UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
BIN C15700
Seattle, WA 98115-0070

October 17, 2003

Megan Hall
Area Engineer
Federal Highway Administration
711 Capitol Way South, Suite 501
MS 40943
Olympia, Washington 98501-1284

Re: Endangerd Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the SR 97 Peshastin Creek Bridge 97/305 Scour Repair Project (WRIA 45) (2003/00781).

Dear Ms. Hall:

In accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended, 16 U.S.C. 1531, and the Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996, 16 U.S.C. 1855, the attached document transmits NOAA's National Marine Fisheries Service (NOAA Fisheries) biological opinion (Opinion) and MSA consultation based on our review of a proposal to fund the repair of a bridge scour on SR 97, milepost 180.98 where the highway crosses Peshastin Creek in Chelan County, Washington. The Federal Highway Administration (FHWA) determined that the proposed action was likely to adversely affect the Upper Columbia River (UCR) spring chinook (*Oncorhynchus twhawytscha)* and UCR steelhead (*O. mykiss*) Evolutionarily Significant Unit (ESU), and requested formal consultation. NOAA Fisheries concurred with this determination, and initiated formal consultation on July 28, 2003.

This Opinion reflects the results of a formal ESA consultation and contains an analysis of effects covering the UCR spring chinook and UCR steelhead in the Peshastin Creek watershed, Washington. The Opinion is based on information provided in the Biological Assessment (BA), and additional information transmitted via telephone conversations and e-mail. A complete administrative record of this consultation is on file at the Washington Habitat Branch Office.

NOAA Fisheries concludes that implementation of the proposed project is not likely to jeopardize the continued existence of UCR spring chinook or UCR steelhead. In your review, please note that the incidental take statement, which includes Reasonable and Prudent Measures and Terms and Conditions, was designed to minimize take.

The MSA consultation concluded that the proposed project may adversely impact designated Essential Fish Habitat (EFH) for chinook (*O. tshawytscha*) salmon. The Reasonable and Prudent Measures of the ESA consultation, and Terms and Conditions identified therein, would address the negative effects resulting from the proposed BPA funded actions. Therefore, NOAA Fisheries recommends that they be implemented as EFH conservation measures.

If you have any questions, please contact Diane Driscoll of the Washington Habitat Branch Ellensburg Field Office at (509) 962-8911 x 227 or Diane.Driscoll@noaa.gov
.

Sincerely,

For Michael R Crouse

D. Robert Lohn
Regional Administrator

Enclosure

cc: Claton Belmot, WSDOT

Endangered Species Act Section 7 Consultation Biological Opinion
and
Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

SR 97 Peshastin Creek Bridge 97/305 Scour Repair
Upper Columbia River Steelhead and Upper Columbia River Chinook
Peshastin Creek Watershed
Wenatchee River Subbasin
Chelan county, Washington
WRIA 45

Lead Action Agency: Federal Highway Administration

Consultation Conducted By: National Marine Fisheries Service
Northwest Region

Date Issued: October 17, 2003

Issued by:

D. Robert Lohn
Regional Administrator

NMFS Tracking No.: 2003/00781

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1.0 INTRODUCTION

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

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

The Federal Highway Administration (FHWA) proposes to fund all or in part construction of a rock bank barb immediately upstream of the State Route (SR) 97 Peshastin Creek Bridge at Mile Post (MP) 180.98 to deflect flows toward the center of the channel, and placement of large rocks to protect both abutments from scour. The barb will create a temporary backwater area around the barb until the thalweg shifts toward the south and the channel reequilibrates. The proposed action will occur within the geographic boundary and habitat of the Upper Columbia River (UCR) steelhead (*Oncorhynchus mykiss*) and UCR chinook (*O. tshawytscha*) Evolutionarily Significant Unit (ESU), both listed as endangered under the ESA. Also, the proposed Action Area is designated as EFH for chinook and coho (*O. kisutch*) salmon. The administrative record for this consultation is on file at the Washington Habitat Branch office.

The regulations (50 CFR 402.08) implementing section 7 of the ESA of 1973, as amended, allow a Federal agency to designate a non-Federal representative to conduct informal consultations or prepare Biological Assessments (BA) by giving written notice to the Director of such designation. The Services has received the letter written May 10, 1999, from FHWA, Gene Fong, Division Administrator, so designating Washington Department of Transportation (WSDOT) as their non-Federal representative. The ultimate responsibility for compliance with section 7 remains with the Federal agency.

1.1 Background and Consultation History

NOAA Fisheries received a complete BA and EFH assessment prepared by the WSDOT) on June 27, 2003. Additional information was received on July 28, 2003 and consultation was then initiated.

According to the BA, the WSDOT proposes a highway safety improvement project located on SR 97 at MP 180.98 to mitigate a critical bridge scour condition. High velocity flows are undermining the north footing and creating another smaller scour hole at the southeast corner of the bridge. During a field inspection on May 28, 2003, Bill Leonard of NOAA Fisheries and WSDOT personnel assessed the condition of the bridge and discussed possible treatments.

Immediately downstream of the bridge on the left bank is a private irrigation diversion. To maintain a steady flow into the diversion, the ditch owner often disturbs the streambed to divert flow. When the WSDOT began studying ways to protect the bridge the first plan included two instream structures which would protect the abutments, slow the streamflow, create a backwater pool that would preserve flows to the irrigation diversion without added manipulation of the streambed, and provide more instream habitat. These plans were changed to a single barb because of the complexity of the water rights associated with the irrigation diversion.

1.2 Proposed Action

Proposed actions are defined in the Services' consultation regulations (50 CFR 402.02) as "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas." Additionally, U.S. Code (16 U.S.C. 1855(b)(2)) further defines a Federal action as "any action authorized, funded, or undertaken or proposed to be authorized, funded, or undertaken by a Federal agency." Because the FHWA proposes to fund the action that may affect listed species, it must consult under ESA section 7(a)(2) and MSA section 305(b)(2).

Rock Barb: The excavator will move down the northwest side of the bridge where vegetation consists of only a few shrubs and native grasses. The excavator will crush two shrubs on the north streambank, a mock orange and a bitterbrush. No grubbing will take place however, and root structures will be preserved to enable rapid regrowth. The barb will extend approximately 15 feet into the stream channel from the existing rock (northwest side of bridge) that is already keyed into the shoreline. Angular rock used for the barb will be positioned to lock it into the rock currently on-site. The WSDOT will use an excavator type piece of equipment with a thumb to "place," not dump, rock. Careful placement of each rock will allow any fish in the area an opportunity to escape. The barb will cover approximately 150 square feet of instream area and will not extend more than one-fourth of the channel width or 15 feet from the edge of the stream.

North Abutment: On completion of the barb, the excavator will use the barb as a platform to place large rock and quarry spalls in a scour hole along the north abutment. The platform will be extended as necessary to allow the excavator to reach under the bridge and place the rock. Quarry spalls will be placed under the large rock in the scour hole to prevent the finer material below from moving up into the water column. The spalls will act as a filter blanket to hold the fine material in place under the large rock. The temporary work platform will cover up to 300 square feet of area within the channel and will allow the excavator to place rock to protect the north abutment. From the temporary rock work platform theWSDOT will place approximately 200 square feet of rock to fill the existing scour hole and protect the abutment from future scour damage. To minimize the disturbance created by placing the quarry spalls, the excavator bucket will enter the water before tilting and releasing the material. The WSDOT will not dump rock from above the water surface. On completion of the scour protection for the north abutment, the excavator will back out of the channel across the rock work platform, removing the excess rock that served as a temporary work platform.

South Abutment: The WSDOT will place rock to repair and protect the south abutment from the bridge deck. Approximately two or three large boulders will be needed to fill the 20 square foot scour hole. During summer low flows the south abutment is usually out of the water and the work area will be dry. Placement of these rocks will be done from the bridge.

1.3 Description of the Action Area

An action area is defined by the Services' regulations (50 CFR Part 402) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The action area affected by the proposed action starts approximately 50 feet upstream of the bridge over Peshastin Creek on SR 97 at milepost 180.98 and ends up to 300 feet downstream of the bridge. The 300-foot downstream area is the maximum allowable distance for turbidity levels to exceed state standards for flows over 100 cubic feet per second (cfs), or 200 feet for flows between 10 cfs and 100 cfs. Turbidity standards for salmonid spawning, rearing, and migration habitat is five nephelometric turbidity units (NTU) above background levels when the background is 50 NTU or less; or a 10% increase in turbidity when the background turbidity is more than 50 NTU (as described in the Washington State Water Quality Standards for Surface Waters of the State, WAC 173-201A-200(1)(e), and WAC 201A- 200(e)(I) WDOE 2003). The fifth field Hydrologic Unit Code (HUC) encompassing the action area is the Peshastin Creek watershed . This area provides rearing habitat and serves as migratory corridor for juvenile and adult UCR steelhead and UCR spring chinook listed in Table 1.

2.0 ENDANGERED SPECIES ACT BIOLOGICAL OPINION

The objective of this Opinion is to determine whether the proposed project is likely to jeopardize the continued existence of the UCR chinook and/or UCR steelhead ESUs.

2.1 Evaluating the Effects of the Proposed Action

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR part 402 (the consultation regulations). NOAA Fisheries must determine whether the action is likely to jeopardize the listed species. This analysis involves the initial steps of (1) defining the biological requirements of the listed species and (2) evaluating the relevance of the environmental baseline to the species' current status.

From that, NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery.

In making this determination, NOAA Fisheries considers estimated levels of mortality attributed to: (1) collective effects of the proposed or continuing action; (2) the environmental baseline; and (3) any cumulative effects. This evaluation must consider measures for survival and recovery specific to the listed salmonid's life stages that occur beyond the action area. If NOAA Fisheries finds the action is likely to jeopardize, NOAA Fisheries must identify reasonable and prudent alternatives for the action.

2.1.1 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying ESA section 7(a)(2) to listed salmon is to define the species' biological requirements that are most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species; considering population size, trends, distribution, and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its original decision to list the species for protection under the ESA. In addition, the assessment will consider any new information or data that are relevant to the determination.

The relevant biological requirements are those necessary for the listed species to survive and recover to naturally reproducing population levels at which time protection under the ESA would be unnecessary. Species or ESUs not requiring ESA protection have the following attributes: population sizes large enough to maintain genetic diversity and heterogeneity; the ability to adapt to and survive environmental variation; and are self-sustaining in the natural environment.

The UCR chinook and UCR steelhead share similar basic biological requirements. These requirements include food, flowing water (quantity), high quality water (cool, free of pollutants, high dissolved oxygen concentrations, low sediment content), clean spawning substrate, and unimpeded migratory access to and from spawning and rearing areas (adapted from Spence *et al.* 1996). The specific biological requirements affected by the proposed action include water quality, food, and unimpeded migratory access.

2.1.2 Status and Generalized Life History of Listed Species

The listing status and biological information for NOAA Fisheries listed species that are the subject of this consultation are described below in Table 1.

Species	Listing Status	Critical Habitat	Protective Regulations	Biological Information
Upper Columbia River spring-run chinook salmon	March 24, 1999; 64 FR 14308, Endangered	Not Designated[1]	July 10, 2000; 65 FR 42422	Myers *et al.* 1998; Healey 1991
Upper Columbia River steelhead	August 18, 1997; 62 FR 43937, Endangered	Not Designated[1]	July 10, 2000; 65 FR 42422	Busby *et al.* 1995; 1996

Table 1. References to Federal Register Notices containing additional information concerning listing status, and biological information for listed and proposed species considered in this biological opinion.

Throughout the Columbia Basin, salmonids have been negatively affected by a combination of habitat alteration and hatchery management practices. Mainstem dams on the Columbia River, are perhaps the most significant source of habitat degradation for the ESUs addressed under this consultation. The dams act as a partial barrier to passage, kill out-migrating smolts in their turbines, raise temperatures throughout the river system, and have created lentic refugia for salmonid predators. In addition to dams, irrigation systems have had a major negative impact by diverting large quantities of water, stranding fish, acting as barriers to passage, and returning effluents containing chemicals and fine sediments. Other major habitat degradation has occurred through urbanization and livestock grazing practices (WDFW *et al.* 1993; Busby *et al.* 1996; NMFS 1996; 1998; 2000; April 22, 1992, 64 FR 14308; August 18, 1997, 62 FR 43937).

Habitat alterations and differential habitat availability (*e.g.*, fluctuating discharge levels) impose an upper limit on the production of naturally spawning populations of salmon and steelhead. The National Research Council Committee on Protection and Management of Pacific Northwest Anadromous Salmonids identified habitat problems as a primary cause of declines in wild salmon runs (NRCC 1996). Some of the habitat impacts identified were the fragmentation and loss of available spawning and rearing habitat, migration delays, degradation of water quality, removal of riparian vegetation, decline of habitat complexity, alteration of stream flows and streambank and channel morphology, alteration of ambient stream water temperatures, sedimentation, and loss of spawning gravel, pool habitat, and Large Woody Debris (LWD) (NMFS 1996; 1998; NRCC 1996; Bishop and Morgan 1996).

Hatchery management practices are suspected to be a major factor in the decline of these ESUs. The genetic contribution of non-indigenous, hatchery stocks may have reduced the fitness of the

[1]Under development. On April 30, 2002, the U.S. District Court for the District of Columbia approved a NOAA Fisheries consent decree withdrawing a February 2000 Critical Habitat designation for this and 18 other ESUs.

locally adapted native fish through hybridization and associated reductions in genetic variation or introduction of deleterious (non-adapted) genes. Hatchery fish can also directly displace natural spawning populations, compete for food resources, or engage in agonistic interactions (Campton and Johnston 1985; Waples *et al.* 1991; Hilborn 1992; NMFS 1996; March 10, 1998, 63 FR 11798).

The following information summarizes the status of Columbia River salmonids by ESU that are the subjects of this consultation. Most of this narrative was largely taken from the Biological Opinion on Reinitiation of Consultation on Operation of the Federal Columbia River Power System (FCRPS), including the Juvenile Fish Transportation Program, and 19 Bureau of Reclamation Projects in the Columbia Basin (NMFS 2000).

2.1.2.1 Upper Columbia River Spring Chinook

The UCR spring chinook salmon ESU, listed as endangered on March 24, 1999 (64 FR 14308), includes all natural-origin, stream-type chinook salmon from river reaches above Rock Island Dam and downstream of Chief Joseph Dam, including the Wenatchee, Entiat, and Methow River subbasins. All chinook in the Okanogan River are apparently ocean-type and are considered part of the UCR summer- and fall-run ESU. The spring-run components of the following hatchery stocks are also listed: Chiwawa, Methow, Twisp, Chewuch, and White rivers and Nason Creek. Critical habitat is not currently designated for UCR chinook, although a designation is forthcoming (see footnote 1).

The populations are genetically and ecologically separate from the summer- and fall-run populations in the lower parts of many of the same river systems (Myers *et al.* 1998). Although fish in this ESU are genetically similar to spring chinook in adjacent ESUs (*i.e.*, mid-Columbia and Snake), they are distinguished by ecological differences in spawning and rearing habitat preferences. For example, spring-run chinook in upper Columbia tributaries spawn at lower elevations (500 to 1,000 meters) than in the Snake and John Day River systems.

The UCR populations were intermixed during the Grand Coulee Fish Maintenance Project (1939 through 1943), resulting in a loss of genetic diversity between populations in the ESU. Homogenization remains an important feature of the ESU. Fish abundance has trended downward both recently and over the long term. At least six former populations from this ESU are now extinct, and nearly all extant populations have experienced escapements of fewer than 100 wild spawners in recent years. The UCR spring chinook are present in the action area during their smolt and adult migrations.

Life History. The UCR spring chinook are considered stream-type fish, smolting as yearlings. Most stream-type fish mature at four years of age. Few coded-wire tags are recovered in ocean fisheries, suggesting that the fish move quickly out of the north central Pacific and do not migrate along the coast.

Habitat and Hydrology. Salmon in this ESU must pass up to nine Federal and public utility district dams. Chief Joseph Dam prevents access to historical spawning grounds farther upstream. Degradation of remaining spawning and rearing habitat continues to be a major concern associated with urbanization, irrigation projects, and livestock grazing along riparian corridors. Overall harvest rates are low for this ESU, currently less than 10% (ODFW and WDFW 1995).

Hatchery Influence. Spring-run chinook salmon from the Carson National Fish Hatchery (a large composite, nonnative stock) were historically introduced into the Wenatchee subbasin. Evidence suggests that these hatchery fish, do not regularly stray into wild areas or hybridize with naturally spawning populations. Starting in 2000, non-listed Carson stock adults from the Leavenworth Fish Hatchery have been planted in Peshastin Creek because naturally returning numbers are very low. In addition to these National Fish Hatcheries, two supplementation hatcheries are operated by the Washington State Department of Fish and Wildlife (WDFW) in this ESU. The Methow Fish Hatchery Complex (operations began in 1992) and the Rock Island Fish Hatchery Complex (operations began in 1989) were both designed to supplement naturally spawning populations on the Methow and Wenatchee rivers, respectively (Chapman *et al.* 1995).

Population Trends and Risks. For the UCR spring chinook salmon ESU as a whole, NOAA Fisheries estimates that the median population growth rate (lambda) over the base period[2] ranges from 0.85 to 0.83, decreasing as the effectiveness of hatchery fish spawning in the wild increases compared to that of fish of wild origin (Tables B-2a and B-2b in McClure *et al.* 2000). NOAA Fisheries has also estimated median population growth rates and the risk of absolute extinction for the three spawning populations identified by Ford *et al.* (1999), using the same range of assumptions about the relative effectiveness of hatchery fish. At the low end, assuming that hatchery fish spawning in the wild have not reproduced (*i.e.*, hatchery effectiveness equals zero), the risk of absolute extinction within 100 years ranges from 0.97 for the Methow River to 1.00 for the Methow and Entiat rivers (Table B-5 in McClure *et al.* 2000). At the high end, assuming that hatchery fish spawning in the wild have been as productive as wild-origin fish (hatchery effectiveness equals 100%), the risk of extinction within 100 years is 1.00 for all three spawning populations (Table B-6 in McClure *et al.* 2000).

NOAA Fisheries has also used population risk assessments for UCR spring chinook salmon and steelhead ESUs from the draft Quantitative Analysis Report (QAR) (Cooney 2000). Risk assessments described in that report were based on Monte Carlo simulations with simple spawner/spawner models that incorporate estimated smolt carrying capacity. Population dynamics were simulated for three separate spawning populations in the UCR spring chinook salmon ESU, the Wenatchee, Entiat, and Methow populations. The QAR assessments showed extinction risks for UCR spring chinook salmon of 50% for the Methow, 98% for the Wenatchee, and 99% for the Entiat spawning populations. These estimates are based on the assumption that the median return rate for the 1980 brood year to the 1994 brood year series will

[2]Estimates of median population growth rate, risk of extinction, and the likelihood of meeting recovery goals are based on population trends observed during a base period that varies between spawning aggregations. Population trends are projected under the assumption that all conditions will stay the same into the future.

continue into the future.

2.1.2.2 Upper Columbia River Steelhead

The UCR steelhead ESU, listed as endangered on August 18, 1997 (62 FR 43937), includes all natural-origin populations of steelhead in the Columbia River basin upstream from the Yakima River in Washington, to the U.S./Canada border. The Wells Hatchery stock is included among the listed populations. Critical habitat is not presently designated for UCR steelhead, although a designation is forthcoming (see footnote 1).

Estimates of historical (pre-1960s) abundance specific to this ESU are available from fish counts at dams. Counts at Rock Island Dam from 1933 to 1959 averaged 2,600 to 3,700, suggesting a pre-fishery run size exceeding 5,000 adults for tributaries above Rock Island Dam (Chapman *et al.* 1994). Runs may, however, already have been depressed by lower Columbia River fisheries. The UCR steelhead rear in the action area and are present during their smolt and adult migrations.

Life History. As in other inland ESUs (the Snake and mid-Columbia River basins), steelhead in the UCR ESU remain in freshwater up to a year before spawning. Smolt age is dominated by two year olds. Based on limited data, it appears that steelhead from the Wenatchee and Entiat rivers return to freshwater after one year in salt water, whereas Methow River steelhead are primarily age-2-ocean (Howell *et al.* 1985). Life history characteristics for UCR steelhead are similar to those of other inland steelhead ESUs; however, some of the oldest smolt ages for steelhead, up to seven years, are reported from this ESU. The relationship between anadromous and nonanadromous forms in the geographic area are unclear.

Habitat and Hydrology. The Chief Joseph and Grand Coulee Dam construction caused blockages of substantial habitat, as did that of smaller dams on tributary rivers. Habitat issues for this ESU relate mostly to irrigation diversions and hydroelectric dams, as well as to degraded riparian and instream habitat from urbanization and livestock grazing.

Hatchery Influence. Hatchery fish are widespread and escape to spawn naturally throughout the region. Spawning escapement is dominated by hatchery-produced fish.

Population Trends and Risks. For the UCR steelhead ESU as a whole, NOAA Fisheries estimates that the median population growth rate (lambda) over the base period ranges from 0.94 to 0.66, decreasing as the effectiveness of hatchery fish spawning in the wild increases compared to that of fish of wild origin (Tables B-2a and B-2b in McClure *et al.* 2000). NOAA Fisheries has also estimated the risk of absolute extinction for the aggregate UCR steelhead population, using the same range of assumptions about the relative effectiveness of hatchery fish. At the low end, assuming that hatchery fish spawning in the wild have not reproduced (*i.e.*, hatchery effectiveness equals zero), the risk of absolute extinction within 100 years is 0.25 (Table B-5 in McClure *et al.* 2000). Assuming that the hatchery fish spawning in the wild have been as productive as wild-origin fish (hatchery effectiveness equals 100%), the risk of absolute extinction within 100 years is 1.00 (Table B-6 in McClure *et al.* 2000). Because of data limitations, the QAR steelhead assessments in Cooney (2000) were limited to two aggregate spawning groups-the Wenatchee/Entiat composite and the above-Wells populations. Wild production of steelhead above Wells Dam was assumed to be limited to the Methow system. Assuming a relative effectiveness of hatchery spawners of 1.0, the risk of absolute extinction within 100 years for UCR steelhead is 100%. The QAR also assumed hatchery effectiveness values of 0.25 and 0.75. A hatchery effectiveness of 0.25 resulted in projected risks of extinction of 35% for the Wenatchee/Entiat and 28% for the Methow populations. At a hatchery effectiveness of 0.75, risks of 100% were projected for both populations.

2.1.3 Environmental Baseline in the Action Area

The environmental baseline represents the current basal set of conditions to which the effects of the proposed action would be added. The term “environmental baseline” means “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 CFR 402.02).

Peshastin Creek is a tributary to the Wenatchee River, originating at Blewett Pass and flowing in a northeasterly direction 15.4 miles before entering the Wenatchee River at River Mile (RM) 17.9, downstream of the town of Peshastin. Today, the Peshastin Creek watershed is in a checkerboard ownership of Federal and private land from its mouth to its headwaters. Most private holdings in the headwaters area, upstream of Tronsen Creek (RM 14.9), are owned by Longview Fibre and are heavily roaded and logged (Andonaegui 2001). Below the Ingalls Creek confluence (RM 9.4), the Peshastin Creek corridor is exclusively in private ownership (Andonaegui 2001) and largely converted to residential use and orchards. Conversion of portions of the channel meander zone and floodplain to agricultural and residential use has contributed to the loss of floodplain functions through channel confinement (dikes, roads, bank protection) and constriction (culverts, diversion dams, bridge structures), and loss of riparian functions such as instream temperature regulation and LWD recruitment. Extensive overall harvest throughout much of the watershed including upland and riparian logging, high road densities, and the location of roads in riparian areas, have resulted in a decrease in LWD recruitment potential and increased sedimentation and sediment delivery to streams.

Peshastin Creek, while one of the major watersheds in the Wenatchee subbasin as far as size, contributes only 4% of the Wenatchee River baseflow (Andonaegui 2001). Annual precipitation decreases in the Wenatchee subbasin moving east from the Cascade Mountains crest to the Columbia River. The Peshastin Creek watershed, situated in the lower, eastern portion of the subbasin, is a more arid watershed, with annual precipitation levels ranging from 80 inches in the upper elevations to 15 inches at the mouth of Peshastin Creek.

The construction of SR 97 in 1956 had a very significant negative impact on Peshastin Creek including the associated reconstruction of 19,317 feet of stream channel. The reconstruction straightened meander bends, reducing the total channel length of Peshastin Creek by 0.8 miles, from the mouth upstream to just downstream of the confluence with Tronsen Creek at RM 14.9. The location of the highway also forced the abandonment of 34% (194 acres) of the of floodplain (565 acres) along Peshastin Creek in this same reach. Road densities throughout the watershed are high (greater than 2.4 miles/square mile) except in the Ingalls Creek drainage, an artifact of management activities aimed at timber harvest. Timber harvest continues on both Forest Service and private lands.

Water use has also significantly affected aquatic habitat and stream function, contributing to low flows or dewatering and elevated instream temperatures in some reaches, affecting fish passage, sediment, and LWD transport through the system. The Peshastin Irrigation District (PID) operates water diversion dams on Peshastin Creek at RM's 2.4 and 4.8, respectively (Andonaegui 2001). The diversion dam at RM 2.4 partially blocks spring chinook salmon migration, depending on flows, and fully blocks bull trout migration from mid-June to October during mid- to low-flows. There are also numerous individual, private irrigation diversions operating along Peshastin Creek and its tributaries.

The major factors affecting UCR spring chinook and UCR steelhead within the action area include irrigation withdrawls, agricultural practices, historic and current logging and grazing practices, confinement by SR 97, and residential development. NOAA Fisheries sometimes uses the Matrix of Pathways and Indicators (MPI) (NMFS 1996) to analyze and describe the effects of these factors on the functional condition of salmon and steelhead habitat elements. The MPI relates the biological requirements of listed species to a suite of habitat variables. In the analysis presented here, each factor is categorized according to the condition of relevant pathways and associated indicators. The categories are *properly functioning, at risk, or not properly functioning*.

Water Quality. Peshastin Creek is on the 303(d) list (WDOE 1998) for exceeding numerous State Water quality criteria. The listing is based on data collected by Enivornmental Protection Agency in 1994 at the United States Department of Agriculture, Forest Service boundary (T24N R18E S21) and data collected by the Yakama Nation from the same year, slightly upstream at T24 R18E S32 (WDOE 1998). In the lower reaches of Peshastin Creek, low flows, extremely limited vegetative cover, high levels of suspended sediment, and high air temperatures contribute to high instream temperatures during the summer months and September (Andonaegui 2001). Based on this information, the relevant water quality indicators (Temperature and Total Dissolved Gas), and thus the Water Quality pathway of the MPI are *not properly functioning*.

Flow/Hydrology/ Habitat Access. Streamflow in the action area is driven by natural watershed processes, but late season flows are presently controlled by the operation of irrigation withdrawls. Aside from irrigation withdrawls, Peshastin Creek is an unregulated system with the hydrograph of a snowmelt-dominated system. Discharge peaks in the spring concurrent with melting snow, and reaches baseflow during the mid- to late-summer. Under these conditions, river ecosystems experience a range of flows that promote floodplain riparian ecosystems, provide habitat for aquatic species assemblages, and protect vital ecosystem linkages and channel structure (Leopold *et al.* 1964; Ward and Stanford 1995a; 1995b; Fisher *et al.* 1998). As a result, aquatic biota have evolved life-history strategies that are spatially and temporally synchronized to seasonal runoff patterns (Groot *et al.* 1995; Stanford *et al.* 1996).

Presently, water withdrawal operations within the action area have attenuated and truncated the natural runoff regime, and produced a system that is substantially out of phase with its, natural hydrograph. Flow regimes that deviate from the natural condition produce a diverse array of negative ecological consequences (Hill *et al.* 1991; Ligon *et al.* 1995; Richter *et al.* 1996; Stanford *et al.* 1996). The hydrograph of Peshastin Creek within the action area is temporally and spatially discordant with its supporting watershed. Consequently, the aquatic and riparian biota of the system have suffered. In the MPI analysis, streamflow falls under the Flow/Hydrology pathway, and Change in Peak/Base flow indicator. Presently, this indicator is *not properly functioning*. In this instance, *not properly functioning* is defined as "pronounced changes in base flow, relative to an undisturbed watershed of similar size, geology, and geography."

Habitat access is significantly affected by late season water withdrawls. The PID operates water diversion dams at RM 2.4 and 4.8. The first diversion dam presents a barrier to summer and fall migration (mid June through October) partially blocking migrating spring chinook salmon, and migrating bull trout. It also precludes the movement of resident rainbows from the lower drainage into cooler waters of the upper watershed. During late summer, in years when total water diversion exceeds instream low flows, the area directly downstream of the diversion is dewatered for up to 100 feet, completely blocking all fish passage (Andonaegui 2001). Therefore, based on the direct presence of diversion structures and the passage problems they cause, the Habitat Access pathway (Physical Barriers indicator) of the MPI is *not properly functioning* within the action area because "manmade barriers present in the watershed prevent upstream and/or downstream fish passage at a range of flows."

Habitat Elements. Numerous instream and floodplain elements of habitat (*e.g.*, substrate, LWD, pool frequency and quality, off-channel areas, and refugia) are vital to the production and maintenance of native fish assemblages (Everest *et al.* 1985; Bjornn and Reiser 1991; Karr 1991; Spence *et al.* 1996; NRCC 1996; NMFS 1996). The mainstem is the waterway with the least amount of woody debris in the watershed. Low LWD counts in Peshastin Creek are mostly a result of State Route 97 and mining activity over the past 100 years. In addition, other tributary streams have been severely affected from forest roads, mining and riparian harvest reducing LWD recruitment potential. This watershed is heavily managed in most areas for harvest, road building, or mining. Mining causes removal of woody debris from the channel (Andonaegui 2001). Pool frequency is low in Peshastin Creek. Contributing factors include roads directly adjacent to the stream, lack of woody debris, mining activity over the years, and harvest of riparian vegetation. Following the 1990 flood, the number of large boulders between Negro and Ingalls Creeks (RM 9.0 – 11.1) decreased, reducing channel roughness and step pool/cascade formation. The reach is entirely bordered by State Route 97 and 2,530 feet of the channel was straightened (48%) as a result of highway construction.

Low gradient areas in the action area include parts of the old Peshastin Creek channel and floodplain that was active before SR 97 construction and channel straightening. These areas, especially the area immediately across Peshastin Creek from the Hansel Creek confluence (upstream of the project area), have wetlands associated with them and could have anadromous fish use if culverts under the highway are modified to allow passage. A WSDOT gravel pit located between Hansel (RM 8.4) and Negro (RM 11.1) Creeks was expanded in 1986. These pit sites have been placed in the old oxbows of Peshastin Creek and have reduced wetland acreage. These factors have impaired every indicator (*e.g.*, Substrate, LWD, Pool Frequency and Quality, Off-channel Habitat, and Refugia) of the Habitat Elements pathway such that all are *not properly functioning* within the action area.

Channel Condition and Dynamics. The location of SR 97 forced the abandonment of 34% (194 acres) of the total acres of floodplain (565 acres) along Peshastin Creek from the mouth upstream almost 15 miles. Additionally, construction of the highway included 19,317 feet of mainstem channel reconstruction to straighten Peshastin Creek. The straightening of meander bends during stream reconstruction reduced the length of the creek by 0.8 miles. These alterations, plus clearing within the floodplain, conversion of floodplain to agriculture and residential use, and water withdrawals have forced the lower reach of the creek into an unstable channel morphology. During flood events, increased discharges have degraded the channel in reaches confined by the highway, increasing stream gradient and transport capacity. This is consistent with the principals of channel-forming processes where the natural response to increased discharge is either an increase in channel width or an increase in channel depth as seen in Peshastin Creek (Montgomery and Buffington 1993). Along Peshastin Creek, where bank stabilization efforts (i.e. riprap and berms) have halted lateral migration and protected the toe of slopes, bank erosion on these sites has been controlled. However, in a reach context, stream channel stabilization work is another factor degrading the stream's functioning condition.

Thus, riverine processes and their ecological linkages, important to listed salmonids and the aquatic environment such as those described in the preceding paragraph, are greatly diminished if not totally absent. Consequently, the indicators of the Channel Condition and Dynamics pathway (*e.g.*, Width/Depth Ratio, Streambank Condition, and Floodplain Connectivity) are *not properly functioning* in the action area.

Watershed Conditions / Riparian Reserves. In the action area, numerous anthropogenic features and activities (*e.g.,* irrigation diversions, residential dwellings, roads, riprap, and landscaping) have become permanent fixtures on the landscape and have displaced and altered native riparian habitat to some degree. Consequently, the potential for normal riparian processes (*e.g.*, shading, bank stabilization, and LWD recruitment) to occur is diminished, and aquatic habitat has become simplified (Ralph *et al.* 1994; Young *et al.* 1994; Fausch *et al.* 1994; Dykaar and Wigington 2000). The Watershed Conditions pathway and Riparian Reserves indicator *are not properly functioning* in the action area because "the riparian reserve system is fragmented, poorly connected, and provides inadequate protection of habitats and refugia for sensitive aquatic species (less than 70% intact)."

2.2 Analysis of Effects

The proposed repair of scour holes at the base of the Peshastin Bridge, MP 180.98, is likely to adversely affect UCR spring chinook and UCR steelhead as determined by the WSDOT. The bridge is located on Peshastin Creek in an area that provides spawning, rearing, and migration habitat for both UCR spring chinook and steelhead.

The ESA implementing regulations define "effects of the action" as "the direct and indirect effects of an action on the species, together with the effects of other activities that are interrelated or interdependent with the action, that will be added to the environmental baseline" (50 CFR 402.02). Indirect effects are defined in 50 CFR 402.02 as "those that are caused by the proposed action and are later in time, but still are reasonably certain to occur." They include the effects on listed species of future activities that are induced by the proposed action and that occur after the action is completed. "Interrelated actions are those that are part of a larger action and depend on the larger action for their justification" (50 CFR 403.02). "Interdependent actions are those that have no independent utility apart from the action under consideration" (50 CFR 402.02).

2.2.1 Direct Effects

Direct effects are the immediate effects of the project on the species or its habitat. Direct effects result from the agency action and include the effects of interrelated or interdependent actions. 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 evaluated.

The UCR steelhead and spring chinook juveniles, and spring chinook redds can be found in the action area during the proposed construction period. In addition, the Yakama Nation has recently begun planting excess adult Carson stock (non-listed) spring chinook from the Leavenworth Fish Hatchery into Peshastin Creek to increase population numbers. A recent field survey of the action area found spring chinook redds and carcasses of these hatchery fish (Hancock, pers. comm. September 2003).

In this case, direct effects related to the proposed action include possible mechanical injury or mortality of juvenile fish as rock is placed in the stream, physical disturbance of chinook redds, and mobilization of instream sediments that can smother downstream redds. The negative effects associated with the project will be minimized through the use of specific construction techniques and restrictions in timing and duration of construction.

2.2.1.1 Mechanical Injury/ Mortality

Placement of rock onto the streambed and into a scour hole has the potential to injure or kill juvenile salmonids or embryos. Introduction of material into the stream channel is most likely to affect non-mobile salmonids (redds) or juveniles that may hide in interstitial spaces rather than avoiding the area of disturbance. The WSDOT has committed to several conservation measures to reduce the probability of injuring juvenile chinook or steelhead during the proposed action. First, the action area will be surveyed for chinook redds before any construction begins. Any observed redds will be flagged and work crews will be informed to avoid those areas. Any identified redds within 200 feet downstream of the bridge will be protected from sediment deposition using silt fences installed in a manner to prevent silt mobilized by the action from reaching any redds. Second, WSDOT will "hand place" each rock separately into the stream without dropping or dragging to minimize sediment disturbance and provide additional time for startled fish to avoid the disturbance.

NOAA Fisheries believes that there is some potential that juvenile steelhead and juvenile chinook will be in the scour pool when it is filled. However, because of the project timing and the technique used to place the rock the number of juvenile UCR steelhead and UCR chinook likely to be injured or killed is expected to be small. In addition, adult, non-listed Carson stock UCR spring chinook from the Leavenworth Fish Hatchery have been stocked in Peshastin Creek for three years. These non-listed fish are planted in lower Peshastin Creek and are believed to be spawning in the area (C. Belmont, pers. comm.) therefore some of the juveniles in the area will be from non-listed stocks. The conservation measures to be implemented by the WSDOT sufficiently minimize and avoid the risk of mechanically injuring or killing UCR steelhead and UCR chinook to the maximum extent practicable. Therefore, NOAA Fisheries does not expect that UCR chinook and UCR steelhead will be measurably affected by the act of avoiding construction activities (see, section 2.6.1)

2.2.1.2 Alteration of Instream Habitat

The proposed action requires disturbance of the streambed to place rock for a barb and fill scour holes at the bridge abutments. Each of these activities can disturb the substrate and alter instream habitat in Peshastin Creek. Work within the stream channel is likely to mobilize existing sediment and displace benthic fauna in the immediate area. Impacts of increased turbidity and sediment deposition are discussed below. Filling of scour holes will result in a loss of pool habitat. Additionally, the use of heavy equipment in the riparian area and within the streambed might cause compaction of soils resulting in reduced infiltration at the project site. Such compacting decreases the stability of the banks, and reduces the recruitment of riparian vegetation, which results in increased deposition of fine sediments into the stream.

Instream work with mechanical equipment can modify habitat by homogenizing the substrate and temporarily reducing the diversity of benthic habitat in the streambed. The importance of the trophic relationship between benthos and fish productivity is direct. Minshall (1984) pointed out that benthos abundance is least in homogenous sand or silt or in large boulders and bedrock. Abundance is greatest in the mixture of heterogeneous gravel, pebbles, and cobbles.

A primary characteristic of high quality aquatic ecosystems is an abundance of large pool habitats. In many tributaries within the range of steelhead and spring chinook, the number of large, deep pools has decreased. The most significant reasons for the loss of pools in Peshastin Creek are loss of pool-forming structures such as boulders and large wood (Sullivan et al. 1987), and loss of sinuosity by channelization (Benner 1992; Furniss et al. 1991). Use of pool habitat varies based on velocity, depth, species, age group, time of year, and competing populations. The proposed project will result in the loss of one year-round pool along the north abutment and a smaller pool on the south side that is available to fish at high flows. The barb will also create a scour pool near the center of the bridge that should partially replace the effects of filling in the existing pools. The new scour pool will remain available to fish at low flows.

To minimize the disturbance of the streambed, the excavator will approach the stream on the northwest side of the bridge, where riprap already covers the lower streambank with only a few shrubs and native grasses interspersed. Up to two shrubs will be crushed on the north streambank, a mock orange and a bitterbrush. No grubbing will take place and root structure will be preserved to promote rapid regrowth. Rock will be carefully placed, not dumped, which will also limit the disturbance of the streambed. After rock is placed for the barb, the excavator will continue to carefully place rock on the streambed to be used as a temporary work platform to fill the scour hole on the north abutment.

The work platform may temporarily cover up to 300 square feet of area within the channel. From the work platform WSDOT will place approximately 200 square feet of rock to fill the existing scour hole at the base of the north abutment. Quarry spalls will be placed under the large rock in the scour hole to prevent the finer material below from moving up into the water column. The spalls will act as a filter blanket to hold the fine material in place under the large rock. To minimize the disturbance created by placing the quarry spalls, the excavator bucket will enter the water before tilting and releasing the material. The WSDOT will not dump rock from above the water surface. Upon completion of the scour protection for the north abutment, the excavator will back out of the channel across the rock work platform, removing the platform as it returns to the streambank.

The material used to protect the south abutment will be placed from the bridge deck. The 20 square foot scour hole will be filled with two or three large boulders. During summer and fall low flows, the south abutment is usually outside the wetted channel and the work area is expected to be dry.

2.2.1.3 Water Quality

The project includes construction activities (installation of rock barb, and temporary rock work platform) that are likely to cause short-term increases in sediment mobilization during and immediately after construction. Deposition of fine sediment can significantly degrade instream spawning habitat, reduce survival of steelhead from egg to emergence (Phillips *et al.* 1975), reduce intergravel cover (Spence *et al.* 1996), and reduce the productivity of benthic organisms as food for fish. Suspended sediments can cause sublethal effects such as elevated blood sugars and cough rates (Servizi and Martens 1992), physiological stress, and reduced growth rates. Elevated turbidity levels can reduce the ability of salmonids to detect prey, cause gill damage (Sigler *et al.* 1984, Lloyd *et al.* 1987), and cause juvenile steelhead to leave rearing areas (Sigler *et al.* 1984). In addition, studies indicate that short-term pulses of suspended sediment influence territorial, gill-flaring, and feeding behavior of salmon under laboratory conditions (Berg and Northcote 1985).

The project incorporates measures to reduce if not avoid the effects described above, including restricting timing and duration of construction, temporary erosion and sediment control measures, and adherence to state water quality standards and the use of a mixing zone. Construction methods will ensure that turbidity levels generated by the action do not exceed 5 nephelometric turbidity units (NTU) above background levels when the background is 50 NTU or less; or a 10% increase in turbidity when the background turbidity is more than 50 NTU (as described in the Washington State Water Quality Standards for Surface Waters of the State, WAC 173-201A-200(1)(e), and WAC 201A- 200(e)(I)).

Mixing zones are geographically and temporally limited authorization (a few hours or a few days) for exceedance of water quality standards to be used during project construction. A mixing zone is allowed only after implementation of appropriate best management practices to avoid or minimize disturbance of sediment. Any deposition from suspended sediments within the action area will be flushed out, either when flow is reestablished or during the next high flow event (rain or snowmelt). Numerous studies have indicated that benthic invertebrate abundance is reduced by deposited sediment, but drift from upstream rapidly recolonize the affected area (Barton 1977; Reed 1977; Chisolm and Downs 1978; Waters 1995). The temporary increase in turbidity will not be significantly additive to the environmental baseline over the long term.

<u>2.2.2 Species Effects</u>

While population growth rates have been calculated at the large ESU scale, changes to the environmental baseline from the proposed action were described only within the action area (typically a watershed). An action that improves habitat in a watershed, and thus helps meet essential habitat feature requirements, can benefit the portion of the population of the ESU in the action area.

Construction is proposed during the time when UCR spring chinook redds are likely to be found Peshastin Creek (B. Steele, pers. comm. 2003). In addition, UCR steelhead juveniles are also likely to be found in the action area (rearing use is likely). For these reasons, a qualified fisheries biologist will conduct a visual survey of the action area to identify any possible chinook redds. These areas will be flagged and monitored to ensure they are not disturbed by construction. If redds are identified close enough downstream to be affected by sediment or turbidity, added protection measures (*e.g.*, turbidity curtain) will be required to minimize effects on redds.

Based on the habitat effects described above, the proposed action may affect UCR spring chinook and UCR steelhead by removing a habitat feature (large pool) that is presently available to ESA-listed species in the area. As mentioned previously, pool habitat in Peshastin Creek has been reduced from natural/historic conditions by a variety of anthropogenic activities. Large deep pools provide resting areas, refuge from predators, and areas of cool water when late season water temperatures rise. The proposed action will provide new pool habitat on the downstream side of the barb but it is not expected to completely replace the total area of pool being filled in the action area. On a reach basis, the change in pool area is not considered measurable or significant.

Based on the effects described above, the SR 97 Peshastin Creek Bridge Scour will result in a small loss of pool habitat. This change is not expected to affect salmonid distribution, reproduction or numbers of UCR chinook or UCR steelhead.

2.2.3 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." For this analysis, cumulative effects for the general Action Area are considered. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being reviewed through separate section 7 consultation processes

The state of Washington has various strategies and programs designed to improve the habitat of listed species and assist in recovery planning. Washington's 1998 Salmon Recovery Planning Act provided the framework for developing watershed restoration projects. It also created the Governor's Salmon Recovery Office to coordinate and assist in the development of salmon recovery plans.

The Watershed Planning Act, also passed in 1998, encourages voluntary planning by local governments, citizens, and Tribes for water supply and use, water quality, and habitat at the Water Resource Inventory Area or multi-Water Resource Inventory Area level. Washington's Department of Fish and Wildlife and tribal comanagers have been implementing the Wild Stock Recovery Initiative since 1992. The co-managers are completing comprehensive species management plans that examine limiting factors and identify needed habitat activities. Water quality improvements will be proposed through development of Total Maximum Daily Loads (TMDLs). The state of Washington is under a court order to develop TMDL management plans on each of its 303(d) water-quality-listed streams. It has developed a schedule that is updated yearly; the schedule outlines the priority and timing of TMDL plan development. These efforts should help improve habitat for listed species.

2.3 Conclusions

NOAA Fisheries has reviewed the direct, indirect and cumulative effects of the proposed action on the above listed species and their habitat. NOAA Fisheries evaluated these effects in light of existing conditions in the action area and measures included in the action to minimize the effects. The proposed action is likely to cause adverse effects to listed salmonids by mechanical injury or death during construction and temporarily decreasing the amount of available pool habitat. These effects are unlikely to appreciably reduce salmonid distribution, reproduction or numbers.

Consequently, the proposed action is not likely to jeopardize the continued existence of listed UCR spring chinook or UCR steelhead.

2.4 Conservation Recommendations

Conservation recommendations are defined as "discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information" (50 CFR 402.02). 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 conservation recommendations listed below are consistent with these obligations, and therefore should be implemented by the FHWA.

1. The action agency should fund the construction and installation of additional structures to slow the streamflow, create pools and additional instream habitat to replace the habitat being removed. The structures should incorporate wood and rock to increase instream habitat complexity.

2. The action agency should explore opportunities to reconnect side channel and floodplain habitats.

In order for NOAA Fisheries to be kept informed of actions minimizing or avoiding adverse effects, or those that benefit listed species or critical habitat, NOAA Fisheries requests notification of the achievement of any conservation recommendations when the action agency submits its monitoring report describing action under this Opinion or when the project is completed.

2.5 Reinitiation of Consultation

As provided in 50 CFR 402.16, reinitiation of formal consultation is required if: 1) The amount or extent of taking specified in the Incidental Take Statement is exceeded, or is expected to be exceeded; 2) new information reveals effects of the action may affect listed species in a way not previously considered; 3) the action is modified in a way that causes an effect on listed species that was not previously considered; or 4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the anticipated amount or extent of incidental take is exceeded, any operations causing such take must cease, pending conclusion of the reinitiated consultation.

2.6 Incidental Take Statement

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

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

2.6.1 Amount or Extent of Take

As stated in section 2.2 above, UCR spring chinook and UCR steelhead use the action area for migration, spawning and rearing. The numbers of ESA-listed species in Peshastin Creek has been low for several years. Because of the low numbers of listed fish returning to Peshastin Creek, non-listed Carson stock spring chinook adults have been planted since 2000. The number of non-listed Carson stock adults that have been planted is greater than the number of ESA-listed adult spring chinook that return to Peshastin Creek to spawn. These non-listed fish are believed to be spawning in Peshastin Creek (B. Steele, WDFW Area Habitat Biologist, 2003 pers.comm.). Therefore, juvenile spring chinook (both listed and non-listed) and juvenile steelhead are likely to be in the Action Area in low numbers during construction activity. Therefore, the proposed action is reasonably certain to result in incidental take of the listed species when the scour hole is filled. NOAA Fisheries is reasonably certain the incidental take described here will occur because: (1) the listed species are known to occur in the action area in low numbers year-round and are likely to be in pools; and (2) juvenile fish will often attempt to hid in interstitial spaces when frightened instead of leaving the area of disturbance; (3) the proposed action is specifically designed to fill a large pool that is threatening the safety of a transportation structure. The action is therefore likely to injure or kill juvenile fish that may try to hide in interstitial spaces instead of leaving the area.

Despite the use of best scientific and commercial data available, NOAA Fisheries cannot quantify a specific amount of incidental take of individual fish for this action. Instead, the extent of take is anticipated to be the temporary loss of a large pool, disturbance of 300 square feet of the streambed for a barb and up to 300 square feet of the streambed for a temporary work platform. For water quality effects, take is anticipated for turbidity increases within 200 feet downstream of the project area. If the proposed action results in a greater area being disturbed or if turbidity exceeds the specified standards, the FHWA will need to reinitiate consultation. The authorized take includes only take caused by the proposed action within the action area as defined in this Opinion.

2.6.2 Reasonable and Prudent Measures

Reasonable and Prudent Measures (RPM) are non-discretionary measures to minimize take, that may or may not already be part of the description of the proposed action. They must be implemented as binding conditions 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. If the FHWA fails to require the applicants to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse. The NOAA Fisheries believes that activities carried out in a manner consistent with these RPMs, except those otherwise identified, will not necessitate further site-specific consultation.

Activities which do not comply with all relevant RPMs will require further consultation. NOAA Fisheries believes that the following RPMs are necessary and appropriate to minimize take of listed fish resulting from implementation of the action.

1. The FHWA will ensure minimization of incidental take from in-water construction activities.

2. The FHWA will ensure minimization of incidental take from construction activities near the stream.

3. The FHWA will ensure minimization of take from effects on riparian and instream habitat.

4. The FHWA will ensure take is minimized by monitoring the effects of the proposed action.

2.6.3 Terms and Conditions

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

1. To implement RPM No. 1 (construction within the ordinary high water mark [OHWM]), above, the FHWA will ensure that:

   a. In accordance with the state issued Hydraulic Project Approval, a qualified fish biologist will conduct a visual survey immediately before construction begins to locate and identify any possible redds within 200 feet downstream of the bridge for flows between 10 and 100 cfs. Both WDFW and NOAA Fisheries will receive immediate verbal notification (within 24 hours) followed by written documentation of the results of this survey. These observations will be conducted daily during the period of instream work.

b. If redds of ESA-listed species are identified downstream of the bridge, a turbidity curtain will be used to further minimize the impacts to the redds or spawning adults.

c. All work within the active channel will be completed within the approved work window, determined through consultation with local FHWA for this specific project.

d. Construction methods will not cause turbidity to extend beyond 200 feet downstream of the project area (as described in WAC-201-100 and WAC-201-110) (WDOE 2003). The use of a mixing zone is intended for brief periods of time (a few hours or a few days) and is not intended as authorization to exceed turbidity standards for the duration of the project. Additionally, a mixing zone is only allowed after the implementation of appropriate best management practices to avoid or minimize disturbance of sediment.

e. All equipment used for in-water work will be cleaned prior to entering the active channel of Peshastin Creek and will be "diapered" or otherwise protected to prevent introducing hazardous material within the OHWM. External oil and grease will be removed. Untreated wash and rinse water will not be discharged into streams and rivers without adequate treatment to remove debris, nutrients, sediment, petroleum hydrocarbons, metals, and other pollutants likely to be present.

2. To implement RPM No. 2 (construction activities near the stream), the FHWA will ensure that:

a. The Contractor will comply with a Standard Pollution Prevention Control and Countermeasures Plan that will minimize the risk of spills and establish efficient response strategy in the event of a spill.

b. All Temporary Erosion and Sediment Control (TESC) measures included in the BA are included as provisions in the contract.

c. Areas for fuel storage, refueling, and servicing of construction equipment and vehicles will be at least 150 feet from the stream channel and all machinery fueling and maintenance will occur within a contained area. Overnight storage of vehicles and equipment must also occur in designated staging areas.

3. To implement RPM No. 3 (riparian and in-stream habitat protection), the FHWA will ensure that:

   a. Alteration of native vegetation will be minimized. Where native vegetation is altered, measures will be taken to ensure that roots are left intact. This will reduce erosion while still allowing room to work. No protection is extended to invasive species (e.g., Himalayan blackberry) although no chemical treatment of invasive species will be used.

   b. Riparian vegetation that is removed will be replaced with a native species mix of seeds, shrubs and trees.

   c. Rock used for construction will be clean, angular rock, of the minimum possible size. Rock will be "placed" not dumped, and will be installed to withstand the 100-year peak flow.

4. To implement RPM No. 4 (monitoring), the FHWA will ensure that:

   a. Erosion control measures as described above in RPM No. 2 will be monitored for effectiveness.

   b. All riparian plantings will be monitored yearly for three years to ensure that finished grade slopes are at stable angles of repose and that woody plantings are achieving a minimum of 80% cumulative survival.

   c. If the success standard specified above in RPM 4.b is not achieved, dead plantings will be replaced to bring the site into conformance. If failed plantings are deemed unlikely to succeed, replacement plantings will be conducted at other appropriate locations in the project area.

   d. By December 31 of the year following the completion of construction, the FHWA will submit a monitoring report with the results of the monitoring required in terms and conditions 4.a and 4.b above. Send reports to NOAA Fisheries, Attention: Diane Driscoll, 510 Desmond Drive SE, Suite 103, Lacey, WA 98503.

   e. In each of the two years following completion of construction, the FHWA will submit to NOAA Fisheries (Washington Branch) a monitoring report with the results of monitoring requirements of 4.a and 4.b above. Send reports to NOAA Fisheries, Attention: Diane Driscoll, 510 Desmond Drive SE, Suite 103, Lacey, WA 98503.

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

All terms and conditions shall be included in any permit, grant, or contract issued for the implementation of the action described in this Opinion.

3.0 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

3.1 Statutory Requirements

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan.

Pursuant to the MSA:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (section 305(b)(2)).

- NOAA Fisheries must provide conservation recommendations for any Federal or state action that may adversely affect EFH (section 305(b)(4)(A));

- Federal agencies must provide a detailed response in writing to NOAA Fisheries within 30 days after receiving EFH conservation recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with NOAA Fisheries EFH conservation recommendations, the Federal agency must explain its reasons for not following the recommendations (section 305(b)(4)(B)).

The EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA section 3). For the purpose of interpreting this definition of EFH: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.10). Adverse effect means any impact which reduces quality and/or quantity of EFH, and may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey or reduction in species fecundity), site-specific, or habitat-wide impacts: including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

An EFH consultation with NOAA Fisheries is required for any Federal agency action that may adversely affect EFH, including actions that occur outside EFH, such as certain upstream and upslope activities.

The objectives of this EFH consultation are to determine whether the proposed action may adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects on EFH.

3.2 Identification of Essential Fish Habitat

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

3.3 Proposed Actions

The proposed action and action area are detailed above in sections 1.2 and 1.3 of this document. The action area includes habitats that have been designated as EFH for various life-history stages of chinook and coho salmon.

3.4 Effects of Proposed Action on Essential Fish Habitat

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

1. Short-term degradation of benthic foraging habitat because of the disturbance of approximately 500 square feet of area below the OHWM.

2. Short-term degradation of water quality in the action area because of an increase in turbidity during in-water construction and the potential for contaminants to reach the

stream.

3. Permanent loss of a large, year-round pool along the north abutment and a smaller, high-water pool along the south abutment.

3.5 Conclusion

NOAA Fisheries concludes that the proposed action may adversely affect designated EFH for chinook and coho salmon.

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations to Federal agencies regarding actions that may adversely affect EFH. While NOAA Fisheries understands that the conservation measures described in the BA will be implemented by the FHWA, it does not believe that these measures are sufficient to address the adverse impacts to EFH described above. Consequently, NOAA Fisheries recommends that FHWA implement the following actions to minimize the potential adverse effects to EFH for chinook and coho salmon:

1. To minimize EFH adverse effect No. 1 (degradation of benthic foraging habitat), all work within the active channel will be completed within the WDFW approved work window and rock will be "placed" and not dumped.

2. To minimize EFH adverse effect No. 2 (water quality), FHWA should ensure that:

    a. The contractor has a Spill Prevention Control and Containment Plan (SPCC) and a TESC Plan in place prior to the start of any construction activities.

    b. Turbidity plumes do not extend greater than 200 feet downstream of the project area for flows above 10 cfs and less than 100 cfs. If flows exceed 100 cfs, turbidity should not extend beyond 300 feet downstream of the project area.

    c. Use a turbidity curtain to contain suspended sediments during instream work if salmonid redds are found within 200 feet downstream for flows between 10 and 100 cfs. This will reduce the potential for deleterious turbidity impacts on downstream redds in the project area.

3. To minimize EFH adverse effect No. 3 (loss of instream pool habitat), FHWA should:

    Construct an additional structure downstream to create a backwater pool or install additional wood and boulders in an appropriate location near the project site to replace the instream habitat that will be lost.

3.7 Statutory Response Requirement

Pursuant to the MSA (section 305(b)(4)(B)) and 50 CFR 600.920(j), 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 impacts of the activity on EFH. In the case of a response that 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.

3.8 Supplemental Consultation

The action agency must reinitiate EFH consultation with NOAA Fisheries if the proposed action is substantially revised in a manner that may adversely affect EFH, or if new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920(l)).

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