system if the culvert fails and the fill washes out during high flow

events. The BLM proposes to replace 12 culverts in five Umpqua River basin subwatersheds, and to modify the hydraulic conditions below two culverts in one subwatershed. Specifically, in two Paradise Creek tributaries, the BLM would construct up to five rock weirs each to backwater the outlet of the culverts and allow upstream fish passage. The construction of the weirs would require the instream operation of an excavator or other heavy equipment to place the boulders. Replacement of the 12 culverts to current standards would also require the use of heavy equipment to excavate and replace fill and to place the culverts, but instream operation should not be needed. These projects would all begin during 2000, but may extend into 2001 or later, depending on funding and other considerations. The BLM would implement a number of mitigation measures to minimize the effects of the proposed actions on fish and fish habitat, including the implementation of specific BMPs to reduce the likelihood and intensity of sedimentation, erosion, and introduction of contaminants.

Aquatic and Riparian Habitat Restoration Projects. While the long-term recovery of watersheds under Federal management in the Umpqua Basin depends on the passive restoration inherent in the growth of trees and large wood recruitment to stream channels, return to normal sediment and hydrologic regimes, etc., the BLM is also charged with the development and implementation of active restoration projects, where such projects are prudent and feasible. In the subject BAs, the BLM proposes to conduct three instream habitat restoration projects and a riparian restoration project. The instream projects would consist of log and boulder placement at eight sites in three hydraulically-simplified streams, while the riparian treatment would be the maintenance of existing conifer plantings (the hand-removal of brush and other competing plants) in one subwatershed. Combined, the instream projects would consist of more than 200 boulder clusters placed at stream margins, 75 logs hauled from off-site for in-channel placement, 188 red alder trees felled on site for in-channel placement, and 19 large conifers pulled or felled on-site for in-channel placement. The hauling and placement of boulders and logs would require the use of trucks and heavy equipment and the construction of some temporary access roads. Some heavy equipment would operate within the stream channel. These projects would all begin during 2000, but may extend into 2001 or later, depending on funding and other considerations. The BLM would implement a number of mitigation measures to minimize the effects of the proposed actions on fish and fish habitat, including the implementation of specific BMPs to reduce the likelihood and intensity of sedimentation, erosion, and introduction of contaminants.

Storm Damage Repair Project. The BLM proposes to construct a low-water road crossing to replace a recently washed-out culvert crossing on Fitzpatrick Creek in the Upper Umpqua watershed. Because of a reciprocal road use agreement with a private land-owner, the BLM is required to provide access to land on the far side of the creek. The BLM believes, and the NMFS concurs, that the proposed action is the most practical and environmentally-sound method of maintaining this access. The ford would be about 12 feet wide and 104 feet long and would be armored with a series of cabled-together concrete blocks, which would be buried so that the surfaces of the blocks are just below the grade of the original stream bottom. The concrete blocks would be anchored to steel plates which would be driven by impact hammer about 5 feet into the substrate of the stream channel. The BLM expects the concrete pad to be covered with a few inches of alluvium after the first winter storm. A road, which was constructed in 1999, is paved at the approaches to the ford to minimize the introduction of sediment into the creek during use of the ford, and the high-flow streambanks would be

armored with riprap at their intersection with the road/ford to resist erosion. No substantial riparian vegetation would be affected by the construction of the ford, which would occur during mid-August, when the wetted channel of the creek is only a few feet in width. The hauling and placement of the concrete blocks would require the use of trucks and heavy equipment which would operate within the stream channel, but water would be diverted around the work area so that no in-water work would occur. The high-flow event which washed out the culvert crossing left the culvert itself and a small amount of fill which would also be removed from the creek channel as part of this action. The BLM would implement a number of mitigation measures to minimize the effects of the proposed action on fish and fish habitat, including the implementation of specific BMPs to reduce the likelihood and intensity of sedimentation, erosion, and introduction of contaminants.

Fisheries, Macroinvertebrate, Hydrology, and Engineering Surveys. The BLM proposes to conduct instream and riparian area surveys for a variety of purposes in 2000. As noted above for road maintenance, a programmatic consultation is being developed which should provide Section 7 coverage for these activities in future years. Fisheries surveys would include direct observation of juvenile and spawning salmonids and measurements of aquatic and riparian habitat variables. BLM juvenile fish surveys would be conducted by visual observations while snorkeling and wading, but would not include direct capture techniques such as electrofishing or seining. Spawning surveys would be conducted by wading, and some wading would occur during conduct of instream habitat measurements. The BLM proposes to conduct up to nearly 200 miles of such surveys in 2000, in nearly every Umpqua River basin watershed. The BLM would also conduct surveys and collections of macroinvertebrates at 45 sites in five watersheds and hydrology surveys (*e.g.*, water sample collection) would be conducted at 49 sites in seven watersheds. These surveys are chiefly intended to provide information on water quality and instream habitat and would involve some wading and substrate disturbance. Finally, engineering surveys consisting of elevation and distance measurements would be conducted at about 11 sites and over roughly 11 stream miles. Some wading will occur during these surveys, which would provide data for the design of replacement culverts, road decommissioning, instream restoration projects, and other beneficial activities. Specific BMPs and other mitigation measures would be implemented to minimize the adverse effects of these actions on fish and fish habitat.

III. BIOLOGICAL INFORMATION AND CRITICAL HABITAT

The biological requirements, including the elements of critical habitat, of each of the ESUs are discussed in the LRMP/RMP Opinion and in NMFS (1999). Environmental baseline conditions in the Umpqua Basin are discussed in Johnson *et al.* (1994), and pages 13-14 of the LRMP/RMP Opinion. Cumulative effects as defined under 50 CFR 402.02 are discussed for the Umpqua Basin on pages 40-43 of the NMFS LRMP/RMP Opinion. These respective analyses are incorporated herein by this reference. NMFS is not aware of any newly available information that would materially change these previous analyses of biological requirements, environmental baseline, or cumulative effects for the purpose of this Opinion. Some general biological information is provided below.

The OC coho salmon is an anadromous species in which individuals typically have a three-year life-cycle. OC coho salmon occur in each of the 23 subject watersheds. Adult OC coho salmon spawn in the late fall and winter, with fry emergence occurring the following spring. Juvenile coho salmon rear for about a year in natal streams and then outmigrate to the ocean as smolts in the spring. Some male coho return to freshwater to spawn the fall and winter of the same year as their smolt migration, but the majority of adult OC coho salmon do not return to spawn until after having spent roughly 18 months in the ocean. Thus, an active OC coho salmon stream would be used for some life-stage—as rearing, feeding, spawning, and incubation habitat—year-round.

OC steelhead occur in each of the 23 subject watersheds and may exhibit anadromy or freshwater residency. Resident forms are usually referred to as *rainbow trout*, while anadromous life forms are termed *steelhead*; both forms likely occur in all four subject watersheds. Steelhead typically migrate to marine waters as smolts in the spring after spending two years in freshwater. They then reside in marine waters for 2 to 3 years prior to returning to their natal stream to spawn as 4- or 5-year-olds. Unlike salmon, steelhead do not necessarily die after spawning and may survive to spawn two or more times. Most or all adult steelhead in the BLM-managed portions of the Umpqua River basin likely enter freshwater in the late fall or winter, and spawn in the late winter to early spring. Thus, as with OC coho salmon, an active OC steelhead stream would be used for some life-stage—as rearing, feeding, spawning, and incubation habitat—year-round.

Although general information about the populations of anadromous fish within the Umpqua River basin is available (e.g., those streams likely inhabited) specific information on the size and health of anadromous fish populations in the basin is often lacking or incomplete. For example, the BLM's Watershed Analyses (WAs) for the 23 watersheds at issue in this consultation generally do not provide specific information on fish populations size, trends, or stream mileage inhabited by anadromous fish or resident fish, but often do document that scores of miles of habitat are available in each watershed for anadromous and resident salmonids. Because of the general paucity of the type of knowledge which would allow the BLM and NMFS to assess the relative health of anadromous salmonid populations on a stream or watershed scale, and the fact that all fish species, populations, and individuals depend on adequate habitat, the NMFS primarily uses a habitat-based system in ESA consultation on land-management activities (NMFS 1999). The NMFS has applied the concept of properly functioning habitat condition to assess the quality of the habitat that fish need to survive and recover. This concept is discussed in the next section.

Site-level environmental baseline descriptions and effects determinations are typically made by BLM personnel for proposed actions. For the actions discussed in the subject BAs, the BLM often used surrogate site-level analyses because of the large number of sites inherent in the proposed actions and because the typical site-level effects on salmonid habitat for these actions are minor to negligible. The baseline descriptions and effects determination are displayed in the project-level Matrices of Pathways and Indicators (MPIs) which were included in the BAs. In addition, watershed-level information on anadromous salmonid habitat is provided in the fifth field MPIs also included in the BA. Surrogate watershed-level MPIs were also prepared for many of the watersheds in which the proposed activities would occur, for the same reasons as noted above for site-level analyses. The NMFS concurred with

these project and watershed-scale environmental baseline descriptions and effect determinations in the streamlined consultation process and NMFS considered them in addition to the broad-scale analysis conducted for the LRMP/RMP Opinion described above.

IV. EVALUATING PROPOSED ACTIONS

The standards for determining jeopardy are set forth in Section 7(a)(2) of the ESA as defined by the consultation regulations (50 CFR 402). NMFS (1999) describes how NMFS applies the ESA jeopardy and destruction/adverse modification of critical habitat standards to Section 7 consultations, including those for Federal land management actions in the Umpqua River basin. While land management actions typically have the potential to modify salmonid habitat, some actions also or instead have the potential to affect the behavior and/or survival of individual salmonids apart from effects on habitat. Such actions can adversely affect individual fish through harassment or direct contact by people or their equipment.

As described in NMFS (1999), the first steps in applying the ESA jeopardy standards for habitat are to define the biological requirements of ESA-listed species and to describe the species' current status as reflected by the environmental baseline. In the next steps, NMFS' jeopardy analysis considers how proposed actions are expected to directly and indirectly affect specific environmental factors that define properly functioning aquatic habitat essential for the survival and recovery of the species. This analysis is set within the dual context of the species' biological requirements and the existing conditions under the environmental baseline (defined in NMFS 1999). An analysis of more direct (*i.e.*, non-habitat) effects on individuals of the species of interest is also made. The jeopardy analysis takes into consideration an overall picture of the beneficial and detrimental activities taking place within the action area, which 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). If the net effect of the activities is found to jeopardize the listed species, then NMFS must identify any reasonable and prudent alternatives to the proposed action.

A. Biological Requirements

For this consultation, NMFS finds that the biological requirements of OC coho salmon and OC steelhead are best expressed in terms of current population status and environmental factors that define properly functioning freshwater aquatic habitat necessary for survival and recovery of the species. The NMFS defines this "properly functioning" condition as the state in which all of the individual habitat factors operate together to provide a healthy aquatic ecosystem that meets the biological requirements of the fish species of interest. Individual, measurable habitat factors (or indicators) have been identified (e.g., water temperature, substrate, etc.), and the properly functioning values for these indicators have been determined, using the best information available. These indicators, when considered together, provide a summary of the conditions necessary to ensure the long-term survival of aquatic species.

The NMFS has assembled a set of these indicators in a form called the Matrix of Pathways and

Indicators (MPI) (NMFS 1996 and 1999). The MPI is a table that lists several categories or *pathways* of essential salmonid habitat, such as water quality, instream habitat elements, and flow/hydrology. Under these pathways are quantitative habitat indicators for which ranges of values are identified that correspond to a *properly functioning* condition, an *at risk* condition, and a *not properly functioning* condition. Because these habitat measurements are more readily available than quantitative measurements of biological variables such as incubation success, standing crop, and growth rate, the NMFS and BLM are able to assess the health of stream reaches or watersheds based on the condition of their component indicators. Such an assessment provides a baseline description of the health of the stream/watershed, and also allows the effects of an action (e.g., a culvert replacement) to be evaluated.

Properly functioning watersheds, where all of the individual factors operate together to provide healthy aquatic ecosystems, are necessary for the survival and recovery of the listed species. It follows, then, that NMFS has determined that an action which would cause the habitat indicators of a watershed to move to a degraded condition, or one which further degrades a not properly functioning watershed, is also likely to jeopardize the continued existence of the listed species.

In addition to the use of the MPI at the watershed level to assist in making jeopardy determinations in Section 7 consultations (especially for land management agencies), the NMFS also uses the MPI at the site or project scale. Assuming that a Federal agency determines that an action is a *may affect*, either informal or formal consultation is required. To assist in this determination, the action agency prepares a project-level MPI. If no *degrades* occur at this scale, then the action is probably not likely to adversely affect individuals of a listed species, and an informal Section 7 consultation is appropriate. If the proposed action degrades any of the indicators at this smaller scale (often the sixth or seventh field HUC), then the action is generally considered to be a *likely to adversely affect*, and formal consultation must occur.

B. Environmental Baseline

Current range-wide status of listed species under environmental baseline. NMFS described the current population status of OC coho salmon in a status review (Weitkamp *et al.* 1995), and in the final listing rule (August 10, 1998, 63 FR 42587). Critical habitat for this ESU was designated on February 16, 2000 (65 FR 7764). The current population status of OC steelhead is described in Busby *et al.* (1996), and in the final rule in which the NMFS determined that the status of the ESU did not currently warrant listing (March 19, 1998, 63 FR 13347).

Current status of listed species under environmental baseline within the action areas. As noted above, the action area includes all areas directly or indirectly affected by the proposed action. The general action areas for this Opinion can be defined as all 23 watersheds in which the proposed actions would occur.

As also noted above, OC coho salmon and OC steelhead use the action areas as rearing, feeding, spawning, and incubation habitat, as well as a migration corridor. The environmental baseline of the action areas are dominated by conditions rated largely as not properly functioning or at risk (see watershed MPIs in BAs). These conditions are likely primarily the result of past forest management and agricultural practices, in particular, timber harvest/clearing within riparian zones, large-scale clear-cut timber harvest, road construction (especially within riparian zones), and timber yarding in riparian zones and streams.

Indicators particularly at issue in this consultation are those which would potentially be degraded by the proposed actions at the project scale, although the NMFS has also reviewed the BLM's *maintain* and *restore* effects determinations. For the projects reviewed in this biological opinion, *sediment/turbidity* and *substrate* were determined to be degraded at the project scale by a few of the actions.

Based on the best information available on the current status of OC coho salmon and OC steelhead, NMFS assumptions given the information available regarding population status, population trends, and genetics, and the relatively poor environmental baseline conditions within the action areas (see MPIs in BAs, the OC coho salmon final listing rule, and OC steelhead proposed listing rule), NMFS finds that the environmental baseline does not currently meet all of the biological requirements for the survival and recovery of the listed species within the action area. Actions that do not retard attainment of properly functioning aquatic conditions, when added to the environmental baseline, are necessary to meet the needs of the species for survival and recovery.

V. ANALYSIS OF EFFECTS

The effects determinations in this Opinion were made using a method for evaluating current aquatic conditions (the environmental baseline) and predicting the effects of the actions on them. This process is described in NMFS (1996) and NMFS (1999). This assessment method, in which MPIs are assembled by action agency biologists, was designed for the purpose of providing information in a tabular form for NMFS to determine the effects of actions subject to consultation.

The BLM uses the MPI to make project-level effects determinations on actions which have the potential to modify salmonid habitat, i.e., whether an action is NLAA or LAA the ESA-listed species (in this case, OC coho salmon). If any of the indicators is thought to be degraded at the project level by the action, the action is determined to LAA. In addition, if harassment or other forms of non-habitat related adverse effects are more than negligibly likely to occur due to the proposed actions, the BLM notes the type, duration, and likely severity of such effects in the BA. The NMFS must then determine whether such adverse effects are profound enough to jeopardize the continued survival of the listed species.

A. Effects of Proposed Actions

Project-Level Effects. The BLM-provided MPIs for the effects of actions are expressed in terms of the expected effect—restore, maintain, or degrade—on aquatic habitat factors in the project area for a subwatershed (or other project-level spatial scale) affected by the proposed actions. The results of the completed checklist for the proposed action provide a basis for determining the effects of the action on the environmental baseline in the project area.

In this consultation, the BLM provided only a few project-level MPIs to serve as surrogates for the many subwatersheds at issue. NMFS believes that this approach is adequate for the proposed actions, because the vast majority of the proposed actions would have almost no potential for site-level adverse effects. A few of the actions have a small potential for site-level adverse effects, but even for these projects, only two of the indicators are expected to be affected. The BLM determined that the actions would almost invariably not degrade indicators at the project level chiefly because most of the activities would occur out of the stream channel during the dry season and because effective mitigation methods and BMPs would be employed.

Road Maintenance. The BLM marked the *sediment/turbidity* and *substrate* indicators as degraded in some of the project-level matrices as a result of road maintenance activities and determined that all other indicators would be maintained. The BLM attributes the degrade checkmarks to a transitory increase in stream sedimentation caused by culvert-related work, but emphasized that this was only an acknowledgment that it was possible that some sediment would enter stream channels as a result of the action. The BLM believes that some types of road maintenance may briefly cause an increase in turbidity at some sites, but would not measurably increase sediment levels in the affected streams and would not impede recovery of the streams' historic sediment regimes. As noted above, BMPs and other mitigation techniques should minimize sediment input to stream channels due to road maintenance. The BLM also noted that there was more than a negligible potential for harassment of individual fish at road crossings because of road maintenance activities.

Because the proposed activities would have more than a negligible potential for harassment of individual fish, and to a lesser extent, because a few *degrades* checkmarks occurred at the project scale, the BLM determined that some road maintenance is likely to adversely affect OC coho salmon or OC steelhead. The NMFS concurs with the BLM on the project-level effects determination for road maintenance.

Road Upgrade, Renovation, and Decommissioning Projects. Similar to Road Maintenance, the BLM marked the *sediment/turbidity* and *substrate* indicators as degraded in some of the project-level matrices due to this category of action and determined that all other indicators would be maintained. The BLM attributes the *degrade* checkmarks to a transitory increase in stream sedimentation caused by culvert-related work, but emphasized that this was only an acknowledgment that it was possible that some sediment would enter stream channels as a result of the action. The BLM believes that some aspects of the actions in this category may briefly cause an increase in turbidity at some sites, but would not measurably increase sediment levels in the affected streams and would not impede recovery of the streams' historic sediment regimes. As noted above, BMPs and other mitigation techniques should minimize sediment input to stream channels due to the proposed activities. The BLM also noted that

there was more than a negligible potential for harassment of individual fish at road crossings because of culvert removal activities.

Because the proposed activities would have more than a negligible potential for harassment of individual fish, and to a lesser extent, because a few *degrades* checkmarks occurred at the project scale, the BLM determined that some of the road upgrade, renovation and/or decommissioning projects are likely to adversely affect OC coho salmon or OC steelhead. The NMFS concurs with the BLM on the project-level effects determination for this category.

Culvert Replacement and Modification Projects. Similar to Road Maintenance, the BLM marked the *sediment/turbidity* and *substrate* indicators as degraded in some of the project-level matrices due to this category of action and determined that all other indicators would be maintained. The BLM attributes the *degrade* checkmarks to a transitory increase in stream sedimentation caused by culvert-related work, but emphasized that this was only an acknowledgment that it was possible that some sediment would enter stream channels as a result of the action. The BLM believes that some aspects of the actions in this category may briefly cause an increase in turbidity at some sites, but would not measurably increase sediment levels in the affected streams and would not impede recovery of the streams' historic sediment regimes. As noted above, BMPs and other mitigation techniques should minimize sediment input to stream channels due to the proposed activities. The BLM also noted that there was more than a negligible potential for harassment of individual fish at road crossings and at the weir construction site because of the use of heavy equipment adjacent to and in the streams.

Because the proposed activities would have more than a negligible potential for harassment of individual fish, and to a lesser extent, because a few *degrades* checkmarks occurred at the project scale, the BLM determined that some of the culvert replacement and modification projects are likely to adversely affect OC coho salmon or OC steelhead. The NMFS concurs with the BLM on the project-level effects determination for this category.

Aquatic and Riparian Habitat Restoration Projects. Similar to Road Maintenance, the BLM marked the *sediment/turbidity* and *substrate* indicators as degraded in some of the project-level matrices due to this category of action and determined that all other indicators would be maintained. The BLM attributes the *degrade* checkmarks to a transitory increase in stream sedimentation caused by operation of heavy equipment adjacent to and in the stream channels, but emphasized that this was only an acknowledgment that it was possible that some sediment would enter stream channels as a result of the action. The BLM believes that some aspects of the actions in this category may briefly cause an increase in turbidity at some sites, but would not measurably increase sediment levels in the affected streams and would not impede recovery of the streams' historic sediment regimes. As noted above, BMPs and other mitigation techniques should minimize sediment input to stream channels due to the proposed activities. The BLM also noted that there was more than a negligible potential for harassment of individual fish at the instream habitat improvement sites because of the use of heavy equipment adjacent to and in the streams.

Several of the instream habitat improvement projects involve pulling or felling trees into streams. Although trees would be sacrificed and maneuvered within the riparian zone and stream channel in these projects, no trees would be harvested or removed from riparian reserves. In addition, the projects would extend over substantial distances and stocking levels of remaining trees would remain high, so the BLM does not believe that riparian indicators would be degraded. In projects where logs would be hauled to the site, the logs would be obtained from upland areas or (in the case of 10 logs for one project) would be salvaged and hauled by the BLM after having been cut in the course of highway repair from a properly function riparian area by the Oregon Department of Transportation. The riparian habitat improvement project proposed should not affect stream channel shading or bank stability or degrade any of the MPI indicators, but was submitted for consultation because the work crews would have occasion to wade in streams.

Because the proposed activities would have more than a negligible potential for harassment of individual fish, and, to a lesser extent, because a few *degrades* checkmarks occurred at the project scale, the BLM determined that some of the aquatic and riparian habitat improvement projects are LAA OC coho salmon or OC steelhead. The NMFS concurs with the BLM on the project-level effects determination for this category.

Storm Damage Repair Project. Although the BLM did not mark any indicators as degraded in the project-level matrix for this project, the BA noted that a transitory increase in stream turbidity and/or sedimentation is likely to be caused by operation of heavy equipment adjacent to and in the stream channel. The BLM emphasized that this was only an acknowledgment that the action might briefly cause an increase in turbidity at the site, but would not measurably increase sediment levels in the affected stream and would not impede recovery of the streams' historic sediment regime. As noted above, BMPs and other mitigation techniques should minimize sediment input to the stream channel due to the proposed activities. The BLM also noted that there was more than a negligible potential for harassment of individual fish at the repair site because of the use of heavy equipment adjacent to and in the stream.

Because the proposed activities would have more than a negligible potential for harassment of individual fish, the BLM determined that the storm damage repair project is LAA OC coho salmon or OC steelhead. The NMFS concurs with the BLM on the project-level effects determination for this action.

Fisheries, Macroinvertebrate, Hydrology, and Engineering Surveys. The BLM did not mark any indicators as degraded in the project-level matrices for these activities because they should cause little or no ground-disturbance. The BLM noted, however, that there was more than a negligible potential for harassment of individual fish during the surveys because of the in-stream and/or streambank nature of the activities. BMPs and other mitigation techniques should minimize the potential for harassment, however.

Because the proposed activities would have more than a negligible potential for harassment of individual fish, the BLM determined that the surveys are LAA OC coho salmon or OC steelhead. The NMFS concurs with the BLM on the project-level effects determination for this category.

Watershed-Level Effects. In the BAs, the BLM provided watershed-scale MPIs and ACS Objective consistency reviews which evaluated the proposed actions. In some cases, one or a few watershed-scale MPIs were provided by the BLM as surrogates for other watersheds because of the large number of watersheds at issue, because effects on habitat by the proposed actions would generally be insubstantial, and because the watershed-level baselines are often similar between watersheds in the Umpqua River basin.

The watershed-scale MPIs evaluate the effects of the proposed action on habitat indicators in the fifth field HUC relative to the long-term environmental baseline. While many actions, including those that may be beneficial in the long term, have short-term, small-scale adverse effects, only those actions with adverse effects which are significant at the watershed scale over a long period would receive a *degrade* checkmark. It is important to realize that both active and passive restoration activities contribute to the environmental baseline. In particular, the passive restoration that will occur over the long term (at least a decade, see above), especially in riparian reserves (RRs), is a principal component of the watershed recovery aspect of the NFP. The role of RRs, Late Successional Reserves, etc., in restoration of watersheds is described in the NFP ROD (USDA and USDI 1994) and in the LRMP/RMP Opinion.

The ACS consistency reviews included a description of how the proposed projects compared to the applicable NFP standards and guidelines (S&Gs) for the listed ESUs and how the proposed projects complied with the nine ACS objectives for those ESUs. Because there is strong correspondence between the habitat indicators of the MPI and the ACS objectives, it is likely that if none of the habitat indicators in the watershed level MPI are degraded by an action, then compliance with ACS objectives for the ESUs is also achieved. In the descriptions below, only those MPI habitat indicators which were determined to degrade at the project scale are discussed.

As noted above under Project-Level Effects, only a few of the proposed activities were thought to be likely to cause project or site-level MPI indicator *degrades*. BLM Level 1 representatives believe, and the NMFS concurs, that the use of the degrade checkmark for *sediment/turbidity* and *substrate* for some culvert-related work (in the road maintenance, road upgrade, and culvert replacement categories), and for some instream habitat restoration projects is a conservative practice, in that most of the proposed activities would literally have no effect on salmonid habitat. In the few situations in which any sediment would be transmitted and/or suspended in streams due to these activities, the BLM Level 1 representatives believe, and the NMFS concurs, that these effects would likely be highly localized and of short duration. The NMFS believes that in the long term and on the watershed scale, any *degrades* for the proposed activities would be inconsequential, because the relatively small amount of sediment that is likely to enter watercourses as a result of the proposed activities would likely not be distinguishable from background natural sedimentation and sedimentation from previous human activities. Stream sedimentation occurs under pristine watershed conditions, and is usually harmful to the persistence of salmonid populations only when it occurs outside of the natural range of variability on a large spatial scale for long periods. Proper road maintenance, road upgrades, culvert replacement, etc., in fact, are likely to diminish the potential adverse effects of roads, including turbidity and sedimentation, by allowing the drainage design features to work properly. Instream habitat projects are even more likely to improve aquatic habitat in the long term.

Based on S&G discussions and the ACS objective consistency reviews in the BAs for the proposed actions, it appears that all of the relevant S&Gs would be observed by the BLM and that compliance with the nine ACS objectives is adequately described by the BLM. Compliance with the fifth objective, “maintain and restore the sediment regime...” is discussed in the previous paragraphs. The proposed activities also appear to be consistent with WA recommendations, direction for Key Watersheds, and watershed restoration planning, in that most of the activities would contribute to the recovery of the subject watersheds over the long term. Even the survey activities, which would have essentially no effect on aquatic or riparian habitat, would contribute information which would allow the BLM to better manage the watersheds.

B. 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." Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being (or have been) reviewed through separate section 7 consultation processes. Therefore, these actions are not considered cumulative to the proposed action.

The NMFS is not aware of any newly available information that would materially change these previous effects analyses. In that substantial portions of all of the watersheds discussed in this Opinion are privately-owned, the NMFS assumes that the cumulative effects of non-Federal land management practices would continue at similar intensities as in recent years (LRMP/RMP Opinion, pages 41-42).

VI. CONCLUSION

NMFS has considered the applicability of these analyses to each of the proposed actions identified in the BAs and in this letter. The NMFS is not aware of any other special characteristics of the particular actions that would cause greater or materially different effects on the subject salmonid species and their habitat than is discussed in these references.

The effects of the proposed activities on OC coho salmon and OC steelhead and their habitat are presented in the BAs prepared by the BLM, specifically in the project and watershed-level MPIs, ACS objective consistency reviews, EAs, and WAs. NMFS finds those descriptions to be adequate for this analysis. Based on this information, the NMFS does not consider these actions to be likely to result in more effects than expected or considered in the LRMP/RMP Opinion. In particular, the BLM determined, and the NMFS concurred, that relevant NFP S&Gs would be followed, and that ACS objectives would be met at the watershed scale and in the long term when the effects of the proposed actions are combined with the environmental baseline. This ACS consistency determination was made because the BLM showed that, despite their proposed actions, watershed habitat indicators would be maintained over the long term. In fact, each of the proposed actions should contribute toward recovery of watershed processes.

The NMFS expects that ACS objectives which may be affected by the subject actions will be met for the following reasons: (1) Potential sediment input from proposed road-related activities (including maintenance, decommissioning/renovation, culvert replacement, etc.) will be minimized by implementation of appropriate mitigation measures and implementation of appropriate BMPs, and the long-term effects of these actions should be beneficial because of lessened sediment and hydrologic effects from existing roads and enhanced upstream passage; (2) potential sediment input from proposed instream habitat enhancement activities, including placement of boulders and large woody material, will be minimized by implementation of appropriate mitigation measures and implementation of appropriate BMPs, and the long-term effects of these actions should be beneficial because instream habitat quality would be improved without substantial effect on riparian habitat; and (3) the noncommercial hand-removal of conifer-suppressing brush in RR should accelerate attainment of large trees to serve as a future source of LWM, but shade and bank stability should not be affected in the short term. Despite potential minor short-term adverse effects—most or all of which would be insignificant even on the site scale—these actions maintain or restore essential habitat functions and will not impede recovery of salmonid habitat, a long-term goal of the NFP. Furthermore, although some harassment of individual OC coho salmon may occur due to the proposed activities, no long-term injury to these individuals is expected because of the implementation of BMPs and because the activities would typically be of low intensity and short duration.

The NMFS concludes that, when the effects of these proposed site specific actions are added to the environmental baseline and cumulative effects occurring in the relevant action areas, they are not likely to jeopardize the continued existence of OC coho salmon or OC steelhead. Additionally, NMFS concludes that the proposed actions would not cause adverse modification or destruction of OC coho salmon proposed critical habitat. This is because our conclusion is largely based on the effects of the actions on salmonid habitat and because the adverse modification or destruction of habitat standard is defined similarly to the *jeopardy* standard. Because we have determined that the actions would not jeopardize the continued existence of OC coho salmon, it follows that critical habitat for this species would not be adversely modified or destroyed. In reaching these conclusions, NMFS has utilized the best scientific and commercial data available as documented herein and by the BAs and documents incorporated by reference.

VII. CONSERVATION RECOMMENDATIONS

Section 7 (a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species, to minimize or avoid adverse modification of critical habitat, or to develop additional information. NMFS has no additional conservation recommendations regarding the proposed actions addressed in this opinion.

VIII. REINITIATION OF CONSULTATION

Reinitiation of consultation is required if: (1) The action is modified in a way that causes an effect on the listed species that was not previously considered in the biological assessment and this biological opinion; (2) new information or project monitoring reveals effects of the action that may affect the listed species in a way not previously considered; or (3) a new species is listed or critical habitat is designated that may be affected by the action (50 C.F.R. 402.16).

IX. REFERENCES

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X. INCIDENTAL TAKE STATEMENT

Harassment of individual OC coho salmon resulting from activities within and adjacent to stream channels and possible short-term and transient increases in turbidity and sedimentation are expected to be the only sources of incidental take associated with the proposed actions covered by this Opinion. Specifically, road maintenance has some potential to take OC coho salmon through harassment in the

operation of heavy equipment in proximity to streams, especially at stream crossings. Road maintenance actions could also potentially introduce sediment into streams and/or generate turbidity, especially culvert maintenance. Road upgrade, renovation, and decommissioning projects have similar potential to affect individual OC coho salmon through harassment and minor introduction of sediment at road crossings. The potential for incidental take during culvert replacement and modification projects and aquatic and riparian habitat restoration projects is somewhat higher than with the previous categories, as some of these projects would involve instream equipment operation and excavation in the presence of individual juvenile coho salmon, which may cause substantial but brief harassment and brief introduction and transmission of substantial turbidity. Although the storm damage road repair project would involve in-stream excavation and heavy equipment operation, the NMFS believes that the likelihood of take for this project is fairly low because of the small size of the stream and the mitigatory measures proposed. In-stream surveys for fisheries, wildlife, hydrology, and engineering have the potential for brief harassment of individual OC coho salmon. This harassment should be very brief and minor for most situations where only juvenile salmon are present, but the potential for take of holding and spawning adult salmon through harassment is somewhat greater because of the physical vulnerability of large fish in small streams and the physiological stress on this life-stage. The NMFS expects that the incidental take associated with the other effects of the proposed actions will be minimal or non-existent.

The BLM believes, and the NMFS concurs, that because of the implementation of the specific and appropriate mitigation measures and BMPs the BLM lists in the BAs for the proposed ground-disturbing activities, sediment impacts to OC coho salmon critical habitat are expected to be minimized. Harassment of individual OC coho salmon as a result of the proposed activities, including the scientific and engineering surveys, is expected to be brief and minor, and would also be minimized by the use of the specific and appropriate mitigation measures and BMP described in the BLM's BAs. As noted above, the BLM and the NMFS are currently engaged in a comprehensive programmatic consultation for a number of activity types, including the categories analyzed in this BO. The terms of this programmatic consultation will require the implementation of specific project design criteria which are similar to the existing BLM BMPs and the mitigation measures proposed by the BLM in this consultation.

Adverse effects of management actions such as these are largely unquantifiable in the short-term, and may not be measurable as long-term effects on the species' habitat or population levels. Therefore, even though the NMFS expects some low level of incidental take to occur due to these actions, the best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take to the species themselves. The adverse effects of the actions, however, should be confined to the sub-watersheds in which the actions are proposed to occur.

In the LRMP/RMP Opinion (NMFS 1997), the NMFS recognizes that the BLM would propose to conduct activities which may have short-term adverse effects to salmonid habitat and which may cause take of individual ESA-listed salmonids, but which are beneficial to the listed species and their habitat in the long term. The LRMP/RMP Opinion specifically evaluates three of the categories of actions

evaluated in this BO: instream habitat restoration projects, culvert replacements, and road decommissioning. The LRMP/RMP Opinion also included an incidental take statement (ITS) which provided reasonable and prudent measures (R&Ps) and terms and conditions (T&Cs) to avoid or minimize the take of listed salmonids from these long-term beneficial actions (pages 64-65 and 70). The R&Ps in the LRMP/RMP Opinion ITS require the BLM to apply the results of watershed analysis and to promote long-term ecosystem recovery when prioritizing beneficial actions and to ensure appropriate project timing and the use of appropriate BMPs. The T&Cs of the ITS are intended to implement the R&Ps of the ITS through adequate Level 1 team review of the proposed projects and through documentation of compliance with appropriate BMPs in regional NFP implementation monitoring reports. The NMFS believes that the remaining three categories of actions analyzed in this BO (road maintenance, road damage repair, and surveys) are similarly long-term beneficial activities, and that the R&Ps and T&Cs for beneficial actions in the ITS associated with the LRMP/RMP opinion are equally appropriate for these action categories. NMFS hereby applies the findings, R&Ps, and T&Cs set forth in the ITS of the LRMP/RMP Opinion to the proposed individual actions in all six activity categories, and authorizes such minimal incidental take, provided the BLM complies with those R&Ps and T&Cs.