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

Refer to:
2002/01178

October 15, 2003

Mr. Lawrence Evans
U.S. Army Corps of Engineers, Portland District
ATTN: John Barco
P.O. Box 2946
Portland, OR 97208-2946

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation on the Dubarko Road Crossing over Tickle Creek by the City of Sandy, Clackamas County, Oregon (Corps. No. 200200284)

Dear Mr. Evans:

Enclosed is 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 issuing a permit for construction of the Dubarko Road crossing over Tickle Creek by the City of Sandy, Clackamas County, Oregon. NOAA Fisheries concludes in this biological opinion (Opinion) that the proposed action is not likely to jeopardize the continued existence of Lower Columbia River steelhead (*Oncorhynchus mykiss*). As required by section 7 of the ESA, we include reasonable and prudent measures with non-discretionary terms and conditions that are necessary to minimize the potential for incidental take associated with this action.

This Opinion also serves as consultation on essential fish habitat (EFH) for chinook salmon (*O. tshawytscha*) and coho salmon (*O. kisutch*) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation Management Act and its implementing regulations at 50 CFR Part 600.

Please direct any questions regarding this consultation to Christy Fellas of my staff in the Oregon Habitat Branch at 503.231.2307.

Sincerely,

Russell M Strach for

D. Robert Lohn
Regional Administrator

cc: Mike Walker, City of Sandy
Ed Strohmaier, Shapiro & Assoc.

Endangered Species Act - Section 7 Consultation
Biological Opinion

&

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

Dubarko Road Crossing over Tickle Creek,
by the City of Sandy,
Clackamas County, Oregon
(Corps No. 200200284)

Agency:	U.S. Army Corps of Engineers
Consultation Conducted By:	National Marine Fisheries Service, Northwest Region
Date Issued:	October 15, 2003
Issued by:	Russell M Strach for D. Robert Lohn Regional Administrator
Refer to:	**2002/01178**

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1. INTRODUCTION

1.1 Background

On September 24, 2002, NOAA's National Marine Fisheries Service (NOAA Fisheries) received a letter from the U.S. Army Corps of Engineers (Corps) requesting formal consultation pursuant to the Endangered Species Act (ESA) for the issuance of a permit under section 404 of the Clean Water Act to the City of Sandy (City) for the construction of a road crossing over Tickle Creek, in Clackamas County, Oregon. The Corps determined the proposed action was likely to adversely affect ESA-listed Lower Columbia River (LCR) steelhead (*Oncorhynchus mykiss*). After staff discussion and meetings, NOAA Fisheries sent a letter dated February 27, 2003, to the Corps requesting additional engineering and design information for the proposed road crossing. The additional information was received and consultation initiated on May 8, 2003.

NOAA Fisheries listed LCR steelhead under the ESA as threatened on March 19, 1998 (63 FR 13347). Protective regulations for steelhead were designated on July 10, 2000 (65 FR 42422). The objective of this Opinion is to determine whether the proposed action is likely to jeopardize the continued existence of these ESA-listed species. This consultation is conducted pursuant to section 7(a)(2) of the ESA and its implementing regulations, 50 CFR 402.

1.2 Proposed Action

The proposed project will consist of two, 3-sided concrete bridge structures at the Dubarko Road/Tickle Creek crossing. The structure over the north channel of Tickle Creek will be 9.8 meters wide and will be skewed to reduce its overall length. The structure will be approximately 2.7 meters from bottom of footing to top. Excavation below the ordinary high water mark (OHWM) will be required for construction of footings and will generally occur outside the streambanks.

The structure proposed for the south channel crossing is 7.9 meters wide and will also be skewed to reduce length. The structure will be approximately 3 meters from bottom of footing to top and will be similar in construction to the north channel structure.

The horizontal alignment of the roadway will be established to minimize effects on the creek, the surrounding wetlands, and the 100-year floodplain. Substantial retaining walls on both sides of Dubarko Road are proposed to confine fill material. This portion of the project is south of Sandy Heights Road between two dead-end sections of Dubarko Road and one dead-end section of Bluff Road. The western limit of Project Area 1 is just east of Melissa Avenue, with Bluff Road forming the northern limit, and the eastern limit south of Bluff Road. The immediate project area is not residential, however neighborhoods are present at the north and west project limits.

A new water main will be constructed to connect to existing water mains at the northerly, easterly, and westerly limits. Sanitary sewer services will be connected to the existing sanitary sewer main running beside Tickle Creek.

In this project area, approximately 5,444 square meters of new impervious surface will be constructed. Stormwater runoff will be detained in roadside drainage swales, west of Tickle Creek or in mechanical treatment devices before discharge to Tickle Creek. Flow control structures will be installed so that the stormwater will be released at a controlled rate based on City standards. Untreated stormwater runoff from a subdivision north of the project area that includes 1,394 square meters of impervious surface will also be collected and treated.

The Dubarko Road crossing of Tickle Creek was modeled using HEC-RAS, using cross-sections for the immediate area and comparing water surface elevation results of existing and proposed conditions. The peak flow rates from the Federal Emergency Management Agency (FEMA) study for 10-, 50-, 100-, and 500-year floods were modeled. No rise occurs in upstream water surface elevations for the proposed dual, 3-sided bridge system. The steep grade of the creek and the selected 3-sided bridges provide sufficient flow area.

Although both 3-sided bridges will be constructed within the 100-year floodplain, they will not conflict with the 100-year floodway. Approximately 632 square meters of surface area of the 100-year floodplain will be affected by the road construction. In this area, 153 cubic meters of fill will be placed within the 100-year floodplain, and approximately 1,300 cubic meters above the 100-year floodplain.

Excavation will be required below the two-year flood elevation, but will be behind protective channel shoring and outside the normal wetted-channel width. Machinery will be situated on the streambanks, roadway approaches, or bridge surfaces and will not be operated within the active channel.

All staging areas, including equipment-fueling sites, will be at least 90 meters from the two-year flood elevation (OHWM) for Tickle Creek. The construction is estimated to take five months. Since work will be done in the two-year flood elevation, in-water work associated with bridge construction will be done during the recommended in-water work period for the area, July 15 through August 31.

Conservation measures for this project will follow practices outlined in ODOT's Standard Specifications for Highway Construction (1996) and the Supplemental Standard Specifications for Highway Construction (1998). A complete list of conservation measures proposed for this project can be found in the biological assessment (BA).

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

2.1.1 Biological Information

The action area is defined by NOAA Fisheries regulations (50 CFR 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 is Tickle Creek including the streambed, streambank, water column and adjacent riparian zone at the Dubarko Road stream crossing and 300 feet downstream of the construction area.

Essential habitat features for salmonids are: Substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food (juvenile only), riparian vegetation, space, and safe passage conditions. The proposed action may affect the essential habitat features of water quality, substrate and riparian vegetation. Tickle Creek within the action area serves as a spawning and rearing area for listed salmonids.

2.1.2 Evaluating Proposed Action

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402. NOAA Fisheries 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: (1) Defining the biological requirements and current status of the listed species; and (2) evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries 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. If NOAA Fisheries finds that the action is likely to jeopardize the listed species, NOAA Fisheries must identify reasonable and prudent alternatives for the action.

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

For the proposed action, NOAA Fisheries' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NOAA Fisheries' analysis considers the extent to which the proposed action impairs the function of essential elements necessary for migration, spawning, and rearing of listed species under the existing environmental baseline.

2.1.3 Biological Requirements

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

The relevant biological requirements are those necessary for the listed species 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 were listed.

2.1.4 Environmental Baseline

Tickle Creek flows into Deep Creek then into the Clackamas River and eventually into the Willamette River. Portions of Tickle Creek support LCR steelhead, although passage is impaired by a perched culvert at 362nd Ave, just downstream of the project area. Some adult steelhead are able to pass this culvert during high flow, but the culvert remains a barrier to migration for juvenile salmonids and most adults.

The following description of baseline conditions in Tickle Creek was taken from the BA submitted with the proposed project.

Tickle Creek has both urban and rural components in the watershed. Dense stands of maturing forest and functioning floodplain commonly occur in the riparian zones beside the stream. Pool frequency and quality are low, but small areas of high quality habitat likely serve as important rearing areas. The substrate is commonly embedded, but enough suitable spawning habitat exists to support a small population of salmonids. Off-channel habitat is relatively scarce. Habitat in the less-affected areas is not pristine, but resembles harvested timberlands and agricultural areas on the west slope of the Cascades in that it is degraded but supports a local run of salmonids.

Tributaries to Tickle Creek are generally more degraded by urban development. In most of these streams, the flows have been diverted into channels to accommodate roads and urban growth. Many passage barriers exist in some tributaries and riparian areas often are cleared, landscaped or paved. Detention ponds are present in places, but are not numerous or large enough to have a significant effect on the hydrograph. As a result of development, fish habitat is now either extremely marginal or nonexistent.

Tickle Creek flows east to west through the project area and divides into a north and south channel which both have flows. The north channel has the majority of flow and measures 4.3 meters at bankfull channel width. The south channel measures 3 meters bankfull channel width and is less entrenched. The two channels parallel each other for 91.4 meters and the land area between channels varies, with a maximum of 94.4 meters. During low flow months, the south channel does not maintain surface flow, but remains wet with a series of interspersed shallow pools.

The north channel maintains year-round flow and is heavily incised with the water surface as much as 0.9 meters below the top of bank. The vegetation consists of a dense understory of vine maple, salmonberry, red elderberry, sword fern and Himalayan blackberry. The overstory which provides a shading value of 80%, is a mixture of red alder and maturing conifers. The trees range from 15.2 to 76.2 centimeters, diameter at breast height.

Within the project area, approximately 3400 square meters is palustrine forested wetland and 1700 square meters is created palustrine emergent wetland. The emergent wetland was created when a sanitary sewer was installed in 1996 and 1997. Water sources in the area include high groundwater, precipitation and surface flow. Vegetation includes a variety of trees, shrubs, sedges, rushes and flowers.

2.1.5 Analysis of Effects

2.1.5.1 Effects of the Proposed Action

Turbidity

The effects of suspended sediment and turbidity on fish, as reported in the literature, range from beneficial to detrimental. Elevated total suspended solids (TSS) conditions have been reported to enhance cover conditions, reduce piscivorus fish/bird predation rates, and improve survival. Elevated TSS conditions have also been reported to cause physiological stress, reduce growth, and adversely affect survival. Of key importance in considering the detrimental effects of TSS on fish are the frequency and the duration of the exposure, not just the TSS concentration.

Behavioral avoidance of turbid waters may be one of the most important effects of suspended sediments (DeVore *et al.* 1980, Birtwell *et al.* 1984, Scannell 1988). Salmonids have been observed to move laterally and downstream to avoid turbid plumes (Sigler *et al.* 1984, Lloyd 1987, Scannell 1988, Servizi and Martens 1991). Juvenile salmonids avoid streams that are chronically turbid, such as glacial streams or those disturbed by human activities, unless the fish

need to traverse these streams along migration routes (Lloyd 1987). The duration of turbidity from the proposed project will be limited in space and time. Furthermore, construction will occur during the in-water work window when no listed species are likely to be present.

Stormwater

Land conversions significantly influence hydrologic processes, increasing the magnitude, frequency and duration of peak discharges and reducing summer base flows (Booth 1991). These changes occur because of a loss of forest cover, and an increase in the impervious surface, and a replacement of the natural drainage system with an artificial network of storm pipes, drainage ditches and roads (Lucchetti and Fuerstenberg 1993, Booth and Jackson 1997). Roads provide a direct drainage pathway for runoff into the stream system and storm sewer outfalls. Reductions in the natural drainage network and increases in artificial drainage systems shrink the lag time between a rainfall event and the point of peak discharge of stormwater into a stream (Booth and Jackson 1997). This reduction often equates to heightened stormwater peak discharges which cause streambed and streambank scour, mobilize and remove large wood, and extend durations of channel forming flows. This change to the natural hydrology of the stream can have adverse effects on all life stages of salmonids, however, rearing juveniles are particularly vulnerable to being swept downstream during high flows and flows of extended durations.

The increased impervious cover of urbanized watersheds also alters the pathway of water to streams. As functional vegetation is removed, evapotranspiration (evaporation of water from plant surfaces and transpiration of water from the soil by plants) can be decreased by 50% or more, resulting in increased runoff volume. Infiltration is reduced as soils are stripped of vegetation, compacted and/or paved, and impervious cover increases. This decrease in infiltration often results in a decrease of stream base flows, adversely affecting salmonids who utilize streams during the summer.

Imperviousness is a very useful indicator with which to measure effects of land development on aquatic systems. Total impervious area is a physically defined unit which is the sum of roads, parking lots, sidewalks, rooftops, and other impermeable surfaces of the lowland streams landscape. Several studies have provided significant scientific evidence that relates imperviousness to specific changes in hydrology, habitat structure, water quality and biodiversity of aquatic systems. The body of research, conducted in many geographic areas, concentrating on many different variables and employing widely different methods, has yielded similar conclusions: Significant stream degradation can occur at relatively low levels of imperviousness (Paul and Meyer 2001). The hydrology of urban streams changes as sites are cleared and natural vegetation is replaced by impervious cover. One of the consequences is that more of a stream's annual flow is delivered as stormwater runoff rather than baseflow. Depending on the degree of a subwatershed's impervious cover, the annual volume of stormwater runoff can increase by up to 16 times that for natural areas (Schueler 1994). Increased stream flows can have significant effects on channel morphology. In addition, since impervious cover prevents rainfall from infiltrating into the soil, less flow is available to recharge groundwater. Therefore, during

extended periods without rainfall, baseflow levels are often reduced in urban streams. The proposed project is not expected to affect Tickle Creek since stormwater runoff will be treated on-site.

Water temperature, turbidity, dissolved oxygen (DO), pH, nutrients, and toxic chemicals/metals, all affect water quality and the ability of surface waters to sustain listed salmonids. Each of these
factors exhibits natural daily or seasonal fluctuations in magnitude or concentration, and when coupled with the effects of development and stormwater runoff, can exceed the natural range of these factors and alter or impair biological processes.

Of these factors, temperature is perhaps the most important influence on salmonids, affecting the body temperatures of all aquatic organisms and their metabolic demands, including food requirements, growth and development rates, timing of life history events, and predator-prey and competitor interactions. In developed areas streamside vegetation is often removed and groundwater inputs are reduced, causing an increase in summer stream temperatures and a decrease in winter water temperatures (Klein 1979).

Siltation and turbidity adversely affect fish at every stage of their life cycle (Iwamoto *et al.* 1978). Turbidity abrades and disrupts fish gills and affects light penetration which in turn affects salmonid feeding behavior. These effects are exacerbated by the loss of vegetation and alteration
of soil structure that occurs with development, and results in increased sediment delivery to streams. In addition, the amount of sediment and rate of transport of sediment through stream systems is increased with the addition of stormwater runoff: Six times greater in a western Washington stream (Richey 1982).

All salmonids require high levels of DO, which are available in most natural situations. Reduced levels can affect the growth of embryos, alevins, and fry, and the swimming ability of migrating adult and juvenile salmonids. In developed environments, stormwater runoff may reduce DO concentrations by carrying large amounts of organic debris (yard waste, leaf litter) and nutrient enrichment (from sewage treatment and agricultural runoff) into streams. In addition, high stream temperatures associated with urban streams, may also decrease DO concentrations (Spence *et al.* 1996).

The effect of pH on salmonids is influenced by watershed characteristics and concentrations of dissolved materials in surface waters. However, surface water acidity frequently results from anthopogenic activities related to land use. Low pH adversely affects salmonids by causing respiratory problems for fish, and increasing the mobility and bioavailability of metals to aquatic organisms (Spence *et al.* 1996).

Nutrients, chemicals and metals are potentially widespread in the environment, and surface and groundwaters may be affected by activities that occur with increased development in a basin. In urban streams during storm events, nitrogen and phosphorus are available in some instances at

levels that equal or exceed that of sewage effluent (Pitt and Bozeman 1980), with the annual export of nitrogen and orthophosphate from urban streams being 8 and 3 times greater, respectively, than in streams draining forested watersheds (Omernick 1977). This increase in nitrogen and phosphorus comes primarily from wastewater discharges and fertilizer use, and the result can be increased primary productivity elevated to nuisance levels, increasing oxygen demand and decreasing DO levels in the stream.

Pesticides are often detected in urban streams at concentrations that frequently exceed guidelines for the protection of aquatic biota (USGS 1999a, Hoffman *et al.* 2000). Sublethal effects such as neurological behavioral effects stemming from standard rates of application of pesticides area a concern. Environmentally relevant concentrations of diazinon (USGS 1999b) has been show to disrupt homing and anti-predator behaviors in chinook salmon (Scholtz *et al.* 2000). Other organic contaminants in urban streams include polychlorinated biphenyls (PCB's), polycyclic aromatic hydrocarbons (PAH's), and petroleum-based aliphatic hydrocarbons, all frequently found at levels exceeding human health criteria or at levels stressful to sensitive aquatic organisms (Paul and Meyer 2001). Natural metal concentrations in surface water vary regionally, however, a common feature of urban streams is elevated water column and sediment metal concentrations, including lead, zinc, chromium, copper, manganese, nickel and cadmium, which increase with increased percentages of urban land use (Wilber and Hunter 1979). In addition to industrial discharges, other sources of metals are brake linings, tires, and metal alloys for engine parts. Although some metals are necessary trace nutrients, many metals are toxic to fish at very low concentrations (Spence *et al.* 1996).

The proposed project includes catch basin inserts with filtration media to remove oils, grease, and heavy metals.

The effects of stormwater on salmonids have recently been evaluated in NOAA Fisheries stormwater guidance: ESA guidance for analyzing stormwater effects (2003b). To protect listed species, NOAA Fisheries recommends treating the volume of runoff predicted from a 6-month, 24-hour storm.

Riparian Vegetation

To the extent that vegetation is providing habitat function, such as delivery of large wood, particulate organic matter, or shade to a riparian area and stream, root strength for slope and bank stability, and/or sediment filtering and nutrient absorption from runoff, removal of that vegetation for construction will reduce or eliminate those habitat values (Darnell 1976, Spence *et al.* 1996). Denuded areas lose organic matter and dissolved minerals such as nitrates and phosphates. Microclimate can become drier and warmer with corresponding increases in wind speed, and soil and water temperature. Water tables and spring flow can be reduced. Loose soil can temporarily accumulate in the construction area. In dry weather, this soil can be dispersed as dust. In wet weather, loose soil is transported to streams by erosion and runoff, particularly in steep areas. Erosion and runoff increase the supply of soil to lowland drainage areas and eventually to aquatic habitats where they increase water turbidity and sedimentation. This

combination of erosion and mineral loss can reduce soil quality and site fertility in upland and riparian areas.

The proposed project includes vegetation removal for construction of Dubarko Road. Approximately 8,000 square meters will be cleared, including 93 trees from 6 inches to 54 inches in diameter. All trees and shrubs removed will be replaced at a ratio of 1.5 to 1. Trees greater than 24 inches in diameter will be saved and stockpiled for use as large woody debris in Tickle Creek to help provide cover and complexity.

The 0.007 acres of adjacent wetlands impacted by the construction of Dubarko Road will be mitigated by creating 0.01 acre of wetland at the eastern end of the project area.

Floodplain

The proposed project design includes an extensive retaining wall for the crossing of Tickle Creek. The structure may partially restrict future natural meander of the stream channels. Floodplains beside stream are important for providing input of leaf litter, delivery of large woody debris, channel meander and storage of flood waters. Without these processes, the natural functions of a healthy stream and riparian corridor are impaired.

The current design is likely to disrupt continuity within the riparian area. Large wood salvaged from the project will be used in the creek as large woody debris and riparian vegetation removed will be replaced within the project area.

2.1.5.2 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as those effects of "future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being (or have been) reviewed through separate section 7 consultation processes. Therefore, these actions are not considered cumulative to the proposed action.

NOAA Fisheries assumes that future private and state actions will continue at similar intensities as in recent years. It is likely that completing this east-west connection of Dubarko Road will result in additional road connections and urban development. This increase in development will likely lead to additional stormwater runoff and clearing of riparian vegetation.

2.1.6 Conclusion

NOAA Fisheries has determined that, based on the available information, the proposed action is not likely to jeopardize the continued existence of listed species. NOAA Fisheries used the best available scientific and commercial data to analyze the effects of the proposed action on the biological requirements of the species relative to the environmental baseline, together with cumulative effects.

These conclusions are based on the following considerations: (1) Construction in and over Tickle Creek will take place in the recommended in-water work window of July 15 through August 31; (2) any increases in sedimentation and turbidity in the project area will be short-term and minor in scale; (3) appropriate best management practices will be followed for all construction activities; (4) few listed species are likely to be present in the project area due to a barrier at 362nd Avenue; and (5) the proposed action is not likely to impair properly functioning habitat, or retard the long-term progress of impaired habitat toward proper functioning condition essential to the long-term survival and recovery at the population or ESU scale.

2.1.7 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of the proposed actions on listed species, or to develop additional information. NOAA Fisheries has the following conservation recommendation regarding the action addressed in this Opinion.

> The Corps and/or the applicant should consider replacement of the culvert at 362nd Avenue to increase fish migration within in Tickle Creek. This culvert is currently preventing fish passage to the upstream reaches of Tickle Creek.

For NOAA Fisheries to be kept informed of actions minimizing or avoiding adverse effects, or those that benefit listed salmon and steelhead or their habitats, we request notification of the achievement of any conservation recommendations by the Corps.

2.1.8 Reinitiation of Consultation

Consultation must 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).

2.2 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].

2.2.1 Amount or Extent of the Take

NOAA Fisheries anticipates that the actions covered by this Opinion are reasonably certain to result in incidental take of listed species because of potential adverse effects from increased sediment levels and sound pressure. Even though NOAA Fisheries expects some low level of incidental take to occur due to the action covered by this Opinion, the best scientific and commercial data available are not sufficient to enable NOAA Fisheries to estimate a specific amount of incidental take to the species itself. In instances such as these, NOAA Fisheries designates the expected amount of take as "unquantifiable". Based on the information provided by the Corps and other available information, NOAA Fisheries anticipates that an unquantifiable amount of incidental take could occur as a result of the action covered by this Opinion.

The extent of the take is limited to disturbance resulting from construction activities within the action area. The action area is Tickle Creek at Dubarko Road, including the streambed, streambank, adjacent riparian zone, and 300 feet downstream of the construction area.

2.2.2 Reasonable and Prudent Measures

The measures described below are non-discretionary. They must be implemented so that they become binding conditions in order for the exemption in section 7(a)(2) to apply. The Corps has the continuing duty to regulate the activities covered in this incidental take statement. If the Corps fails to adhere to the terms and conditions of the incidental take statement through enforceable terms added to the document authorizing this action, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(a)(2) may lapse.

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to avoid or minimize take of listed salmonid species resulting from the action covered by this Opinion.

The Corps shall include measures that will:

1. Avoid or minimize incidental take from general construction by excluding unauthorized permit actions and applying permit conditions that avoid or minimize adverse effects to riparian and aquatic systems.

2. Complete a comprehensive monitoring and reporting program to ensure implementation of these conservation measures are effective at minimizing the likelihood of take from permitted activities.

2.2.3 Terms and Conditions

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

1. To implement reasonable and prudent measure #1 (general conditions for construction, operation and maintenance), the Corps shall ensure that:

    a. Timing of in-water work. Work below the bankfull elevation[1] will be completed during the preferred in-water work period of July 15 to August 31, unless otherwise approved in writing by NOAA Fisheries.
    b. Cessation of work. Cease project operations under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.
    c. Pollution and Erosion Control Plan. Prepare and carry out a pollution and erosion control plan to prevent pollution caused by surveying or construction operations. The plan must be available for inspection on request by Corps or NOAA Fisheries.
        i. Plan Contents. The pollution and erosion control plan will contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.
            (1) The name and address of the party(s) responsible for accomplishment of the pollution and erosion control plan.
            (2) Practices to prevent erosion and sedimentation associated with access roads, stream crossings, drilling sites, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations, staging areas, and roads being decommissioned.
            (3) Practices to confine, remove and dispose of excess concrete, cement, grout, and other mortars or bonding agents, including measures for washout facilities.
            (4) A description of any regulated or hazardous products or materials that will be used for the project, including procedures for inventory, storage, handling, and monitoring.

[1] 'Bankfull elevation' means the bank height inundated by a 1.5 to 2-year average recurrence interval and may be estimated by morphological features such average bank height, scour lines and vegetation limits.

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

(6) Practices to prevent construction debris from dropping into any stream or waterbody, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.

ii. Inspection of erosion controls. During construction, monitor instream turbidity and inspect all erosion controls daily during the rainy season and weekly during the dry season, or more often as necessary, to ensure the erosion controls are working adequately.[2]

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

(2) Remove sediment from erosion controls once it has reached 1/3 of the exposed height of the control.

d. Construction discharge water. Treat all discharge water created by construction (*e.g.*, concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) as follows.

i. Water quality. Design, build and maintain facilities to collect and treat all construction discharge water, including any contaminated water produced by drilling, using the best available technology applicable to site conditions. Provide treatment to remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

ii. Discharge velocity. If construction discharge water is released using an outfall or diffuser port, velocities may not exceed 4 feet per second, and the maximum size of any aperture may not exceed one inch.

iii. Pollutants. Do not allow pollutants including green concrete, contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 24 hours to contact any wetland or the 2-year floodplain.

iv. Drilling discharge. All drilling equipment, drill recovery and recycling pits, and any waste or spoil produced, will be completely isolated to prevent drilling fluids or other wastes from entering the stream.

(1) All drilling fluids and waste will be completely recovered then recycled or disposed to prevent entry into flowing water.

(2) Drilling fluids will be recycled using a tank instead of drill recovery/recycling pits, whenever feasible.

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[2] 'Working adequately' means that project activities do not increase ambient stream turbidity by more than 10% above background 100 feet below the discharge, when measured relative to a control point immediately upstream of the turbidity causing activity.

(3) When drilling is completed, attempts will be made to remove the remaining drilling fluid from the sleeve (*e.g.*, by pumping) to reduce turbidity when the sleeve is removed.

e. Preconstruction activity. Complete the following actions before significant[3] alteration of the project area.

i. Marking. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.

ii. Emergency erosion controls. Ensure that the following materials for emergency erosion control are onsite.

(1) A supply of sediment control materials (*e.g.*, silt fence, straw bales[4]).

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

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

f. Heavy Equipment. Restrict use of heavy equipment as follows:

i. Choice of equipment. When heavy equipment will be used, the equipment selected will have the least adverse effects on the environment (*e.g.*, minimally-sized, low ground pressure equipment).

ii. Vehicle and material staging. Store construction materials, and fuel, operate, maintain and store vehicles as follows:

(1) To reduce the staging area and potential for contamination, ensure that only enough supplies and equipment to complete a specific job will be stored on-site.

(2) Complete vehicle staging, cleaning, maintenance, refueling, and fuel storage in a vehicle staging area placed 150 feet or more from any stream, waterbody or wetland, unless otherwise approved in writing by NOAA Fisheries.

(3) Inspect all vehicles operated within 150 feet of any stream, waterbody or wetland daily for fluid leaks before leaving the vehicle staging area. Repair any leaks detected in the vehicle staging area before the vehicle resumes operation. Document inspections in a record that is available for review on request by Corps or NOAA Fisheries.

(4) Before operations begin and as often as necessary during operation, steam clean all equipment that will be used below

[3] 'Significant' means an effect can be meaningfully measured, detected or evaluated.

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

bankfull elevation until all visible external oil, grease, mud, and other visible contaminates are removed.

(5) Diaper all stationary power equipment (*e.g.*, generators, cranes, stationary drilling equipment) operated within 150 feet of any stream, waterbody or wetland to prevent leaks, unless suitable containment is provided to prevent potential spills from entering any stream or waterbody.

g. Site preparation. Conserve native materials for site restoration.

i. If possible, leave native materials where they are found.

ii. If materials are moved, damaged or destroyed, replace them with a functional equivalent during site restoration.

iii. Stockpile any large wood[5], native vegetation, weed-free topsoil, and native channel material displaced by construction for use during site restoration.

h. Earthwork. Complete earthwork (including drilling, excavation, dredging, filling and compacting) as quickly as possible.

i. Site stabilization. Stabilize all disturbed areas, including obliteration of temporary roads, following any break in work unless construction will resume within four days.

ii. Source of materials. Obtain boulders, rock, woody materials and other natural construction materials used for the project outside the riparian area.

i. Stormwater management. Prepare and carry out a stormwater management plan for any project that will produce a new impervious surface or a land cover conversion that slows the entry of water into the soil. The plan must be available for inspection on request by Corps or NOAA Fisheries.

i. Plan contents. The goal is to avoid and minimize adverse effects due to the quantity and quality of stormwater runoff for the life of the project by maintaining or restoring natural runoff conditions. The plan will meet the following criteria and contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.

(1) A system of management practices and, if necessary, structural facilities, designed to complete the following functions.

(a) Minimize, disperse and infiltrate stormwater runoff onsite using sheet flow across permeable vegetated areas to the maximum extent possible without causing flooding, erosion impacts, or long-term adverse effects to groundwater.

[5] For purposes of this Opinion only, 'large wood' means a tree, log, or rootwad big enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and otherwise support aquatic habitat function, given the slope and bankfull channel width of the stream in which the wood occurs. See, Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995 (www.odf.state.or.us/FP/RefLibrary/LargeWoodPlacemntGuide5-95.doc).

(b) Pretreat stormwater from pollution generating surfaces, including bridge decks, before infiltration or discharge into a freshwater system, as necessary to minimize any nonpoint source pollutant (*e.g.*, debris, sediment, nutrients, petroleum hydrocarbons, metals) likely to be present in the volume of runoff predicted from a 6-month, 24-hour storm.[6]

(2) For projects that require engineered facilities to meet stormwater requirements, use a continuous rainfall/runoff model, if available for the project area, to calculate stormwater facility water quality and flow control rates.

(3) Use permeable pavements for load-bearing surfaces, including multiple-use trails, to the maximum extent feasible based on soil, slope, and traffic conditions.

(4) Install structural facilities outside wetlands or the riparian buffer area[7] whenever feasible, otherwise, provide compensatory mitigation to offset any long-term, adverse effects.

(5) Document completion of the following activities according to a regular schedule for the operation, inspection and maintenance of all structural facilities and conveyance systems, in a log available for inspection on request by the Corps and NOAA Fisheries.

(a) Inspect and clean each facility as necessary to ensure that the design capacity is not exceeded, heavy sediment discharges are prevented, and whether improvements in operation and maintenance are needed.

(b) Promptly repair any deterioration threatening the effectiveness of any facility.

(c) Post and maintain a warning sign on or next to any storm drain inlet that says, as appropriate for the receiving water, 'Dump No Waste - Drains to Ground Water, Streams, or Lakes.'

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[6] A 6-month, 24-hour storm may be assumed to be 72% of the 2-year, 24-hour amount. See, Washington State Department of Ecology (2001), Appendix I-B-1.

[7] For purposes of this Opinion only, 'riparian buffer area' means land: (1) Within 150 feet of any natural water occupied by listed salmonids during any part of the year or designated as critical habitat; (2) within 100 feet of any natural water within 1/4 mile upstream of areas occupied by listed salmonids or designated as critical habitat and that is physically connected by an above-ground channel system such that water, sediment, or woody material delivered to such waters will eventually be delivered to water occupied by listed salmon or designated as critical habitat; and (3) within 50 feet of any natural water upstream of areas occupied by listed salmonids or designated as critical habitat and that is physically connected by an above-ground channel system such that water, sediment, or woody material delivered to such waters will eventually be delivered to water occupied by listed salmon or designated as critical habitat. 'Natural water' means all perennial or seasonal waters except water conveyance systems that are artificially constructed and actively maintained for irrigation.

(d) Only dispose of sediment and liquid from any catch basin in an approved facility.

ii. Runoffs/discharge into a freshwater system. When stormwater runoff will be discharged directly into fresh surface water or a wetland, or indirectly through a conveyance system, the following requirements apply.

(1) Maintain natural drainage patterns and, whenever possible, ensure that discharges from the project site occur at the natural location.

(2) Use a conveyance system comprised entirely of manufactured elements (*e.g.*, pipes, ditches, outfall protection) that extends to the ordinary high water line of the receiving water.

(3) Stabilize any erodible elements of this system as necessary to prevent erosion.

(4) Do not divert surface water from, or increase discharge to, an existing wetland if that will cause a significant adverse effect to wetland hydrology, soils or vegetation.

(5) The velocity of discharge water released from an outfall or diffuser port may not exceed 4 feet per second, and the maximum size of any aperture may not exceed one inch.

j. Site restoration. Prepare and carry out a site restoration plan as necessary to ensure that all streambanks, soils and vegetation disturbed by the project are cleaned up and restored as follows. Make the written plan available for inspection on request by the Corps or NOAA Fisheries.

i. General considerations.

(1) A planting plan and plan for placing large wood[8] in the creek shall be submitted for NOAA Fisheries' approval **before** construction.

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

(3) Streambank shaping. Restore damaged streambanks to a natural slope, pattern and profile suitable for establishment of permanent woody vegetation, unless precluded by pre-project conditions (*e.g.*, a natural rock wall).

(4) Revegetation. Replant each area requiring revegetation before the first April 15 following construction. Use a diverse assemblage of species native to the project area or region, including grasses, forbs, shrubs and trees. Noxious or invasive species may not be used.

[8] For guidance on placing large wood in streams see: Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995 (http://www.odf.state.or.us/FP/RefLibrary/RefsList.htm).

(a) Trees to be replaced in the riparian area shall be planted within 100 feet of Tickle Creek and commencing no more than 10 feet from the road.

(b) Replacement trees shall be equivalent in diameter of trees removed (*i.e.* a 24-inch diameter tree shall be replaced with two 12-inch trees, four 6-inch trees, six 4-inch trees, twelve 2-inch trees, *etc.*)

(c) Trees shall be replaced within the project area near Tickle Creek or at another location authorized in writing by NOAA Fisheries.

(5) Pesticides. Take of ESA-listed species caused by any aspect of pesticide use is not included in the exemption to the ESA take prohibitions provided by this incidental take statement. Although, mechanical or other methods may be used to control weeds and unwanted vegetation.

(6) Fertilizer. Do not apply surface fertilizer within 50 feet of any stream channel.

ii. Plan contents. Include each of the following elements:

(1) Responsible party. The name and address of the party(s) responsible for meeting each component of the site restoration requirements, including providing and managing any financial assurances and monitoring necessary to ensure restoration success.

(2) Baseline information. This information may be obtained from existing sources (*e.g.*, land use plans, watershed analyses, subbasin plans), where available.

(a) A functional assessment of adverse effects, *i.e.*, the location, extent and function of the riparian and aquatic resources that will be adversely affected by construction and operation of the project.

(b) The location and extent of resources surrounding the restoration site, including historic and existing conditions.

(3) Goals and objectives. Restoration goals and objectives that describe the extent of site restoration necessary to offset adverse effects of the project, by aquatic resource type.

(4) Performance standards. Use these standards to help design the plan and to assess whether the restoration goal is met. While no single criterion is sufficient to measure success, the intent is that these features should be present within reasonable limits of natural and management variation.

(a) Bare soil spaces are small and well dispersed.

(b) Soil movement, such as active rills or gullies and soil deposition around plants or in small basins, is absent or slight and local.

(c) If areas with past erosion are present, they are completely stabilized and healed.

(d) Plant litter is well distributed and effective in protecting the soil with few or no litter dams present.

(e) Native woody and herbaceous vegetation, and germination microsites, are present and well distributed across the site.

(f) Vegetation structure is resulting in rooting throughout the available soil profile.

(g) Plants have normal, vigorous growth form, and a high probability of remaining vigorous, healthy and dominant over undesired competing vegetation.

(h) High impact conditions confined to small areas necessary access or other special management situations.

(i) Streambanks have less than 5% exposed soils with margins anchored by deeply rooted vegetation or coarse-grained alluvial debris.

(j) Few upland plants are in valley bottom locations, and a continuous corridor of shrubs and trees provide shade for the entire streambank.

(5) Work plan. Develop a work plan with sufficient detail to include a description of the following elements, as applicable.

(a) Boundaries for the restoration area.

(b) Restoration methods, timing, and sequence.

(c) Water supply source, if necessary.

(d) Woody native vegetation appropriate to the restoration site[9]. This must be a diverse assemblage of species that are native to the project area or region, including grasses, forbs, shrubs and trees. This may include allowances for natural regeneration from an existing seed bank or planting.

(e) A plan to control exotic invasive vegetation.

(f) Elevation(s) and slope(s) of the restoration area to ensure they conform with required elevation and hydrologic requirements of target plant species.

(g) Geomorphology and habitat features of stream or other open water.

(h) Site management and maintenance requirements.

(6) Five-year monitoring and maintenance plan.

(a) A schedule to visit the restoration site annually for 5 years or longer as necessary to confirm that the performance standards are achieved. Despite the initial 5-year planning period, site visits and monitoring will continue from year-

[9] Use references sites to select vegetation for the mitigation site whenever feasible. Historic reconstruction, vegetation models, or other ecologically-based methods may also be used as appropriate.

to-year until the Corps certifies that site restoration performance standards have been met.

(b) During each visit, inspect for and correct any factors that may prevent attainment of performance standards (*e.g.*, low plant survival, invasive species, wildlife damage, drought).

(c) Keep a written record to document the date of each visit, site conditions and any corrective actions taken.

2. To implement reasonable and prudent measure #2 (monitoring), the Corps shall:

a. Implementation monitoring. Ensure that a monitoring report is submitted to the Corps within 120 days of project completion describing the applicant's success meeting his or her permit conditions. The monitoring report will include the following information.

i. Project identification

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

(2) Type of activity.

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

(4) Corps contact person.

(5) Starting and ending dates for work completed.

ii. Photo documentation. Photos of habitat conditions at the project and any compensation site(s), before, during, and after project completion.[10]

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

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

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

(1) Pollution control. A summary of pollution and erosion control inspections, including any erosion control failure, contaminant release, and correction effort.

(2) Site preparation.

(a) Total cleared area – riparian and upland.

(b) Total new impervious area.

(3) Site restoration. Photo or other documentation that site restoration performance standards were met.

iv. Site restoration or compensatory mitigation monitoring. In addition to the 120-day implementation report, each applicant will submit an annual

[10] Relevant habitat conditions may include characteristics of channels, eroding and stable streambanks in the project area, riparian vegetation, water quality, flows at base, bankfull and over-bankfull stages, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

report by December 31 that includes the written record documenting the date of each visit to a restoration site or mitigation site, and the site conditions and any corrective action taken during that visit. Reporting will continue from year to year until the Corps certifies that site restoration or compensatory mitigation performance standards have been met.

b. NOTICE. If a sick, injured or dead specimen of a threatened or endangered species is found, the finder must notify the Vancouver Field Office of NOAA Fisheries Law Enforcement at 360.418.4246. The finder must take care in handling of 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. MAGNUSON-STEVENS ACT

3.1 Background

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance essential fish habitat (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 (§305(b)(2)).

- NOAA Fisheries must provide conservation recommendations for any Federal or state action that would adversely affect EFH (§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 (§305(b)(4)(B)).

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §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; "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.10), and "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).

EFH consultation with NOAA Fisheries is required regarding 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 would adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH.

3.2 Identification of EFH

Pursuant to the MSA, the Pacific Fisheries Management Council (PFMC) has designated EFH for federally-managed fisheries within the waters of Washington, Oregon, and California. Designated EFH for groundfish and coastal pelagic species encompasses all waters from the mean high water line and upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon and California, seaward to the boundary of the U.S. exclusive economic zone (370.4 km) (PFMC 1998a, 1998b). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies 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) (PFMC 1999). In estuarine and marine areas, designated salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone (370.4 km) offshore of Washington, Oregon, and California north of Point Conception to the Canadian border (PFMC 1999).

Detailed descriptions and identifications of EFH are contained in the fishery management plans for groundfish (PFMC 1998a), coastal pelagic species (PFMC 1998b), and Pacific salmon (PFMC 1999). Casillas *et al*. (1998) provides additional detail on the groundfish EFH habitat complexes. Assessment of the potential adverse effects to these species' EFH from the proposed action is based, in part, on these descriptions and on information provided by the Corps.

3.3 Proposed Actions

The proposed action and action area are detailed above in sections 1.2 and 2.1.1 of this Opinion. The action area includes habitats that have been designated as EFH for various life-history stages of chinook and coho salmon.

3.4 Effects of Proposed Action

As described in detail in section 2.1.5 of this document, the proposed action will result in short-term adverse effects to a variety of habitat parameters. These adverse effects are: Decreased water quality (turbidity) and riparian vegetation.

3.5 Conclusion

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

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations to Federal agencies regarding actions which may adversely affect EFH. While NOAA Fisheries understands that the conservation measures described in the BA will be implemented by the Corps it does not believe that these measures are sufficient to address the adverse impacts to EFH described above. However, the terms and conditions outlined in section 2.2.3 are generally applicable to designated EFH for the species designated in section 3.3, and address these adverse effects. Consequently, NOAA Fisheries incorporates them here as EFH conservation measures.

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 Corps 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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