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

NMFS Tracking No.:
2002/00235

July 26, 2004

Mr. Stephen A. Moreno, Division Administrator
Federal Highways Administration, Idaho Division
3050 Lake Harbor Lane, Suite 126
Boise, Idaho 83703

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Basin Creek Bridge Replacement Project (one action)

Dear Mr. Moreno:

Enclosed is a document containing a biological opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of the Basin Creek Bridge Replacement Project in the Upper Salmon River Basin. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Snake River sockeye salmon, Snake River spring/summer chinook salmon, Snake River steelhead, and designated critical habitat.

This document contains a consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and its implementing regulations (50 CFR Part 600). NOAA Fisheries concludes that the proposed action may adversely affect designated EFH for chinook salmon. As required by section 305(b)(4)(A) of the MSA, included are conservation recommendations that NOAA Fisheries believes will avoid, minimize, mitigate, or otherwise offset adverse effects on EFH resulting from the proposed action. As described in the enclosed consultation, 305(b)(4)(B) of the MSA requires that a Federal action agency must provide a detailed response in writing within 30 days of receiving an EFH conservation recommendation.

If you have any questions regarding this letter, please contact Ms. Nikki Leonard of my staff in the Idaho State Habitat Office at 208/378-5708.

Sincerely,

Russell M Strach for

D. Robert Lohn
Regional Administrator

Enclosure

cc: J. Foss - USFWS
D. Clark - ITD
C. Carnohan - ITD

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

Basin Creek Bridge Replacement Project
Basin Creek, Salmon River
Upper Salmon River Basin HUC 17060201
Custer County, Idaho

Lead Action Agency: Federal Highway Administration

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

Date Issued: July 26, 2004

Issued by: Russell M Strach for
D. Robert Lohn
Regional Administrator

NMFS Tracking No.: 2002/00235

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BA	Biological Assessment
BMPs	Best Management Practices
CRB	Columbia River Basin
EFH	Essential Fish Habitat
ESA	Endangered Species Act
ESU	Evolutionary Significant Unit
FCRPS	Federal Columbia River Power System
FHWA	Federal Highway Administration
HUC	Hydrologic Unit Code
IDFG	Idaho Department of Fish and Game
ITD	Idaho Transportation Department
lambda	Median Population Growth Rate
Matrix	Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NOAA Fisheries	NOAA's National Marine Fisheries Service
NTUs	Nephalometric Turbidity Units
Opinion	Biological Opinion
PFC	Properly Functioning Condition
PFMC	Pacific Fisheries Management Council
SH-75	State Highway 75
USFWS	U.S. Fish and Wildlife Service

1. INTRODUCTION

The Endangered Species Act (ESA) of 1973 (16 USC 1531-1544), as amended, establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with U.S. Fish and Wildlife Service (USFWS) and NOAA's National Marine Fisheries Service (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 designated critical habitats. This biological opinion (Opinion) is the product of an interagency consultation pursuant to section 7(a)(2) of the ESA and implementing regulations found at 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 (§305(b)(2)).

The Federal Highway Administration (FHWA) proposes to provide funds to the Idaho Transportation Department (ITD). The purpose of the Basin Creek Bridge Replacement Project is to replace the bridge on State Highway 75 (SH-75) which crosses Basin Creek near its confluence with the Salmon River. The FHWA has proposed the action according to its authority under the Transportation Equity Act for the 21st Century (1997). The administrative record for this consultation is on file at the Idaho Habitat Branch office.

1.1 Background and Consultation History

NOAA Fisheries received a request for a species list on May 7, 2001, and provided the requested list on June 4, 2001. NOAA Fisheries first met with the ITD at the Basin Creek Bridge in the fall of 2001. A draft biological assessment (BA) was received on March 15, 2002, and NOAA Fisheries requested more information on the proposed action on April 2, 2002. NOAA Fisheries then met with ITD personnel and their consultant on April 23 and July 23, 2002. NOAA Fisheries, USFWS, and ITD met on July 30, 2002, and conducted a site visit on September 10, 2002.

NOAA Fisheries received a revised BA March 6, 2003, and received an addendum to the BA on August 6, 2003. Consultation was initiated at that time. NOAA Fisheries provided FHWA with a draft Opinion on December 3, 2003, and FHWA responded with comments on January 30, 2004.

The Basin Creek Bridge Replacement Project would likely affect tribal trust resources. Because the proposed action is likely to affect tribal trust resources, NOAA Fisheries has contacted the Shoshone-Bannock Tribes and the Nez Perce Tribe pursuant to the Secretarial Order (June 5, 1997). The Nez Perce Tribe did not respond. The Shoshone-Bannock Tribes responded with a December 3, 2003, email request for additional information on the project. NOAA Fisheries advised FHWA of the tribal interest in the project and, subsequent to receiving and incorporating FHWA comments into the Opinion, released a draft Opinion to the Tribes on February 6, 2004. No response was received from the Tribes.

1.2 Proposed Action

Proposed actions are defined in NOAA Fisheries' 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 Basin Creek Bridge Replacement Project and because the project may affect listed species, the FHWA must consult under ESA section 7(a)(2) and MSA section 305(b)(2).

The Proposed Action is to replace the existing Basin Creek bridge, including the base and surface work associated with the approaches. The existing bridge has a substandard curb-to-curb width of 25.5 feet, and out-to-out width of 27.5 feet, and a span of 21 feet. The new bridge will be a 50-foot clear span, voided slab design. It will have a curb-to-curb deck width of 33.1 feet and an out-to-out width of 36.3 feet. The new bridge will be skewed 30 degrees from the existing road center line for better hydraulic alignment on Basin Creek and the bridge centerline will be moved upstream approximately 6 feet. The bridge will have a one-foot clearance at the 50-year flood interval. Spread footers will be constructed 4 feet below the existing streambed. Bridge railing will be two-tube curb mounted railing. To preclude negative impacts to water quality from pentachlorophenols or leachates from treated wood posts, metal posts will be used for all permanent guardrail applications. The design speed of the facility will be 55 miles per hour, with a super elevation of 6%. An existing materials waste site located approximately 10 miles downstream will be used for project material disposal. Equipment staging and fueling will be at an existing area 0.2 miles downstream of the bridge site.

1.2.1 Road and Bridge Construction

The Basin Creek bridge will be replaced in 2004 or 2005. All instream work will be conducted under de-watered conditions during a fisheries window of July to mid-November and all construction will be limited to daylight hours only. The de-watering activities are expected to be completed before August 10. Oversight for all instream work will be provided by a qualified riparian specialist, approved by the ITD Senior Environmental Planner. Construction of the new bridge will occur in two stages in order to maintain traffic flow through the project area.

The first step in the construction process will be the installation of the de-watering structure which will consist of a plastic-lined sluice (Porta dam or similar structure). This structure consists of a wood or metal frame to which is attached plastic which forms a temporary stream channel within the boundaries of the natural channel. A trackhoe (or similar equipment) will be operated from the streambank and excavate a trench across the stream channel approximately 100 feet upstream of the existing bridge. This trench will be used to anchor the upstream edge of the plastic stream channel and ensure thorough de-watering of the construction area. The trench will extend to a depth of 2 to 4 feet or until bedrock is encountered, whichever comes first. A modular steel framework system will first be erected by hand in the stream channel. An impermeable vinyl liner will then be attached to the framework which will create the plastic channel for streamflow. The leading edge of the fabric will then be sealed in the trench with gravel bags (if needed). The de-watering structure will capture most of Basin Creek's flow, allowing work to begin in the de-watered area. Gravel bags will be placed randomly in the bottom of the de-watering structure to provide fish refuge and fabric stabilization. A manufacturer's representative will be required to be on site to provide technical expertise during installation. Once the de-watering device is installed, any work near the streambanks may be conducted without contributing additional sediment to the stream system.

Using a backhoe (or similar equipment), stilling wells will be excavated in the de-watered areas to collect water likely to flow under the vinyl liner and percolate into the work area. Initially, small submersible pumps will be used to pump this water into a sediment retention pond. Once the initial flush of sediment passes, clean water will be returned directly to Basin Creek immediately upstream of the de-watering device. Sediment-laden water from all other excavation activities will be pumped to the sediment retention pond.

After the site is de-watered, the upstream (northern) half of the new bridge will be constructed. All material and equipment will be stored and maintained in identified uplands adjacent to SH-75. Excavation will begin by using a trackhoe (or similar equipment) to dig holes for the placement of the new footings. This excavation will occur above the ordinary high water line and culminate at a grade point below the stream channel. Should water be encountered, it will be pumped to the sediment retention pond. Wattles or berms will be used to prevent the introduction of sediment into the stream. The footings for the upstream half of the new bridge will then be formed and poured.

The existing northern wingwalls will be removed with a trackhoe to a depth of one foot below stream bottom. A temporary plank structure will be constructed to span the de-watering device and provide access to the north half of the existing bridge. The north half of the bridge will be removed by saw cutting in strategic locations to preserve the south half of the bridge and to prevent debris from entering streamflow. A trackhoe (or similar equipment) will be used to remove the materials from the site.

Voided slabs will be placed by crane upon the new abutments. The approaches to the new bridge will be constructed to join the new deck. Graders, dump trucks, bulldozers, and compactors will be used to taper the existing roadway to the new bridge. Because the road prism was modified six years ago in anticipation of the new bridge alignment, approach work will be minimal on the west side. However, two existing, 24-inch, non-functioning culverts (leading from the U.S. Forest Service, Basin Creek campground to the bank of the Salmon River) will be replaced at their present locations and at identical elevations. There is little to no flow through these culverts at the time of year that construction will take place and any potential sediment will easily be contained by the use of wattles or silt fences. On the east approach, the apron of the Forest Service road will be modified and the highway will encroach upon the hillside to meet curve design standards. This will require a four foot shift to the north which will impact the existing cutslope for approximately 100 feet along the highway and as much as 20 feet up the slope. The bank material will be excavated and hauled to the disposal site and the new surface will be graded to match alignment. The Forest Service road will remain in place but a guard rail will be added and a ditch will be dug to channel runoff to a pipe adjacent to the bridge and leading to the sediment retention basin.

Traffic will be routed to the northern half of the bridge and demolition will begin on the southern half. The removal process will be identical to that used for the northern half. The southern footings will be constructed following demolition of the existing structure. Excavation will take place above the ordinary high water line. Should water be encountered, it will be pumped to the sediment retention pond. The footings for the downstream half of the new bridge will then be formed and poured. Voided slabs will be placed by crane upon the newly constructed abutments.

New wing walls will be constructed for the entire bridge by first excavating the banks to accommodate the new structure. Forms will be placed and concrete poured into them. Using a trackhoe, riprap (large, angular rock 2-4 feet in diameter) will be anchored into place. On the southeastern side of the bridge at the confluence of the Salmon River, the channel of Basin Creek will be realigned, approximately 30 degrees to the east of its present location. The new alignment will more closely match the historic channel which was moved during construction of the existing bridge. Material from the old road will be removed by trackhoe, backhoe, and manual labor during September, October, and early November. No excavation will occur in the Salmon River, but grading and shaping the banks of Basin Creek could remove up to 1,000 cubic yards of material. All excavated material will be transported to the disposal site on SH-75 at milepost 207. Under the direction of the qualified riparian specialist, cobble material will be placed to reestablish and stabilize the channel, create a non-erodible bank, and taper the cobble to the wingwalls and riprap. The newly stabilized area will be power-washed to remove sediment and the water will be pumped to the sediment retention pond.

The de-watering structure will be removed by hand, in the reverse order by which it was installed, as per manufacturer's specifications. The trench that was required for anchoring the leading edge of the vinyl material will either be filled with boulders and cobblestone or left in place to be filled by natural fluvial processes.

1.2.2 Site Restoration

The campground area upstream from the road and bridge project will be abandoned and the floodplain will be restored to natural conditions. To restore the original high flow channel, a riprap berm and approximately 42 to 51 cubic yards of fill material will be removed using an excavator so as to carefully minimize impacts to riparian vegetation. The pipe culvert at the existing campground entrance will be removed but the entrance approach will remain as a parking area to accommodate up to four vehicles. Approximately 1,364 feet of roadbed will be removed from the campground area using a trackhoe. This material, totaling approximately 1,720 cubic yards, will be transported to the disposal site. The Forest Service (Sawtooth National Recreation Area) will complete restoration of the campground as previously described in their 1996 Final Environmental Impact Statement.

Restoration work along the highway and new bridge will be completed by ITD. Willows will be planted in excavated and riprapped banks using the Lium Willow planter. Wetland plantings (plugs), obtained from the natural wetland near the east end of the campground, will be placed by hand at the outflow locations of the two campground wetland overflow culverts for approximately 1500 feet along the north Salmon River bank. Additional riparian plantings and reseeding along the Salmon River will complete the restoration work in the area previously compacted by float boat take-out use.

1.2.3 Best Management Practices (BMPs)

The following BMPs are part of the project design.

1. All in-channel work will occur during lower flows.

2. Construction will be limited to daylight hours.

3. A spill prevention and contingency plan will be prepared by the contractor and approved by ITD.

4. All staging areas, rock and gravel borrow sources, and waste disposal sites will be located outside the 100-year floodplain.

5. A stormwater pollution prevention plan will be prepared by the contractor and approved by ITD.

6. Sediment control measures include wattles or silt fences waterward of all excavations and a sediment retention pond.

1.2.4 Monitoring

Fish movement will be monitored during construction by a regional fisheries biologist from the Idaho Department of Fish and Game (IDFG). A project inspector will be on site during all construction activities and an environmental monitor will visit the site at least weekly to examine the application and effectiveness of BMPs and mitigation measures. Upon initial excavation of the trench for the de-watering structure, visual and instrumental (turbidity meter) documentation of the sediment plume will be recorded. A visual observation of the distance that the plume traveled will be recorded first; then a turbidity meter will be used to detect if, or the extent to which nephalometric turbidity units (NTUs) were increased, both in terms of suspended sediment concentration and spatial extent. The IDFG will monitor fish movement and presence/absence during construction activities. The ITD will suspend work and notify NOAA Fisheries if IDFG detects direct impacts to fish. The ITD will monitor all BMPs. Documentation of the implementation and effectiveness of these measures will be provided to NOAA Fisheries by December 31 of the year in which the project is implemented.

1.3 Description of the Action Area

An action area is defined by NOAA Fisheries 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 1000 feet upstream from the Basin Creek Bridge on Basin Creek and extends downstream to the extent the Upper Salmon River basin is included in and defined by the hydrologic unit code (HUC) 17060201. As noted in Table 1, this area serves as migratory habitat for sockeye salmon, spawning and rearing habitat for spring/summer chinook salmon, and spawning and rearing habitat for steelhead. The action area is also within the range of designated critical habitat for spring/summer chinook and sockeye salmon. It also includes EFH for chinook salmon.

2. ENDANGERED SPECIES ACT BIOLOGICAL OPINION

The objective of this Opinion is to determine whether the Basin Creek Bridge Replacement Project is likely to jeopardize the continued existence of the Snake River sockeye salmon, spring/summer chinook salmon, steelhead or destroy or adversely modify designated critical habitat.

2.1 Evaluating the Effects of the Proposed Action

The standards for determining jeopardy and destruction or adverse modification of critical habitat are set forth in section 7(a)(2) of the ESA as defined by 50 CFR 402.02 (the consultation regulations). In conducting analyses of habitat-altering actions under section 7 of the ESA, NOAA Fisheries uses the following steps of the consultation regulations and when appropriate[1] combine them with the Habitat Approach (National Marine Fisheries Service [NMFS] 1999): (1) Consider the status and biological requirements of the listed species; (2) evaluate the relevance of the environmental baseline in the action area to the species' current status; (3) determine the effects of the proposed or continuing action on the species, and whether the action is consistent with the available recovery strategy; and (4) determine whether the species can be expected to survive with an adequate potential for recovery under the effects of the proposed or continuing action, the effects of the environmental baseline, and any cumulative effects, and considering measures for survival and recovery specific to other life stages. In completing this step of the analysis, NOAA Fisheries determines whether the action under consultation, together with all cumulative effects when added to the environmental baseline, is likely to jeopardize the ESA-listed species or result in the destruction or adverse modification of critical habitat. If either are found, step five occurs. In step five, NOAA Fisheries may identify reasonable and prudent alternatives for the action that avoid jeopardy and/or destruction or adverse modification of critical habitat, if any exists.

The fourth step above requires a two-part analysis. The first part focuses on the action area and defines the proposed action's effects in terms of the species' biological requirements in that area (i.e., impacts on essential habitat features). The second part focuses on the species itself. It describes the action's impact on individual fish–or populations, or both–and places that impact in the context of the Evolutionary Significant Unit (ESU) as a whole. Ultimately, the analysis seeks to answer the questions of whether the proposed action is likely to jeopardize a listed species' continued existence or destroy or adversely modify its critical habitat.

Part of developing Reasonable and Prudent Alternatives and Reasonable and Prudent Measures is consideration of how the proposed action meets recovery goals. Recovery planning is underway for listed salmonids in the Northwest with technical recovery teams identified for each domain. Recovery planning will help identify measures to conserve listed species and increase their survival at each life stage. NOAA Fisheries also intends recovery planning to identify the areas/stocks most critical to species conservation and recovery and to thereby evaluate proposed actions on the basis of their effects on those factors.

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[1]The Habitat Approach is intended to provide guidance to NOAA Fisheries staff for conducting analyses, and to explain the analytical process to interested readers. As appropriate, the Habitat Approach may be integrated into the body of Opinions. NOAA Fisheries staff are encouraged to share the Habitat Approach document with colleagues from other agencies and private entities who are interested in the premises and analysis methods.

2.1.1 Biological Requirements in the Action Area

The listed species' biological requirements may be described in a number of different ways. For example, they can be expressed in terms of population viability using such variables as a ratio of recruits to spawners, a survival rate for a given life stage (or set of life stages), a positive population trend, or a threshold population size. Biological requirements may also be described as essential habitat features and can be expressed in terms of physical, chemical, and biological parameters. The manner in which these requirements are described varies according to the nature of the action under consultation and its likely effects on the species or its critical habitat.

The first step NOAA Fisheries uses when applying ESA section 7(a)(2) to the listed ESUs considered in this Opinion includes defining the species' biological requirements within the action area. Relevant biological requirements are those necessary for the listed ESU's to survive and recover to naturally-reproducing population sizes at which protection under the ESA would become unnecessary. This will occur when populations are large enough to safeguard the genetic diversity of the listed ESUs, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment. Interim recovery numbers for Snake River steelhead and spring/summer chinook salmon are 53,700 and 41,900, respectively (NMFS 2002a). The survival and recovery of these species will depend on their ability to persist through periods of low natural survival.

The Basin Creek Bridge Replacement Project would occur within designated critical habitat delineated for spring/summer chinook and sockeye salmon ESU(s). Freshwater critical habitat includes all waterways, substrates, and adjacent riparian areas below longstanding, natural impassable barriers (e.g., natural waterfalls in existence for at least several hundred years) and dams that block access to former habitat. Riparian areas adjacent to a stream provide the following functions: shade, sediment delivery/filtering, nutrient or chemical regulation, streambank stability, and input of large woody debris or organic matter.

Essential habitat features of critical habitat for the affected listed species are: (1) substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) water velocity, (6) cover/shelter, (7) food (juvenile only), (8) riparian vegetation, (9) space, and (10) safe passage conditions. For this consultation, the essential habitat features that function to support successful adult and juvenile migration, adult holding, spawning, incubation, rearing, and growth and development to adulthood include substrate, water quality, water temperature, water velocity, cover/shelter, and safe passage conditions. All of these essential habitat features of critical habitat are included in a NMFS (1996) analysis framework called *Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (hereafter referred to as the "Matrix") as discussed in more detail in Section 2.2.1. The FHWA used the Matrix to evaluate the environmental baseline condition, and effects of the action on essential habitat features for affected steelhead, spring/summer chinook, and sockeye salmon.

2.1.2 Status of Species

In the first step, NOAA Fisheries considers the current status of the listed species taking into account population size, trends, distribution, and genetic diversity. To assess the current status of the listed species within the action area, NOAA Fisheries starts with the determinations made in its decision to list the species in the first place and also considers any new data that is relevant to the determination.

The Basin Creek Bridge Replacement project has been found, by the action agency, likely to adversely affect steelhead, spring/summer chinook salmon, sockeye salmon, and designated critical habitat identified in Table 1. Based on the life histories expressed in these ESUs, it is likely that incubating eggs, juveniles, and adults life stages of these listed species would be adversely affected by the Basin Creek Bridge Replacement project.

Table 1. References for Additional Background on Listing Status, Protective Regulations, and Critical Habitat Elements for the ESA-Listed and Candidate Species Considered in this Consultation.

Species ESU	**Status**	**Critical Habitat**	**Protective Regulations**
Chinook salmon (*O. Tshawytscha*)			
Snake River steelhead (*Oncorhynchus mykiss*)	Threatened; August 18, 1997; 62 FR 43937	under review	July 10, 2000; 65 FR 42422
Snake River spring/summer	Threatened; April 22, 1992; 57 FR 14653[2]	October 25, 1999; 64 FR 57399[2]	July 10, 2000; 65 FR 42422
Sockeye salmon (*O. nerka*)			
Snake River	Endangered; November 20, 1991; 56 FR 58619	December 28, 1993; 58 FR 68543	ESA section 9 applies

2.1.2.1 Snake River Spring/Summer Chinook

The Snake River spring/summer chinook salmon ESU, listed as threatened on April 22, 1992, (67 FR 14653), includes all natural-origin populations in the Tucannon, Grande Ronde, Imnaha,

[2] This corrects the original designation of December 28, 1993 (58 FR 68543) by excluding areas above Napias Creek Falls, a naturally impassable barrier.

Snake, and Salmon Rivers. Some or all of the fish returning to the Tucannon River, Imnaha, Grande Ronde, Sawtooth, Pahsimeroi, and McCall hatcheries are also listed. Although Snake River spring/summer chinook salmon are listed as threatened, the population was very near the endangered threshold at the time of listing (Matthews and Waples 1991) and dropped below the endangered threshold for several years in the mid 1990s (Fish Passage Center 2001).

For the Snake River spring/summer chinook salmon ESU as a whole, NOAA Fisheries estimates that the median population growth rate (lambda) over the base period[3] ranges from 0.96 to 0.80, decreasing as the effectiveness of hatchery fish spawning in the wild increases compared to the effectiveness 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 seven spring/summer chinook salmon index stocks,[4] 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 = 0), the risk of absolute extinction within 100 years for the wild component ranges from zero for Johnson Creek to 0.78 for the Imnaha River (Table B-5 in McClure et al 2000). At the high end, assuming that the hatchery fish spawning in the wild have been as productive as wild-origin fish (hatchery effectiveness = 100%), the risk of absolute extinction within 100 years ranges from zero for Johnson Creek to 1.00 for the wild component in the Imnaha River (Table B-6 in McClure et al. 2000).

The Snake River drainage is believed to have produced more than 1.5 million adult spring/summer chinook salmon in some years during the late 1800s (Matthews and Waples 1991). By the 1950s, the abundance of spring/summer chinook salmon had declined to an annual average of 125,000 adults. Adult returns counted at Lower Granite Dam reached all-time lows in the mid-1990s (less than 8,000 adult returns, natural and hatchery), but numbers have increased somewhat since 1997. Habitat problems are common in the range of this ESU. Spawning and rearing habitats are often impaired by activities such as tilling, water withdrawals, timber harvest, grazing, mining, and alteration of floodplains and riparian vegetation. Mainstem Columbia River and Snake River hydroelectric developments have altered flow regimes and estuarine habitat and disrupted migration corridors. Competition between natural indigenous stocks of spring/summer chinook salmon and spring/summer chinook salmon of hatchery origin has likely increased due to an increasing proportion of naturally-reproducing fish of hatchery origin.

Compared to the greatly reduced numbers of returning adults during the 1980s and 1990s, numbers of adult chinook salmon returning to the Snake River drainage in 2000 and in 2001

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[3] 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 beginning in 1980 and including 1999 adult returns. Population trends are projected under the assumption that all conditions will stay the same into the future.

[4] McClure et al. (2000b) have calculated population trend parameters for additional SR spring/summer chinook salmon stocks.

were large. These large returns are thought to be a result of favorable ocean conditions and above average flows in the Columbia River Basin when the smolts migrated downstream. However, the 2000 and 2001 runs are only a fraction of the size of runs in the late 1800s. The 2002 run was also large compared to runs in the late 1990s. The 2003 run was expected to be depressed due to low flows during smolt out-migration in 2000, but a larger than expected number of 5-year old fish helped offset the small number of 4-year olds. The 2004 runs are also expected to be poor due to low flows when smolts were migrating in 2001. The long-term decline in Snake River spring/summer chinook salmon is expected to continue for the foreseeable future. Detailed information on the current range-wide status of Snake River chinook salmon under the environmental baseline, is described in chinook salmon status review (Myers et al 1998).

Spring/summer chinook have utilized the Salmon River immediately adjacent to the confluence of Basin Creek for spawning and rearing habitat. Basin Creek also provides spawning and rearing habitat.

2.1.2.2 Snake River Steelhead

The Snake River steelhead ESU includes all natural-origin populations of steelhead in the Snake River basin. None of the hatchery stocks in the Snake River basin are listed, but several are included in the ESU. Designated critical habitat for Snake River steelhead was administratively withdrawn on April 30, 2002. There is currently no designated critical habitat for Snake River steelhead.

For the Snake River steelhead ESU as a whole, NOAA Fisheries estimates that the lambda over the base period[5] ranges from 0.91 to 0.70, 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 A- and B-runs, 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 = 0), the risk of absolute extinction within 100 years is 0.01 for A-run steelhead and 0.93 for B-run fish (Table B-5 in McClure et al. 2000). At the high end, assuming that the hatchery fish spawning in the wild have been as productive as wild-origin fish (hatchery effectiveness = 100%), the risk of absolute extinction within 100 years is 1.00 for both runs (Table B-6 in McClure et al. 2000).

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[5] 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 beginning in 1980 and including 1997 adult returns. Population trends are projected under the assumption that all conditions will stay the same into the future.

In listing the Snake River steelhead as threatened, NOAA Fisheries determined that the ESU is not presently in danger of extinction, but is likely to become endangered in the foreseeable future. This is due largely to the declining abundance of natural runs over the past decades. Some of the significant factors in the declining populations are mortality associated with the dams along the Columbia and Snake Rivers, losses from harvest, loss of access to more than 50% of their historic range, and degradation of habitats used for spawning and rearing. Possible genetic introgression from hatchery stocks is another threat to Snake River steelhead since wild fish comprise such a small proportion of the population. Additional information on the biology, status, and habitat elements for Snake River steelhead are described in Busby et al (1996).

The 2000 and 2001 counts at Lower Granite Dam indicate a short-term increase in returning adult spawners. Adult returns (hatchery and natural origin) in 2001 were the highest in 25 years and 2000 counts were the sixth highest on record (Fish Passage Center 2001). Increased levels of adult returns are likely a result of favorable ocean and instream flow conditions for these cohorts. Although steelhead numbers have dramatically increased, wild steelhead comprised only
10% to 20% of the total returns since 1994. Consequently, the large increase in fish numbers does not necessarily reflect a strong or sustained improvement in the status of naturally spawning steelhead. Recent increases in the population are not expected to continue, and the long-term trend for this species indicates a decline.

Survival of downstream migrants in 2001 was the lowest since 1993. Low survival was due to record low run-off volume and elimination of spills from the Snake River dams to meet hydropower demands (Fish Passage Center, 2001). Average downstream travel times for steelhead nearly doubled and were among the highest observed since recording began in 1996. Consequently, wide fluctuations in population numbers are expected over the next few years when adults return to spawning areas. Naturally produced Snake River steelhead occur in all the Upper Salmon Subbasins; however, detailed knowledge of spawning reaches and numbers of spawners is lacking. Basin Creek is known to provide spawning and rearing habitat for steelhead. Detailed information on the current range-wide status of Snake River steelhead, under the environmental baseline, is described in steelhead status review (Busby et al 1996), and status review update (BRT 1998).

2.1.2.3 Snake River Sockeye Salmon

The Snake River sockeye salmon ESU includes populations of sockeye salmon from the Snake River basin, Idaho (extant populations occur only in the Salmon River drainage). Under NOAA Fisheries' interim policy on artificial propagation (58 FR 17573), the progeny of fish from a listed population that are propagated artificially are considered part of the listed species and are protected under ESA. Thus, although not specifically designated in the 1991 listing, Snake River sockeye salmon produced in the captive broodstock program are included in the listed ESU.

Given the dire status of the wild population under any criteria (16 wild and 264 hatchery-produced adult sockeye returned to the Stanley basin between 1990 and 2000), NOAA Fisheries considers the captive broodstock and its progeny essential for recovery.

Adult Snake River sockeye salmon enter the Columbia River in late spring and early summer and reach the spawning lakes in late summer and early fall. The entire mainstem Salmon River downstream from Alturas Lake Creek has been designated as critical habitat for sockeye salmon (50 CFR Part 226, December 28, 1993), but all spawning and rearing habitat is in the Upper Salmon subbasin.

Snake River sockeye salmon stocks in Pettit, Stanley, and Yellow Belly Lakes were eliminated by a combination of fishery management practices designed to eliminate non-sport fishes, land use practices such as irrigation diversion, and migration blockage due to the Sunbeam Dam (Chapman et al 1990). Fishery management practices and the Sunbeam Dam are no longer adversely impacting Snake River sockeye salmon, however the species has been and continues to be adversely impacted by operation of the Federal Columbia River Power System (FCRPS) (Chapman et al 1990), and by low flows which are exacerbated by operation of irrigation diversions (Chapman et al 1990).

Table 2. - Interim abundance targets for spawning aggregations in Upper Salmon Subbasin of the Snake River spring/summer chinook salmon, Snake River sockeye salmon, and Snake River steelhead ESUs (NMFS 2002a).

Spawning Aggregation	**Target Number of Spawners**
Spring/summer chinook salmon, Lemhi River	2,200
Spring/summer chinook salmon, Pahsimeroi River	1,500
Spring/summer chinook salmon, Salmon River, Lemhi To Redfish Lake Creek (summer)	2,000
Spring/summer chinook salmon, Salmon River, Lemhi to Yankee Fork (spring)	2,400
Spring/summer chinook salmon, Upper East Fork Salmon River (spring)	700
Spring/summer chinook salmon, Salmon River and tributaries above the Yankee Fork (spring)	5,100
Snake River sockeye salmon, entire ESU	1,500 in at least two lakes
Snake River steelhead, Lemhi River	1,600
Snake River steelhead, Pahsimeroi River	800
Snake River steelhead, upper Salmon River	4,700

2.1.3 Environmental Baseline in the Action Area

The environmental baseline is defined as: "the past and present impacts of all Federal, state, or private actions and other human activities in the action area, including the anticipated impacts of all proposed Federal projects in the action area that have undergone section 7 consultation and the impacts of state and private actions that are contemporaneous with the consultation in progress" (50 CFR 402.02). In step 2 of NOAA Fisheries' analysis, it evaluates the relevance of the environmental baseline in the action area to the species' current status. In describing the environmental baseline, NOAA Fisheries evaluates essential habitat features of designated critical habitat and the listed salmonid ESUs affected by the proposed action.

It is helpful to discuss the environmental baseline in light of the species' essential habitat features. For proposed actions that affect habitat, NOAA Fisheries often characterizes essential habitat features in terms of a concept called properly functioning condition (PFC). The PFC is the sustained presence of natural habitat-forming processes in a watershed (*e.g.*, riparian community succession, bedload transport, precipitation runoff pattern, channel migration) that are necessary for the long-term survival of the species through the full range of environmental variation. The PFC, then, constitutes the habitat component of a species' biological requirements. The indicators of PFC vary between different landscapes based on unique physiographic and geologic features.

In general, the environment for listed species in the Columbia River Basin (CRB), including those in the action area, has been dramatically affected by the development and operation of the FCRPS. Storage dams have eliminated mainstem spawning and rearing habitat, and have altered the natural flow regime of the Snake and Columbia Rivers, decreasing spring and summer flows, increasing fall and winter flow, and altering natural thermal patterns. Power operations cause fluctuation in flow levels and river elevations, affecting fish movement through reservoirs, disturbing riparian areas and possibly stranding fish in shallow areas as flows recede. The eight dams in the migration corridor of the Snake and Columbia Rivers kill or injure a portion of the smolts passing through the area. The low velocity movement of water through the reservoirs behind the dams slows the smolts' journey to the ocean and enhances the survival of predatory fish (Independent Scientific Group 1996, National Research Council 1996). Formerly complex mainstem habitats in the Columbia, Snake, and Willamette Rivers have been reduced, for the most part, to single channels, with floodplains reduced in size, and off-channel habitats eliminated or disconnected from the main channel (Sedell and Froggatt 1984; Independent Scientific Group 1996; and Coutant 1999). The amount of large woody debris in these rivers has declined, reducing habitat complexity and altering the rivers' food webs (Maser and Sedell 1994).

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

To address problems inhibiting salmonid recovery in CRB tributaries, Federal agencies developed the All H Strategy (Federal Caucus, 2000). A component of the All H Strategy is a habitat conservation approach that commits Federal agencies to increased coordination, a fast start on habitat protection and restoration, and lays a foundation for long-term habitat strategies geared to the unique conditions of each subbasin and watershed.

The project area is located in the Upper Salmon River Basin which is dominated by mid-and early-seral stage forest and woodland communities. The project area along the mainstem Salmon River and Basin Creek is located between Valley Creek to the west and Yankee Fork to the east. Basin Creek originates on forested uplands in the Salmon-Challis National Forest before entering the Salmon River.

Basin Creek is a Rosgen "B" channel type with a 5% average gradient in the project area. It contains 12.3 miles of perennial stream. The riparian area is dominated by small red alder, willow, and grasses. The mainstem Salmon River in the project area is a Rosgen "C" type channel with a stream gradient of approximately 3%.

The BA uses the matrix of pathways and indicators (NMFS 1996) in its analysis of existing conditions and potential effects of the action. Of the matrix parameters that could potentially be affected by the proposed action, riparian vegetation condition, sediment yield, width/depth ratio, streambank stability, floodplain connectivity, temperature, suspended sediment, cobble embeddedness, percent surface fines, and pool quality were rated as being "Functioning at Risk." Chemical contamination/nutrients, large woody debris, and pool frequency were rated as "Properly Functioning."

The habitat biological requirements of the listed species are not being met under the environmental baseline. Environmental baseline conditions in the action area would have to improve to meet those biological requirements not presently met. Any further degradation or delay in improving of these conditions might increase the amount of risk the listed species presently face under the environmental baseline.

It should be noted that, salmonid populations are also substantially affected by variation in the freshwater and marine environments. Ocean conditions are a key factor in the productivity of Northwest salmonid populations, and they appear to have been in a low phase of the cycle for some time and therefore are probably an important contributor to the decline of many stocks. These species' survival and recovery depends on their ability to persist through periods of low natural survival due to ocean conditions and other conditions outside the action area. Therefore, it is important to maintain or restore PFC in order to sustain the ESU through periods of reduced survival outside the action area. Additional details about these effects can be found in Federal Caucus (2000), NMFS (2000), and Oregon Progress Board (2000).

2.2 Analysis of Effects

Effects of the action are defined as: "the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with the action, that will be added to the environmental baseline" (50 CFR 402.02). Direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing essential habitat features of critical habitat. Indirect effects are defined in 50 CFR 402.02 as “those that are caused by the proposed action and are later in time, but still are reasonably certain to occur.” They include the effects on listed species or critical habitat of future activities that are induced by the proposed action and that occur after the action is completed. “Interrelated actions are those that are part of a larger action and depend on the larger action for their justification” (50 CFR 403.02). “Interdependent actions are those that have no independent utility apart from the action under consideration” (50 CFR 402.02).

In step 3 of NOAA Fisheries’ jeopardy and adverse modification analysis, NOAA Fisheries evaluates the effects of proposed actions on listed species and seeks to answer the question of whether the species can be expected to survive with an adequate potential for recovery if those actions go forward. The action should not further damage impaired[6] habitat or retard the progress of impaired habitat toward PFC.

The effects analysis must sometimes be applied to geographic areas smaller than a watershed or basin due to a proposed action’s scope or geographic distribution. These circumstances necessarily reduce analytic accuracy because the processes essential to aquatic habitats extend continuously upslope and downslope, and may operate quite independently between drainages (NMFS 1996). Such loss of analytic accuracy should typically be offset by more conservative management practices in order to achieve parity of risk with the watershed approach. Conversely, a watershed approach to habitat conservation provides greater analytic certainty, and hence more flexibility in management practices.

2.2.1 Habitat Effects

There is more than one scientifically credible analytical framework for determining an activity’s effect, and NOAA Fisheries will consider any scientifically credible analysis. However, NOAA Fisheries has developed an analytic methodology, referred to as the Matrix, that action agencies may want to consider when looking for an analytical model. Regardless of the analytical method used, if a proposed action is likely to impair properly functioning habitat, appreciably reduce the functioning of already impaired habitat, or retard the long-term progress of impaired habitat toward PFC, it cannot be found consistent with conserving the species.

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[6] In this document, to “impair” habitat means to reduce habitat condition to the extent that it does not fully support long-term salmonid survival and therefore “impaired habitat” is that which does not perform that full support function.

The Basin Creek Bridge Replacement Project BA provides a detailed analysis of the effects of the proposed action on sockeye salmon, spring/summer chinook, steelhead, and critical habitat in the action area. The analysis uses NOAA Fisheries' Matrices and the information in the BA and BA addendum to evaluate elements of the proposed action that have the potential to affect the listed fish or essential habitat features of their critical habitat.

The BA documents that the proposed action would adversely affect sediment yield, suspended sediment, cobble embeddedness, percent surface fines, and percent fines by depth in the short-term but would maintain or improve those parameters in the long-term. The specific components of the proposed action which would be expected to create these adverse effects are the removal of the existing bridge, the excavation of the stream channel for the placement of the de-watering device, and the excavation for the construction of the new bridge.

When sediment delivery exceeds a stream's sediment transport capabilities, the amount of fine sediments increase on and within stream substrates. Salmonid populations are typically negatively correlated with the amount of fine sediment in stream substrate (Chapman and McLeod 1987). Excessive concentrations of fine sediments in spawning and rearing habitats can reduce survival of embryos and alevins by entombing embryos and reducing flow of dissolved oxygen, decrease the availability of interstitial hiding places, alter production of macroinvertebrates, and reduce total pool volume (various studies summarized in Spence et al. 1996). Successful spawning and survival of deposited eggs are reduced when sediment fills the interstitial spaces between gravels and prevents the flow of oxygen and the flushing of metabolic wastes. Fine sediment deposited in stream substrates is directly related to chinook salmon egg-to-fry survival. As fine sediment increases above approximately 19%, chinook salmon egg-to-fry survival declines rapidly (Tappel and Bjornn 1983; Chapman and McLeod 1987; Burton et al. 1993). Rhodes et al. (1994) concluded that survival to emergence for chinook salmon in the Snake River Basin is probably substantially reduced when fine sediment concentrations (< 6.4 mm in size) in spawning gravel exceed 20%. They recommended suspension of ongoing activities and prohibition of new activities where this standard is exceeded.

Emerging fry can also be trapped and smothered by sediment deposition in the gravels. As sediment becomes deposited in interstitial spaces, rearing habitat for juvenile salmonids is also reduced. Rearing areas are diminished as sediment fills pools and other areas. Sedimentation of deep pools and coarse substrate used for rearing and overwintering limits the space available for fish. Increased sediment load can be detrimental to juvenile salmon not only by causing siltation, but also by introducing suspended particulate matter that interferes with feeding and territorial behavior (Berg and Northcote 1985). Newly emerged fry appear to be more susceptible to even moderate turbidity than older fish. Turbidity in the 25-50 NTU range (equivalent to 125-275 mg/L of bentonite clay) reduced growth and caused more young salmon and steelhead to emigrate from laboratory streams than did clear water (Sigler, et al. 1984).

Sedimentation can negatively affect invertebrates, resulting in a reduction of the food supply for salmon and steelhead. Potential effects of sedimentation on benthic macroinvertebrates include interference with respiration and the overwhelming of filtering insects such as some caddisfly larvae that employ fine-meshed catchnets for obtaining drifting food particles. However, the major effect upon benthic invertebrates is the massive smothering of physical habitat by heavy sediment deposition on the stream-bed, including the loss of interstitial space occupied by burrowing or hyporheic animals (Waters 1995).

Potential sedimentation from the removal of the existing bridge and the excavation for the construction of the new bridge would be minimized by the de-watering of the stream channel, the use of sediment retention ponds, and the use of silt fences or wattles. Sediment delivery to the Salmon River from the trenching of the stream channel for the placement of the de-watering device will occur, but due to the small size of the trench and the brief timeframe in which this action will occur, the extent of potential effects from this portion of the action are expected to be minimal. The FHWA also proposes the use of sediment barriers that could include silt fences or wattles. A sediment retention pond which would further minimize the risk of excessive sediment delivery is also proposed. These measures will minimize or eliminate potential sediment delivery for other ground-disturbing components of the proposed action. Due to the implementation of these measures, sediment delivery to the Salmon River is expected to be limited to temporary, localized increases in sediment delivery.

The BA also notes that riparian vegetation condition, floodplain connectivity, temperature, and off-channel habitat would be improved by the action. These improvements would occur through the extensive riparian plantings and floodplain restoration which is proposed. The riparian plantings would be expected to reduce sediment delivery in the long-term.

2.2.2 Species Effects

The proposed action would occur July through mid-November. The major instream activity proposed is the de-watering of Basin Creek which is expected to be completed by August 10. Snake River sockeye salmon have typically already migrated through the portion of the Salmon River potentially affected by the action. As construction is limited to daytime hours, any sockeye which have not yet migrated would be able to do so during dark. Additionally, sedimentation which might delay sockeye migration is expected to be minimized or eliminated by the measures referenced above in Section 2.2.1.

Snake River steelhead have typically spawned and resulting alevins have emerged from the redd before August. The lifestage which could potentially be affected by the action would be juveniles rearing in the project area. Juvenile steelhead are able to move to avoid sediment plumes and would be able to locate ample shelter either upstream in Basin Creek or downstream in the Salmon River. Alternative feeding sources would be available in either location and the de-watering device will be constructed so as to permit easy downstream migration.

Snake River spring/summer chinook typically spawn in late August through September and there is a possibility there would be redds in the Salmon River immediately downstream of the project area. Any large release of sediment from project activities could potentially cover a redd and suffocate its eggs. The FHWA has proposed substantial sediment control measures and has committed to extensive water turbidity monitoring. The likelihood of a sediment delivery pulse occurring is expected to be minimal. Additionally, the activity which would be expected to generate the largest sediment input would be the installation of the de-watering device for Basin Creek and this is expected to be completed prior to August 10 or spring/summer chinook spawning.

Another potential effect would be an instream blockage of Basin Creek to spring/summer chinook passage during instream activities. The de-watering device is expected to be constructed prior to the key spring/summer chinook spawning time of late-August through September. The use of a plastic stream channel as the de-watering device would increase stream velocities by reducing channel roughness and decreasing the size of the channel. This could potentially create a barrier to upstream migration. However, the primary areas for spring/summer chinook spawning in this area are within the main Salmon River. Additionally, Basin Creek flows are low during this part of the year and it is likely that increases in stream velocities would be too small to prevent upstream migration through the 100 foot long device.

The effect that a proposed action has on particular essential habitat features or Matrix pathways can be translated into an effect on population growth rate (lambda [λ]). In the case of this consultation it is not possible to quantify an incremental change in survival for Snake River spring/summer chinook salmon, and Snake River steelhead.

While essential habitat features were discussed within the action area, the existing population growth rates have been calculated at the much larger ESU scale. An action that improves habitat in a watershed, and thus helps meet essential habitat feature requirements, may therefore increase lambda (λ) for Snake River steelhead, sockeye, and Snake River spring/summer chinook salmon.

Adverse effects on individual fish can reduce population recruitment rates of Snake River spring/summer chinook salmon and Snake River steelhead by a small increment. The short-term adverse effects of the project will likely be minimized through the extensive mitigation measures. However, the potential for adverse effects on these populations remains a concern. The steelhead and spring/summer chinook salmon populations currently are well below their historic abundances and well below interim targets for recovery, as noted above. Therefore, even small incremental reductions in these populations can reduce the likelihood of their survival over the long-term.

As described in the effects discussion above, the Basin Creek Bridge Replacement Project will have short-term negative effects on salmon and steelhead due to sedimentation and displacement of juvenile fish due to de-watering. However the project will have long-term positive effects on the survival and recovery of Snake River spring/summer chinook salmon and Snake River steelhead through extensive riparian plantings and floodplain restoration.

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." Other activities within the watershed have the potential to adversely affect the listed species and critical habitat within the action area. 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. Past Federal actions have already been added to the environmental baseline in the action area.

State, tribal, and local government actions will likely be in the form of legislation, administrative rules or policy initiatives. Government and private actions may encompass changes in land and water uses (including ownership and intensity) any of which could adversely affect listed species or their habitat. Government actions are subject to political, legislative, and fiscal uncertainties.

Changes in the economy have occurred in the last 15 years, and are likely to continue, with less large-scale resource extraction, more targeted extraction, and significant growth in other economic sectors. Growth in new businesses, primarily in the technology sector, is creating urbanization pressures and increased demands for buildable land, electricity, water supplies, waste-disposal sites, and other infrastructure.

Economic diversification has contributed to population growth and movement, and this trend is likely to continue. Such population trends will result in greater overall and localized demands for electricity, water, and buildable land in the action area; will affect water quality directly and indirectly; and will increase the need for transportation, communication, and other infrastructure. The impacts associated with these economic and population demands will probably affect habitat features such as water quality and quantity, which are important to the survival and recovery of the listed species. The overall effect will likely be negative, unless carefully planned for and mitigated.

NOAA Fisheries is currently in negotiations with the State of Idaho regarding instream flows in the Upper Salmon River. While specifics are not yet available, it is likely that improved steamflows will occur in the future. NOAA Fisheries is not aware of any other new non-Federal activities that are reasonably certain to occur in the action area.

2.2.4 Consistency with Listed Species ESA Recovery Strategies

Recovery is defined by NOAA Fisheries regulations (50 CFR 402) as an "improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in section 4 (a)(1) of the Act." Until the species-specific recovery plans are developed, the FCRPS Opinion and the related December *2000 Memorandum of Understanding Among Federal Agencies Concerning the Conservation of Threatened and Endangered Fish Species in the Columbia River Basin* (Basinwide Salmon Recovery Strategy) provides the best guidance for judging the significance of an individual action relative to the species-level biological requirements. In the absence of completed recovery plans, NMFS strives to ascribe the appropriate significance to actions to the extent available information allows. Where information is not available on the recovery needs of the species, either through recovery planning or otherwise, NMFS applies a conservative substitute that is likely to exceed what would be expected of an action if information were available.

The Basin Creek Bridge Replacement Project has a number of restorative elements which are expected to have long-term beneficial effects for listed anadromous species. Floodplain connectivity, riparian vegetation condition, temperature, and off-channel habitat would all likely be improved as a result of the project. The bridge structure would be able to pass debris flows more easily and would reduce potential channel constriction and scour. The project also proposes numerous measures to minimize potential short-term adverse impacts. Due to the long-term restorative potential of the project and the effective minimization of short-term impacts, the Basin Creek Bridge Replacement Project is consistent with the Basinwide Salmon Recovery Strategy.

2.3 Conclusions

2.3.1 Species Conclusions

After reviewing the current status of the Snake River sockeye salmon, Snake River steelhead and Snake River spring/summer chinook salmon, the environmental baseline for the action area, the effects of the proposed actions, and cumulative effects in the action area, it is NOAA Fisheries' Opinion that the Basin Creek Bridge Replacement Project is not likely to jeopardize the continued existence of Snake River sockeye salmon, Snake River steelhead and Snake River spring/summer chinook salmon. NOAA Fisheries applied its evaluation methodology to the proposed action and found that it could cause minor, short-term degradation of anadromous salmonid habitat, temporary blockage of streams, and increases in sedimentation. NOAA Fisheries expects that construction-related effects and work isolation activities could temporarily alter normal feeding and sheltering behavior of juvenile steelhead or chinook salmon during the proposed action. NOAA Fisheries expects some direct or delayed mortality of juvenile steelhead, or chinook salmon as a result of in-stream activities should chinook or steelhead be present in those areas during the proposed action. NOAA Fisheries expects eventual beneficial water quality and hydrologic effects from the riparian plantings and the floodplain restoration.

NOAA Fisheries' conclusions are based on the following considerations: (1) most of the ground disturbing activities proposed will occur outside of the flowing waters of Basin Creek and the Salmon River; (2) in-water and near-water work will have timing, limited duration, and erosion control measures designed to minimize introduction of sediments and disturbance of juvenile and adult fish; (3) increases in sedimentation and turbidity in the project reach are expected to be short-term and minor in scale, and not degrade or hinder recovery of stream substrate in the action area; (4) long-term, beneficial effects are expected to result from the proposed floodplain restoration and riparian plantings; and (5) the proposed action is not likely to impair properly functioning habitat, appreciably reduce the functioning of already impaired habitat, or retard the long-term progress of impaired habitat toward proper functioning condition essential to long-term survival and recovery at the population ESU scale.

2.3.2 Critical Habitat Conclusions

After reviewing the current condition of the critical habitat, the environmental baseline for the action area, the effects of the proposed action, and cumulative effects in the action area, it is NOAA Fisheries' Opinion that the Basin Creek Bridge Replacement Project is not likely to destroy or adversely modify critical habitat for Snake River spring/summer chinook salmon. The effects on the habitat, which also affect the species, are summarized above.

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. NOAA Fisheries worked with the FHWA, prior to formal consultation, to incorporate measures to avoid or minimize adverse effects of the proposed activities. Therefore, NOAA Fisheries has no additional conservation recommendations regarding the actions addressed in this Opinion.

2.5 Reinitiation of Consultation

As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and 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 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

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

Incidental take is defined as "any taking otherwise prohibited, if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity" [50 CFR 17.3]. The ESA at section 7(o)(2) removes the prohibition from incidental taking that is in compliance with the terms and conditions specified in a section 7(b)(4) incidental take statement.

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

The proposed action is reasonably certain to result in incidental take of the listed species. The NOAA Fisheries is reasonably certain the incidental take described here will occur because: (1) the listed species are known to occur in the action area; and (2) the proposed actions are likely to cause impacts to critical habitat significant enough to impair feeding, breeding, migrating, or sheltering for the listed species. Despite the use of best scientific and commercial data available, NOAA Fisheries cannot quantify a specific amount of incidental take of individual fish or incubating eggs for these actions. Instead, the extent of take is anticipated to be limited to the length of stream extending 150 feet upstream (due to potential harassment from operations) and 300 feet downstream of the project site. The number of juvenile fish killed or injured during instream work is expected to be low because healthy fish typically flee from people and equipment, and few, if any, redds are likely to occur within a distance where sedimentation might be substantial enough to prevent eggs from maturing or fry from emerging from the gravels. If the proposed actions result in areas of disturbance exceeding the extent of take outlined above, the FHWA would need to reinitiate consultation. The authorized take includes only take caused by the proposed actions as defined in this Opinion.

2.6.2 Reasonable and Prudent Measures

Reasonable and Prudent Measures 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(a)(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 reasonable and prudent measures, except those otherwise identified, will not necessitate further site-specific consultation. Activities which do not comply with all relevant reasonable and prudent measures will require further consultation.

The NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of listed fish resulting from implementation of the action. These reasonable and prudent measures would also minimize adverse effects on designated critical habitat.

The FHWA shall:

1. Monitor the implementation and effects of the proposed action. Monitoring should be sufficient to detect adverse effects of the proposed action on listed species or their habitat. Report monitoring data to NOAA Fisheries (50 CFR 402.14 (I)(3)).

2. Minimize the impact of incidental take resulting from instream work activities.

3. Minimize the impact of incidental take resulting from fuels and/or toxic chemicals.

2.6.3 Terms and Conditions

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

1. To implement Reasonable and Prudent Measure #1 (monitor project activities to ensure proper implementation) above, the FHWA shall ensure that:

   a. The IDFG biologist assisting FHWA in the project monitoring shall verify the presence or absence of chinook redds within the project area and 200 yards downstream in the Salmon River.

   b. The IDFG biologist assisting FHWA in the project monitoring shall verify that the gravel bags placed in the de-watering device are sufficient to allow upstream adult passage and that the de-watering device provides adequate shelter for migrating fish.

      (1) The gravel bags shall be placed on alternating sides of the stream channel and shall be no more than 10 feet apart.

      (2) All components of the de-watering device shall be inspected and maintained, as necessary, at least monthly.

   c. All BMPs referenced in the BA and Terms and Conditions contained herein shall be monitored to document proper implementation. Results from this monitoring shall be provided to NOAA Fisheries no later than December 31 in the year during which the project is implemented.

   d. All vegetative plantings shall be monitored for a period of not less than three years. Any plants which do not successfully establish will be replaced in such a manner as to increase the likelihood of their survival.

2. To implement Reasonable and Prudent Measure #2 (minimize the impact of incidental take resulting from instream work activities) above, the FHWA shall ensure that:

   a. Complete all de-watering activities within Basin Creek prior to August 10 of the year work is being conducted. If it is determined that this is not feasible, FHWA shall contact NOAA Fisheries within 48 hours to re-initiate consultation.

b. If redds are detected in the Salmon River within 200 yards downstream of the project location, FHWA shall notify NOAA Fisheries within 72 hours. The contact person for this notification will be:

Ms. Nikki Leonard
NOAA Fisheries
Phone: 208-378-5708

c. If redds are detected in that area of Basin Creek which will be de-watered, FHWA shall suspend in-water activities until emergence has occurred.

d. Clear mylar ribbons shall be placed on top of the de-watering device to discourage avian predators. The ribbons shall be inspected on a regular basis and replaced as necessary.

e. Monitor all sediment/erosion control devices. Maintain these devices so that the levels of sediment stored will never exceed one-third the capacity of the device.

f. If a dead, injured, or sick Snake River steelhead, Snake River spring/summer chinook, and/or sockeye salmon specimen is found, initial notification must be made to:

NOAA Fisheries Law Enforcement Office
Idaho Field Office
10215 West Emerald, Suite 180
Boise, Idaho 83704
Phone: 208-321-2956

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.

3. To implement Reasonable and Prudent Measure #3 - (minimize the impact of incidental take resulting from fuels and chemical contamination), the FHWA shall:

a. Restrict heavy equipment use as follows:

(1) All construction and instream equipment is required to be clean prior to arrival at the construction site(s) to prevent the spread of noxious weeds and to prevent contamination of the stream by petroleum products.

(2) All vehicles operating within riparian habitat conservation areas of any stream or water body will be inspected daily for fluid leaks, and any leaks will be repaired before leaving the vehicle staging area.

b. Ensure that no uncured concrete comes into contact with moving water.

3. 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).

The 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 EFH

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 salmon.

3.4 Effects of Proposed Action on EFH

The effects on chinook salmon EFH are the same as those for the ESA listed species and their habitat, and are described in detail in Section 2.2 of this document. The proposed action may result in short adverse effects on a variety of habitat parameters. The primary habitat effects are short-term increases in turbidity and sedimentation, and long-term improvements in riparian vegetation and floodplain function. These effects would extend downstream to stream reaches used by chinook salmon.

3.5 Conclusion

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

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that may adversely affect EFH. In addition to conservation measures proposed for the project by the FHWA, all of the reasonable and prudent measures and the terms and conditions contained in Sections 2.6.2 and 2.6.3, respectively, of the ESA portion of this Opinion are applicable to salmon EFH. Therefore, NOAA Fisheries incorporates each of those measures here as EFH conservation recommendations.

3.7 Statutory Response Requirement

Pursuant to the MSA (§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 FHWA 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(k)).

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