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 NOAA Fisheries No:
2004/00513

September 7, 2004

Mr. Fred P. Patron
Senior Transportation Planning Engineer
Federal Highway Administration, Oregon Division
530 Center Street NE
Salem, Oregon 97301

Re: Endangered Species Act Interagency Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Oregon Department of Transportation Region 3 Retrofits Project, Jackson, Griffin, and King Creeks, Jackson and Coos Counties, Oregon (6th field HUCS: 171003050210, 171003080112, and 171003080111)

Dear Mr. Patron:

The enclosed document contains a biological opinion and conference opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7(a)(2) of the Endangered Species Act (ESA) on the effects of the ODOT Region 3 Retrofits Project. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of Southern Oregon Northern California (SONC) coho salmon (*Oncorhynchus kisutch*), or Oregon Coast (OC) coho salmon, a species proposed for listing under the ESA. This Opinion also includes an incidental take statement with terms and conditions necessary to minimize the impact of taking that is reasonably likely to be caused by this action. Take from actions by the action agency and applicant, if any, that meet these terms and conditions will be exempt from the ESA take prohibition.

Pursuant to section 7 of the ESA, NOAA Fisheries has included reasonable and prudent measures with non-discretionary terms and conditions that NOAA Fisheries believes are necessary and appropriate to minimize the potential for incidental take associated with this project. However, this incidental take statement does not become effective for OC coho salmon until that species is listed and this conference opinion is adopted as a biological opinion. If NOAA Fisheries reviews the proposed action and finds that no significant changes have been made in the action as proposed or in the information used in the conference, NOAA Fisheries will confirm this conference opinion as a biological opinion on the project and no further section 7 consultation will be necessary.

This document also includes the results of our consultation on the action's likely effects on essential fish habitats (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), and includes conservation recommendations to avoid, minimize, or otherwise offset potential adverse effects to EFH. 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 Federal Highway Administration (FHWA) 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 questions regarding this consultation, please contact Tom Loynes, Fishery Biologist, in the Southwest Oregon Habitat Branch of the Oregon State Habitat Office at 541.957.3380.

Sincerely,

for Michael R Crouse

D. Robert Lohn
Regional Administrator

cc: Frannie Brindle, ODOT
Jim Collins, ODOT
John Raasch, ODOT
Ken Cannon, ODOT

Endangered Species Act – Section 7 Consultation
Biological Opinion and Conference Opinion

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

Oregon Department of Transportation Region 3 Retrofits Project,
Jackson, Griffin, and King Creeks,
Jackson and Coos Counties, Oregon
(6th field HUCS: 171003050210, 171003080112, and 171003080111)

Lead Action Agency: Federal Highway Administration

Consultation Conducted By: NOAA's National Marine Fisheries Service, Northwest Region

Date Issued: September 7, 2004

Issued by: for Michael R Crouse
D. Robert Lohn
Regional Administrator

NOAA Fisheries No.: **2004/00513**

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INTRODUCTION

The conference/biological opinion (Opinion), and incidental take statement of this consultation were prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) in accordance with section 7(a)(2) the Endangered Species Act (ESA) of 1973, as amended (16 USC 1531 *et seq*.), and implementing regulations at 50 C.F.R. 402. The essential fish habitat (EFH) part of this consultation was prepared in accordance with section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 USC 1801 *et seq*.) and implementing regulations at 50 C.F.R. 600. The administrative record for this consultation is on file in Roseburg, Oregon, at the Southwest Oregon Habitat Branch Office.

Background and Consultation History

On April 29, 2004, NOAA Fisheries received a biological assessment (BA) and a request from the Federal Highway Administration (FHWA) for ESA section 7 formal consultation for funding the ODOT Region 3 Retrofit Fish Passage Project. This Opinion is based on the information presented in the BA, site visits, and discussions with the applicant. The project area is near the city of Medford, Oregon, along Highway 1 (I-5) at road mile 27, and on Hwy 42 between Remote and Myrtle Point, Oregon

The FHWA has determined that Southern Oregon/Northern California Coast (SONC) coho salmon (*Oncorhynchus kisutch*) and Oregon Coast (OC) coho salmon, a species proposed for listing as threatened under the ESA, occur within the project areas. The SONC coho salmon were listed as threatened under the ESA on May 6, 1997 (62 FR 24588), critical habitat was designated on May 5,1999 (64 FR 24049), and interim protective regulations were issued under section 4(d) of the ESA on July 18, 1997 (62 FR 38479). Critical habitat is designated to include all river reaches accessible to listed coho salmon between Cape Blanco, Oregon, and Punta Gorda, California. Excluded are areas above specific dams or above longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for at least several hundred years).

NOAA Fisheries listed OC coho salmon as threatened under the ESA on August 10, 1998 (63 FR 42587), and issued protective regulations under section 4(d) of the ESA on July 10, 2000 (65 FR 42422). Critical habitat is not designated or proposed for this species.

In September 2001, in the case *Alsea Valley Alliance v. Evans*, U.S. District Court Judge Michael Hogan struck down the 1998 ESA listing of OC coho salmon and remanded the listing decision to NOAA Fisheries for further consideration. In November 2001, the Oregon Natural Resources Council appealed the District Court's ruling. Pending resolution of the appeal, in December 2001, the Ninth Circuit Court of Appeals stayed the District Court's order that voided the OC coho listing. While the stay was in place, the OC coho evolutionarily significant unit (ESU) was again afforded the protections of the ESA.

On February 24, 2004, the Ninth Circuit dismissed the appeal in *Alsea*. On June 15, 2004, the Ninth Circuit returned the case to Judge Hogan and ended its stay. Judge Hogan's order invalidating the OC coho listing is back in force. Accordingly, OC coho are now not listed, and

ESA provisions for listed species, such as the consultation requirement and take prohibitions, do not apply to OC coho salmon.

In response to the *Alsea* ruling, NOAA Fisheries released its revised policy for considering hatchery stocks when making listing decisions on June 3, 2004 (69 FR 31354). NOAA Fisheries completed a new review of the biological status of OC coho salmon, and applying the new hatchery listing policy, proposed to list OC coho salmon as a threatened species on June 14, 2004 (69 FR 33102). NOAA Fisheries must make a final decision on the proposed OC coho salmon listing by June 14, 2005.

The FHWA, using methods described in *Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996), determined that the proposed action is likely to adversely affect SONC coho salmon and OC coho salmon.

This Opinion is based on the information presented in the BA and developed through correspondence to obtain additional information and clarity. The objective of this Opinion is to determine whether Oregon Department of Transportation's (ODOT) proposed actions to improve fish passage on the ODOT Region 3 Retrofits Fish Passage Project are likely to jeopardize the continued existence of OC coho salmon, SONC coho salmon, or destroy or adversely modify critical habitat. This consultation is undertaken under section 7(a)(2) of the ESA, and its implementing regulations, 50 C.F.R. Part 402.

Proposed Action

The four existing culverts are oversized, in good structural shape, and have at least another 20 years of life. The existing outlets at the four culverts do not effectively allow for fish passage, particularly during low flow conditions. The purpose of the culvert retrofits is to improve fish passage and reestablish natural channel morphology and fish habitat. The four culverts currently have perched outfalls with insufficient jump pool depth.

Start of construction for the proposed project is June 2004, with a completion date of late August/early September 2004. Because of project scheduling, start of construction may be delayed until the 2005 construction season. The Oregon Department of Fish and Wildlife (ODFW) in-water work period for King Creek (Middle Fork Coquille River) is July 1 to September 15. The in-water work period for Griffin and Jackson Creeks (Rogue River) is June 15 to September 15.

In-water structures and work areas within the ordinary high water (OHW) elevation will be isolated from the actively flowing water. The existing OHW elevation is highly variable and depends on silt deposition and seasonal storm flow events, particularly at King Creek. The OHW elevation at each project location will be flagged in the field by the Engineer.

Design

The roughened chute simulates a natural channel via a series of large instream boulders that raise streambed and water elevation slightly above the culvert outlet, creating a backwatered effect. A boulder weir is a grade control structure that slows water behind it and creates a focused spill. Boulder weirs and roughened chutes contribute to a number of important functions in the aquatic environment, including:

- Improved fish passage conditions through culverts.
- Reducing water energy and erosion potential.
- Improve aquatic habitat by aerating the water and providing pools.
- Raising water elevations to reestablish connectivity with the floodplain, slow or eliminate headcuts and increase channel stability.

King Creek Retrofit Design

King Creek crossing is a 51-meter (m) long, 3.7-m by 3.7 m, single reinforced concrete box culvert (RCBC) with paved invert and apron passing King Creek under Hwy 42 under 9.1 m of fill. At the outfall, a roughened chute will be created from the culvert extending downstream to the confluence with the Middle Fork Coquille River. Roughened chutes are designed to simulate a natural stream channel using large boulders. The stream between the outlet and Middle Fork Coquille River is nearly 38 m. ODOT previously installed weirs inside the culvert, however, fish passage is still a problem. A constructed box was previously built at the culvert outlet for scour protection. This will be removed and the roughened chute installed to raise the streambed and allow fish passage. The chute will be designed so the water elevation in the creek is at the top of the lowest downstream weir on the apron with a slope of 8%. As mentioned above, the existing OHW elevation varies depending on deposition from the Middle Fork Coquille River or the scour from King Creek. The proposed 2-year flow depth is 0.6 m with deeper pockets. Initial estimates of cut and fill volumes for placement of chute material at King Creek are 103 m^3 and 93 m^3, respectively, for a net total of approximately 10 m^3 of excavation below the OHW elevation. Excavated materials to be reused for construction of the roughened chute will be temporarily staged in the dewatered stream channel. Surplus excavated material will be removed and transported off site to an appropriate location. Because of the highly transitory nature of the creek system and the substrate, less material could be excavated or filled depending on the time of construction. Roughly 172 m^3 of large diameter (English Class 2000) riprap will be placed in the channel below the OHW elevation. Eight to ten larger boulders will be imported and placed among the riprap. Existing finer material from on site will be used to fill the voids of the large riprap. Water compaction will be implemented to pack and seal the voids.   Four pieces of large woody debris (LWD) stems with rootwads, approximately 6 m in length and 30 to 45 centimeters (cm) in diameter, will be added to the stream for habitat and channel complexity and buried along two-thirds of their length.

Griffin Creek Retrofit Design

The Griffin Creek culvert was built in 1961. The 70-m long culvert is a double, 3.6-m by 1.8-m RCBC with paved invert and apron that passes Griffin Creek through I-5 under 3 m of fill. Griffin Creek has overall degraded stream conditions because of historic events such as the 1997 flood and the perched culvert, however, the streambed has been generally stable in recent history. Griffin Creek is incised upstream of the I-5 culvert but as water flows through the I-5 culvert and into Bear Creek downstream, the channel is not incised.

In 2003, ODOT retrofitted the existing culvert with weirs inside the barrel of the culvert for fish passage. At the Griffin Creek outfall, a roughened chute will also be installed, similar to King Creek but on a smaller scale. The channel has incised, leaving the culvert perched above the creek elevation. The roughened chute will extend approximately 15 m downstream from the culvert and will build up the streambed for fish to enter the culvert. The final proposed slope of the chute is 6.7%. The proposed 2-year flow depth is 0.58 m with deeper pockets.

No excavation is anticipated at Griffin Creek other than moving a few existing boulders. Approximately 260 m^3 of large riprap (English Class 2000) will be placed in the channel. Ten or more larger boulders will be imported and placed among the riprap. Roughly 46 m^3 of 15- to 25-cm diameter cobbles and 23 m^3 of 8-cm minus diameter fines will be imported. The total amount of fill below the OHW elevation is estimated at approximately 222 m^3; no cut below OHW is anticipated. This smaller material will be incorporated into the riprap voids, and water will be used to seal the voids. The chute will be installed in single lifts of riprap and finer material. Four pieces of LWD will be incorporated into the roughened chute and will be roughly 30 to 45 cm in diameter with 6-m long stems and rootwads attached, buried along two-thirds of their length.

Jackson Creek at I-5

At Jackson Creek, two culvert retrofits are proposed (one beneath I-5 and one beneath Hwy 99). The 107-m long I-5 culvert is a triple, 3-m by 2.1-m RCBC with paved invert and apron and is under 3 m of fill. As with Griffin Creek, Jackson Creek has experienced degradation of stream conditions from historic events such as the 1997 flood. The Jackson Creek streambed has been stable in recent history, but the channel is incised.

ODOT retrofitted the existing I-5 culvert with weirs for fish passage in 2003. At the I-5 culvert, a boulder blanket will be installed to create a boulder matrix that will help accumulate bedload and lift the channel bottom up to its original elevation. The chute will consist of random boulder placement raising the water elevation approximately 0.5 m. The blanket will extend approximately 9 m downstream from the apron. The low flow channel and pool will be centered on the notch in the angle iron, which is approximately in the middle of the culvert apron. It is unlikely the streambanks will have to be pulled back to accommodate the excavator for boulder placement and because of a buried sewer line in the area, little streambed excavation will be performed. Similar to the previous two locations, large clusters of 0.5- to 0.9-m diameter boulders "rock blanket" will be placed in the channel atop existing substrate, and existing fines will be water packed to seal the voids. An approximate volume of fill material below the OHW elevation at the I-5 culvert location on Jackson Creek is 92 m^3. Velocity at the bottom of the projec t will be directed and controlled by random placement of boulders into a 'V' shape. Two or three pieces of LWD will be incorporated into the roughened chute design and will have 30- to 35-cm diameter stems with rootwads attached.

Jackson Creek at Hwy 99

The 47.2-m long culvert is a triple, 2.7-m by 1.8-m RCBC with paved invert and is under 1.2 m of fill. A pair of boulder weirs using large angular riprap (0.8-m to 1.1-m diameter) will be constructed at the Jackson Creek Hwy 99 culvert outlet to back water up into the culverts. The first weir is approximately 9 m downstream from the separating wall between the north and middle culvert barrels, and the second weir is approximately 5 m downstream from the first weir. Each weir will require about 8 to 10 boulders. An approximate volume of fill material below the OHW elevation for the Hwy 99 culvert boulder weirs is 8 to 11 m^3 total. The backwatered condition will provide resting spots and lower water velocities to improve adult fish passage upstream through the culverts. The resultant change in water elevation will facilitate fish passage by creating a jump pool. The oddly shaped boulders allow for juvenile fish passage downstream through the cracks in the boulders.

Access/Staging

All four project locations will be accessed via existing paved/graveled roads and parking lots. Staging for the project activities will also occur from paved/graveled roads and parking areas beside the action areas. At King Creek, both equipment and rock staging will be via an existing graveled pullout on the eastbound shoulder of Hwy 42 and will require no new clearing or grubbing. If additional staging areas are required, a large graveled pullout is also available across Hwy 42 on the north side of the westbound lane. Access to King Creek is already partially disturbed with natural erosion and will have the least impact to existing mature riparian vegetation. Distance from the staging area to the streambed is roughly 50 m.

At Griffin Creek, staging and access will be from Blackwell Frontage road (parallel to I-5) via the Bear Creek Greenway property (Jackson County). Access to the culvert location will be via an existing dirt road starting at the equestrian trailhead on Blackwell Frontage road. Both equipment and rock staging will be approximately 30 m from the creek in an already cleared area of roughly 600 m^2. Access to construct the roughened chute will be from the west side of Griffin Creek via two access points approximately 60 m^2 each. No trees will need to be removed at this location, and upland impacts will be limited to Himalayan blackberry (*Rubus discolor*) and other grasses.

ODOT Maintenance staff will perform the construction for the Jackson Creek culvert under I-5. Staging and access will be entirely on ODOT right-of-way from Blackwell Frontage road via an existing dirt/gravel farm road on the northeast side of the creek. Rock will be stockpiled on ODOT property, either on a lot roughly 137 m from the work site or at a side storage area roughly 27 m away, depending on project schedule and when rock is imported to the site. Rock will be brought to the excavator as needed for placement. Approximately 300 m^2 of uplands will be impacted by equipment access and staging. No trees will be cut or removed at this location, and vegetation impacts are limited to Himalayan blackberry.

ODOT Maintenance staff will perform the construction for the Jackson Creek culvert under Hwy 99. Access and staging will be via Hwy 99. Rock for the weirs will likely be removed directly from a dump truck for placement. Construction of the boulder weirs will be attempted from the existing highway with a crane/boom truck. No trees would be removed, and streambanks would not need to be pulled back for equipment access. Minimal brushing (removal of blackberry) would be required. An excavator would place as much rock as possible from Hwy 99 and then would be staged on the bank of the creek and reach into the streambed with the bucket to place the remaining boulders.

Minimal tree removal will be required only at King Creek. Cut trees will be left on site for fish and wildlife habitat improvements. For site restoration native trees will be replanted at a 2 to 1 ratio and areas disturbed during access or construction will be seeded and mulched for erosion control. On completion of the project, access roads will be restored to match existing contours.

<u>Construction</u>
During the culvert retrofit projects, construction equipment will work below the OHW elevation of the creeks to prepare the creek beds for the boulder weirs and roughened chutes. In-water construction will occur only during the time of year when ESA-listed species are least likely to be present or exist in low abundance. The streams will be isolated from the active work area using cofferdams made of sandbag dams and visqueen and/or sediment fence and sandbags, and diverting creek water to a point below the project site. The selected work area isolation method will meet applicable water quality standards set forth in the National Pollutant Discharge Elimination System (NPDES) permit for construction. No equipment or vehicles shall operate in the flowing stream. After work area isolation occurs, pools (if present) within the work zone will surveyed and fish will be salvaged by ODFW and/or ODOT biologists and relocated to the creek below the work zones. Fish salvage could use several techniques including electrofishing, dipnetting, seining, or a combination of all three. The appropriate fish removal method will be determined in the field by biologists based on site conditions, the effectiveness of the technique, and the health and safety of the captured fish.

At King Creek, equipment will operate in the isolated channel to place rock for the roughened chute. Downstream fish passage will be maintained at the site, and upstream fish passage will likely be blocked for up to three days during construction. The likely pipe that will be used is a rigid-walled plastic pipe at least 10 cm in diameter. The existing apron downstream from the culvert will be removed, leaving the wing walls in place. A spider-type hoe and a small excavator or bulldozer will either be lowered into the stream channel from the top of the bank or driven in from the east under its own power to place the rock. The rock will be transported into the streambed via a steel sheet or similar device.

At Griffin Creek, equipment will also operate in the isolated channel to place rock for the roughened chute. Downstream fish passage will be maintained at the site, and upstream fish passage will likely be blocked for up to two days during construction. Existing boulders within the outlet of the culvert will be removed for chute installation. Minor riparian removal of Himalayan blackberry will be required before construction. Rock will be end-dumped into the dry isolated work area. The creek bed will be built up to the level of the existing apron and taper off downslope for approximately 15 m.

Equipment will not need to operate in the channel at either Jackson Creek culvert locations, and the work area will be isolated from the flowing stream using sediment fencing and sandbags. Upstream and downstream fish passage will be maintained throughout the construction process at both Jackson Creek culvert locations. Construction at the Jackson Creek locations on I-5 and Hwy 99 will each take one day. Excavation within the waterway will be required to place rock for the roughened chute at I-5, and a small excavator will be able to operate outside of the stream at I-5. A crane/boom truck with 8- to 9-m reach will extend over the guardrail from Hwy 99 and place boulders for the two weirs. Rock will be individually placed at both Jackson Creek locations. If not feasible, an excavator would be staged on the creek bank and reach in with the bucket to place boulders.

Tree Removal

Approximately 26 trees at 10 cm to 25 cm diameter at breast height (dbh) will be removed during the proposed King Creek culvert retrofit. No tree removal will be required for the Jackson and Griffin Creek retrofits. Trees will be used onsite for LWD. Removed trees will be mitigated at a 2:1 ratio. At King Creek, the overstory vegetation is primarily red alder (*Alnus rubra*), big-leaf maple (*Acer macrophyllum*), and Oregon myrtle. Depending on the width of the heavy machinery, up to five fewer Oregon myrtle could be removed.

Action Area

'Action area' means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 C.F.R. 402.02). For purposes of this consultation, the action area for Jackson and Griffin Creek culverts extends from 10 m upstream of the culverts to a point 50 m downstream below the culverts. These are at milepoints 34 and 35 on Interstate 5 and on Hwy 99 beside these culverts. The action area for the King Creek culverts extends from 10 m upstream of the culvert downstream to the confluence with the Middle Fork Coquille River at milepoint 29.17.

The action area is used by adult and juvenile OC coho salmon in King Creek. In the Jackson Creek (spawning, rearing and migration) and Griffin Creek (rearing) systems there is likely use by SONC coho salmon. The action area is designated as EFH for coho salmon and Chinook salmon (PFMC 1999).

ENDANGERED SPECIES ACT

The ESA 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 U.S. Fish and Wildlife Service and NOAA Fisheries, 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 critical habitats. Section 7(b)(4) requires the provision of an incidental take statement specifying the impact of any incidental taking and specifying reasonable and prudent measures to minimize such impacts.

Biological and Conference Opinion

This Opinion presents NOAA Fisheries' review of the status of each evolutionarily significant unit (ESU)[1] considered in this consultation and critical habitat, the environmental baseline for the action area, all the effects of the action as proposed, and cumulative effects. NOAA Fisheries analyzes those combined factors to conclude whether the proposed action is likely to appreciably reduce the likelihood of both the survival and recovery of the affected ESUs, or is likely to destroy or adversely modify critical habitat (50 C.F.R. 402.14(g)). If the action under consultation is likely to jeopardize an ESU, or destroy or adversely modify critical habitat, NOAA Fisheries must identify any reasonable and prudent alternatives for the action that avoid jeopardy or destruction or adverse modification of critical habitat and meet other regulatory requirements (50 CFR 402.02).

Status of the ESU

This section defines range-wide biological requirements of each ESU, and reviews the status of the ESUs relative to those requirements. The present risk faced by each ESU informs NOAA Fisheries' determination of whether additional risk will 'appreciably reduce' the likelihood that an ESU will survive and recover in the wild. The greater the present risk, the more likely any additional risk resulting from the proposed action's effects on the population size, productivity (growth rate), distribution, or genetic diversity of the ESU will be an appreciable reduction (see, McElhaney *et al.* 2000).

<u>OC Coho Salmon</u>
The OC coho salmon ESU has been assessed in three previous status reviews (Weitkamp *et al.* 1995, NMFS 1996a, 1997). In the 1995 status review (Weitkamp *et al.* 1995), the Biological Review Team (BRT) considered evidence from many sources to identify ESU boundaries in coho populations from Washington to California. For the most part, evidence from physical environment, ocean conditions/upwelling patterns, marine and coded wire tag recovery patterns, coho salmon river entry and spawn timing, as well as estuarine and freshwater fish and terrestrial vegetation distributions were the most informative to the ESU delineation process. Genetic information was used for an indication of reproductive isolation between populations and groups of populations. Based on this assessment, six ESUs were identified, including the OC coho salmon ESU, which includes naturally-spawning populations in Oregon coastal streams north of Cape Blanco, to south of the Columbia River.

In 1997, there were extensive survey data available for coho salmon in this region. Overall, spawning escapements had declined substantially during the century, and may have been at less than 5% of their abundance in the early 1900s. Average spawner abundance had been relatively

[1] 'ESU' means an anadromous salmon or steelhead population that is either listed or being considered for listing under the ESA, is substantially isolated reproductively from conspecific populations, and represents an important component of the evolutionary legacy of the species (Waples 1991). An ESU may include portions or combinations of populations more commonly defined as stocks within or across regions.

constant since the late 1970s, but pre-harvest abundance had declined. Average recruits-per-spawner may also have declined. Coho salmon populations in most major rivers appeared to have had heavy hatchery influence, but some tributaries may have been sustaining native stocks.

For this ESU, information on trends and abundance were better than for the more southerly ESUs. Main uncertainties in the assessment included the extent of straying of hatchery fish, the influence of such straying on natural population trends and sustainability, the condition of freshwater habitat, and the influence of ocean conditions on population sustainability. Total average (5-year geometric mean) spawner abundance for this ESU in 1996 was estimated at about 52,000. Corresponding ocean run size for the same year was estimated to be about 72,000; this corresponds to less than one-tenth of ocean run sizes estimated in the late 1800s and early 1900s, and only about one-third of those in the 1950s (ODFW 1995a). Total freshwater habitat production capacity for this ESU was estimated to correspond to ocean run sizes between 141,000 under poor ocean conditions and 924,000 under good ocean conditions (Oregon Coastal Salmon Restoration Initiative Science Team 1996b). Abundance was unevenly distributed within the ESU at this time, with the largest total escapement in the relatively small Mid/South Coast Gene Conservation Group and lower numbers in the North/Mid Coast and Umpqua Gene Conservation Groups.

Trend estimates using data through 1996 showed that for all three measures (escapement, run size, and recruits-per-spawner), long-term trend estimates were negative. More recent escapement trend estimates were positive for the Umpqua and Mid/South Coast Monitoring Areas, but negative in the North/Mid Coast. Recent trend estimates for recruitment and recruitsper-spawner were negative in all three areas, and exceed 12% annual decline in the two northern areas. Six years of stratified random survey population estimates showed an increase in escapement and decrease in recruitment.

To put these data in a longer-term perspective, ESU-wide averages in 1996 that were based on peak index and area under the curve escapement indices, showed an increase in spawners up to levels of the mid-to-late 1980s, but much more moderate increases in recruitment. Recruitment remained only a small fraction of average levels in the 1970s. An examination of return ratios showed that spawner-to-spawner ratios had remained above replacement since the 1990 brood year as a result of higher productivity of the 1990 broodyear and sharp reductions in harvest for the subsequent broods. As of 1996, recruit-to-spawner ratios for the 1991 to 1994 broods were the lowest on record, except for 1988 and, possibly, 1984. The 1997 BRT considered risk of extinction for this ESU under two scenarios: First, if present conditions and existing management continued into the foreseeable future, and second, if certain aspects of the Oregon Plan for Salmon and Watersheds (1997) relating to harvest and hatchery production were implemented.

With respect to habitat, the BRT had two primary concerns: First, that the habitat capacity for coho salmon within this ESU has significantly decreased from historical levels, and second, that the Nickelson and Lawson (1998) model predicted that, during poor ocean survival, only high quality habitat is capable of sustaining coho populations, and subpopulations dependent on medium and low quality habitats would be likely to go extinct. Both of these concerns caused the BRT to consider risks from habitat loss and degradation to be relatively high for this ESU.

In 1997, the BRT concluded that, assuming that 1997 conditions continued into the future (and that proposed harvest and hatchery reforms were not implemented), this ESU was not at significant short-term risk of extinction, but that it was likely to become endangered in the foreseeable future. A minority felt that the ESU was not likely to become endangered. Of those members who concluded that this ESU was likely to become endangered, several expressed the opinion that it was near the border between this and a ‘not at risk’ category.

The BRT generally agreed that implementation of the harvest and hatchery proposals of the Oregon Plan for Salmon and Watersheds (1997) would have a positive effect on the status of the ESU, but the BRT was about evenly split as to whether the effects would be substantial enough to move the ESU out of the ‘likely to become endangered’ category. Some members felt that, in addition to the extinction buffer provided by the estimated 80,000 naturally-produced spawners in 1996, the proposed reforms would promote higher escapements and alleviate genetic concerns so that the ESU would not be at significant risk of extinction or endangerment. Other members saw little reason to expect that the hatchery and harvest reforms by themselves would be effective in reducing what they viewed as the most serious threat to this ESU—declining recruits-per-spawner.

If the severe declines in recruits-per- spawner of natural populations in this ESU were partly a reflection of continuing habitat degradation, then risks to this ESU might remain high even with full implementation of the hatchery and harvest reforms. While harvest and hatchery reforms may substantially reduce short-term risk of extinction, habitat protection and restoration were viewed as key to ensuring long-term survival of the ESU, especially under variable and unpredictable future climate conditions. The BRT therefore concluded that these measures would not be sufficient to alter the previous conclusion that the ESU is likely to become endangered in the foreseeable future.

The Oregon Plan for Salmon and Watersheds (1997) is the most ambitious and far-reaching program to improve watersheds and recover salmon runs in the Pacific Northwest. It is a voluntary program focused on building community involvement, habitat restoration, and monitoring. All State agencies with activities affecting watersheds are required to evaluate their operations with respect to salmon impacts and report on actions taken to reduce these impacts to the Governor on a regular basis. The original Oregon Plan was written in 1997, so the Plan has been in operation for about seven years. As a result of the plan, watershed councils across the State have produced watershed assessments of limiting factors for anadromous salmonids on both public and private land.

The State of Oregon has dedicated about $20 million/year to implement restoration projects and is developing a system to link project development with whole-watershed assessments. The Oregon Department of Environmental Quality and the Oregon Department of Agriculture are implementing regulatory mechanisms to reduce non-point-source pollution. If these efforts are successful Oregon could see a widespread improvement in water quality. Nonetheless, reporting of watershed assessment results, limiting factors, and identification of actions to be taken or progress made in addressing these limiting factors can be improved. While this is a significant recovery effort in the Pacific Northwest, and an extensive, coordinated monitoring program is in place, measurable results of the program will take years or decades to materialize.

The regime shift in 1976 was the beginning of an extended period of poor marine survival for coho salmon in Oregon. Conditions worsened in the 1990s, and hatchery survival reached a low of 0.006 adults per smolt in 1997 (1996 ocean entry). Coastal hatcheries appear to have fared even worse, although adult counts at these facilities are often incomplete, biasing these estimates low. Following an apparent shift to a more productive climate regime in 1998 marine survival has started to improve, reaching 0.05 for adults returning in 2001. The Pacific Decadal Oscillation had been in a cold, productive phase for about four years and in August reversed indicating a warm, unproductive period. This reversal may be short-lived; the Pacific Decadal Oscillation historically has show a 20 to 60 year cycle. However, the rising influence of global warming should throw up a big caution sign to us when trying to use past decadal patterns as predictive models for the future (Nathan J. Mantua, personal communication, cited in BRT 2003).

A long-term understanding of the prospects for OC coho salmon can be constructed from a simple conceptual model incorporating a trend in habitat quality and cyclical ocean survival (Lawson 1993). Short-term increases in abundance driven by marine survival cycles can mask longer-term downward trends resulting from freshwater habitat degradation or longer-term trends in marine survival that may be a consequence of global climate change. Decreases in harvest rates can increase escapements and delay ultimate extinction. Harvest rates have been reduced to the point where no further meaningful reductions are possible. The current upswing in marine survival is a good thing for OC coho salmon, but will only provide a temporary respite unless other downward trends are reversed.

This ESU continues to present challenges to those assessing extinction risk. The BRT found several positive features compared to the previous assessment in 1997. Adult spawners for the ESU in 2001 and 2002 exceeded the number observed for any year in the past several decades, and pre-harvest run size rivaled some of the high values seen in the 1970s. Some notable increases in spawners have occurred in many streams in the northern part of the ESU, which was the most depressed area at the time of the last status review evaluation. Hatchery reforms have continued, and the fraction of natural spawners that are first-generation hatchery fish has been reduced in many areas compared to highs in the early to mid 1990s.

On the other hand, the recent years of good returns were preceded by three years of low spawner escapements—the result of three consecutive years of recruitment failure, in which the natural spawners did not replace themselves the next generation, even in the absence of any directed harvest. These three years of recruitment failure, which immediately followed the last status review in 1997, are the only such instances that have been observed in the entire time series of data collected for OC coho salmon. Whereas the recent increases in spawner escapement have resulted in long-term trends in spawners that are generally positive, the longterm trends in productivity in this ESU are still strongly negative.

As indicated in the risk matrix results, the BRT considered the decline in productivity to be the most serious concern for this ESU with a moderate risk estimate. With all directed harvest for these populations already eliminated, harvest management can no longer compensate for declining productivity by reducing harvest rates. The BRT was concerned that if the long-term decline in productivity reflects deteriorating conditions in freshwater habitat, this ESU could face very serious risks of local extinctions during the next cycle of poor ocean conditions. With the cushion provided by strong returns in the last 2 to 3 years, the BRT had much less concern about short-term risks associated with abundance and assigned them a low risk estimate.

A minority of the BRT felt that the large number of spawners in the last few years demonstrate that this ESU is not currently at significant risk of extinction or likely to become endangered. Furthermore, these members felt that the recent years of high escapement, following closely on the heels of the years of recruitment failure, demonstrate that populations in this ESU have the resilience to bounce back from years of depressed runs.

The BRT votes reflected ongoing concerns for the long-term health of this ESU: A majority (56%) of the BRT votes were cast in the 'likely to become endangered' category, with a substantial minority (44%) falling in the 'not likely to become endangered' category. Although the BRT considered the significantly higher returns in recent years to be encouraging, most members felt that the factors responsible for the increases were more likely to be unusually favorable marine productivity conditions than improvements in freshwater productivity. The majority of BRT members felt that to have a high degree of confidence that the ESU is healthy, high spawner escapements should be maintained for a number of years, and the freshwater habitat should demonstrate the capability of supporting high juvenile production from years of high spawner abundance.

SONC Coho Salmon

The SONC coho salmon ESU extends from Cape Blanco in southern Oregon to Punta Gorda in northern California (Weitkamp *et al.* 1995). The status of coho salmon coastwide, including the SONC coho salmon ESU, was formally assessed in 1995 (Weitkamp *et al.* 1995). Two subsequent status review updates have been published by NOAA Fisheries, one addressing all West Coast coho salmon ESUs (NMFS 1996b) and a second specifically addressing the Oregon Coast and Southern Oregon-Northern California ESUs (NMFS 1997).

In the 1995 status review, the BRT was unanimous in concluding that coho salmon in the SONC coho salmon ESU were not in danger of extinction but were likely to become so in the foreseeable future if present trends continued (Weitkamp *et al.* 1995). In the 1997 status update, estimates of natural population abundance in this ESU were based on very limited information. Favorable indicators included recent increases in abundance in the Rogue River and the presence of natural populations in both large and small basins, factors that may provide some buffer against extinction of the ESU. However, large hatchery programs in the two major basins (Rogue and Klamath/Trinity) raised serious concerns about effects on, and sustainability of, natural populations.

New data on presence/absence in northern California streams that historically supported coho salmon were even more disturbing than earlier results, indicating that a smaller percentage of streams in this ESU contained coho salmon compared to the percentage presence in an earlier study. However, it was unclear whether these new data represented actual trends in local extinctions, or were biased by sampling effort. This new information did not change the BRT's conclusion regarding the status of the SONC coho ESU. Although the Oregon Plan for Salmon and Watersheds (1997) proposals were directed specifically at the Oregon portion of this ESU, the harvest proposal would affect ocean harvest of fish in the California portion as well. The proposed hatchery reforms can be expected to have a positive effect on the status of populations in the Rogue River Basin. However, the BRT concluded that these measures would not be sufficient to alter the previous conclusion that the ESU is likely to become endangered in the foreseeable future.

One effect of the Oregon Plan for Salmon and Watersheds (1997) has been increased monitoring of salmon and habitats throughout the Oregon coastal region. Besides continuation of the abundance data series analyzed in the 1997 status update, Oregon has expanded its random survey monitoring to include areas south of Cape Blanco, including monitoring of spawner abundance, juvenile densities, and habitat condition.

New data for the SONC coho salmon ESU includes expansion of presence-absence analyses, a limited analysis of juvenile abundance in the Eel River basin, a few indices of spawner abundance in the Smith, Mad, and Eel river basins, and substantially expanded monitoring of adults, juveniles, and habitat in southern Oregon. None of these data contradict conclusions reached previously by the BRT. Nor do any of recent data (1995 to present) suggest any marked change, either positive or negative, in the abundance or distribution of coho salmon within the SONC coho ESU. Coho salmon populations continued to be depressed relative to historical numbers, and there are strong indications that breeding groups have been lost from a significant percentage of streams within their historical range. Although the 2001 broodyear appears to be the one of the strongest perhaps of the last decade, it follows a number of relatively weak years. The Rogue River stock is an exception; there has been an average increase in spawners over the last several years, despite two low years (1998, 1999).

Risk factors identified in previous status reviews, including severe declines from historical run sizes, the apparent frequency of local extinctions, long-term trends that are clearly downward, and degraded freshwater habitat and associated reduction in carrying capacity continue to be of concern to the BRT. Termination of hatchery production of coho salmon at the Mad River and Rowdy Creek facilities has eliminated potential adverse risk associated with hatchery releases from these facilities. Likewise, restrictions on recreational and commercial harvest of coho salmon since 1994 have undoubtedly had a substantial positive impact on coho salmon adult returns to SONC streams. An additional risk factor that has been identified within the SONC coho ESU is predation resulting from the illegal introduction of non-native Sacramento pikeminnow (*Ptychocheilus grandis*) to the Eel River basin (NMFS 1998). Sacramento pikeminnow were introduced to the Eel River via Pillsbury Lake in the early 1980s and have subsequently spread to most areas within the basin. The rapid expansion of pikeminnow populations is believed to have been facilitated by alterations in habitat conditions (particularly increased water temperatures) that favor pikeminnow (Brown *et al.* 1994, NMFS 1998).

The BRT remained concerned about low population abundance throughout the ESU relative to historical numbers and long-term downward trends in abundance; however, the paucity of data on escapement of naturally-produced spawners in most basins continued to hinder assessment of risk. A reliable time series of adult abundance is available only for the Rogue River. These data indicate that long-term (22-year) and short-term (10-year) trends in mean spawner abundance are upward in the Rogue; however, the positive trends reflect effects of reduced harvest (rather than improved freshwater conditions) since trends in pre-harvest recruits are flat. Less-reliable indices of spawner abundance in several California populations reveal no apparent trends in some populations and suggest possible continued declines in others.

Additionally, the BRT considered the relatively low occupancy rates of historical coho salmon streams (between 37% and 61% from broodyear 1986 to 2000) as an indication of continued low abundance in the California portion of this ESU. The relatively strong 2001 broodyear, likely the result of favorable conditions in both freshwater and marine environments, was viewed as a positive sign, but was a single strong year following more than a decade of generally poor years.

The moderate risk matrix scores for spatial structure reflected a balancing of several factors. On the negative side was the modest percentage of historical streams still occupied by coho salmon (suggestive of local extirpations or depressed populations). The BRT also remains concerned about the possibility that losses of local populations have been masked in basins with high hatchery output, including the Trinity, Klamath, and Rogue systems. The extent to which strays from hatcheries in these systems are contributing to natural production remains uncertain; however, it is generally believed that hatchery fish and progeny of hatchery fish constitute the majority of production in the Trinity River, and may be a significant concern in parts of the Klamath and Rogue systems a well. On the positive side, extant populations can still be found in all major river basins within the ESU. Additionally, the relatively high occupancy rate of historical streams observed in broodyear 2001 suggests that much habitat remains accessible to coho salmon. The BRT's concern for the large number of hatchery fish in the Rogue, Klamath, and Trinity systems was also evident in the moderate risk rating for diversity.

A majority (67%) of BRT votes fell into the 'likely to become endangered' category, while votes in the 'endangered' category outnumbered those in the 'not warranted' categories by 2-to-1. The BRT found moderately high risks for abundance and growth rate/production, with mean matrix scores of 3.5 to 3.8, respectively, for these two categories. Risks to spatial structure and diversity were judged by the BRT to be moderate.

Environmental Baseline

The 'environmental baseline' includes the past and present impacts of all Federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process (50 C.F.R. 402.02). For projects that are ongoing actions, the effects of future actions over which the Federal agency has discretionary involvement or control will be analyzed as 'effects of the action.'

NOAA Fisheries describes the environmental baseline in terms of the biological requirements for habitat features and processes necessary to support life stages of the subject ESUs within the action area. When the environmental baseline departs from those biological requirements, the adverse effects of a proposed action on the ESU or its habitat are more likely to jeopardize the listed species or result in destruction or adverse modification of critical habitat (NMFS 1999). The biological requirements of salmon and steelhead in the action area vary depending on the life history stage present and the natural range of variation present within that system (Groot and Margolis 1991, NRC 1996, Spence *et al.* 1996).

Generally, during spawning migrations, adult salmon require clean water with cool temperatures and access to thermal refugia, dissolved oxygen near 100% saturation, low turbidity, adequate flows and depths to allow passage over barriers to reach spawning sites, and sufficient holding and resting sites. Anadromous fish select spawning areas based on species-specific requirements of flow, water quality, substrate size, and groundwater upwelling. Embryo survival and fry emergence depend on substrate conditions (*e.g.*, gravel size, porosity, permeability, and oxygen concentrations), substrate stability during high flows, and, for most species, water temperatures of 13˚C or less. Habitat requirements for juvenile rearing include seasonally suitable microhabitats for holding, feeding, and resting. Migration of juveniles to rearing areas, whether the ocean, lakes, or other stream reaches, requires unobstructed access to these habitats. Physical, chemical, and thermal conditions may all impede migrations of adult or juvenile fish.

Each ESU considered in this Opinion resides in or migrates through the action areas. Thus, for this action area, the biological requirements for salmon and are the habitat characteristics that would support successful juvenile OC coho and SONC coho salmon rearing and migration and adult migration and spawning.

Land use types present in the vicinity of the proposed projects include mostly developed and agricultural lands with limited riparian area surrounding Griffin and Jackson Creeks and logged forest land/rural residential areas surrounding King Creek. The major human activities responsible for the decline of coho salmon in Oregon include overfishing, logging, removal of LWD, road building, grazing and mining activities, urbanization, stream channelization, dams, loss of estuaries and wetlands, beaver trapping, introduction of non-native species, water withdrawals, and unscreened diversions for irrigation (62 FR 24588). Natural factors that have contributed to recent declines include unfavorable ocean conditions, El Nino events, interdecadal tidal shifts, and drought conditions (Carline, 2001).

Griffin and Jackson Creeks

Griffin and Jackson Creeks originate in the Siskiyou Mountains, south of Medford, Oregon, approximately 24 kilometers (km) and 32 km north of the California border, respectively. Griffin Creek flows in a northerly direction for approximately 23 km, and Jackson Creek flows in a northeasterly direction for approximately 20 km. Both creeks flow into Bear Creek approximately 10 km north of Medford. The confluences of the creeks are separated by less than 1.6 km. The land use immediately surrounding the project sites is predominantly residential and agricultural. Because of their proximity to I-5, Highway 99, and other residential and agricultural features, the streams are generally confined to a narrow meander zone. Channel morphology of both creeks has been greatly altered by human development. Griffin and Jackson Creeks are also water deficient, primarily caused by the seasonality of rainfall patterns and the demand for surface water supplies for irrigation and urban uses. During the summer months, flows within the creeks primarily consist of irrigation runoff. Both Griffin and Jackson Creeks cross irrigation canals upstream that may mix water between the two creeks.

Small, undisturbed portions of the riparian zone within the vicinity of the proposed projects are dominated by deciduous trees including big-leaf maple, black cottonwood (*Populus balsamifera ssp. trichocarpa*), Cascade mountain ash (*Sorbus scopulina*), and willow (*Salix sp.*). These plant species function to shade waterways, filter sediments and other pollutants, and input organic matter including large and small woody debris, leaves, and insects.

Disturbed portions of the riparian zone within Griffin and Jackson Creeks support a simpler vegetation structure that consists of Himalayan blackberry, reed canarygrass (*Phalaris arundinacea*), and other often non-native plants under minimal (if any) tree canopy. This type of vegetation structure does not adequately function to shade creeks, filter pollutants, or provide suitable organic matter for the creeks.

Climatic conditions within the project vicinity include warm, dry summers and cool, relatively dry winters. Based on climatic data collected at Medford, Oregon, the average annual temperature is 12˚C. Average annual precipitation is 48 cm (Weatherbase, 2003). Griffin and Jackson Creeks, from headwaters to confluence with Bear Creek, are listed on the Oregon Department of Environmental Quality (DEQ) 303(d) List of Water Quality Limited Water Bodies for temperature and bacteria (DEQ, 1999). Data collected by ODFW at lower, middle, and upper portions of Jackson Creek show monthly average maximums exceeding the 18˚C rearing-temperature standard for at least three months.

The ODFW in-water work period for Griffin and Jackson Creeks is June 15 to September 15 (ODFW 2000).

King Creek

King Creek is within the Middle Fork Coquille River watershed in southwestern Oregon. King Creek flows south approximately 3 km from its headwaters to its mouth at the Middle Fork Coquille River (StreamNet, 2003). King Creek is considered an anadromous salmon-bearing stream containing primarily coho salmon, steelhead (*O. mykiss*), and cutthroat trout (*O. clarki clarki*).

King Creek is a small stream with an active channel that varies in width, especially at the project site. The creek exhibits extreme seasonal flow variation and may become dry during late summer or early fall. The land use immediately surrounding the creek is rural residential and private forestland.

Functional riparian vegetation consists primarily of red alder, black cottonwood, Oregon myrtle (*Umbellularia californica*), and willow. These plant species function to shade waterways, filter sediments and other pollutants, and input organic matter, including large and small woody debris, leaves, and insects.

Disturbed portions of the riparian zone of King Creek support a simpler vegetation structure that consists of Himalayan blackberry, reed canarygrass, and other (often non-native) plants.

Channel substrate at the project site is gravel/cobble and embedded gravel transitioning to silty sand near the stream confluence with the Middle Fork Coquille.

Climatic conditions within the project vicinity include warm, dry summers and cool, wet winters with minimal snowfall. Based on climatic data collected at Myrtle Point, Oregon, the average annual temperature is 11˚C) with an average annual precipitation of 149 cm (Weatherbase, 2003).

The ODFW in-water work period for King Creek is July 1 to September 15 (ODFW, 2000).

Effects of the Action

'Effects of the action' means 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 that action, that will be added to the environmental baseline (50 C.F.R. 402.02). If the proposed action includes offsite measures to reduce net adverse impacts by improving habitat conditions and survival, NOAA Fisheries will evaluate the net combined effects of the proposed action and the offsite measures.

'Indirect effects' are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur (50 C.F.R. 402.02). Indirect effects may occur outside the area directly affected by the action, and may include other Federal actions that have not undergone section 7 consultation but will result from the action under consideration. To be considered indirect effects, such actions must be reasonably certain to occur, as evidenced by appropriations, work plans, permits issued, or budgeting; follow a pattern of activity undertaken by the agency in the action area; or be a logical extension of the proposed action.

'Interrelated actions' are those that are part of a larger action and depend on the larger action for their justification; 'interdependent actions' are those that have no independent utility apart from the action under consideration (50 C.F.R. 402.02). Future Federal actions that are not a direct effect of the action under consideration, and not included in the environmental baseline or treated as indirect effects, are not considered in this Opinion.

Effects on SONC and OC Coho Salmon

There are a number of direct and indirect effects associated with many elements of this project. FHWA has outlined numerous performance and conservation measures in the BA (sections 6.2 and 7.0) to deal with these effects.

Construction Activities

In-water construction activities will occur within cofferdams. The effects of cofferdam installation and removal, fish removal and handling, and ground disturbance are discussed below. Fish may be killed, or more likely temporarily displaced, by in-water work activities. Aspects of the proposed action most likely to injure or kill SONC or OC coho salmon are the isolation of the in-water work area, and fish removal and handling. Although in-water work area isolation is a conservation measure intended to minimize adverse effects from instream construction activities to fish present in the work isolation area, some fish may be captured, handled, and released. Capturing and handling fish causes physiological stress, though overall effects of the procedure are generally short-term if appropriate precautions are exercised. The primary factors controlling the likelihood of stress and death from handling are differences in water temperatures (between the river and transfer containers), dissolved oxygen concentrations, the amount of time that fish are held out of the water, and the extent of physical trauma. Stress on salmonids increases rapidly from handling if the water temperature exceeds 18°C or if dissolved oxygen concentration is below saturation.

The in-water work period recommended by the ODFW is July 1 to September 15 in King Creek and June 15 to September 15 in Jackson and Griffin Creeks, and the proposed fish removal methods are likely to minimize the adverse effects from work area isolation and fish handling as abundance of juvenile salmon is likely to be low at this time of year.

Ground Disturbance

Excavation required to gain access to the channels will remove some vegetation that provides effective ground cover and minimize erosion from rainfall, increasing suspended sediment in King Creek and Jackson Creek systems. Effects of increased suspended sediment are likely to lead to effects similar to those described below in "Water Quality - Total Suspended Solids."

Water Quality - Total Suspended Solids (TSS)

In-water construction activities (*i.e.*, cofferdam installation and removal, roughened chute installation, placement of rock, bank excavation, and channel excavation) are likely to temporarily increase concentrations of total suspended solids (TSS) and turbidity. Potential effects from project-related increases in turbidity on salmonid fishes include, but are not limited to: (1) Reduction in feeding rates and growth; (2) increased mortality; (3) physiological stress; (4) behavioral avoidance; (5) reduction in macroinvertebrate populations; and (6) temporary beneficial effects. Potential beneficial effects include a reduction in piscivorous fish/bird predation rates, enhanced cover conditions, and improved survival conditions.

Increases in TSS can adversely affect filter-feeding macroinvertebrates and fish feeding. At concentrations of 53 to 92 ppm (24 hours) macroinvertebrate populations were reduced (Gammon 1970). Concentrations of 250 ppm (1 hour) caused a 95% reduction in feeding rates in juvenile coho salmon (Noggle 1978). Concentrations of 1200 ppm (96 hours) killed juvenile coho salmon (Noggle 1978). Concentrations of 53.5 ppm (12 hours) caused physiological stress and changes in behavior in coho salmon (Berg 1983).

The proposed in-water work is likely to increase turbidity downstream from the work area. These increases in turbidity are likely to increase physiological stress, physical injury (*e.g.*, gill abrasion), and potentially displace rearing juvenile salmon. Restricting in-water work to the respective in-water work periods of King, Jackson, and Griffin Creeks, and the use of cofferdams is likely to minimize the above effects on rearing juvenile salmon and steelhead.

The first phase of in-water work will be short-lived; occurring when the channels are disturbed and water enters the new channel creating an initial pulse of sediment. Surface erosion will likely take place until plantings are well-established, as the new channel construction will have exposed earth with no effective ground cover to minimize erosion. These increases in turbidity due to erosion are likely to increase physiological stress and physical injury.

<u>Water Quality - Chemical Contamination</u>

Operation of excavation equipment requires the use of fuel, lubricants, coolants, *etc.*, which if spilled into a waterbody could injure or kill aquatic organisms. The proposed action includes a spill containment and control plan, however, the FHWA provided no details of the plan, therefore its potential effectiveness cannot be evaluated.

Juvenile salmon exposed to constant water temperatures greater than 18°C are highly susceptible to disease, such as *Chondrococcus columnaris.* Susceptibility to disease is a function of concentration of *C. columnaris* organisms, length of exposure, and temperature (EPA 2001) as well as age of individual (increased age, increased resistance). Contagion of *C. columanaris* has been suspected during passage of salmon through fish ladders (Pacha 1961), and increased incidence may be a result of the creation of slow-moving waters (Snieszko 1964). Increases in water temperature likely will reduce dissolved oxygen, thereby compounding adverse effects on rearing juveniles.

<u>Water Quality - Temperature</u>

A major portion of this project entails using rock to rebuild a stream channel. The proposed additional amount of rock in the channel increases the possibility of elevated water temperatures due to solar radiation. This potential will be minimized by maintaining a low-flow channel during the summer months, decreasing the width to depth ratio. Over time, the riparian zone will encroach on the stream, will provide shade and vegetation, and will grow beside the channel.

The water above the upper diversion could also experience elevated temperatures. Maintaining downstream flow and fish passage will allow fish to move without being trapped, and exposed to elevated stream temperatures and predation.

Stream Channel Conditions

The in-water work proposed will also alter the substrate in the stream around the existing culverts. The substrate will be disturbed when the new channel is constructed. When the channel is watered up later in the summer after project completion, there will be a short-term suspension of fine sediments within the work area. In the long term, the substrate will become more stable and even, due to the elimination of the step in the channel. The streambank and channel will be temporarily disturbed by placement of rocks, which will be completed in the dry. If remedial action is required due to rock movement or shifting, there may be a need to adjust boulders and disturb the substrate; potentially causing short-term suspension of fine sediments. This could cause hydraulic jumps, turbulence, or velocity barriers to fish passage if not corrected. All remedial actions will be completed during the ODFW in-water work period and from above the OHW mark.

Direct Harm or Harassment

Roughened chute and boulder weir installation will likely require work area isolation from the flowing water. Fish removal activities will be in accordance with NOAA Fisheries fish handling guidelines (NOAA Fisheries 2000). Any SONC coho salmon or OC coho salmon removed from the isolated work areas will experience high stress, with the possibility of up to a 5% delayed mortality rate depending on rescue method. Work area isolation can result in a loss of aquatic invertebrates due to dewatering areas within the wetted channel. In addition, sediment-laden water created within isolated work areas could escape, resulting in impacts to the aquatic environment downstream from the project site. OC coho salmon abundance is expected to be higher in the King Creek project area than SONC coho salmon abundance in the Jackson and Griffin Creek project areas.

Effects on Critical Habitat

NOAA Fisheries designates critical habitat based on physical and biological features that are essential to the listed species. Essential features for designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. Effects on critical habitat for SONC coho salmon from the proposed action are included in the effects description above in this Opinion. Consequently, NOAA Fisheries does not expect that the net effect of these actions will diminish the conservation value of designated critical habitat for survival and recovery of SONC coho salmon.

Cumulative Effects

'Cumulative effects' are 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 (50 C.F.R. 402.02). Cumulative effects that reduce the capacity of listed ESUs to meet their biological requirements in the action area increase the risk to the ESU that the effects of the proposed action on the ESU or its habitat will result in jeopardy (NMFS 1999).

Between 1990 and 2000, the population of Coos County increased by 4.2%. Thus, NOAA Fisheries assumes that future private and state actions will continue within the action area, increasing as population density rises. As the human population in the action area continues to grow, demand for agricultural, commercial, or residential development is also likely to grow. The effects that new development have that are caused by that demand are likely to further reduce the conservation value of habitat within the action area.

Although quantifying an incremental change in survival for the ESUs considered in this consultation due to the cumulative effects is not possible, it is reasonably likely that those effects within the action area will have a small, short-term, negative effect on the likelihood of their survival and recovery. In the long-term more adequate fish passage will be provided at these crossings.

Conclusion

After reviewing the best available scientific and commercial information regarding the biological requirements and the status of the SONC and OC coho salmon considered in this Opinion, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, NOAA Fisheries' concludes that the action, as proposed, is not likely to jeopardize the continued existence of SONC or OC coho salmon. Nor will the Project result in adverse modification of designated critical habitat for SONC coho salmon.

These conclusions are based on the following considerations: (1) In-water construction and its potential effects will occur at a time of year when abundance of adult and juvenile salmon is likely to be low; (2) conservation measures are in place to ensure impacts are minimized on all aspects of the project; (3) work area isolation and fish removal will occur; and (4) the effects of this action are not likely to impair currently 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.

Conservation Recommendations

Section 7 (a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. The following recommendations are discretionary measures that NOAA Fisheries believes are consistent with this obligation and therefore should be carried out by the FHWA:

- In areas within the project site that lack vegetation, plant native vegetation.
- Look at all possibilities to incorporate LWD in with the projects.
- Look for ways on the project site to treat stormwater associated with existing impervious surface.

Please notify NOAA Fisheries if the FHWA carries out any of these recommendations so that we will be kept informed of actions that minimize or avoid adverse effects, and those that benefit species or their habitats.

Reinitiation of Consultation

Reinitiation of formal consultation is required and shall be requested by the Federal agency or by the Service, where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) If the amount or extent of taking specified in the incidental take statement is exceeded; (b) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (c) If the identified action is subsequently modified in a manner that has an effect to the listed species or critical habitat that was not considered in the biological opinion; or (d) If a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16). This Opinion and incidental take statement cover the described actions if conducted within five years of the signature date. Any activities not completed by that date will require subsequent consultation.

To reinitiate consultation, contact the appropriate State Habitat Office of NOAA Fisheries and refer to the NOAA Fisheries Number assigned to this consultation (2004/00513).

Incidental Take Statement

Section 9(a)(1) and protective regulations adopted pursuant to section 4(d) of the ESA prohibit the taking of listed species without a specific permit or exemption. Among other things, an action that harasses, wounds, or kills an individual of a listed species or harms a species by altering habitat in a way that significantly impairs its essential behavioral patterns is a taking (50 CFR 222.102). Incidental take refers to 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). Section 7(o)(2) exempts any taking that meets the terms and conditions of a written incidental take statement from the taking prohibition.

The incidental take statement included in this biological/conference opinion does not become effective for OC coho salmon until NOAA Fisheries adopts this biological/conference opinion as a biological opinion, after the listing is final. Until the time that the species is listed, the prohibitions of the ESA do not apply.

Amount or Extent of Take

The proposed action covered by this Opinion is reasonably certain to result in incidental take of listed species due to changes in physical habitat, fish harassment, suspension of sediments, temporary changes in water quality, and reduction in benthic prey resources. Effects of actions such as these are unquantifiable in the short term, but are likely to be largely limited to harm. Therefore, even though NOAA Fisheries expects some low level of incidental take to occur due to the action covered by this Opinion, the best scientific and commercial data available are not sufficient to enable it to estimate a specific amount of incidental take. In instances such as this, NOAA Fisheries designates the expected level of take in terms of the extent of take allowed. Therefore, the extent of incidental take for this opinion is limited to 240 m of stream channel habitat disturbance within the action area for SONC coho salmon and 80 m of stream channel habitat disturbance for OC coho salmon, as described on page 5 of the BA.

Further, NOAA Fisheries anticipates that up to 48 (45 non-lethal and 3 lethal) individuals of SONC coho salmon and up to 80 (76 non-lethal and 4 lethal) individuals of OC coho salmon will be taken as a result of work necessary to complete the fish passage projects. This estimate is based on 320 m^2 of glide-pool habitat that will be dewatered during the instream work.

Reasonable and Prudent Measures

Reasonable and prudent measures are non-discretionary measures to avoid or minimize take that must be carried out by cooperators for the exemption in section 7(o)(2) to apply. The FHWA has the continuing duty to regulate the activities covered in this incidental take statement where discretionary Federal involvement or control over the action has been retained or is authorized by law. The protective coverage of section 7(o)(2) may lapse if the FHWA fails to exercise its discretion to require adherence to terms and conditions of the incidental take statement, or to exercise that discretion as necessary to retain the oversight to ensure compliance with these terms and conditions. Similarly, if any applicant fails to act in accordance with the terms and conditions of the incidental take statement, protective coverage may lapse. The following reasonable and prudent measures are necessary and appropriate to minimize the impact on listed species of incidental taking caused by the proposed action.

The FHWA shall:

1. Avoid or minimize the amount of incidental take from rock placement activities in the channels of Griffin, Jackson, and King Creeks by requiring measures be taken to limit the duration and extent of rock placement in the action area, reduce direct harm, and to schedule such work when the fewest number of fish are expected to be present.

2. Minimize incidental take from general construction by applying conditions to the proposed action that avoid or minimize adverse effects to water quality, riparian, and aquatic systems.

3. As necessary, ensure completion of a monitoring and reporting program to confirm this Opinion is meeting its objective of minimizing take from permitted activities.

Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the FHWA and its cooperators must comply with the following terms and conditions, that implement the reasonable and prudent measures described above. Partial compliance with these terms and conditions may invalidate this take exemption or lead NOAA Fisheries to a different conclusion regarding whether the proposed action will result in jeopardy or the destruction or adverse modification of critical habitats.

1. To implement reasonable and prudent measure #1 (rock placement) and minimize direct harm, the FHWA shall ensure that:

   a. Conservation goal. All actions intended for streambank protection will also provide the greatest degree of natural stream function achievable through maintenance of existing natural features.

   b. Rock Placement

      i. Rock may be used for the following purposes and structures.

         (1) The downstream end of the chute will be keyed in with large enough boulders to anchor into the bedrock and stabilize the channel.

         (2) Hydraulic shadow (low velocity resting areas) within the channel.

         (3) Rock must be evenly graded and mixed as it is put into place.

         (4) When the low-flow channel is designed, the outside curves should be constructed (soft spots) so that natural flow processes can create pool habitat.

   c. After completion of the project, the existing channel should be re-watered in a way that will not significantly impact water quality or cause fish stranding.

      i. The diversion pipe shall be maintained in place while slowly dismantling the upper and lower dams. This will allow the new channel to slowly water-up, while still maintaining flow in the lower channel below the project. Because the area above the upper dam has temporarily expanded usable habitat for fish, slowly ramping the water will allow fish to enter the actual low-flow channel.

      ii. An ODOT or ODFW biologist shall be on site to monitor for fish stranding during this process.

      iii. The existing flow downstream from the project will be maintained throughout the construction.

d. Any pump used for dewatering or diverting authorized under this Opinion must have a fish screen installed, operated and maintained in accordance to NOAA Fisheries' fish screen criteria.

2. To implement reasonable and prudent measure #2 (general conditions for construction, operation and maintenance), the FHWA shall ensure that:

a. Timing of in-water work. Work within the active channel of Griffin and Jackson Creek will be completed during the period of June 15 to September 15. Work within the active channel of King Creek will be completed during the period of July 1 to September 15. All work must be completed within these dates unless otherwise approved in writing by NOAA Fisheries.

b. Minimum Area. Confine construction impacts to the minimum area necessary to complete the project.

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

d. Fish screens. All water intakes used for a project, including pumps used to isolate an in-water work area, will have a fish screen installed, operated and maintained according to NOAA Fisheries' fish screen criteria.[2]

e. Fish passage. Passage will be provided for any adult or juvenile salmonid species present in the project area during construction, and after construction for the life of the project. Upstream passage is not required during construction if it did not previously exist.

f. Pollution and Erosion Control Plan. A pollution and erosion control plan will be prepared and carried out to prevent pollution related to construction operations. The plan must be available for inspection on request by FHWA or NOAA Fisheries.

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

(1) Practices to prevent erosion and sedimentation associated with access roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations and staging areas.

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

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[2] National Marine Fisheries Service, *Juvenile Fish Screen Criteria* (revised February 16, 1995) and *Addendum: Juvenile Fish Screen Criteria for Pump Intakes* (May 9, 1996) (guidelines and criteria for migrant fish passage facilities, and new pump intakes and existing inadequate pump intake screens) (http://www.nwr.noaa.gov/1hydrop/hydroweb/ferc.htm).

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

(4) 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.

ii. Inspection of erosion controls. During construction, all erosion controls must be inspected daily during the rainy season and weekly during the dry season to ensure they are working adequately.[3]

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

(2) Sediment must be removed from erosion controls once it has reached 1/3 of the exposed height of the control.

g. Construction discharge water. All discharge water created by construction (*e.g.*, concrete washout, pumping for work area isolation, vehicle wash water) will be treated as follows.

I. Water quality. Facilities must be designed, built and maintained to collect and treat all construction discharge water using the best available technology applicable to site conditions. The treatment must 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 must not exceed 4 feet per second.

iii. Spawning areas, marine submerged vegetation. No construction discharge water may be released within 300 feet upstream of active spawning areas.

h. Preconstruction activity. Before significant[4] alteration of the project area, the following actions must be completed:

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 the following materials for emergency erosion control are onsite:

[3] "Working adequately" means no turbidity plumes are evident during any part of the year.

[4] "Significant" means an effect can be meaningfully measured, detected or evaluated.

(1) A supply of sediment control materials (*e.g.*, silt fence, straw bales[5]).

(2) An oil-absorbing, floating boom whenever surface water is present.

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

i. Temporary access roads.

i. Existing ways. Existing roadways or travel paths must be used whenever possible, unless construction of a new way would result in less habitat take.

ii. Steep slopes. Temporary roads built mid-slope or on slopes steeper than 30% are not authorized.

iii. Minimizing soil disturbance and compaction. When a new temporary road is necessary within 150 feet[6] of a stream, waterbody or wetland, soil disturbance and compaction must be minimized by clearing vegetation to ground level and placing clean gravel over geotextile fabric (Geotextile fabric is a woven material that reduces surface erosion and sometimes allows vegetative growth), unless otherwise approved in writing by NOAA Fisheries.

iv. Temporary stream crossings.

(1) The number of temporary stream crossings must be minimized.

(2) Temporary road crossings must be designed as follows:

(a) A survey must identify and map any potential spawning habitat within 300 feet downstream from a proposed crossing.

(b) No stream crossing may occur at known or suspected spawning areas, or within 300 feet upstream of such areas if spawning areas may be affected.

(c) The crossing design must provide for foreseeable risks (*e.g.*, flooding and associated bedload and debris) to prevent the diversion of streamflow out of the channel and down the road if the crossing fails.

(d) Vehicles and machinery must cross riparian areas and streams at right angles to the main channel wherever possible.

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

[6] Distances from a stream or waterbody are measured horizontally from, and perpendicular to, the bankfull elevation, the edge of the channel migration zone, or the edge of any associated wetland, whichever is greater. "Channel migration zone" means the area defined by the lateral extent of likely movement along a stream reach as shown by evidence of active stream channel movement over the past 100 years, *e.g.*, alluvial fans or floodplains formed where the channel gradient decreases, the valley abruptly widens, or at the confluence of larger streams.

v. Obliteration. When the project is completed, all temporary access roads and work bridges must be obliterated, the soil must be stabilized, and the site must be revegetated. Temporary roads in wet or flooded areas must be abandoned and restored as necessary by the end of the in-water work period.

j. Heavy Equipment. Use of heavy equipment will be restricted as follows.

i. Choice of equipment. When heavy equipment must be used, the equipment selected must have the least adverse effects on the environment (*e.g.*, minimally-sized, rubber-tired).

ii. Vehicle staging. Vehicles must be fueled, operated, maintained, and stored as follows.

(1) Vehicle staging, cleaning, maintenance, refueling, and fuel storage must take place in a vehicle staging area placed 150 feet or more from any stream, waterbody or wetland.

(2) All vehicles operated within 150 feet of any stream, waterbody or wetland must be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected must be repaired in the vehicle staging area before the vehicle resumes operation. Inspections must be documented in a record that is available for review on request by FHWA or NOAA Fisheries.

(3) All equipment operated instream must be cleaned before beginning operations below the bankfull elevation to remove all external oil, grease, dirt, and mud.

(4) The temporary work bridges shall be constructed to ensure full containment of any spills and/or leaks.

iii. Stationary power equipment. Stationary power equipment (*e.g.*, generators, cranes) operated within 150 feet of any stream, waterbody or wetland must be diapered to prevent leaks, unless otherwise approved in writing by NOAA Fisheries.

k. Site preparation. Native materials will be conserved for site restoration.

i. If possible, native materials must be left where they are found.

ii. Materials that are moved, damaged or destroyed must be replaced with a functional equivalent during site restoration.

iii. Any large wood,[7] native vegetation, weed-free topsoil, and native channel material displaced by construction must be stockpiled for use during site restoration.

l. Isolation of in-water work area. If adult or juvenile fish are reasonably certain to be present, the work area will be well isolated from the active flowing stream

[7] 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 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).

using inflatable bags, sandbags, sheet pilings, or similar materials. The work area will also be isolated if in-water work may occur within 300 feet upstream from spawning habitats.

m. Capture and release. Before and intermittently during pumping to isolate an in-water work area, an attempt must be made 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. A fishery biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed fish must conduct or supervise the entire capture and release operation.

   ii. If electrofishing equipment is used to capture fish, the capture team must comply with NOAA Fisheries' electrofishing guidelines.[8]

   iii. The capture team must 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.

   iv. Captured fish must be released as near as possible to capture sites.

   v. ESA-listed fish may not be transferred to anyone except NOAA Fisheries personnel, unless otherwise approved in writing by NOAA Fisheries.

   vi. Other Federal, state, and local permits necessary to conduct the capture and release activity must be obtained.

   vii. NOAA Fisheries or its designated representative must be allowed to accompany the capture team during the capture and release activity, and must be allowed to inspect the team's capture and release records and facilities.

   viii. Lethal take. If a sick, injured, or dead specimen of a threatened or endangered species is found, the finder must notify the Roseburg Field Office of NOAA Fisheries Law Enforcement at (541) 957-3388. 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 is also responsible for following instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not disturbed unnecessarily.

n. Earthwork. Earthwork (including drilling, excavation, dredging, filling and compacting) will be completed as quickly as possible.

   i. Site stabilization. All disturbed areas must be stabilized, including obliteration of temporary roads, within 12 hours of any break in work unless construction will resume work within 7 days between June 1 and September 30, or within 2 days between October 1 and May 31.

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

ii. Source of materials. Boulders, rock, woody materials and other natural construction materials used for the project must be obtained outside the riparian area.

o. Site restoration. All streambanks, soils and vegetation disturbed by the project are cleaned up and restored as follows.

i. Restoration goal. The goal of site restoration is renewal of habitat access, water quality, production of habitat elements (such as large woody debris), channel conditions, flows, watershed conditions and other ecosystem processes that form and maintain productive fish habitats.

ii. Streambank shaping. Damaged streambanks must be restored to a natural slope, pattern and profile suitable for establishment of permanent native woody vegetation.

iii. Revegetation. Areas requiring revegetation must be replanted before the first April 15 following construction with a diverse assemblage of species that are native to the project area or region, including grasses, forbs, shrubs, and trees.

iv. Pesticides. No pesticide application is allowed, although mechanical or other methods may be used to control weeds and unwanted vegetation.

v. Fertilizer. No surface application of fertilizer may occur within 50 feet of any stream channel.

vi. Fencing. Fencing must be installed as necessary to prevent access to revegetated sites by livestock or unauthorized persons.

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

a. Implementation monitoring. Ensure that the permittee submits a monitoring report to the FHWA within 120 days of project completion describing the permittee's success meeting permit conditions. The monitoring report will include the following information.

i. Project identification.

(1) Permittee name, permit number, and project name.

(2) Project location, including any compensatory mitigation site(s), by 5^{th} field HUC and by latitude and longitude as determined from the appropriate USGS 7-minute quadrangle map.

(3) FHWA contact person.

(4) Starting and ending dates for work completed.

(a) Photo documentation. Photo of habitat conditions at the project and any compensation site(s), before, during, and after project completion.[9]

[9] 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 from the project.

(b) Include general views and close-ups showing details of the project and project area, including pre and post construction.

(c) Label each photo with date, time, project name, photographer's name, and a comment about the subject.

ii. Other data. Additional project-specific data, as appropriate for individual projects.

(1) Work cessation. Dates work cessation was required due to high flows.

(2) Fish screen. Compliance with NOAA Fisheries' fish screen criteria.

(3) A summary of pollution and erosion control inspections, including any erosion control failure, hazardous material spill, and correction effort.

(4) Site preparation.

(a) Total cleared area – riparian and upland.

(b) Total new impervious area.

(5) Isolation of in-water work area, capture and release.

(a) Supervisory fish biologist – name and address.

(b) Methods of work area isolation and take minimization.

(c) Stream conditions before, during and within one week after completion of work area isolation.

(d) Means of fish capture.

(e) Number of fish captured by species.

(f) Location and condition of all fish released.

(g) Any incidence of observed injury or mortality.

(6) Site restoration.

(a) Finished grade slopes and elevations.

(b) Log and rock structure elevations, orientation, and anchoring (if any).

(c) Planting composition and density.

(d) A 5-year plan to:

(i) Inspect and, if necessary, replace failed plantings to achieve 100% survival at the end of the first year, and 80% survival or 80% coverage after five years (including both plantings and natural recruitment).

(ii) Control invasive non-native vegetation.

(iii) Protect plantings from wildlife damage and other harm.

b. Reporting. On an annual basis for 5 years after completing the project, the FHWA shall ensure submital of a monitoring report to NOAA Fisheries describing the applicant's success in meeting their habitat restoration goals of any riparian plantings. This report will consist of the following information.

i. Project identification.

a. Project name.
b. Starting and ending dates of work completed for this project.
c. The FHWA contact person.

ii. Riparian restoration. Documentation of the following conditions:
a. Any changes in planting composition and density.
b. A plan to inspect and, if necessary, replace failed plantings and structures.

iii. Monitoring reports will be submitted to:
NOAA Fisheries
Oregon State Habitat Office
Attn: 2004/00513
525 NE Oregon Street, Suite 500
Portland, OR 97232-2778

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

The consultation requirements of section 305(b) of the MSA direct Federal agencies to consult with NOAA Fisheries on all actions, or proposed actions, that may adversely affect EFH. Adverse effects include the direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside EFH, and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 C.F.R. 600.810). Section 305(b) also requires NOAA Fisheries to recommend measures that may be taken by the action agency to conserve EFH.

The Pacific Fishery Management Council designated EFH for groundfish (PFMC 1998a), coastal pelagic species (PFMC 1998b), and Chinook salmon, coho salmon, and Puget Sound pink salmon (PFMC 1999). The proposed action and action area for this consultation are described in the Introduction to this document. The action area includes areas designated as EFH for various life-history stages of coho and Chinook salmon (PFMC 1999).

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 would adversely affect EFH. The conservation measures proposed for the project by the applicant and the terms and conditions described in the incidental take statement that is attached to the ESA Conference Opinion for this project are all applicable to salmon EFH, except those relating to work timing, isolation of the in-water work area, fish salvage (capture and release), and the disposition of any individual fish killed or injured during completion of the project. With those exceptions, NOAA Fisheries incorporates those conservation measures and terms and conditions here as EFH conservation recommendations.

Statutory Response Requirement

Federal agencies are required to provide a detailed written response to NOAA Fisheries' EFH conservation recommendations within 30 days of receipt of these recommendations. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse affects that the activity has on EFH. In the response is inconsistent with the EFH conservation recommendations, the response must explain the reasons for not following the recommendations, including the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

Supplemental Consultation

The FHWA must reinitiate EFH consultation with NOAA Fisheries if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations [50 C.F.R. 600.920(l)]. This EFH consultation covers the proposed activities if completed within 5 years of the signature date of this document. Proposed activities not completed within 5 years would require another consultation.

DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

Section 515 of the Treasury and General Government Appropriations Act of 2001 (Public Law 106-554) ("Data Quality Act") specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the Biological Opinion addresses these Data Quality Act (DQA) components, documents compliance with the DQA, and certifies that this Opinion has undergone pre-dissemination review.

Utility: This ESA Section 7 Consultation and MSA EFH Consultation on the Griffin, Jackson and King Creek Retrofit Projects funded by the FHWA concluded that the action will not jeopardize the continued existence of the SONC coho salmon (*O. kisutch*), OC coho salmon, or result in the destruction or adverse modification of critical habitat. Therefore, the FHWA may fund those actions. Pursuant to the MSA, NOAA Fisheries provided the FHWA with conservation recommendations to conserve EFH.

The intended users of this consultation is the FHWA and the Oregon Department of Transportation. Users of the interstate and state highway system in Oregon benefit from the consultation.

Individual copies were provided to the above listed entities. This consultation will be posted on the NOAA Fisheries Northwest Region web site (http://www.nwr.noaa.gov). The format and naming adheres to conventional standards for style.

Integrity: This consultation was completed on a computer system managed by NOAA Fisheries in accordance with relevant information technology security policies and standards set out in Appendix III, "Security of Automated Information Resources," Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

Objectivity:

Information Product Category:: Natural Resource Plan.

Standards: This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods. They adhere to published standards including the NOAA Fisheries ESA Consultation Handbook, ESA Regulations, 50 C.F.R. 402.01 *et seq*., and the MSA implementing regulations regarding EFH, 50 C.F.R. 600.920(j).

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the literature cited section. The analyses in this biological opinion/EFH consultation contain more background on information sources and quality.

Referencing: All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NOAA Fisheries staff with training in ESA and MSA implementation, and reviewed in accordance with Northwest Region ESA quality control and assurance processes.

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