



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
BIN C15700
Seattle, WA 98115-0070

August 7, 2003

MEMORANDUM FOR: File

FROM: D. Robert Lohn, Regional Administrator

SUBJECT: Endangered Species Act Section 7 Consultation Biological Opinion, Unlisted Species Analysis, Section 10(a)(2)(B) Findings and Magnuson-Stevens Fisheries Conservation and Management Act Essential Fish Habitat Consultation For issuance of an Incidental Take Permit to the Tagshinney Tree Farm for Forest Management Activities in Lewis County, Washington (NMFS Tracking No.: 2003/00433)

Attached is a document containing a biological opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of the proposed issuance of an Incidental Take Permit under section 10(a)(1)(B) of the ESA for forest management on 144 acres in Lewis County, Washington by multiple landowners collectively known as the Tagshinney Tree Farm. Issuance of this permit is supported by a low-effect Habitat Conservation Plan (Plan) that has undergone public and NOAA Fisheries review. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed species and other unlisted species under NOAA Fisheries jurisdiction. Permit issuance was found in this Opinion to meet requirements of section 10(a)(2)(B) of the ESA.

This document contains a consultation on Essential Fish Habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and its implementing regulations (50 CFR Part 600). NOAA Fisheries concludes that the proposed action may adversely affect designated EFH for two species of Pacific salmon. While the proposed action may adversely affect EFH, NOAA Fisheries believes that the conservation measures incorporated into the Plan to address ESA concerns already minimize these effects and conserve EFH. Therefore, conservation recommendations are not required.

The point of contact for this consultation is Mike Parton of my staff in the Washington State Office at (360) 753-4650 or Mike.Parton@noaa.gov.



**Endangered Species Act - Section 7 Consultation
Biological Opinion,
Unlisted Species Analysis,
Section 10(a)(2)(B) Findings
and
Magnuson-Stevens Fisheries Conservation and
Management Act
Essential Fish Habitat Consultation**

For issuance of an Incidental Take Permit to the Tagshinney Tree Farm
for Forest Management Activities in Lewis County, Washington

NMFS Tracking No.: 2003/00433

Action Agency: National Marine Fisheries Service
Northwest Region

Consultation
Conducted by: NOAA's National Marine Fisheries Service
Northwest Region
Washington State Habitat Branch

Issued by: *Michael R Couse*
f.l

Date Issued: August 7, 2003

D. Robert Lohn
Regional Administrator

TABLE OF CONTENTS

1.0 INTRODUCTION	1
1.1 Background and Consultation History	1
1.2 Description of the Proposed Action	2
1.3 Description of the Action Area	2
1.3.1 Home Parcel	3
1.3.2 Kinzie Road Parcel	3
1.3.3 Highway 12 Parcel	3
1.3.4 Burchett Road Parcel	4
1.3.5 Winter Road Parcel	4
2.0 ENDANGERED SPECIES ACT BIOLOGICAL OPINION	4
2.1 Evaluating the Proposed Action	4
2.1.1 Biological Requirements	5
2.1.2 Environmental Baseline	5
2.1.3 Status of the Species	8
2.1.4 Relevance of the Baseline to the Status of Species	10
2.2 Analysis of Effects	10
2.2.1 Direct Effects	11
2.2.2 Indirect Effects	13
2.2.3 Cumulative Effects	14
2.3 Conclusion	14
2.4 Reinitiation of Consultation	15
2.5 Incidental Take Statement	15
2.6 Amount or Extent of Take Anticipated	16
2.7 Reasonable and Prudent Measures	17
3.0 SECTION 10(a)(2)(B) FINDINGS	17
3.1 Permit Issuance Considerations	17
3.2 Permit Issuance Findings	19
3.3 Conclusion	20
4.0 MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT	20
4.1 Background	20
4.2 Identification of EFH	21
4.3 Proposed Actions	21
4.4 Effects of Proposed Actions	21
4.5 Conclusion	22
4.6 EFH Conservation Recommendations	22
4.7 Statutory Response Requirement	22
4.8 Supplemental Consultation	22
5.0 REFERENCES	23

1.0 INTRODUCTION

This document has been prepared in response to a request for issuance of an Incidental Take Permit (Permit) under section 10(a)(1)(B) of the Endangered Species Act (ESA) of 1973, as amended, 16 U.S.C. 1531, *et. seq.* and communicates NOAA's National Marine Fisheries Service (NOAA Fisheries) Biological Opinion (Opinion), and Magnuson-Stevens Fishery Management and Conservation Act (MSA) Essential Fish Habitat (EFH) consultation, based on our review of the effects of forest management activities on 144 acres of privately-owned forestland. This acreage is comprised of five separate parcels, collectively known as the Tagshinney Tree Farm. Permit issuance is supported by a comprehensive Conservation Plan consisting of a low-effect Habitat Conservation Plan. The project site is in central Lewis County, Washington, within the Evolutionarily Significant Units (ESU) of threatened Lower Columbia River steelhead (*Oncorhynchus mykiss*) and unlisted Lower Columbia River coho (*O. kisutch*). The action area also is EFH for chinook (*O. tshawytscha*) and coho salmon.

1.1 Background and Consultation History

From 1997 to December 2002, the U. S. Fish and Wildlife Service (FWS) and NOAA Fisheries (together, the Services) provided technical and policy assistance to the Tagshinney Tree Farm in development of a conservation plan for listed and unlisted species. The proposed Tagshinney Tree Farm Conservation Plan (Plan) integrates a low-effect Habitat Conservation Plan (HCP) for species under NOAA Fisheries' jurisdiction with a Safe Harbor Agreement (SHA) and a Candidate Conservation Agreement with Assurances (CCAA) for species under FWS' jurisdiction. This consultation is based on the Plan (Fox *et al.* March, 2003) noticed for public review and comment in the Federal Register on March 26, 2003 (68 FR 14581).

Low-effect HCPs are a special category of conservation plan established by the Services to address planned activities with relatively minor or negligible effects. The purpose of low-effect HCPs is to expedite administrative processes for activities with inherently low impacts to one or more species' distribution, abundance, or the habitats they depend upon. Issuance of a Permit under section 10(a)(1)(B) of the ESA is expected to contribute to the long-term survival of the covered species.

The objective of this Opinion is to determine whether the issuance of a Permit for proposed forest management activities is likely to jeopardize the continued existence of listed species. The listed species analyzed in this Opinion is the threatened Lower Columbia River (LCR) steelhead trout (*O. mykiss*). An unlisted species, LCR coho, also is analyzed in keeping with the Service's No Surprises Policy (February 23, 1998; 63 FR 8859) to provide regulatory assurances should this ESU require protection of listing under the ESA. The LCR chinook are not expected to utilize the limited amount and type of aquatic habitats in the Plan area or to be subject to downstream effects of Plan activities and are not covered under the proposed Plan. The Opinion was completed pursuant to the ESA and its implementing regulations (50 Code of Federal Regulations (CFR) 402) and constitutes formal consultation for the covered species.

The objective of the EFH consultation is to identify any adverse effects of Federal activities to EFH, and provide conservation recommendations for activities that do adversely affect EFH. The species considered in this EFH consultation are chinook and coho salmon. The EFH consultation was completed pursuant to the MSA and its implementing regulations (50 CFR 600).

1.2 Description of the Proposed Action

The NOAA Fisheries proposes to issue a Permit for incidental take of listed LCR steelhead. The owners of the Tagshinney Tree Farm (the Applicants) have prepared a Plan and applied for a section 10(a)(1)(B) incidental take permit to comply with the ESA and to address forest management activities described below. The term of the requested Permit would be 80 years. For unlisted species specified in the Plan, the proposed Permit would become effective if and when one of these currently unlisted species is listed.

A detailed description of the conservation measures is provided on pages 35 to 52 of *Enhancement Activities and Conservation Measures for Covered Species* (Fox *et al.*, 2003). Under the Plan, the Applicants will implement extended rotations (50 to 80 years between harvests); develop and retain standing dead trees, green recruitment trees, and large woody debris; provide forested habitat; establish and retain protective riparian and wetland management zones; and ensure that the lands in the Plan area remain in long-term forest management.

Leave trees will be distributed and located so as to maximize wildlife values and minimize potential for windthrow. Leave trees will be distributed (clumped), particularly along ridges, stream buffers, and forested-edges where the likelihood of windthrow is lowest and where the retained trees will provide the greatest benefit to wildlife. Retained trees will be left for the remainder of the Plan term with the intent of providing standing dead and ultimately fallen trees (down woody debris) to upland and riparian forest floors. These retained trees will hasten the development of a multi-layered canopy and a complex forest structure.

1.3 Description of the Action Area

The action area is defined at 50 CFR 402 to mean “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” For the purposes of this consultation, NOAA Fisheries recognizes the action area to include the covered lands and the surrounding areas within one quarter mile of each parcel. The Tagshinney Tree Farm is typical of other privately owned tree farms in Lewis County with young and simply structured conifer forests. The five parcels that comprise the Tagshinney Tree Farm are described below. Detailed description of these parcels are provided in the Plan (Fox *et al.* 2003) and are incorporated herein by reference.

1.3.1 Home Parcel

The Home Parcel is 46 acres total; 39 acres are forested and 7 acres will remain unforested. The forested acreage consists of approximately 20 acres of early seral conifer forest following

regeneration harvest in 1992 with the remaining acreage in simple structured 45 year-old forest. The Applicants are also growing several acres of hybrid poplar on this parcel. No current or historic fishbearing channels are present.

1.3.2 Kinzie Road Parcel

The Kinzie Road parcel, one of two focal areas for this Opinion, is three tracts that are treated collectively as one parcel of 67 acres. Within this parcel is a seasonally-flowing, fishbearing stream confluent with an open water wetland. This stream joins Skook Creek, a tributary to the Cowlitz River, approximately 1.5 miles downstream from the parcel. The wetland covers approximately four acres of which one acre is part of the Plan. There are trees within a wetland management zone left from previous timber harvest and a passively recovering riparian area dominated by shrub species along the seasonal stream.

The seasonal stream is small (bank-full width less than five feet), low gradient, and flows primarily during the winter months. Upstream passage of anadromous and resident fish species into the Plan area is blocked by twin culverts under Howe Road (road mile post 2.59, stream mile 1.1 of Skook Creek). This blockage is slated for replacement with a fish passable structure by Lewis County Public Works in the summer of 2003 under Washington State's Salmon Recovery Program (Salmon Recovery Funding Board project number 00-1912D, on file at the Washington Habitat Branch Office, Lacey, Washington). Resident cutthroat trout (*O. clarkii*) now likely occupy both the stream and wetland, suggesting suitability for one or more life stages of LCR steelhead and LCR coho when passage is restored.

The low-use logging road that runs through this parcel and crosses the seasonal fishbearing stream is level, narrow, and in most places has vegetation growing between the tire tracks. The road bed is primarily native materials with gravel lift over the culverts to stabilize this area and limit sediment delivery.

1.3.3 Highway 12 Parcel

The Highway 12 parcel is approximately 15 acres in size and is the second focal area of this Opinion. Adjacent to the eastern portion of the parcel, a leave strip of mature (greater than 80 years old) Douglas-fir, bigleaf maple and western red cedar has been retained in a power line right-of-way owned and managed by Tacoma City Light. This leave strip of older forest of approximately 2 acres runs from the top of the parcel to the base of the slope, becoming contiguous with the shoreline buffer along Mayfield Lake. In combination, the leave strip beneath the power line and the portion of the state-designated shoreline buffer on the Applicants' parcel equals about four acres of late-successional forest. No current or historic fishbearing channels are present. Mayfield Lake is habitat for both LCR steelhead and LCR salmon transported above the Cowlitz Barrier Dam that migrate into and from the upper Cowlitz River.

1.3.4 Burchett Road Parcel

The Burchett Road parcel is 10 acres. It is dominated by 18 year-old Douglas-fir on

approximately eight acres, with 45 to 50 year-old Douglas-fir dominating the remaining two acres. No current or historic fishbearing channels are present.

1.3.5 Winter Road Parcel

The Winter Road parcel is six acres and is forested with approximately 40 year-old Douglas fir, second-growth trees that were commercially thinned in 2000. The current stand density ranges from approximately 100 to 150 trees per acre. No current or historic fishbearing channels are present.

2.0 ENDANGERED SPECIES ACT BIOLOGICAL OPINION

The ESA establishes a national program for the conservation of threatened and endangered species of fish, wildlife, and plants and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with NOAA Fisheries, as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or to adversely modify or destroy their designated critical habitats. This Opinion considers the action of NOAA Fisheries issuance of a section 10(a)(1)(B) permit pursuant to section 7(a)(2) of the ESA and implementing regulations found at 50 CFR Part 402.

2.1 Evaluating the Proposed Action

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR 402. NOAA Fisheries must determine whether the proposed action of issuing a Permit is likely to jeopardize the listed and unlisted salmon 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 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 action; (2) the environmental baseline; and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed species' life stages that occur beyond the action area. If NOAA Fisheries finds that the action is likely to jeopardize, NOAA Fisheries must identify reasonable and prudent alternatives for the action.

For this Opinion, NOAA Fisheries' habitat analysis considers the extent to which Forest Plan activities will impair or improve the functions of essential elements for migration, spawning, and rearing of the listed and unlisted salmon under the existing environmental baseline. The potential effects of Plan activities on listed and unlisted salmon were evaluated based on: (1) the biological requirements of the species; (2) the present environmental conditions of the action area; (3) the likely direct and indirect effects of Plan activities on habitat and the species

biological requirements; and (4) the cumulative effects of the environmental baseline and Plan activities on the likelihood of salmon species survival. The analysis was based on a review and synthesis of the best available scientific information. Specific sources are listed in the bibliography and cited throughout the body of the document. Primary sources of information included the Plan and site visits conducted by Service's biologists over the multi-year course of Plan development.

2.1.1 Biological Requirements

Relevant biological requirements are those conditions necessary for salmon to survive and recover to naturally reproducing population levels that would make protection under the ESA unnecessary. Adequate population levels must conserve and potentially expand the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment. At a finer scale, biological requirements are those habitat conditions that are necessary at any salmon life stage. Essential features of any salmon species' habitat include adequate substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food, riparian vegetation, space and passage conditions. Information on salmon biological requirements is replete in published literature including, but not limited to, the following general and specific references considered in this Opinion: Brown (1985), Busby *et al.* (1996), Bustard and Narver (1975), Cederholm and Scarlett (1981), Chapman (1966), Emmett *et al.* (1991), Everest and Chapman (1972), Groot and Margolis (1991), Laufle *et al.* (1986), McMahon (1983), NRC (1996), Pauley *et al.* (1986), Reeves *et al.* (1995), Sabo (1995), Sandercock (1991), Simenstad *et al.* (1982), Spence *et al.* (1996), Stouder *et al.* (1997) and Weitkamp *et al.* (1995) .

2.1.2 Environmental Baseline

The environmental baseline is the current set of conditions to which the effects of the proposed action are added. Environmental baseline is defined as “the past and present impacts of all Federal, state, and private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or informal ESA section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation process” (50 CFR 402.02).

The action area for this Opinion is situated near the middle of the Cowlitz River Basin in southwestern Washington. The origins of the Cowlitz River are on the slopes of Mt. Rainier, Mt. Adams, and Mt. St. Helens. Major tributary streams are the Tilton, Cispus, and Toutle rivers, and Silver, Winston, Salmon, Lacamas, and Olequa creeks. Total drainage area is approximately 2,480 square miles, with approximately 1,400 square miles drained to the general vicinity of the action areas at Mayfield Dam (FERC 2001).

Forestry is the dominant land use for all subbasins within the Cowlitz River basin (WSCC 2000, Table 6). In the Cowlitz River floodplain below Mayfield Dam, agriculture and other uses made up only 16% of land use in 1974 (WDW 1990). Some of the percentages have changed since 1974 due to substantial amounts of residential and industrial development within the basin. The

percent increases in population for Cowlitz and Lewis counties from 1970 through 1996 were 24% and 31% respectively (Harza 1999). The most growth during this period in both counties occurred between 1990 and 1996.

The construction of Mayfield (River Mile (RM) 52), Mossyrock (RM 65.5) and Barrier (RM 50) dams in the 1960's blocked migration of salmon into the upper watershed and eventually divided the Cowlitz River into three major aquatic habitat areas: (1) the mainstem Cowlitz River downstream from Barrier dam; (2) the Cowlitz River reservoirs; and (3) the Cowlitz River and tributaries upstream from Barrier Dam (FERC 2001).

A suite of studies conducted for FERC licensing of the above-described hydroelectric complex describes aquatic and terrestrial conditions in the action areas (Final Environmental Impact Statement, FERC 2001). The Washington State Conservation Commission (WSCC) also recently completed a comprehensive review of factors limiting salmon production in the Cowlitz River basin (2000). These documents are fundamental references that describe baseline conditions for analyzing the effects of Plan activities on the Highway 12 parcel (on the north shore of Mayfield Lake) and the Kinzie Road parcel (containing a tributary to Skook Creek which enters the Cowlitz River at about RM 48). The following section describes conditions in the Lower Cowlitz River subbasin downstream of the Barrier Dam.

2.1.2.1 Conditions in the Lower Cowlitz River Subbasin

The system of dams on the Cowlitz River is the most significant factor limiting salmonid habitat in the Cowlitz River basin (WSCC 2000). The WSCC (2000, Map 3a) identified both the historic anadromous fish distribution and current passage barriers, showing major access problems in the Cowlitz River basin. Fish passage on the mainstem is, however, good throughout the lower Cowlitz River subbasin to the Barrier Dam at RM 49.5.

The WSCC reported numerous access issues known to block fish passage in the lower Cowlitz subbasin. Particularly relevant is the Skook Creek fish blockage downstream of the Plan Area. Two culverts under Howe Road, 1.1 miles above its mouth, block approximately 4 miles of anadromous fish habitat (David Evans and Associates 1998). These culverts are planned to be replaced with fish passable designs in the summer of 2003, thereby potentially reestablishing anadromous fish passage into the Plan area. Details of the Skook Creek barrier removal project are presented in the Plan (Appendix F, Fox *et al.* 2003).

Compared to historical levels, there have been losses in key habitat areas and habitat diversity for most salmonid life-stages due to channel simplification and diking (Mobrاند Biometrics 1999). From 1939 to 1996, there has been a decrease in the total square feet of habitat per mile available to steelhead (Mobrاند Biometrics 1999). The condition of side channel habitat is generally unknown for most of the smaller streams in the subbasin (WSCC 2000).

Historically, the Cowlitz River mainstem had abundant amounts of large wood contained within the channel, which included large logjams (Mobrاند Biometrics 1999). Large woody debris (LWD) concentrations within the mainstem Cowlitz River and tributaries are considered "poor,"

based on observations by local experts conducting the limiting factors analysis for the Cowlitz River (WSCC 2000). Lack of woody debris in smaller tributaries to the lower Cowlitz subbasin is caused by the combination of extensive logging within riparian areas and past streamclearing efforts (Mobrاند Biometrics 1999).

The WSCC (2000, Table 29) summarized pool and other habitat areas from surveys of nine tributaries in the lower Cowlitz River. Those results suggest that pool areas are generally low. Pool quality in Skook Creek, downstream of the Plan area, was reported to be "very good" from the mouth to Howe Road. Above Howe Road, pool quality appears to be "excellent" (David Evans and Associates 1998). However, pool frequencies were not given, and their criteria may not be equivalent to criteria used in the limiting factors analysis by WSCC (2000).

The WSCC (2000) stated that there are basically no substrate fines in the mainstem between the Barrier Dam and Mayfield Dam because the dams block sediment moving downstream. Substantial increases in fine sediments to the mainstem below the Barrier Dam are attributed to land-use activities primarily within this subbasin (Mobrاند Biometrics 1999). The EDT analysis found a moderate degradation in sediment load over historic conditions (Mobrاند Biometrics 1999). Road density has been used as a surrogate to indicate probable fine-sediment problems, and densities above 3.0 miles per square mile are considered to be high (WSCC 2000, Appendix B). The road density in the Lower Cowlitz subbasin is 4.9 miles per square mile, and 31% of the anadromous streams have stream-adjacent roads (Lewis County GIS 2000, as cited in WSCC 2000). Tributaries in the Lower Cowlitz subbasin are generally rated as "poor" for fine sediment conditions. Skook Creek, downstream of the Plan area, was described by David Evans and Associates (1998) as having clean gravel tailouts from pools from the mouth to Howe Road. Between Howe and Spencer Roads, there are relatively-long stretches of clean gravels with a range of gravel sizes, depending on velocities. Below Spencer road, Skook Creek received a fair rating for fine sediments by contributors to WSCC (2000). Above Spencer Road, the land use is primarily agriculture and rural residential (David Evans and Associates 1998).

Riparian areas in the Cowlitz River mainstem from the Toutle River to Barrier Dam historically were comprised of both deciduous and coniferous trees with abundant wetlands (WSCC 2000). Prairies were likely present. Riparian cover types for the mainstem Cowlitz River were mapped by Harza (2000). They found the total area of forested types to be relatively constant since 1939, but found a decrease in the conifer type and an increase in mixed and deciduous types (Harza 2000). Other notable changes include a decrease in the meadow/grasslands cover type. This change is likely due to the conversion of grassland areas to agricultural use, or to an encroachment of shrubs in abandoned fields. Residential use also has increased along the river corridor, mostly since the mid-1960s.

In general, riparian conditions in the lower Cowlitz tributaries are poor because land-use practices have altered riparian zones. The WSCC (2000, Map 11a) illustrates the extent of the impacts to the riparian cover in the lower Cowlitz subbasin (data from Lunetta *et al.* 1997). The majority of riparian habitat within the Lower Cowlitz subbasin is in "poor" condition (WSCC 2000, Appendix A). In lower Skook Creek, downstream of the Plan area, the condition of riparian areas appear to be fair from the mouth to Spencer Road (WSCC 2000). Above this

point, the watershed was considered to be a natural prairie, now used for agriculture, and no further information was available.

Water quality is generally good for the lower Cowlitz River mainstem. The EDT analysis by Mobrand (1999) concluded that there has not been a substantial change in water quality compared to historic levels for the mainstem Cowlitz River in this subbasin.

2.1.3 Status of the Species

NOAA Fisheries considers the current status of the listed species, taking into account population size, trends, distribution, and genetic diversity. To assess the current status of the listed species within the action area, NOAA Fisheries starts with the determinations made in its decision to list for ESA protection the ESUs considered in this Opinion and also considers any new information that is relevant to the determination.

2.1.3.1 Lower Columbia River Steelhead ESU

LCR steelhead were listed as threatened under the ESA on March 19, 1998 (63 FR 13347). In Washington, the LCR steelhead ESU includes winter and summer steelhead in tributaries to the Columbia River between the Cowlitz River and Wind River, inclusive (Busby *et al.* 1996). The NOAA Fisheries has updated a status review of West Coast salmon, *Preliminary conclusions regarding the updated status of listed ESUs of West Coast salmon and steelhead (Draft - February 2003)*, available at: <http://161.55.120.162/trt/brtrpt.htm>. The Biological Review Team found that populations of LCR steelhead are at low abundance relative to historical levels, and that near universal, and often drastic, declines had been observed since the mid-1980s. They describe widespread occurrence of hatchery fish in naturally spawning steelhead populations. The habitat for the population of LCR steelhead in the lower Cowlitz River was estimated to be 80% of the historical amount.

There are several factors for decline of LCR steelhead including habitat degradation, overharvest, predation, hydroelectric dams, hatchery introgression, and the eruption of Mount Saint Helens. Habitat degradation or elimination is mainly due to urbanization, forestry, water diversions, and mining. There is strong concern about the pervasive influence of hatchery stocks within the ESU. There is no tribal or direct commercial fishery on steelhead although incidental catch of wild steelhead may occur in the lower Columbia River fall gill-net fishery (WDF *et al.* 1993). The following sections provide a history of salmon management and status by species, drawing primarily from the work of the WSCC, Washington Department of Fish and Wildlife (WDFW), and a team of local experts who compiled a comprehensive report on factors limiting salmon production in the Cowlitz River Basin (WSCC 2000).

2.1.3.1.1 Lower Cowlitz River Population

Winter steelhead are indigenous to the Cowlitz Basin, were historically abundant, and probably present throughout the watershed (Washington Department of Wildlife (WDW) 1990). It is estimated that wild steelhead production in the mainstem Cowlitz is minimal, but that key wild

production areas still exist in lower river tributaries such as Olequa Creek (LCSCI 1998).

The Cowlitz Trout Hatchery is the primary source of winter steelhead production in the Cowlitz River. In 1990, it was estimated that naturally-spawning steelhead below Barrier Dam were less than two percent of the total run (WDW 1990). A spawning escapement survey, conducted in 1985, estimated that 5,703 winter steelhead spawned below Mayfield Dam (Tipping *et al.* 1985). The naturally-spawning Cowlitz River winter steelhead are a mixed stock of wild production. The average percent of hatchery spawners is approximately 92% (WSCC 2000, Table 19). The stock is considered depressed based on chronically low returns (WSCC 2000, Table 18). Most of the natural spawning takes place in Olequa, Ostrander, Salmon, Arkansas, Delameter, and Monahan creeks (Washington Department of Fisheries (WDF) *et al.* 1993). The primary limiting factor for steelhead production on the Cowlitz River is lack of suitable spawning and rearing habitat due to construction of Mayfield Dam in 1963 (WDF *et al.* 1993).

2.1.3.2 Lower Columbia River Coho ESU

Coho are indigenous to the Cowlitz Basin, and were historically abundant throughout the watershed (WDF 1951, as cited in WSCC 2000). The NOAA Fisheries has updated a status review of West Coast salmon, *Preliminary conclusions regarding the updated status of listed ESUs of West Coast salmon and steelhead (Draft - February 2003)*, available at: <http://161.55.120.162/trt/brtrpt.htm>. The Biological Review Team was very concerned that the vast majority (over 90%) of the historic populations in the LCR coho salmon ESU appear to be extirpated or nearly so. Twenty-one of 23 historical populations appear to be extirpated and the LCR coho ESU is dominated by hatchery production. They also estimate that only 45% of the historical coho salmon habitat remains in the lower Cowlitz River.

Historically, two separate runs of coho were reported to enter the Cowlitz River. The early run (Type-S) entered the Cowlitz from late August and September with a spawning peak in late October, and the late run (Type-N) entered from October through March with a spawning peak in late November (WDG/WFC 1948, as cited in WSCC 2000). Type-S and Type-N were named for stocks either turning south or north upon reaching the Pacific Ocean.

Cowlitz River coho are managed for a large range of return timing, but all are now considered to be of "Type-N", or late-returning stock. The Type-N stock has dominated Cowlitz Hatchery production because catch distribution favors the Washington ocean fishery (WDW 1990). Most coho in the Cowlitz River basin are of hatchery origin.

Since 1968, the Cowlitz Salmon Hatchery has been producing coho salmon. Small numbers of coho spawn naturally in Olequa, Ostrander, Arkansas, Stillwater, Campbell, Foster, Hill, Lacamas, Brights, Blue, Otter, and Mill creeks (WDF *et al.* 1993).

2.1.4 Relevance of the Baseline to the Status of Species

In general, habitat elements in the project vicinity have been substantially altered from historical conditions. The lower Cowlitz River and tributary channel network now lacks natural habitat

complexity and diversity, and the hydrologic regime is now controlled by a series of mainstem dams. These anthropogenic alterations, along with genetic management strategies, have created habitat conditions substantially contributing to the depressed status of the listed species.

2.2 Analysis of Effects

In this analysis, the probable direct and indirect effects of the action on the LCR steelhead and LCR coho are identified. The ESA implementing regulations direct NOAA Fisheries to evaluate the direct and indirect effects “together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline (50 CFR 402.02).”

Direct effects include potential short-term sedimentation and diminished riparian function occurring with forest management activities on the Kinzie Road parcel. Long-term effects of forest management will be a similar level of overall riparian function compared to forest management under state forest practice rules on the Kinzie Road and Highway 12 parcels. The affected riparian area along seasonal fishbearing and non-fishbearing streams may be as much as 3.9 and 4.1 acres, respectively. As much as one acre of forested wetland shoreline will be affected. Both juvenile steelhead and coho are expected to be present in the seasonal stream on the Kinzie Road parcel once passage is reestablished into the upper Skook Creek system. Adult salmon may explore this seasonal stream but no spawnable gravel substrates exist. Both juvenile and adult salmon may be present along the shore of Mayfield Lake, proximal to the Highway 12 parcel. The following is a brief description of the effects anticipated from implementation of the Plan.

2.2.1 Direct Effects

Direct effects are the immediate effects of the project on the species or its habitat. Future Federal actions that are not a direct effect of the action under consideration (and not included in the environmental baseline or treated as indirect effects) are not evaluated (50 CFR 402.02).

The proposed forest management has the potential to directly impact listed species or their habitat as a result of the Plan implementation. The Plan addresses activities associated with commercial forest management activities, including site preparation and planting, thinning, regeneration harvest, road construction and maintenance, and brush control.

The primary conservation elements of the Agreements are: (1) extended harvest rotations of 50 to 80 years that will provide large trees, tree species diversity, and substantial understory growth; (2) commitment of nearly 20% or more of the ownership in forested habitat greater than or equal to 40 years of age at all times throughout the 80-year Permit term (greater than 70% during the first two decades); (3) provision of snags, green recruitment trees for future snags, and downed logs; protection of steep slopes and landslide-prone areas; (4) riparian protection of the only fishbearing stream with a 100-foot managed buffer and a 30- to 50-foot equipment limitation zone (ELZ); (5) wetland protection with a 75-foot managed buffer and a 30-foot ELZ; and (6) timing restrictions to limit harvest operations and road use in wet, erodible conditions. Section

V of the Plan contains a more detailed account of the enhancement activities and conservation measures to be implemented under the Plan.

2.2.1.1 Water Quality

The expected effects of forest management activities under the Plan include temporary increases in turbidity and sediment levels during or following upland harvest activities, log-haul, and road use or maintenance along or upstream of the fishbearing segment of Skook Creek (Kinzie Road parcel). Both juvenile and adult-covered species would avoid turbid waters which are expected to be quickly ameliorated by the hydraulic actions of receiving lentic water bodies (lake and wetland) and which are not expected to persist downstream. It is unlikely that sediment will deliver to Mayfield Lake from forest management activities on the Highway 12 parcel due to a continuous (200-foot wide) and permanent shoreline buffer and interception of any sediment-laden overland flow in the structure of the forest floor.

Elevated turbidity levels can reduce the ability of salmonids to detect prey and can cause gill damage (Sigler 1980; Lloyd *et al.* 1987). Potential short-term negative effects include deposition of fine sediment that can temporarily degrade instream spawning habitat, and loss of intergravel cover for fish from increased sediment levels (Spence *et al.* 1996). Additionally, short-term pulses of suspended sediment have been shown to influence territorial, gill-flaring, and feeding behavior of salmon under laboratory conditions (Berg and Northcote 1985).

These potential negative affects will be minimized through: (1) limitations on forest management and road use in wet conditions; (2) application of Best Management Practices for roads; and (3) prohibited use of ground-based equipment on potentially unstable slopes. In addition, riparian management prescriptions will minimize sediment recruitment from bank scour through tree retention nearest the stream and wetland areas. Overall, any increased turbidity and potential fine sediment deposition are not expected to seriously affect any juvenile or adult LCR steelhead or LCR coho that may eventually utilize habitats in the Plan area.

2.2.1.2 Riparian Vegetation

Over the Plan term, riparian vegetation along approximately 850 feet of fishbearing and 900 feet of non-fishbearing stream on the Kinzie Road parcel will be treated as follows: (1) fishbearing 100-foot wide riparian management zone with a 30-foot ELZ nearest the stream to the north, 50-foot ELZ to south, managed to 150 trees greater than eight inches dbh and a minimum of eight conifers greater than 16 inches per 1,000 feet of stream, and (2) non-fishbearing 20-foot ELZ to the south, with wildlife trees retained in keeping with upland conservation agreements with the FWS. Management of the Kinzie Road parcel also will affect a four acre wetland, of which one acre is under the control and management of the Applicants. The Plan prescribes treatment of forest vegetation along the wetland as 75 feet, with a 30-foot ELZ closest to the water, and retention of 138 trees greater than eight inches dbh, of which 70 are greater than 12 inches dbh. Ten trees greater than 20 inches dbh also will be retained per 1,000 feet of wetland shoreline perimeter. The Plan further prescribes that retained trees will be concentrated along stream banks and that regeneration harvest immediately adjacent to fishbearing waters will

be scheduled to allow the riparian area on one side of the stream to reach a “stem-exclusion” stage (12 to 15 years) before managing the opposing riparian area.

These riparian management prescriptions likely will increase riparian function along fishbearing streams over existing conditions by providing a continuous vegetation zone dominated by deciduous and conifer canopy species. Habitats would be developed and/or enhanced for potential use by LCR steelhead and LCR coho, plus other upland and aquatic species under the jurisdiction of the FWS listed as covered species in the Plan. These habitats would be available as higher quality forest stands than what would typically be available to these species under normal harvest rotations by other small, private land managers, and as riparian and wetland buffers. The habitat quality of forest stands in the riparian and wetland buffers, as well as in uplands, would be enhanced through thinning operations and other management activities that retain snags, large green trees, species diversity, and understory vegetation. The amount of suitable salmonid spawning and rearing habitat on the ownership is currently low but would be able to increase over the term of the Plan. At the very least, there would always be more, better quality habitat in the last two decades of the Plan than that which is presently available. These are opportunities that would not be otherwise available to covered species if the Applicants were to manage the ownership similar to that which is normally done on other forested ownerships under Washington forest practices rules, or if the Applicants were to convert or sell the ownership for non-timber management uses. Thus, the activities and measures in the Plan would have minor or negligible effects on federally listed, proposed, or candidate species and their habitats and have minor or negligible effects on other environmental values or resources. Some minor contribution to the recovery of listed species may be realized through conservation and creation of additional habitats to those available on nearby state park lands, Federal forest lands, and lands covered by other Habitat Conservation Plans.

The affected stream on the Kinzie Road parcel is approximately two feet wide and deep at normal winter flow. Recruitment of woody debris to 1,750 feet of this small stream according to Plan activities is not likely to appreciably reduce the quality or quantity of habitats for winter-rearing juvenile salmon or for adults which may enter it, either in the stream reach or downstream in the confluent wetland. Further, reduced riparian canopy from Plan management likely will not affect stream temperatures in either the stream or wetland because flow typically ceases in May each year. Annual and shrub vegetation along the streambanks likely will provide adequate shade during periods of surface flow and, further, offer cover/refuge and edge habitats for rearing and foraging juvenile salmon.

Forest management on the Highway 12 parcel is unlikely to affect the permanent, 200-foot wide unmanaged shoreline buffer along Mayfield Lake. The number and wind firmness of trees in the shoreline management zone will likely not affect blow-down rates, or overall riparian/shoreline function beyond the baseline condition.

The overall effect of riparian management and conservation measures under the Plan likely will be the conservation of existing functions on the Highway 12 Parcel (Mayfield Lake shoreline) and the improvement of instream structure and habitat complexity in streams on the Kinzie Road parcel. Prescribed riparian management and equipment exclusion zones will allow for the long-

term contribution of woody debris, litter, and shade/cover to stream and wetland habitats utilized by LCR steelhead and LCR coho.

2.2.2 Indirect Effects

Indirect effects are those effects that are caused by or will result from the proposed action and are later in time, but are still reasonably certain to occur (50 CFR 402.02). Indirect effects might occur outside of the area directly affected by the action. Indirect effects might include other actions that have not undergone section 7 consultation, but will result from the action under consideration. These actions must be reasonably certain to occur, or they are a logical extension of the proposed action.

Indirect effects of forest management under the Plan are the growth of riparian trees and shrubs and the amelioration of sediment delivery to streams and wetlands. Ecological functions are expected to improve over time. Other potential effects are exposure to predatory resident trout as juvenile anadromous fish are displaced by altered conditions of aquatic habitats in the Plan area.

2.2.3 Cumulative Effects

Cumulative effects are defined 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” (50 CFR 402.02). Future Federal actions that are unrelated to the proposed action are not considered in this section because they might require separate consultation pursuant to section 7 of the ESA.

For this action, there are likely cumulative effects from continued population growth, changes from forest to non-forested land use, development of rural residential areas, agricultural practices, non-Federal forestry, and the maintenance and expansion of transportation systems. The cumulative effect of these impacts within, and proximal to, the action area may be substantial over the Plan term of 80 years.

2.3 Conclusion

The effect of this action, together with effects from the baseline condition and cumulative effects, is not likely to jeopardize the continued existence of either LCR steelhead or LCR coho. The determination of no jeopardy was based on the summary points, below:

- ▶ There will be short-term direct impacts associated with the proposed activities which will be minimized through conservation measures stipulated in the Plan for riparian and upland forest management, road use and maintenance, and equipment use. The majority of project effects occur in the headwaters of one small, seasonal stream that likely will be occupied by few winter-rearing LCR steelhead or LCR coho juveniles and fewer adults, if any. This stream provides limited habitat for winter-rearing juveniles and no spawning habitat (even if fully functioning) because of its size and geomorphology. Therefore, Plan activities are not

expected to appreciably reduce the reproduction, numbers, or distribution of LCR steelhead or LCR coho.

- ▶ The management of riparian and wetland shoreline forests likely will meet functional requirements for aquatic habitats on the Kinzie Road parcel. Any slight alteration of habitats for the few juvenile LCR steelhead or LCR coho that may utilize the seasonal stream and wetland is expected to be negligible with respect to the condition of existing habitats. Potential temperature effects from reduced riparian canopy are negligible due to the seasonal (winter flow) nature of the stream. Protection and limited disturbance of riparian function over the Plan term likely will improve edge habitats for rearing juvenile salmon and minimize potential diminution of LWD recruitment.
- ▶ Channel stability is maintained and improved through conservation measures (Kinzie Road parcel) and will not affect the shoreline of Mayfield Lake.
- ▶ The potential effects of incidental take on LCR steelhead or LCR coho would be insignificant in the context of the effects of historic and continuing management of streamflows, fisheries, genetic diversity of salmon, and habitats within agricultural and urbanized areas of the Cowlitz River basin.
- ▶ Indirect and cumulative effects of Plan activities are negligible. The overall benefit of the Plan and issuance of Permits by the Services may be to assist and encourage the Applicants to maintain lands in forestry instead of types of development that would have greater and irreversible effects on salmon habitats (*e.g.*, development with extensive impervious surface).

2.4 Reinitiation of Consultation

Consultation must be reinitiated if the extent of taking specified in the Incidental Take Statement is exceeded, or is expected to be exceeded; new information reveals effects of the action may affect listed species in a way not previously considered; the action is modified in a way that causes an effect on listed species that was not previously considered; or, a new species is listed or habitat is designated that may be affected by the action (50 CFR 402.16).

In the event that after Permit issuance, unforeseen circumstances arise or new information becomes available, and such circumstances or information lead NOAA Fisheries to believe that the effects of the permittee's activities on a covered species will be sufficiently more severe than originally analyzed under the section 7 intra-service consultation performed at the time of Permit issuance, such that a covered species could be jeopardized by the covered activities, NOAA Fisheries shall proceed as follows. First, it shall utilize its resources to conserve the species. Second, it shall work with the permittee to voluntarily reduce the effects of covered activities on the species. Third, NOAA Fisheries shall reinitiate section 7 consultation on the Permit and shall document its analysis of the new effects in a biological opinion. Conservation efforts undertaken by NOAA Fisheries or the permittee shall be considered in the analysis, as well as any information provided by the permittee regarding the probability of jeopardy. If reinitiation

of consultation results in a finding that covered activities are likely to jeopardize the species, then NOAA Fisheries will: (1) consult with the permittee to identify a reasonable and prudent alternative (RPA) and modify the Plan accordingly; or (2) remove that species from the Permit, after which any prohibitions against take would apply.

2.5 Incidental Take Statement

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species without special exemption. “Take” is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Harm is further defined as significant habitat modification or degradation that actually kills or injures to listed species by “significantly impairing behavioral patterns such as breeding, spawning, rearing, migrating, feeding, and sheltering” (50 CFR 222.102).

2.6 Amount or Extent of Take Anticipated

As stated in section 2.1.3, both threatened LCR steelhead and unlisted LCR coho use the shoreline of Mayfield Lake (Highway 12 parcel) and might eventually use the seasonal stream on the Kinzie Road parcel for passage, foraging, and rearing. These covered species may be present in the action area during part of the year, thus they would likely encounter the effects of the proposed action. Therefore, incidental take of both species is reasonably certain to occur. The conduct of forest management activities under the Plan includes conservation measures to reduce the likelihood and amount of incidental take.

Take caused by forest management activities is likely to be in the form of harm, where habitat modification could impair normal behavioral patterns of covered species. Here, the ability of salmon to use the area as cover, refuge, or to forage will be diminished by (1) the extent to which water quality is affected by sediment, and (2) the extent that the complexity of instream habitats are potentially reduced by altered riparian forest processes. Because of the highly variable nature of fish use and presence in a given locale, and the complexity of the relationship between fish use and habitat values, the amount of take from this diminution is difficult, if not impossible to estimate, despite the use of best available scientific and commercial data. When the number of individual animals to be taken cannot be reasonably estimated, NOAA Fisheries characterizes the amount as “unquantifiable” and uses a habitat surrogate to assess the extent of take. The surrogate provides a threshold of anticipated take which, if exceeded, provides a basis for reinitiating consultation.

This Opinion analyzes the extent of effects that would result from loss or decreased function of instream habitats resulting from forest management activities across the 144-acre tree farm. The extent of take NOAA Fisheries anticipates in this statement is that which would result from riparian forest modifications and forest management along 850 feet of seasonal fishbearing stream (Kinzie Road parcel) and from forest management activities adjacent to two acres of permanent (unmanaged) shoreline management zone along Mayfield Lake (Highway 12 parcel). Should either of these parameters be exceeded during the Plan term, the reinitiation provisions of

the Opinion shall apply.

Even though NOAA Fisheries expects some low level of incidental take with implementation of the Plan, 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. Therefore, NOAA Fisheries anticipates incidental take from activities occurring in: (1) the area within approximately one site potential tree height (approximately 175 feet) of the seasonal stream and wetland on the Kinzie Road parcel, and (2) the existing and permanent 200-foot wide shoreline management zone along Mayfield Lake on the Highway 12 parcel. Take resulting from forest management activities and the delivery of sediment to either the seasonal stream or wetland on the Kinzie Road parcel or to Mayfield Lake (Highway 12 parcel) is not anticipated. Incidental take occurring beyond these areas is not authorized by this consultation. No take of any life stage of either LCR steelhead or LCR coho is anticipated.

2.7 Reasonable and Prudent Measures

NOAA Fisheries shall minimize take by ensuring the applicant implements all conservation measures described in the Plan, together with the terms and conditions therein and in the section 10(a)(1)(B) Permit to be issued based on the Plan. These measures are incorporated by reference herein as the terms and conditions to implement this reasonable and prudent measure. Such terms and conditions are non-discretionary and must be undertaken for the exemptions under section 10(a)(1)(B) and section 7(o)(2) of the ESA to apply. If the permittee fails to adhere to these terms and conditions, the protective coverage of the section 10(a)(1)(B) Permit and section 7(o)(2) may lapse. The amount or extent of incidental take anticipated under the proposed Plan, associated reporting requirements, and provisions for disposition of dead or injured animals are as described in the Plan and its accompanying section 10(a)(1)(B) Permit.

3.0 SECTION 10(a)(2)(B) FINDINGS

3.1 Permit Issuance Considerations

Although only one of two anadromous salmonid species addressed in the Plan are listed under the ESA at this time, this document is intended to provide the Applicants with assurances that they will receive an Incidental Take Permit if and when such unlisted species are subsequently listed under the ESA, subject to the "unforeseen circumstances" clause incorporated in the Plan. In order to issue an incidental take permit under the ESA section 10(a)(1)(B) and 50 CFR section 222.307, NOAA Fisheries must consider the following:

1. The status of the affected species or stocks. The status of anadromous salmonids potentially affected by Plan activities has been considered above (section 2.1.1). The environmental baseline for anadromous fish and their habitats (section 2.1.3) also was considered.

2. The potential severity of direct, indirect and cumulative impacts on anadromous salmonids and their habitats as a result of the proposed activity. The impacts of Plan activities were examined in detail in this analysis (section 2.4). In sum, the potential impacts to covered fish species would be negligible from implementing the conservation measures of the Plan.
3. The availability of effective monitoring techniques. Implementation monitoring of Plan activities and prescriptions is an important feature of this Plan. Monitoring reports will be completed and submitted to NOAA Fisheries and the FWS according to the schedule described in section VII of the Plan. The frequency of monitoring varies by the level of forest management activity throughout the 80-year term of the Plan. Monitoring and reporting required in the Plan would demonstrate how management is consistent with enhancement activities and conservation measures for covered species. Reports would identify management activities for the preceding period (such as amount of standing and down wood left after harvest, number and type of road maintenance activities, etc.), and would qualitatively assess the net benefit of Plan implementation to covered species.
4. The use of the best available technology for minimizing and mitigating impacts. The prescriptions established in this Plan represent current knowledge and application of science in minimizing and mitigating impacts to riparian and aquatic habitats. Conservation measures are commensurate with the low-effect of Plan activities, the anticipated low level of take, and the potential slight effect of take on covered species.
5. The views of the public, scientists and other interested parties knowledgeable of the species or stocks or other matters related to the application. Over the past few years, the Applicants have hosted many tours of the Plan Area, meetings with stakeholders, and kept interested citizens informed through public meetings related to Plan development.

The Applicants first engaged the FWS to identify programs and forest management approaches that could receive assurances under the ESA beginning in 1997. Late in 2001, NOAA Fisheries engaged the Applicants and the FWS in the development process to include elements that comprise a low-effect Habitat Conservation Plan. The Services (NOAA Fisheries and FWS) and the Applicants completed a working Draft Plan in February 2002 that was subject to further review by the Applicants. The Services published a Notice of Availability of Environmental Action Statements and receipt of an application for the issuance of enhancement of survival permits (FWS) and incidental take permit in the *Federal Register* on March 26, 2003. Publication initiated a 30-day public comment period that closed on April 24, 2003. Copies of the Environmental Action Statement and proposed Plan were mailed to over 50 interested parties and upon request to two additional parties.

The Services received 16 comment letters during the 30-day comment period. No comments opposing the Plan or Permit issuance were received. Fifteen of the comment letters were clearly

supportive of the Plan and associated Federal permit issuance.

The Services also have considered their Federal Trust responsibility to Native American Tribes. This Trust responsibility imposes a duty on Federal agencies to protect Trust assets for Tribes. The Services have contacted affected tribal governments or their technical staffs to inform, discuss, and represent their interests in these matters. No written tribal response was received. The Services believe that the proposed Plan and Permit Issuance are consistent with this Trust responsibility.

3.2 Permit Issuance Findings

Having considered the above, NOAA Fisheries makes the following findings under section 10(a)(2)(b) of the ESA with regard to the adequacy of the Plan meeting statutory and regulatory requirements:

1. The taking of listed species will be incidental. NOAA Fisheries anticipates that activities conducted under the Plan may result in incidental take of threatened LCR steelhead and other currently unlisted species of anadromous salmonids, i.e., LCR coho. Activities in the Plan area that may result in take include "harm" through diminished riparian functions such as wood and litter recruitment to aquatic habitats and the delivery of fine sediments from timber harvest and road use. Some instances of incidental take will likely occur despite the conservation measures in the Plan. These types of take are not quantifiable, and would be limited in extent to a small fraction of the action area. The effect of the above-described take is expected to be minimal and commensurate with the concept and policy established by the Services for low-effect Habitat Conservation Plans.
2. The Applicants will, to the maximum extent practicable, monitor, minimize and mitigate the impacts of taking anadromous salmonids associated with forest management and related activities. Conservation measures in the Plan minimize and mitigate take that may occur. These include the retention and management of riparian and wetland shoreline forests, equipment limitations near streams to reduce sediment delivery, foregoing use of ground-based equipment on steep slopes, application of best management practices for roads, and the use of roads only when dry or frozen.
3. NOAA Fisheries has received the necessary assurance that the Plan will be funded and implemented. The suite of mitigation, minimization, and monitoring measures are matched by funding commensurate with the effort and operational costs specific to each element. Signing of the Plan by the Applicants ensures that the Plan will be implemented. Also, the Plan specifically commits the Applicants to adequately fund Plan implementation.
4. Based upon the best available scientific information, the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild.

Conservation measures identified in the Plan will slightly increase the quality and quantity of rearing habitat and result in a benefit to anadromous salmonid species. In summary, NOAA Fisheries has considered the status of the species, the environmental baseline and the effects of the proposed action, and any indirect and cumulative effects, to conclude that issuance of an Incidental Take Permit to the Applicants for LCR steelhead would likely not jeopardize the continued existence of any anadromous salmonid species addressed in the Plan.

5. The Plan has been developed to assure that other measures, as required by NOAA Fisheries, have been met. The Plan and commitments therein incorporate all elements determined by NOAA Fisheries to be necessary for approval of the Plan and issuance of an Incidental Take Permit.

3.3 Conclusion

Based on these findings, it is determined that the Applicants' Plan meets the statutory and regulatory requirements for an Incidental Take Permit under section 10(a)(1)(B) of the ESA and 50 CFR § 222.307.

4.0 MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT

4.1 Background

The MSA, as amended by the Sustainable Fisheries Act of 1996, established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. Pursuant to the MSA:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (§305(b)(2));
- NOAA Fisheries must provide conservation recommendations for any Federal or state activity that may 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 the conservation recommendations of NOAA Fisheries, the Federal agency shall 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; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.110). Adverse effect means any impact which reduces quality and/or quantity of EFH, and may include direct (*e.g.*, contamination or physical disruption), indirect (*e.g.*, loss of prey or reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

An EFH consultation with NOAA Fisheries is required 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.

4.2 Identification of EFH

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

4.3 Proposed Actions

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

4.4 Effects of Proposed Actions

As described in detail in section 2.1.3 of this document, the proposed action may result in detrimental short- and long-term impacts to a variety of habitat parameters. These adverse effects are:

1. Short-term degradation of habitat due to removal of riparian trees and vegetation.

2. Short-term degradation of water quality by sediments generated by forest management activities and delivered to a seasonal, fishbearing stream.

4.5 Conclusion

NOAA Fisheries believes that the proposed actions may adversely affect EFH for coho salmon and chinook salmon.

4.6 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 the proposed action may adversely affect EFH as described above, NOAA Fisheries believes that the conservation measures incorporated into the Plan to address ESA concerns already minimize these effects and conserve EFH. Therefore, conservation recommendations are not required.

4.7 Statutory Response Requirement

Since NOAA Fisheries is not providing conservation recommendations at this time, no 30-day response is required (MSA) §305(b)(4)(B)).

4.8 Supplemental Consultation

NOAA Fisheries must reinitiate EFH consultation 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 EFH conservation recommendations (50 CFR 600.920(l)).

5.0 REFERENCES

- Berg, L. and T.G. Northcote. 1985. Changes in territorial, gill-flaring, and feeding behavior in juvenile coho salmon (*Oncorhynchus kisutch*) following short-term pulses of suspended sediment. *Canadian Journal of Fisheries and Aquatic Sciences* 42:1410-1417.
- Brown, E.R. (Ed.) 1985. Management of wildlife and fish habitats in forests of western Oregon and Washington. Part 2 Appendices. USDA Forest Service, Pacific Northwest Region, Portland, OR R6-F&WL-192-1985.
- Busby, P.J., T.C. Wainwright, G.J. Bryant, L.J. Lierheimer, R.S. Waples, F.W. Waknitz and I.V. Lagomarsino. 1996. Status review of west coast steelhead from Washington, Idaho, Oregon and California. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-NWFSC-27. 261 p.
- Bustard, D. R., and D. W. Narver. 1975. Aspects of the winter ecology of juvenile coho salmon (*Oncorhynchus kisutch*) and steelhead trout (*Salmo gairdneri*). *J. Fish. Res. Board Canada* 32:556-680.
- Cederholm, L. J., and W. J. Scarlett. 1981. Seasonal immigrations of juvenile salmonids into four small tributaries of the Clearwater River, Washington, 1977-1981. Pages 98-110 in E. L. Brannon and E. O. Salo, editors. *Salmon and trout migratory behavior symposium*. School of Fisheries, University of Washington, Seattle, Washington. June 1981.
- Chapman, D. W. 1966. Food and space as regulators of salmonid populations in streams. *The American Naturalist* 100:345-357.
- David Evans and Associates. 1998. Stream reconnaissance report for Howe Road/Skook Creek culvert replacement project. Bellevue, Washington. Prepared for Lewis County Public Works.
- Emmett, R. L., S. L. Stone, S. A. Hinton, and M. E. Monaco. 1991. Distribution and abundance of fishes and invertebrates in west coast estuaries, Volume II: species life history summaries. ELMR Report Number 8. NOAA/NOS Strategic Environmental Assessments Division, Rockville, Maryland. 329 p.
- Everest, F. H., and D. W. Chapman. 1972. Habitat selection and spatial interaction by juvenile chinook salmon and steelhead trout in two Idaho streams. *J. Fish. Res. Board Canada* 29:91-100.
- FERC (Federal Energy Regulatory Commission). 2001. Final Environmental Impact Statement: Cowlitz River Hydroelectric Project (No. 2016-044) Washington. Division of Public Information, FERC, Washington, D.C.. Groot, C. and L. Margolis. 1991. Pacific salmon

- life histories. University of British Columbia Press, Vancouver, BC, Canada..
- Fox, T., S. Fox, Tree Management Plus, Inc., G. Davis, J. Murphy, and P. Murphy. 2003. Draft Tagshinney Tree Farm Conservation Plan. Public Review Draft (March 2003) on file and available from NOAA Fisheries, Washington Habitat Branch, Lacey, WA. 112 pp.
- Groot, C. and L. Margolis. 1991. Pacific salmon life histories. University of British Columbia Press, Vancouver, BC, Canada.
- Harza Engineering Company. 1999. Draft environmental assessment. Cowlitz River hydroelectric project FERC No. 2016. Prepared for Tacoma Power. December, 1999.
- Harza Engineering Company. 2000. 1999 Technical Studies. Cowlitz River hydroelectric project FERC No. 2016. Prepared for Tacoma Power. March, 2000.
- Laufle, J. C., G. B. Pauley, and M. F. Shepard. 1986. Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (Pacific Northwest) - coho salmon. U.S. Fish Wildl. Serv. Biol. Rep. 82(11.48). U.S. Army Corps of Engineers, TR EL-82-4.
- LCSCI (Lower Columbia Steelhead Conservation Initiative). 1998. State of Washington, Olympia. Draft of March 10, 1998.
- Lloyd, D.S., J. P. Koenings, and J. D. LaPerriere. 1987. Effects of turbidity in fresh waters of Alaska. North American Journal of Fisheries Management: 18-33.
- Lunetta, R; B. Consentino; D. Montgomery; E. Beamer; T. Beechie. 1997. GIS-Based evaluation of salmon habitat in the Pacific Northwest. Photogrammetric Engineering and Remote Sensing, Vol. 63, No. 10, October 1997, pp. 1219-1229.
- McMahon, T. E. 1983. Habitat suitability index models: Coho salmon. FWS/OBS-82/10.49. U.S. Fish and Wildlife Service.
- Meekin, T. and R. Birtchet. 1963. Cowlitz River progress reports, Mayfield Dam Project. Washington Department of Game (now WDFW). Olympia, WA.
- Mobrand Biometrics. 1999. Application of the ecosystem diagnostic and treatment method (EDT) to analyze fish resources in the Cowlitz watershed in support of FERC relicensing process. Draft report Vol. 1. Prepared for the Resource Planning Group of the Cowlitz River FERC Relicensing Process. June, 1999.
- NRC (National Research Council). 1996. Upstream, salmon and society in the Pacific Northwest. Committee on Protection and Management of Pacific Northwest Anadromous Salmonids, Board on Environmental Studies and Toxicology, Commission on Life Sciences,

- NRC. National Academy Press, Washington, D.C.
- Pauley, G. B., B. M. Bortz, and M. F. Shepard. 1986. Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (Pacific Northwest)-- steelhead trout. U.S. Fish Wildl. Serv. Biol. Rep. 82(11.62). U.S. Army Corps of Engineers, TR EL-82-4.
- PFMC (Pacific Fishery Management Council). 1999. Amendment 14 to the Pacific Coast Salmon Plan. Appendix A: Description and Identification of Essential Fish Habitat, Adverse Impacts and Recommended Conservation Measures for Salmon. Portland, Oregon.
- Reeves, G.H., L.E. Benda, K.M. Burnett, P.A. Bisson, and J.R. Sedell. 1995. A disturbance-based ecosystem approach to maintaining and restoring freshwater habitats of evolutionarily significant units of anadromous salmonids in the Pacific Northwest. American Fisheries Society Symposium 17:334-349.
- Sabo, J. L. 1995. Competition between stream-dwelling cutthroat trout (*Oncorhynchus clarki clarki*) and coho salmon (*O. kisutch*): implications for community structure and evolutionary ecology. Masters' thesis. University of Washington, Seattle, Washington.
- Sandercock, F. K. 1991. Life history of coho salmon (*Oncorhynchus kisutch*) Pages 397-445 in C. Groot and L. Margolis, editors. Pacific salmon life histories. University of British Columbia Press Vancouver, Canada.
- Sigler, J.W. 1980. Effects of chronic turbidity on feeding, growth, and social behavior of steelhead trout and coho salmon. Ph.D. Dissertation. University of Idaho, Moscow, ID. 158 p.
- Simenstad, C. A., K. L. Fresh, and E. O. Salo. 1982. The role of Puget Sound and Washington coastal estuaries in the life history of Pacific salmon: An unappreciated function. Pages 343-364 in V. S. Kennedy, Ed.. Estuarine comparisons. Academic Press, New York, New York.
- Spence, B.C., G.A. Lomnicky, R.M. Hughes, and R.P. Novitzki. 1996. An ecosystem approach to salmonid conservation. TR-4501-96-6057. ManTech Environmental Research Services Corp., Corvallis, Oregon. (Available from the National Marine Fisheries Service, Portland, Oregon). 356 p.
- Stouder, D.J., P.A. Bisson and R.J. Naiman, eds. 1997. Pacific salmon and their ecosystems. Chapman and Hall, New York, NY.
- Tipping, J; P. Wagner; C. Keown. 1985. Cowlitz River steelhead spawning report. Washington Department of Wildlife (now WDFW), Olympia, WA.

- Weitkamp, L.A., T.C. Wainwright, G.J. Bryant, G.B. Milner, D.J. Teel, R.G. Kope, and R.S. Waples. 1995. Status review of coho salmon from Washington, Oregon, and California. National Marine Fisheries Service. NOAA Technical Memorandum NMFS-NWFSC-24, Seattle, Washington. 258 p.
- WDF (Washington Department of Fisheries). 1951. Lower Columbia River fisheries development program. Cowlitz area, Washington. Washington Department of Fisheries and U.S. Fish and Wildlife Service. August.
- WDF (Washington Department of Fisheries), Washington Department of Wildlife, and Western Washington Indian Tribes. 1993. 1992 Washington state salmon and steelhead stock inventory. Appendix three: Columbia River stocks. Olympia, Washington.
- WDF/WGC (Washington Department of Fisheries and Washington Game Commission) 1948. A report on the fisheries problems in connection with the proposed hydroelectric development of the Cowlitz River, Lewis County, Washington.
- WDW (Washington Department of Wildlife). 1990. Cowlitz River subbasin salmon and steelhead production plan. Columbia Basin System Planning. Northwest Power Planning Council, and the Agencies and Indian Tribes of the Columbia Basin Fish and Wildlife Authority. September 1990. 163 p.
- WSCC (Washington State Conservation Commission). 2000. Salmon and steelhead limiting factors in Water Resource Inventory Area 26, Final Report. G. Wade, Ed.. WSCC, Olympia, Washington. 144 p.