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National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
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BIN C15700
Seattle, WA 98115-0070

Refer to:
OHB2002-0011-FEC

May 29, 2002

Ms. Shannon Stewart
US Department of Energy
Bonneville Power Administration
PO Box 3621
Portland, OR 97208-3621

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Act
Essential Fish Habitat Consultation for the Bear Creek Irrigation Siphon Project, Grant
County, Oregon

Dear Ms. Stewart:

Enclosed is the biological opinion (Opinion) prepared by the National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of the proposed Bear Creek Irrigation Siphon Project, Grant County, Oregon. In this Opinion, NMFS concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*), or destroy or adversely modify their designated critical habitat. As required by section 7 of the ESA, NMFS has included reasonable and prudent measures with nondiscretionary terms and conditions that NMFS believes are necessary to minimize the impact of incidental take associated with this action.

The attached Opinion contains an analysis of the effects of the proposed action on designated critical habitat. Shortly before the issuance of this Opinion, however, a Federal court vacated the rule designating critical habitat for the evolutionarily significant units considered in this Opinion. The analysis and conclusions regarding critical habitat remain informative for our application of the jeopardy standard even though they no longer have independent legal significance. Also, if critical habitat is redesignated before this action is fully implemented, the analysis will be relevant when determining whether a reinitiation of consultation will be necessary at that time. For these reasons and the need to timely issue this Opinion, our critical habitat analysis has not been removed from this Opinion.

This Opinion also serves as consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations at 50 CFR part 600.



If you have any questions regarding this consultation, please contact Liz Ellis of my staff in the Oregon Habitat Branch at 541.975.1835 x.227.

Sincerely,

for Michael R Couse

D. Robert Lohn
Regional Administrator

cc: Steve Allen - ODFW

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1. ENDANGERED SPECIES ACT

1.1 Background

On January 16, 2002, NMFS received a letter and an attached biological assessment (BA) from the Bonneville Power Administration (BPA) requesting consultation on a proposed fish passage improvement, fish screen replacement, and diversion replacement project located on Bear Creek, a tributary of the mainstem John Day River, Grant County, Oregon. In response to a request by the present landowner, the Bureau of Reclamation (BOR), as part of their cost share contribution to Oregon Department of Fish and Wildlife (ODFW), surveyed the site and developed engineered drawings for a project to provide fish passage and improve water quality conditions in Bear Creek. ODFW, funded by the Oregon Watershed Enhancement Board (OWEB) and acting through the BPA, propose to complete this project during the year 2002. The BPA is designated as the lead Federal agency for section 7 consultation under the ESA.

The BPA has determined that juvenile MCR steelhead may occur within the project area. The MCR steelhead were listed as threatened under the ESA by NMFS on March 25, 1999 (64 FR 14517). The NMFS designated critical habitat for MCR steelhead on February 16, 2000 (65 FR 7764) and applied protective regulations under section 4(d) of the ESA on July 10, 2000 (65 FR 42422). Critical habitat is designated to include all river reaches accessible to listed MCR steelhead in Oregon rivers between the Columbia River and Cape Blanco, Oregon. Excluded are areas above specific dams or above longstanding, naturally impassable barriers (i.e., natural waterfalls in existence for at least several hundred years). The BPA, using methods described in *Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996), determined that the proposed action may affect, but is not likely to adversely affect (NLAA) MCR steelhead or their designated critical habitat. Based on a January 31, 2002, site visit, NMFS and BPA mutually agreed that the project is likely to adversely affect MCR steelhead, and that formal consultation would be required.

This biological opinion (Opinion) is based on the information presented in the BA and developed through correspondence to obtain additional information and clarity. In addition, NMFS toured the project site with project personnel on January 31, 2002. The objective of this Opinion is to determine whether the Bear Creek irrigation siphon project is likely to jeopardize the continued existence of the MCR steelhead salmon, or destroy or adversely modify critical habitat. This consultation is undertaken under section 7(a)(2) of the ESA, and its implementing regulations, 50 CFR Part 402.

1.2 Proposed Action

The Bear Creek watershed is 7,094.5 acres, most of which are privately owned. Bear Creek enters the mainstem John Day River at River Mile (RM) 258.5. At stream mile 0.3; 20 feet below U.S. Highway 26, Bear Creek crosses an irrigation diversion (Diversion A), entering Hall Ditch. At times, Bear Creek is completely diverted into Hall Ditch. Hall Ditch flows east to west, perpendicular to Bear Creek. Hall Ditch originates 4,800 feet east of Bear Creek, diverting

water from John Day River through two 30-inch culverts, and continuing to flow west for approximately 600 yards after intercepting Bear Creek, irrigating hay meadows until the ditch runs out of water. A second diversion (Diversion B) from Bear Creek is located 200 feet below the area where Hall Ditch and Bear Creek intercept. West of Diversion B, a screened canal withdraws Bear Creek water during irrigation season. As a result of Diversion A and B, in late summer Bear Creek is essentially dry at the project site, according to ODFW fish biologists. The two structures (A and B) are also fish barriers at low flow.

The objectives for the proposed action include the following: Prevent flow from Bear Creek water, a Clean Water Act section 303(d) listed stream for temperature, from mixing with Hall Ditch canal water; prevent fish from leaving Bear Creek and entering Hall Ditch; ensure fish passage at the project site; and upgrade a fish screen to NMFS' fish screen standards.

A number of measures are proposed to meet project objectives. The proposed action would prevent the mixing of Bear Creek and Hall Ditch waters, and prevent fish from entering Hall Ditch by siphoning (siphon bypass) Hall Ditch under Bear Creek, 20 feet south of Highway 26 and 90 feet north of Diversion A. The proposed project will remove the older diversions (A and B), and plug up the screened irrigation canal west of Diversion B currently used by the landowner. Both diversion structures would be replaced with a fish-friendly diversion located 400 feet north of Diversion A (Diversion C). Diversion C is the actual legal point of diversion from Bear Creek.

Diversion C would divert 4.49 cubic feet per second (cfs) of water from Bear Creek into a currently abandoned diversion canal, located 330 feet northwest of the siphon bypass, running into Hall Ditch. A NMFS-approved fish screen and a water meter would be installed in the abandoned canal to allow fish passage and monitor water withdrawal by the landowner. The Oregon State Water Resources Department (OWRD) would monitor this withdrawal. The landowner will construct, on private land, a lateral channel (secondary water delivery system) located approximately 225 feet southwest of the siphon bypass to Hall Ditch in order to obtain 4.49 cfs of water. Two separate water withdrawals are associated with the project area: 7.52 (cfs) are removed from the mainstem John Day River into the Hall Ditch, and 4.49 cfs are removed from Bear Creek and diverted into the Hall Ditch. The only change to water withdrawals associated with this project is the location of the the removal of 4.49 cfs. The point of diversion will be moved to the legal point of diversion, Diversion C, bringing the landowner into compliance with Oregon Water Resources Department (OWRD) requirements.

The project would take place in several steps. A fish salvage operation would occur prior to instream work, after which Bear Creek would be routed around the project area through a 12-inch PVC pipe which allows two cfs flow. Juvenile salmon will be able to move downstream through the pipe during the construction period. The construction work consists the following components: 1) Removal of diversion structures A and B; 2) construction of a siphon bypass for Hall Ditch; 3) placement of three upstream-V rock weirs south of Highway 26 to maintain stream grade; 4) construction of a fish-friendly diversion 400 feet upstream (north) from bypass and installation of a measuring device for metering water; 5) installation of a NMFS-approved

fish screen in abandoned diversion channel below Diversion C; 6) reconfiguring the secondary water delivery system; and 7) construction of an overflow spillway for Hall Ditch. No new roads are associated with the proposed project. One new channel (secondary water delivery channel) will be built as a result of this project, and that will occur on private property, approximately 150 feet east of Bear Creek (see sections 1.2.5 and 1.5.3). A small ditch will be created to link a new diversion to an abandoned channel (see section 1.5.1). The proposed project would occur in during the ODFW in-water work window (July 15 - August 31) of 2002.

Project design features for species conservation to minimize and avoid potential impacts to listed fish and their designated critical habitat are described in the BA, and are incorporated herein by reference.

1.2.1 Fish Salvage and Water Diversion

Prior to construction, ODFW personnel will conduct a fish salvage operation to move juvenile steelhead from the project area upstream. A block seine will be placed above and below the project site to prevent movement of fish into the project area. Once the seines are in place, trained ODFW personnel will make two passes through the area with an electroshocker, using NMFS-approved shocking protocol (See Appendix). Fish captured will be placed into a bucket for recovery, and then released above the project site. After fish are removed from the project site, temporary dams will be constructed with sandbags above and below the work area. A 12-inch pipe will route water from above the upper dam to below the lower dam, which will allow juvenile MCR steelhead (adult steelhead are not present at Bear Creek this time of year) to move downstream, but will also effectively dewater the work site. After the project is complete, the sandbags and bypass pipe will be removed and fish allowed to re-occupy the stream channel.

1.2.2 Diversion Removal, Siphon Installation, and Rock Weir Placement

The two existing steel flashboard diversion structures of Diversions A and B will be removed with an excavator. Any materials left over from the removal will be disposed of outside the floodplain. Once Diversion B is removed, boulder armoring material will be placed along the bank of Diversion B, five feet upstream and five feet downstream from the site; a total of 10 linear feet. The siphon through which Hall Ditch will run consists of two earthen plugs, one on each side of the stream, a concrete inlet and outlet structure, and approximately 60 feet of 24-inch, buried PVC pipe. The open ditch that is fed by Diversion B will be filled in at the mouth to block entrance by fish.

The steel flashboard structure (Diversion B) also backwaters (re-directs) the stream into the box culvert under Highway 26 for a total distance of approximately 28 feet, creating a pool of approximately 18-24 inches that will be lost when the diversion is removed. To provide optimum fish passage through the box culvert, the BOR determined prior to this consultation that it would be advantageous to keep the box culvert backwatered in light of the minimal flow depth and hydraulic drop. In order to backwater the culvert, three boulder V-weirs will be constructed. Placement of rock weirs to backwater flow towards the center of the channel is necessary to

maintain grade. The weirs will also minimize the risk of bank erosion and channel migration. The three rock weirs consist of approximately 93 cubic yards (cy) of 42-inch maximum diameter rock. The weirs will be about 30 feet apart beginning where the existing steel flashboard diversion dam is located and continuing downstream for about 90 feet. Each rock weir will be about eight feet wide, and will create a horizontal notch of about five feet in depth in the center of the channel. All bank and riparian areas disturbed by construction activities will be planted with native trees, shrubs, and grasses.

1.2.3 Construction of New Diversion

In order to maintain the existing water use by the private landowner from Bear Creek a new diversion approximately 400 feet upstream from the Diversion A, north of Highway 26, will be constructed. This new diversion will be a smaller version of structures that have been used extensively throughout the John Day basin in recent years and are referred to as “lay-flat diversions.” The “lay-flat” diversion consists of a permanent eight-foot square precast concrete pad at streambed grade, two sidewalls created out of steel sheet piling placed along the sides of the box to maintain stream gradient, lay-flat stanchions with a 24-inch wide, three-inch deep v-notch fishway in the center of the wooden flashboards. Outside of irrigation season, the flashboards will be removed or lowered for unrestricted fish passage at all stream levels.

The structure will be backfilled with angular rock for scour protection. The rock will then be covered with streambed material to aid in revegetation and to emulate the adjacent streambed. A plunge pool will be shaped in the streambed material below the flashboard and will maintain a minimum depth of two feet at minimum creek flows in order to facilitate upstream fish migration. Angular boulder armor will provide scour protection to upstream and downstream creek-side slopes for approximately 33 feet upstream and 20 feet downstream. Willow cuttings will be hand-planted in trenches (necessary for placement of rock armor) to help revegetate disturbed banks. Such structures are not prone to damage by periodic high stream flows, therefore maintenance is minimal, sediment input is reduced, streambed/streambank degradation ceases, and both aquatic and terrestrial system recovery is possible.

In the center of the diversion, a prefabricated fish passage box will be placed, with a fish passage slot, ensuring fish passage and flow during irrigation withdrawals (see section 1.5.1.3). Just west of the diversion, and north of the abandoned irrigation canal, the streambed will be sloped to a gradient slightly higher than the fish slot found in the fish passage box. A headgate will be installed where the abandoned canal meets Bear Creek. The floor of the headgate will be at a higher elevation than the fish passage slot. The difference in elevation will help maintain flow in Bear Creek during low flow season when water is being withdrawn by the irrigator.

The water-metering device will be installed by ORWD officials after all other phases of this project are complete. This will allow monitoring of the amount of water diverted out of Bear Creek during irrigation season (April - September) by ORWD. This project is expected to increase the base flows in Bear Creek below the diversion site during irrigation season because Bear Creek will not be diverted in its entirety into Halls Ditch. The water-measuring device will

be located approximately 20 feet downstream from the fish screen in the abandoned ditch channel. This device will be used by the Water Masters office to regulate the withdrawal of waters from Bear Creek.

1.2.4 Installation of NMFS-Approved Fish Screen

A NMFS-approved fish screen will be installed in the irrigation ditch, just below the point of Diversion C (see 1.2.3). This device will prevent juvenile steelhead from migrating down the ditch into the irrigated fields. A NMFS-approved bypass system will be included with the fish screen to route all fish back into Bear Creek. There is no screen on the existing ditch below the points of diversion on Bear Creek. The new screen will consist of a two-bay, five-foot by 24-inch rotary screen commonly used throughout the John Day River basin. The two bays are necessary because the water withdrawal is for 4.49 cfs, but late in the irrigation season, flows in Bear Creek at the Diversion C are much less than two cfs, and may be approaching no measurable flow. In order for the screen to work effectively, water must submerge 75 percent of the screen. When flows drop to these low levels, one of the bays will be closed, which will raise the water level to submerge the screen by the required 75 percent.

1.2.5 Ditch Reconfiguration

A secondary water delivery system will need to be reconfigured to deliver water from Hall Ditch to the private landowner. This “new” delivery system will require no work associated with the stream, but will require excavation of the bank of Hall Ditch on private land downstream from where it presently intercepts Bear Creek. A lateral canal will be created on private land to replace the diversion (Diversion B) being removed in this project. The lateral canal will remove water from Hall Ditch and deliver it to the landowner. The landowner would complete this portion of the project.

1.2.6 Overflow Spillway

The overflow spillway on Hall Ditch is needed to prevent summertime flashflood events from traveling down the ditch and washing out the siphon and other associated parts of the project in the unnamed, 265-acre tributary drainage east of Bear Creek. The existing flashboard diversion has the capacity to carry these unpredictable flashflood events. However, the siphon as presently designed, does not have the capacity to pass the additional volume of water that could be generated by a flashflood. The spillway will be located approximately 20 feet east of where Hall Ditch enters the siphon bypass.

1.3 Biological Information and Critical Habitat

The MCR steelhead evolutionarily significant unit (ESU) was listed as threatened under the ESA by the NMFS on March 25, 1999 (64 FR 14517), with protective regulations added through 4(d) on July 10, 2000 (65 FR 42422). Biological information concerning the MCR steelhead may be found in Busby et al. (1995, 1996). Critical habitat was designated for the MCR steelhead on

February 16, 2000 (65 FR 7764). Critical habitat for MCR steelhead includes the major Columbia River tributaries known to support this ESU: The Deschutes, John Day, Klickitat, Umatilla, Walla Walla, and Yakima Rivers and the Columbia River and estuary. The adjacent riparian zone is also included in the designation. This zone is defined as the area that provides the following functions: Shade, sediment, nutrient or chemical regulation, stream bank stability, input of large woody debris or organic matter, and others. The entire action area along Bear Creek is within MCR designated critical habitat.

1.4 Evaluating Proposed Actions

The standards for determining jeopardy are set forth in Section 7(a)(2) of the ESA as defined by 50 CFR 402 (the consultation regulations). NMFS must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the initial steps of defining the biological requirements of the listed species, and evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NMFS evaluates whether the action is likely to jeopardize the ESA-listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NMFS must consider the estimated level of mortality attributable to: 1) Collective effects of the proposed or continuing action; 2) the environmental baseline; and 3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the ESA-listed species' life stages that occur beyond the action area. If NMFS finds that the action is likely to jeopardize the continued existence of the ESA-listed species, NMFS must identify reasonable and prudent alternatives for the action.

Furthermore, NMFS evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the ESA-listed species' critical habitat. NMFS must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. NMFS identifies those effects of the action that impair the function of any essential feature of critical habitat. NMFS then considers whether such impairment appreciably diminishes the habitat's value for the species' survival and recovery. If NMFS concludes that the action will adversely modify critical habitat, it must identify any reasonable and prudent measures available.

For the proposed action, NMFS' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NMFS' critical habitat analysis considers the extent to which the proposed action impairs the function of essential biological elements necessary for juvenile and adult migration, spawning, and rearing of the ESA-listed and proposed species under the existing environmental baseline.

1.4.1 Biological Requirements

The first step in the methods NMFS uses for applying the ESA section 7(a)(2) to ESA-listed salmonids is to define the species' biological requirements that are most relevant to each consultation. NMFS also considers the current status of the listed species, taking into account population size, trends, distribution and genetic diversity. To assess to the current status of the listed species, NMFS starts with the determinations made in its decision to list MCR steelhead for ESA protection and also considers new data available that is relevant to the determination.

The relevant biological requirements are those necessary for MCR steelhead salmon to survive and recover to a naturally-reproducing population level at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance its capacity to adapt to various environmental conditions, and allow it to become self-sustaining in the natural environment. For this consultation, the biological requirements are improved habitat characteristics that function to support successful rearing and migration. The current status of the listed species, based upon their risk of extinction, has not significantly improved since the species was listed.

MCR steelhead in the wild depends on the proper functioning of certain ecosystem processes including habitat formation and maintenance. The restoration of improperly functioning habitat to a a more properly functioning condition will likely lead to improved survival and recovery of MCR steelhead. In conducting analyses of habitat altering actions, NMFS defines the biological requirements in terms of a concept called properly functioning condition (PFC) and applies a "habitat" approach to its analysis (NMFS 1996; 1999). The current status of MCR steelhead, based on their risk of extinction, has not improved much since the species was listed.

1.4.2 Environmental Baseline

The environmental baseline is an analysis of the effects of past and ongoing human-caused and natural factors leading to the current status of the species or its habitat and ecosystem within the action area. The action area is defined as, "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR 402.02). The action area for this consultation, therefore, includes the Bear Creek streambed and streambank 100 feet upstream of the new diversion to be installed, 100 feet downstream of the diversions to be removed, the immediate vicinity of both diversions to be removed, location of new diversion to be installed (400 feet upstream from existing diversion located at confluence), siphon installation, location of secondary water delivery system, overflow spillway, and the three V-shaped rock weirs. ODFW engineers estimate that approximately 100 feet of streambank will be included in the diversion installation area; 100 feet for siphon installation and rock weirs, and 30 feet for removal of the lower diversion.

The current population status and trends for MCR steelhead are described in Busby et al. (1996). In general, the current status of MCR steelhead is the result of several long-term, human-induced factors (e.g., habitat degradation, water diversions, hydropower dams) that serve to exacerbate the adverse effects of natural environmental variability from such factors as drought, floods, and poor ocean conditions. Environmental baseline conditions within the action area were evaluated

for the subject action at the project site and watershed scales. The results of this evaluation, based on the “matrix of pathways and indicators” (MPI) described in NMFS (1996), follow. This method assesses the current condition of instream, riparian, and watershed factors that collectively provide properly functioning aquatic habitat essential for the survival and recovery of the species.

An assessment of the essential features of MCR steelhead critical habitat is obtained by using the MPI process to evaluate whether aquatic habitats are properly functioning. In the mainstem of John Day and/or directly in Bear Creek, eight of the 16 habitat indicators were rated as functioning “at risk,” and four were rated “not properly functioning” based on thresholds presented in the MPI. Water temperature, physical barriers, pool frequency and pool quality were rated as not properly functioning. Two MPI parameters were rated as properly functioning: chemical contamination/nutrients and width/depth ratio. The condition of each indicator is described under the “Effects of the Action” section of the BA, and those descriptions are incorporated herein by reference.

Bear Creek is listed by the Oregon Department of Environmental Quality (ODEQ) Clean Water Act Section 303(d) list for temperature from its mouth to the headwaters and has a seven-day average of 71.96 Celsius. Water temperatures in the John Day River are higher than in Bear Creek. The water in Halls Ditch comes directly from the John Day River and is also of a higher temperature. Because Bear Creek is intercepted in its entirety by Hall Ditch, Bear Creek steelhead can presently enter Hall Ditch and swim towards the John Day River, or remain in Halls Ditch, which flows for 600 yards after intercepting Bear Creek until ending in an agricultural field. Steelhead can follow Halls Ditch as it irrigates hay meadows, and eventually die. Steelhead are also currently exposed to chemicals associated with agricultural use and higher irrigation canal water temperatures.

No formal habitat surveys have been conducted on private lands surrounding Bear Creek. Observations presented in the BA are based upon ODFW experience and professional judgement arising from working in the Bear Creek watershed. Habitat surveys conducted in the Bear Creek watershed upstream from the project area indicate that gravel embeddedness is not a concern.

Recently (within the past few years) beaver have begun building dam complexes above the project site. This has led to the creation of new pools and the deposition of large amounts of fine sediments behind the beaver dams. The project is not expected to disturb the dams or accumulated sediment. In the lower seven miles of Bear Creek, downstream of the project site, grazing has reduced bank stability, weakened overhanging streambanks and reduced riparian vegetation. The sediment and turbidity load associated with the grazing downstream is unknown.

Turbidity levels and sediment loads in Bear Creek during the in-water work period (July 15-August 31) are generally low due to low instream flows, and the ODFW has expressed an opinion that Bear Creek may be dewatered during the in-water work window. ODFW personnel (Tim Unterwegner, Fishery Biologist, ODFW, 1/31/02) estimate that approximately 1-5 cfs run

through the Bear Creek project area during the in-water work window (July 15-August 31). The authorized irrigation season for this area is between April 1 and September 30.

1.5 Analysis of Effects

1.5.1 Effects of Proposed Action

Site preparation

The lack of significantly attractive flows at the mouth of Bear Creek would likely limit the number of adult MCR steelhead entering the creek from John Day River during the instream work window unless there is a high flow event, and refuge is needed from the mainstem John Day River. Bear Creek, even during low flow, is expected to provide rearing habitat for juvenile salmonids. Site preparation includes fish capture and transport measures to actively search out and remove all juvenile (and adult, if present) MCR steelhead as a precaution.

The fish salvage operation to be conducted prior to the project will result in disturbance and stress to listed steelhead in the project area. Stress approaching or exceeding the physiological tolerance limits of individual fish can impair reproductive success, growth, resistance to infectious diseases, and general survival (Wedemeyer et al. 1990). Physical injury is also possible during holding, netting, or electroshocking. Many factors influence the relative effects of electrofishing on fish including conductivity of water, depth of water, substrate, and size of the fish. Additionally, the amount of time taken to complete electrofishing within the sample area, the frequency of sampling through time, crew efficiency, and operator skill have been identified as factors influencing the magnitude of electrofishing effects.

The construction and removal of pushup dams created from sandbags is expected to deliver sediment to Bear Creek and increase turbidity. These effects will occur after the project is completed, when water is returned to the project area. Turbidity and sedimentation is generally high during this time, since flow levels are low (between 1-5 cfs) during the instream work window. The impact from the delivery of sediment is expected to be short-term and localized in nature.

Diverting Bear Creek around the project area will allow juvenile steelhead passage downstream. Temporary access to upstream habitat will be blocked off for the in-water work window. Juvenile steelhead are heading downstream at this time, and that direction is accessible.

Removal of existing diversion structure, siphon installation, rock weir placement

The effects of removing existing structures, installation of earthen plugs, installation of 60 feet of 24-inch PVC pipe, placement of a concrete inlet and outlet, and the movement and placement of boulders to shift the thalweg towards the center of Bear Creek to maintain grade, follows.

Placement of imported boulders require operation of a rubber-tired backhoe below the ordinary high water mark (OHWM) and within the wetted width of Bear Creek. Disturbance of substrate in Bear Creek would result in a short-term increase in the turbidity at the project site and

downstream. However, turbidity levels and sediment loads in Bear Creek are generally low during the in-water work period (July 15-August 31) and Bear Creek will be piped around the project site. Any potential temporary increase in turbidity in Bear Creek, though it is expected to be a slight increase over baseline levels for that time of year, could result in temporarily reduced feeding efficiency for juvenile MCR steelhead that may be present in the project area. It is also possible that when placing boulders, or removing the diversion structures, machinery may kill or injure listed juvenile MCR steelhead not found during the ODFW fish salvage operation. During the project, direct mortality is expected to be minimal, because of the fish salvage operation, piping Bear Creek around the project work site, and the low flow and higher temperatures of Bear Creek during the in-water work window at Bear Creek limiting the use of the area by juvenile MCR steelhead.

The project would affect approximately 163 feet of streambank, most of which will be short duration until riparian vegetation is re-established. Long-term impacts (over 90 days) would be restricted to about 40 linear feet, where boulders are placed to protect the siphon and to about 15 feet where the new diversion will be placed. Along with temporary increases of turbidity, the movement of boulders to shift the thalweg of Bear Creek and placement of imported boulders for armoring could result in some change of stream hydraulics at the water intake site and downstream. Movement of boulders would not increase water velocities or impede fish passage, and no barriers to fish passage would be created. Substrates in Bear Creek at the water intake site and downstream are dominated by gravel and cobble and streambanks will be revegetated with willows. Furthermore, the thalweg will be directed towards the center of Bear Creek, not at the streambanks. Therefore, any change in stream hydraulics resulting from the slight shift of the thalweg at the water intake site is not expected to result in any streambank erosion downstream.

Construction of new diversion

Construction of the diversion will require removal of streambed material, placement of steel sheet piling to maintain existing stream gradient, and creation a section of new ditch which will tie into the abandoned ditch. Also, the excavation of pools, placement of angular rock, and construction of a new diversion will result in disturbance of the stream substrate. This will result in a temporary increase in turbidity in the John Day River downstream from Bear Creek. As earlier noted, ODFW stated that during the instream work window Bear Creek often runs at low flows, and turbidity is expected to be high at that time of year. The temporary increase in stream turbidity in Bear Creek could result in temporarily reduced feeding efficiency for juvenile salmonids that may be present or downstream of in the area.

After project completion and during low flow years, a minimum of 1-2 cfs will be left in Bear Creek. This is accomplished by having a fish passage slot on the flashboards at a lower elevation than the headgate floor. The headgate sill will be set at a higher elevation than the flashboard fish passage slot and this elevation difference (0.43') will maintain water in Bear Creek during low flow years. As Bear Creek flows from the northwest and passes the headgate sill located southwest of the fish passage slot, if the water surface is lower than 3401.18' above MSL, the headgate sill will act as a "dam", keeping flow in Bear Creek instead of diverting it

into the irrigation ditch.

Installation of NMFS-approved fish screen

Installation of the new fish screen would occur in the dry. No water would be released into the abandoned channel before installing the fish screen. No impacts to water quality in Bear Creek are expected. Installation of the new screen is expected to minimize or eliminate the danger that MCR steelhead will be entrained into the Hall Ditch, where they would become entrapped and die. Once the new screen is in place, a slight potential exists for fish to become stranded on the screen if a catastrophic event plugs the Hall Ditch intake with debris and monitoring does not occur. If flow into the canal intake is blocked during a major catastrophic event, the screen would be dewatered and fish could potentially be stranded. A measuring device for water will be placed 20 feet downstream of the fish screen. Installation of the measuring device will have little effect on the existing lands as it will be a rectangular box design with overall dimensions of four feet by two feet. No fish will come into contact with this device.

Construction of overflow spillway

The overflow spillway would be located 20 feet east of where Hall Ditch enters the siphon and does not require instream work. Sediment delivery to Bear Creek may happen should a flashflood occur during construction. Bales of straw will be placed in potential drainage areas adjacent to the construction site to capture sediment as a precaution. Effects, if any, are likely to be inconsequential from this project component.

1.5.2 Effects on Critical Habitat

NMFS designates critical habitat based on physical and biological features that are essential to the listed species. Essential features for designated critical habitat include: Substrate, water quality, water quantity, water temperature, food, riparian vegetation, refugia, access, water velocity, space and safe passage. Those essential features which may be affected by this project in Bear Creek are refugia, water quality, and safe passage. For the proposed action, NMFS expects that the long-term effects will tend to improve current baseline conditions, specifically temperature and flow, and increase available salmonid rearing habitat in Bear Creek over the long term. The project is located within migratory and rearing habitat, although it is unlikely that juvenile steelhead will be present during the preferred in-water work period. If steelhead juveniles are found at the project site, they will be removed from the affected stream reach by ODFW personnel prior to the project commencing. Because little, if any, spawning habitats for MCR steelhead salmon spawning habitat are present in Bear Creek near the proposed project, spawning habitat will not be adversely affected by the instream work.

Short-term direct effects to critical habitat include the removal of 35 cy of material from the channel to construct instream structures and removal of 61 cy of material from above the OHWM. After structures are created and placed, material removed from the channel prior to construction will be used to backfill around the structures.

1.5.3 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." See Section 1.4.2 for a definition of the action area. Other activities within the John Day River watershed have the potential to adversely affect fish and habitat within the action area. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities will be reviewed through separate section 7 consultation processes. NMFS assumes that future private and state actions will continue at similar intensities as in recent years.

Construction of the secondary water delivery system is necessary to reconfigure the delivery of water from Hall Ditch to a second ditch located downstream from the project area in order to obtain irrigation water. This work will not occur instream, will not occur in Bear Creek, but will occur on private land on the banks of Hall Ditch, downstream from the project area, so little opportunity will be present to deliver sediment to Bear Creek. In order for sediment to be delivered to either Bear Creek or the John Day River, it would have to be carried over approximately 0.5 mile of pastureland, which would provide adequate distance for settling and filtration. Cumulative effects, if any, are inconsequential from this project component.

This water delivery system will obtain water from Hall Ditch, the withdrawal of which is supplemented by water from Bear Creek. The potential effects of dewatering Bear Creek, are described in section 1.5.1 of this Opinion.

1.6 Conclusion

NMFS has determined that, when the effects of the Bear Creek project addressed in this Opinion are added to the environmental baseline and cumulative effects occurring in the action area, it is not likely to jeopardize the continued existence of MCR steelhead. Additionally, NMFS concludes that the subject action would not cause adverse modification or destruction of designated critical habitat for MCR steelhead. NMFS believes that the proposed actions would cause a minor, short-term increase in stream turbidity in Bear Creek. The sediment and turbidity is expected after the project is completed, and the flow is released back into the channel. Loose fines from the removal of two diversion structures, a construction of a new diversion, and the installation of a siphon will result in increased sediment and turbidity levels. During this time of year, turbidity levels are normally high in Bear Creek because of low flows resulting from water withdrawals and stream fluctuations.

Long-term effects will include improved fish survival resulting from improvements in stream temperature, maintained water flow, an improved diversion intake system, improved fish screen, and a fish bypass system.

Although direct mortality of juvenile MCR steelhead from this project could occur during in-water work, it is not expected, and potential mortality would be minimal and would not result in jeopardy.

NMFS expects that the net effect of the proposed action will be to maintain or help restore properly functioning habitat conditions in the project area of the mainstem of John Day River and Bear Creek. These conclusions are based on the following considerations: 1) All in-water work will be completed during the ODFW preferred in-water work period between July 15 and August 31 when listed salmonids are least likely to be present, 2) a fish salvage operation would occur prior to project implementation to minimize the potential that juvenile steelhead are present in the project site, 3) Hall Ditch will bypass Bear Creek, preventing the diversion of Bear Creek waters into the warmer waters of the irrigation canal, 4) installation of a NMFS-approved fish screen is expected to minimize or eliminate the potential for MCR steelhead to enter the ditch, 5) replacement of the existing diversion structures that block fish passage will allow steelhead access to additional rearing habitat in Bear Creek, 6) permanent installation of a metering device will allow the OWRD to monitor water removal from Bear Creek, and 7) the elevation of the irrigation headgate will be higher than the streambed, ensuring Bear Creek will not be dewatered during low flow periods.

1.7 Reinitiation of Consultation

Consultation must also be reinitiated 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 (50 CFR 402.16). To reinitiate consultation, the BPA should contact the Habitat Conservation Division (Oregon Habitat Branch) of NMFS, and reference OHB2002-0011.

2. INCIDENTAL TAKE STATEMENT

Section 4 (d) and Section 9 of the ESA prohibit any taking any endangered species and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect. Harm in the definition of “take” in the ESA means 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 behavioral patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering (50 CFR 222.102; October 1, 2001). Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement. An incidental take statement specifies the impact of any incidental taking of 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.

2.1 Amount or Extent of the Take

NMFS anticipates that the action covered by this Opinion is reasonably certain to result in incidental take of listed steelhead because of detrimental effects from increased turbidity levels (non-lethal), and the potential for direct incidental take of juvenile steelhead during in-water work and fish salvage operations (lethal and non-lethal). Effects of actions such as minor sedimentation and minor riparian disturbance are unquantifiable in the short term and are not expected to be measurable as long-term harm to habitat features or by long-term harm to steelhead behavior or population levels. Therefore, even though NMFS expects some low level incidental take to occur due to the construction actions other than isolating the work area covered by this Opinion, best scientific and commercial data available are not sufficient to enable NMFS to estimate the specific amount of incidental take to the species itself. In instances such as these, NMFS designates the expected level of take as "unquantifiable." Based on the information in the biological assessment, NMFS anticipates that an unquantifiable amount of incidental take could occur as a result of the habitat altering actions covered by the Opinion. The extent of the take includes the aquatic and associated riparian habitats affected by the action activities, extending upstream to the edge of disturbance, and downstream 300 feet.

Unlike general habitat effects, the effects of the salvage operation could result in minor incidental lethal take of MCR steelhead that can be quantified based on the results of past salvage operations involving ODFW. NMFS anticipates that an incidental take of up to 10 juvenile MCR steelhead could occur as a result of the fish salvage operation as described in this Opinion. The extent of take is limited to MCR steelhead in Bear Creek within the action area.

2.2 Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measures are necessary and appropriate to avoid or minimize take of listed steelhead species resulting from the action covered by this Opinion. The BPA shall:

1. Minimize the amount and extent of incidental take by implementing measures to limit the duration and extent of in-water work.
2. Minimize the amount and extent of take and impacts on critical habitat by implementing measures that minimize or avoid the potential for chemical pollution and minimize the movement of soils and sediment both into, and within, the John Day River and Bear Creek.
3. Minimize the likelihood of take and impacts to critical habitat resulting from riparian area disturbances including removal of vegetation and disturbance of

soils and sediments.

4. Minimize the potential for take associated with installation and operation of the Hall Ditch fish screen.
5. Minimize the likelihood of incidental take that may occur during the fish salvage operations.
6. Monitor project implementation and report the results to ensure conservation measures are effective in minimizing the likelihood of take from the proposed activities.

2.3 Terms and Conditions

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

1. To implement reasonable and prudent measure #1 (in-water work), the BPA shall ensure that:
 - a. In-water work
 - i. All work within the active channels of Bear Creek and Hall Ditch will be completed within the ODFW approved in-water work period (July 15 to August 31).
 - ii. Extension of the in-water work period, including those for work outside the wetted perimeter of the stream but below the ordinary high water mark must be approved by biologists from NMFS.
 - iii. In-water work will not inhibit passage of any adult or juvenile steelhead species throughout the construction period or after project completion.
 - iv. Follow the Oregon Department of Fish and Wildlife Guidelines for Timing of In-water Work to Protect Fish and Wildlife Resources, 12 pp. (June 2000) (identifying work periods with the least impact to fish)
2. To implement reasonable and prudent measure # 2 (pollution and erosion), the BPA shall ensure that:
 - a. Pollution Control
 - i. All equipment that is used for instream work will be cleaned before entering the job site.
 - ii. External oil and grease will be removed, along with dirt and mud. Wash and rinse water will not be discharged into streams and rivers without adequate treatment. Areas for fuel storage and servicing of construction equipment and vehicles will be at least 150-feet away from any water body.

- iii. The contractor will develop and implement a site-specific spill prevention, containment, and control plan (SPCCP), and is responsible for containment and removal of any toxicants released. The contractor will be monitored by the BPA/ODFW to ensure compliance with the SPCCP. The SPCCP will contain notification procedures, specific clean up and disposal instructions for different products, quick response containment and clean up measures that will be available on site, and proposed methods for disposal of spilled materials. Employee training for spill containment will be developed to ensure containment can be carried out at the project site.
 - iv. Any spill will be reported to NMFS.
 - (1) In the event of a hazardous materials or petrochemical spill, immediate action shall be taken to recover toxic materials from further impacting aquatic or riparian resources.
 - (2) In the event of a hazardous materials or petrochemical spill, a detailed description of the quantity, type, sources, reason for spill, and actions taken to recover materials will be documented.
 - v. All refueling of equipment will take place 300 feet from any waterbody and auxiliary fuel tanks will not be stored on bridges, roads, or within the two-year floodplain.
 - vi. A fifteen gallon capacity oil boom will be kept on site during all instream work.
 - vii. Excavators will have a properly guarded belly pan for pioneering type of work in rough terrain.
- b. Erosion Control
- i. Material removed or excavated from the river bottom will be placed in upland locations where it cannot enter streams or other water bodies.
 - ii. Appropriate erosion control devices (e.g., silt fencing or straw bales) will be placed to prevent turbid water from entering Bear Creek or other water bodies from the project access road, when excavated material is loaded into trucks for removal from the project site, and during transportation to the final upland disposal site.
 - iii. Any additional unused material will be disposed of in a pre-determined upland site at least 300 feet away from Bear Creek.
3. To implement reasonable and prudent measure #3 (fish screen installation and operation), the BPA shall ensure that:
- a. Maintenance
 - i. The ODFW continues to work with private landowners to maintain the rotary screen during high flow events, which has the potential to plug the ditch intake with debris.
 - ii. During such an event, ODFW and/or private landowner(s) would close the ditch intake, if possible, and check the fish screen periodically for stranded fish.

4. To implement reasonable and prudent measure #4 (revegetation), the BPA shall ensure that:
 - a. Reseeding and Replanting Efforts
 - i. Construction activities will be conducted in a way which minimizes disturbance of riparian vegetation. In all areas that require removal of riparian vegetation, reseeding or replanting of native vegetation will occur. Certified weed-free seed will be used.
 - ii. All disturbed streambank areas will be revegetated. Any riparian vegetation that is removed will be used to the extent practicable in revegetation efforts. Willow clumps removed as part of construction will be replanted on site to decrease the amount of time necessary for willow re-growth.
 - iii. Erosion control fabric will be used in conjunction with seeding to reduce sedimentation releases into waterways.
 - iv. The planted and seeded areas will be watered during the first summer to optimize plant survival.
 - v. If seeding or planting in any of the riparian areas fail, additional revegetation efforts will be made to ensure the establishment of a healthy riparian plant community and reduce sediment loads to the stream.
 - vi. Manual weed control and plant irrigation will occur during the summer after the major restoration efforts have been completed (2003). The Landowner's existing water allotment will be used, in part, to irrigate the revegetated riparian areas during the first two years.

5. To implement reasonable and prudent measure #4 (fish salvage operation), the BPA shall ensure that:
 - a. Operation Guidelines
 - i. The fish salvage operation is conducted by qualified ODFW personnel familiar with NMFS electrofishing guidelines (Appendix). All precautionary measures outlined in the BA will be implemented.
 - ii. If possible, fish will be captured by seining under the supervision of a fishery biologist experienced in such efforts and all staff working with the seining operation must have the necessary knowledge, skills, and abilities to ensure the safe handling of all ESA-listed fish.
 - iii. If seining is not possible, fish may be captured using electrofishing gear as described in NMFS guidelines (NMFS 2000). No electrofishing may occur if water temperatures exceed 18° C (64° F), or are expected to rise above this temperature before concluding the capture.
 - iv. During electroshocking, backpack electroshockers that meet NMFS guidelines for use on ESA listed fish will be used and the number of passes through the stretch will be kept to a minimum.
 - v. During periods of high water temperature, sampling shall occur early in the morning or in the evening before dark.

- vi. Personnel must obtain any and all Federal permits and authorizations necessary for the conduct of the capture activities.
 - vii. The NMFS or its designated representative can accompany field personnel during the capture activity, and allow such representative to inspect capture records and facilities.
 - viii. A description of the capture and release effort will be included in the post-project report, including the name and address of the supervisory fish biologist, methods used to isolate the work area and minimize disturbances to ESA-listed species, stream conditions before and after placement and removal of barriers; the means of fish removal; the number of fish removed by species; the condition of all fish released, and any incidence of observed injury or mortality.
- b. Handling of Fish During Operation
- i. Surveyors shall observe the condition of sampled fish. If fish appear stressed or injured (dark bands, gulping air, excessive mucus, irregular swimming, or bucket predation), immediately halt sampling and decrease the frequency and volume.
 - ii. There shall be no fin clipping or use of anaesthetics on ESA listed steelhead.
 - iii. Fish will not be returned to channel sections with high turbidity resulting from construction activities.
 - iv. Captured fish must be released in appropriate habitat, as near as possible but upstream of the capture site.
 - v. ESA-listed fish must be handled with extreme care and kept in aerated water to the maximum extent possible during capture and transfer procedures. The transfer of ESA-listed fish must be conducted using a sanctuary net that holds water during transfer, whenever necessary to prevent the added stress of an out-of-water transfer.
 - vi. Only ODFW vehicles will be used to transport MCR steelhead to the release site.
 - vii. The transfer of any ESA-listed fish from the BPA to third-parties other than NMFS personnel requires written approval from the NMFS.
6. To implement reasonable and prudent measure #5 (monitoring and reporting), the BPA shall ensure that:
- a. Thirty Day Status Report
 - i. Within 30 days of completing the project, the BPA will submit a monitoring report to NMFS describing their success at meeting these terms and conditions. This report will consist of the following information:
 - ii. Project identification.
 - (1) Project name;
 - (2) starting and ending dates of work completed for this project; and

- (3) the name and address of the construction supervisor.
- iii. A narrative assessment of the project's effects on natural stream function.
- iv. Photographic documentation of environmental conditions at the project site before, during and after project completion.
 - (1) Photographs will include general project location views and closeups showing details of the project area and project, including pre and post construction.
 - (2) Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.
 - (3) Relevant habitat conditions include characteristics of channels, streambanks, riparian vegetation, flows, water quality, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.
- b. Dead, Injured, Threatened Specimen Notification
 If a dead, injured, or sick endangered or threatened species specimen is located, initial notification must be made to the National Marine Fishery Service Law Enforcement Office, located at Vancouver Field Office, 600 Maritime, Suite 130, Vancouver, Washington 98661; telephone: 360/418-4246. Care should be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered and threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.
- c. Annual Monitoring Reports
 Within one year of completion of all phases of the project (new screen installation, new siphon construction, water intake modification), the BPA will submit a report to NMFS describing:
 - (1) Effectiveness of the rotary screen and the siphon in passing listed steelhead, uninjured, through the siphon and back into Bear Creek, and
 - (2) the use of the newly created rearing habitat in Bear Creek by adult and juvenile steelhead.
- d. Address for Monitoring Reports:
 Monitoring reports shall be submitted to:
 National Marine Fisheries Service
 Oregon Habitat Branch
 Attn: OHB2002-0011FEC
 525 NE Oregon Street, Suite 500
 Portland, OR 97232-2778

3. MAGNUSON - STEVENS ACT

3.1 Background

The objective of the essential fish habitat (EFH) consultation is to determine whether the proposed action may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action.

3.2 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-297), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NMFS on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of essential fish habitat: 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 (50CFR600.110).

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

- Federal agencies must consult with NMFS on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;
- NMFS shall provide conservation recommendations for any Federal or State activity that may adversely affect EFH;
- Federal agencies shall within 30 days after receiving conservation recommendations from NMFS provide a detailed response in writing to NMFS regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NMFS, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH

consultation with NMFS is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.3 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Pacific salmon: chinook (*Oncorhynchus tshawytscha*); coho (*O. kisutch*); and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other 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), 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 on this information.

3.4 Proposed Actions

The proposed actions are detailed above in Sections 1.2 through 1.2.5. The action area for this consultation, therefore, includes the Bear Creek streambed and streambank, 100 feet upstream from the location of the new diversion and 100 feet downstream from the location of Diversion B to be removed. The project area encompasses the location of both diversions to be removed, location of new diversion to be installed (located 400 feet upstream from existing diversion located at confluence), location of siphon installation, location of secondary water delivery system, location of overflow spillway, and location of the three V-shaped rock weirs. ODFW engineers estimate that approximately 100 feet of streambank will be included in the diversion installation area; 100 feet for siphon installation and rock weirs, and 30 feet for removal of the lower diversion.

3.5 Effects of Proposed Action

As described in detail in sections 1.5 through 1.5.3 the proposed activities may result in detrimental short- and long-term adverse effects to a variety of habitat parameters. These impacts include: Short term turbidity, short-term and localized impacts to riparian vegetation, short term and localized streambed destabilization, stress and effects associated with fish salvage operations. NMFS expects that the net effect of the proposed action will be to maintain or help restore properly functioning habitat conditions in the project area of the mainstem of the John Day River and Bear Creek.

Long-term effects will include improved fish survival resulting from improvements in stream temperature, maintained water flow, an improved diversion intake system, improved fish screen, and a fish bypass system.

3.6 Conclusion

NMFS believes that the proposed action may adversely affect the EFH for Pacific salmon.

3.7 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the Magnuson-Stevens Act, NMFS is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation measures proposed for the project by the BPA, and all of the Reasonable and Prudent Measures and the Terms and Conditions contained in Sections 2.2 and 2.3 are applicable to Pacific salmon EFH. Therefore, NMFS incorporates each of those measures here as EFH conservation recommendations.

3.8 Statutory Response Requirement

Please note that the Magnuson-Stevens Act (section 305(b)) and 50 CFR 600.920(j) requires the Federal agency to provide a written response to NMFS after receiving EFH conservation recommendations within 30 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse impacts of the activity on EFH. If the response is inconsistent with a conservation recommendation from NMFS, the agency must explain its reasons for not following the recommendation.

3.9 Supplemental Consultation

The BPA must reinitiate EFH consultation with NMFS if either action is substantially revised or new information becomes available that affects the basis for NMFS' EFH conservation recommendations (50 CFR 600.920).

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Appendix A. NMFS Electrofishing Guidelines (NMFS 2000)

Suggested protocol for the use of backpack electrofishing equipment in waters containing fish listed under the Endangered Species Act (ESA). These recommendations should be seen as guidelines for developing consistent and safe electrofishing technique. It is hoped that these guidelines will ultimately help improve electrofishing technique in ways which will reduce fish injury and increase electrofishing efficiency.

Purpose and Scope

The purpose of this document is to recommend guidelines for using backpack electrofishing equipment to sample ESA-listed fish. Because electrofishing can kill or severely injure fish, every effort should be made to avoid electrofishing, and use snorkeling or other fishery information-collecting techniques. Where electrofishing is the only suitable sampling method, these guidelines are suggested to help reduce the number of fish killed or severely injured. These guidelines are concerned only with studies that involve electrofishing juvenile or adult salmonids that are not in spawning condition. Electrofishing in the vicinity of adults in spawning condition or operating equipment in the vicinity of redds containing developing eggs is not discussed as there is no justifiable basis for permitting these activities near listed species. Also, these guidelines do not deal with factors such as temperature or fish handling technique both of which can significantly affect fish health during an electrofishing session. None the less, all ESA-listed fish must be sampled with extreme care. The field crew must carefully design the sampling sessions to minimize fish stress by working within favorable temperature regimes, using anesthetics when necessary, and minimizing the time the fish are held before release. As with all fieldwork involving live ESA-listed fish, the best science should be used along with an experienced crew and good equipment in order to minimize handling stress.

Equipment

Equipment should be in good working condition. Operators should go through the manufacturer's preseason checks, adhere to all provisions, and record major maintenance work in a log.

Training

A crew leader having at least 100 hours of electrofishing experience in the field using similar equipment should train the crew. The crew leader's experience must be documented and available for confirmation; such documentation may be in the form of a logbook. The training should occur before an inexperienced crew begins any electrofishing; it should also be conducted in waters that do not contain ESA-listed fish.

The training program must include the following elements:

1. Definitions of basic terminology: e.g. galvanotaxis, narcosis, and tetany.
2. An explanation of how electrofishing attracts fish.
3. An explanation of how gear can injure fish and how to recognize signs of injury.
4. A review of these guidelines and the manufacturer's recommendations.

5. A demonstration of the proper use of electrofishing equipment, the role each crew member performs, and basic gear maintenance.
6. A field session where new individuals actually perform each role on the electrofishing crew

Specific Electrofishing Guidelines

1. In order to avoid contact with spawning adults or active redds, carefully survey the area to be sampled before beginning electrofishing.
2. Measure conductivity and set voltage as follows:

<u>Conductivity (umhos/cm)</u>	<u>Voltage</u>
Less than 100	900 to 1100
100 to 300	500 to 800
Greater than 300	150 to 400

3. Only direct current (DC) should be used.
4. Each session should begin with pulse width and rate set to the minimum needed to capture fish. These settings should be gradually increased only to the point where fish are immobilized and captured. Start with pulse width of 500 us and do not exceed 5 milliseconds. Pulse rate should start at 30Hz and work carefully upwards. In general, exceeding 40 Hz will injure more fish.
5. The zone of potential fish injury is 0.5m from the anode. Care should be taken in shallow waters, undercut banks, or where fish can be concentrated because in such areas the fish are more likely to come into close contact with the anode.
6. The stream segment should be worked systematically, moving the anode continuously in a herringbone pattern through the water. Do not electrofish one area for an extended period.
7. Crew should carefully observe the condition of the sampled fish. Dark bands on the body and longer recovery times are signs of injury or handling stress. When such signs are noted, the settings for the electrofishing unit may need adjusting. Sampling should be terminated if injuries occur or abnormally long recovery times persist.
8. When the sampling design involves taking scales and measurements, a healthy environment for the stressed fish must be provided and the holding time must be minimized. For these operations, additional crew members who are experienced in holding and processing stressed fish may be necessary.
9. Whenever possible, a block net should be placed below the area being sampled to capture stunned fish that may drift downstream.
10. The electrofishing settings should be recorded in a logbook along with conductivity, temperature, and other variables affecting efficiency. These notes, together with observations on fish condition, will improve technique and form the basis for training new operators.