FINDINGS AND RECOMMENDATIONS FOR ISSUANCE OF A SECTION 10(a)(1)(B) INCIDENTAL TAKE PERMIT (PERMIT NUMBER PRT-TE121202-0) ASSOCIATED WITH THE STATE OF WASHINGTON FOREST PRACTICES HABITAT CONSERVATION PLAN

I. DESCRIPTION OF THE PROPOSED ACTION

The United States Fish and Wildlife Service (FWS) proposes to issue an Incidental Take Permit (Permit) to the State of Washington (State) under the authority of section 10(a)(1)(B) and section 10(a)(2) of the Endangered Species Act of 1973, as amended (ESA) (16 U.S.C. 1531 et seq), for a period of 50 years. Documents used in the preparation of this Statement of Findings and Recommendations include the Draft Forest Practices Habitat Conservation Plan (Washington Department of Natural Resources [WDNR] 2004), the Final Forest Practices Habitat Conservation Plan (FPHCP) (WDNR 2005), the associated Draft Environmental Impact Statement (DEIS) (National Marine Fisheries Service [NMFS] and FWS 2005), the Final Environmental Impact Statement (FEIS), Volumes I and II (NMFS and FWS 2006), the Record of Decision (NMFS and FWS 2006), the Implementation Agreement (IA) (WDNR et al. 2005), and the FWS's Biological and Conference Opinion on the Permit Application (Opinion) (FWS 2006).

The FWS has reviewed the above-described documents, as well as other available biological information and other documentation, in accordance with 16 U.S.C. § 1539(a), 50 C.F.R. §§ 17.22(b), 17.32(b) and other applicable laws and regulations.

Under the Permit, the State (Permittee) would receive incidental take authorization for its actions as regulator of forest practices activities on 9.3 million acres of non-Federal, non-Tribal forest lands in Washington State as identified in the FPHCP submitted by the prospective Permittee as part of the Permit application. Incidental take authorization would extend to all non-Federal and non-tribal forest landowners conducting forest practices activities in compliance with the State Forest Practices Regulatory Program including the prescriptive rules. The permit would not apply to landowners that have an existing habitat conservation plan (HCP) and incidental take permit (ITP) covering the same species.

The prospective Permittee is requesting coverage under the Permit for a total of 47 species (Covered Species). The Permit would cover incidental take for one threatened fish species, bull trout (*Salvelinus confluentus*), and 46 currently unlisted species (identified in Table 1 below), should they become listed in the future during the term of the Permit. The Permit would become effective with respect to the currently unlisted Covered Species concurrent with their listing under the ESA. Assurances provided under the "No Surprises" rule at 50 C.F.R. §§17.3, 17.22(b)(5), and 17.32(b)(5) would extend to all Covered Species to the extent allowed by law.

Table 1. Species covered in the Incidental Take Permit for the State of Washington's Forest Practices Habitat Conservation Plan.

Common Name	***Scientific Name***
Threatened Species	
Bull trout	*Salvelinus confluentus*
Unlisted Fish Species	
Dolly Varden	*S. malma*
Cutthroat trout [1]	*Oncorhynchus clarki*
Rainbow/ Redband trout [2]	*O. mykiss*
Kokanee	*O. nerka*
Pacific lamprey	*Lampetra tridentata*
River lamprey	*L. ayerst*
Western brook lamprey	*L. richardsoni*
Pygmy whitefish	*Prosopium coulteri*
Mountain whitefish	*P. williamsoni*
Olympic mudminnow	*Novumbra hubbsi*
Chiselmouth	*Acrocheilus alutaceus*
Redside shiner	*Richardsonius balteatus*
Longnose dace	*Rhinichtys cataractae*
Speckled dace	*R. osculus*
Leopard dace	*R. falcatus*
Umatilla dace	*R. umatilla*
Northern pikeminnow	*Ptychocheilus oregonensis*
Tui chub	*Gila bicolor*
Lake chub	*Cauesius plumbeus*
Peamouth	*Mylocheilus caurinus*
Largescale sucker	*Catostomus macrocheilus*
Bridgelip sucker	*C. columbianus*
Longnose sucker	*C. catostomus*
Mountain sucker	*C. platyrynchus*
Salish sucker	*C. carli (species pending)*
Three-spine stickleback	*Gasteroseius aculeatus*
Sandroller	*Percopsis transmontana*

Common Name	***Scientific Name***
Coastrange sculpin	*Cottus aleuticus*
Prickly sculpin	*C. asper*
Reticulate sculpin	*C. perplexus*
Riffle sculpin	*C. gulosus*
Shorthead sculpin	*C. confuses*
Torrent sculpin	*C. rhotheus*
Slimy sculpin	*C. cognatus*
Paiute sculpin	*C. beldingi*
Margined sculpin	*C. marginatus*
Mottled sculpin	*C. bairdi*
Longfin smelt	*Spirinchus thaleichthys*
Burbot	*Lota lota*
White sturgeon [3]	*Acipenser transmontanus*
Unlisted Amphibian Species	
Columbia torrent salamander	*Rhyacotriton kezeri*
Cascade torrent salamander	*R. cascadae*
Olympic torrent salamander	*R. olympicus*
Dunn's salamander	*Plethodon dunni*
Van Dyke's salamander	*P. vandykei*
Pacific tailed frog	*Ascaphus truei*
Rocky Mountain tailed frog	*A. montanus*

[1] The cutthroat trout includes two subspecies: the coastal cutthroat (*Oncorhynchus clarki clarki*) and the westslope cutthroat (*Oncorhynchus clarki lewisi*).

[2] The rainbow trout includes two subspecies: the coastal rainbow trout (*Oncorhynchus mykiss irideus*) and the redband trout (a.k.a. Interior) (*Oncorhynchus mykiss gairdneri).*

[3] White sturgeon excludes the endangered Kootenai River Distinct Population Segment. The Kootenai population is located wholly upstream and outside of this Action Area. Those sturgeon that are landlocked and occur within Washington State, and those that are marine and/or anadromous (downstream of Bonneville Dam), are proposed for coverage. However, incidental take coverage under this permit would be extended only to the landlocked portion of the population (exclusive of the Kootenai River DPS), since the anadromous portion of the population falls under the jurisdiction of the National Marine Fisheries Service.

The Permit would authorize the incidental take of Covered Species associated with forest practices activities on approximately 9.3 million acres of State and private, non-Federal forestland in Washington State (described below) for a period of 50 years. These lands provide, or have the potential to provide, habitat for the Covered Species. The Permit would cover the regulatory actions of the State, and forest practices of third-party operators and land owners operating under State permits. These forest practices activities would result in biological effects to Covered Species that rise to the level of take. The FPHCP includes protection measures to minimize, mitigate, and monitor impacts and incidental take that are caused by the covered activities. Protection measures are presented in detail in Chapter 4 of the FPHCP as two separate but interrelated conservation strategies, including a Riparian Conservation Strategy and Upland Conservation Strategy. In summary, the Riparian Conservation Strategy consists of riparian and wetland management zones that provide large-wood recruitment, shade, and other ecological functions through tree retention; limitations on equipment use in and around waters and wetlands to minimize erosion and sedimentation and maintain hydrologic flowpaths; and, streamside land and timber acquisitions for the long-term conservation of aquatic resources. The Upland Conservation Strategy consists of protection measures that are implemented in upslope areas outside riparian zones and wetlands. These measures are designed to limit forest practices-related changes in physical watershed processes – such as erosion and hydrology – that may adversely affect the quality and quantity of riparian and aquatic habitat lower in the watershed, thereby minimizing and mitigating take of Covered Species.

Lands Covered

The proposed Permit covers approximately 9.3 million acres of forestland in Washington, about 6.1 million acres of which are located west of the crest of the Cascade Range, and approximately 3.2 million acres are in eastern Washington (described in detail in Chapter 1, Section 1-5 of the FPHCP). Ownership patterns range from individuals and families who own small forest parcels to large holdings owned and/or managed by private corporations and public agencies.

Covered lands are forestlands within the State of Washington subject to the Washington Forest Practices Act, Chapter 76.09 of the Revised Code of Washington (RCW). Forestland means "all land which is capable of supporting a merchantable stand of timber and is not being actively used for a use which is incompatible with timber growing" (RCW 76.09.010(9)). For purposes of road maintenance and abandonment planning and implementation for small forest landowners, "forestland" does not include residential home sites, crop-fields, orchards, vineyards, pastures, feedlots, fish pens, and land that contains facilities necessary for the production, preparation or sale of crops, fruit, dairy products, fish, and livestock.

Forestlands covered by existing federally approved HCPs are generally not considered part of FPHCP covered lands (Washington Administrative Code (WAC) 222-12-041). However, there are two exceptions. One is the 5-year Boise Cascade single-species HCP (Boise Cascade Corporation 2001) that encompasses 620 acres and provides coverage for the

northern spotted owl, but does not include coverage for aquatic species. The other exception is approximately 228,000 acres of managed land on the east side of the Cascade Crest that were included in the approximately 1.6 million acres addressed by the WDNR HCP (WDNR 1997). The WDNR State Lands HCP provides coverage for some listed terrestrial species east of the Cascade Crest (e.g., wolves, spotted owls, and bald eagles), but does not include coverage for aquatic species. Forestlands within these two areas are considered part of the covered lands under the FPHCP.

Covered lands may change over time as lands are bought and sold or change land-use status. For instance, covered lands may increase if an existing HCP is terminated and those lands then become subject to the standard Washington Forest Practices Rules. Forestlands purchased by the Federal government would no longer be covered by the FPHCP. Land exchanges between landowners of covered lands and Federal, State, or other existing HCP lands could increase or decrease FPHCP covered lands. Lands converted from forestry to other uses would no longer be subject to the Washington Forest Practices Rules or the FPHCP. Lands that become forested could become subject to the Washington Forest Practices Rules and the FPHCP. For instance, if a field is planted to hybrid poplar and is harvested before it is 25 years old, it remains subject to agricultural rules; but if that plantation grows past 25 years of age, it would become subject to the Washington Forest Practices Rules and the FPHCP.

Types of Activities Covered

Forest-practices activities proposed to be covered by the Permit are the otherwise lawful activities described in Chapter 4 of the FPHCP, and in the Opinion. These activities generally include the following: road and skid-trail construction, road maintenance and abandonment, final and intermediate harvesting, pre-commercial thinning, reforestation, timber salvage, and brush control. In addition, adaptive-management research and monitoring activities—some of which include experimental treatments—are also covered by the Permit.

Activities specifically not covered in the HCP include the following: forest species seed orchard operations, intensive forest nursery operations and preparatory work such as marking trees, surveying and flagging roads, and removing or harvesting incidental vegetation from forestlands, such as berries, ferns, greenery, mistletoe, herbs, mushrooms and other products that cannot normally be expected to result in damage to forest soils, timber, or public resources. Furthermore, the application of forest chemicals (pesticides, herbicides, and fertilizers) is not a covered activity.

Term of the Permit

The Permit would be in effect for a period of 50 years. Sections 6-3 and 6-4 of the IA describe provisions for relinquishment of the Permit. Under these provisions, should the Permittee request relinquishment of its Permit, all obligations assumed by the Permittee will terminate as of the date specified in the notice of relinquishment unless the FWS takes steps to cure the concerns specified in the notice and, in response to those steps, the Permittee

either withdraws its notice of intent to relinquish or extends the proposed relinquishment date.

The FWS may suspend or revoke the Permit for cause in accordance with the laws and regulations in force at the time of such suspension or revocation. (The regulations applicable to the Permit are found at 5 U.S.C. § 558, and 50 C.F.R. §§ 13.27 – 13.29.) Such suspension or revocation may apply to the entire Permit or only to specified Covered Species, Covered Lands, or Covered Activities. If applicable Federal regulations are modified subsequent to the effective date of this agreement, those modifications will apply only to the extent required by subsequent enactment of Congress or court order, or upon agreement of all the Parties. Prior to suspending or terminating the Permit, the FWS shall give notice to the State of any impending suspension or termination, and shall provide an opportunity for the State to cure any circumstance giving rise to the suspension or termination.

Background – Washington State Forest Practices Conservation Strategy

In Washington State, forest practices are regulated through the Department of Natural Resources Forest Practices program by means of the Forest Practices Act, established by the legislature, and the rules established by the Washington Forest Practices Board (the Board). The Board is charged with creating rules to protect the State's public resources while maintaining a viable timber industry. The Forest Practices Act applies to primarily all non-Federal and non-tribal forestland, many of which contain habitat for aquatic and riparian-dependent species that have been listed (or may be listed in the future) under the Federal ESA.

In 1999, the Washington State Legislature passed the Salmon Recovery Funding Act (Engrossed Senate House Bill 5595) which identified forest practices as a critical component for salmon recovery. Through that act, the Legislature recognized a report known as the Forests and Fish Report (FFR) as being responsive to its policy directive for a collaborative, incentive-based approach to support salmon recovery; ESA coverage and regulatory certainty being key incentives of implementation of the FFR. The FFR was developed though a collaborative, multi-stakeholder process to create forest-practices prescriptions that would protect riparian and aquatic habitat for the conservation of listed salmonid species and other unlisted fish and stream-associated amphibian species.

The groups that contributed to the development of the FFR included groups representing all six caucuses of Timber, Fish, and Wildlife (TFW): State agencies, Federal agencies, Native American Tribes, industry, non-industrial forest landowners, and environmental groups. At the conclusion of the discussions leading to the submittal of the FFR, the environmental caucus and some individual Tribes withdrew their support and chose to not be listed as authors of the report. Authors include State agencies: WDNR, Washington Department of Fish and Wildlife (WDFW), Washington Department of Ecology (WDOE), Governor's Office; Federal agencies: FWS, NMFS, U.S. Environmental Protection Agency (EPA); the Confederated Tribes of the Colville Reservation, other Washington Tribes, the Northwest Indian Fisheries Commission; the Washington State Association of Counties; the Washington Forest Protection Association; and the Washington Farm Forestry Association.

Also in 1999, the Washington State Legislature passed the Forest Practices Salmon Recovery Act (Engrossed Substitute House Bill 2091) which directed the Washington Forest Practices Board to adopt new Washington Forest Practices Rules, encouraging the Forest Practices Board to follow the recommendations of the FFR. In its rulemaking procedures, the Forest Practices Board conducted an evaluation of the FFR, as well as alternatives to the FFR. This evaluation included an Environmental Impact Statement under the Washington State Environmental Policy Act (SEPA). The Final State Environmental Impact Statement, entitled Alternatives for Forest Practices Rules for Aquatic and Riparian Resources, was published in April 2001. The Forest Practices Board adopted new permanent Washington Forest Practices Rules in 2001 based on the FFR. As provided by the Washington State Legislature, through the Forest Practices Salmon Recovery Act, (RCW, Chapter 77.85.190(3)), Governor Gary Locke designated the Commissioner of Public Lands, Doug Sutherland, to negotiate on behalf of the State with the relevant Federal agencies to satisfy Federal requirements under the ESA and the Federal Water Pollution Control Act (Clean Water Act) (33 U.S.C. 1251 et seq.).

Since 2001, the State has worked with the FWS and the NMFS to develop a HCP under Section 10(a)(1)(B) of the ESA based on the Washington Forest Practices Rules adopted in 2001.

FPHCP Conservation Strategy

The purpose of the FPHCP is to provide long-term conservation of Covered Species and their habitat, support an economically viable timber industry, and create regulatory stability for landowners. The FPHCP was developed as a programmatic plan designed to provide ESA coverage for forest landowners through the State's Forest-Practices program. Forest landowners would conduct forest-practices activities according to the State's Forest Practices Act and Rules as described in the FPHCP, and therefore become beneficiaries of incidental take coverage for which the State of Washington has applied.

The FPHCP consists of two parts: a set of protection measures and an administrative framework.

The *protection measures* are stated in the State forest practices laws, rules, and guidance designed to minimize and mitigate forestry-related impacts and incidental take and conserve habitat for species covered by the FPHCP. These measures determine the level of on-the-ground habitat protection for Covered Species. The two major sets of protective measures are presented as separate but interrelated conservation strategies: Riparian Conservation Strategy and Upland Conservation Strategy.

> The *Riparian Conservation Strategy* includes protection measures implemented in and adjacent to surface waters and wetlands. Examples include wetland and water typing systems, channel migration zones (CMZs), wetland and riparian management zones and equipment limitation zones (ELZs). These measures are designed to provide adequate levels of large-wood recruitment and shade, and to limit excess fine sediment delivery to surface waters and wetlands.

The *Upland Conservation Strategy* includes measures that protect the habitats of Covered Species by minimizing and mitigating upslope forest practices impacts. This strategy includes, for example protection measures related to unstable slopes; road construction, maintenance, and abandonment; fish passage at road crossings; and rain-on-snow hydrology. These measures are intended to limit excess coarse and fine sediment delivery to surface waters and wetlands, and to maintain hydrologic regimes. In cases where roads have altered hydrologic regimes, protection measures are also designed to restore hydrologic flowpaths.

The *administrative framework* supports the development, implementation, and refinement of the State's Forest Practices Rules and contributes to the overall effectiveness of the FPHCP in meeting the needs of the Covered Species. The process is open to input from participants that include the Washington Forest Practices Board, the WDNR, the Forest Practices Appeals Board, Native American Tribes, cooperating agencies, other natural-resource organizations, and the general public. Participants have roles in developing, implementing, and/or refining the Forest Practices program, and work collaboratively on many aspects of program administration.

Program development includes the establishment of new forest practices rules and guidance. Program implementation includes administration of the forest practices permitting process, compliance monitoring, enforcement actions, and training and technical support. Program refinement occurs through an adaptive-management process. Adaptive management is designed to assess the effectiveness of the protection measures in achieving established resource objectives. It also includes programs to monitor the status and trends of key environmental parameters and to evaluate watershed-scale cumulative effects.

The conservation strategy is further summarized below:

PROTECTION MEASURES

The forest practices rules contained in Title 222 of the WAC represent the protection measures on which much of the FPHCP is based. Forest Practices Board Manual guidelines and internal WDNR guidance supplement the rules and sometimes determine how a particular rule is implemented, but the rules themselves are the foundation of the overall conservation strategy.

Riparian Conservation Strategy: Section 4b of the FPHCP summarizes the Riparian Strategy components of the operating conservation program.

The Riparian Strategy includes two separate systems for classifying aquatic habitats. The first is a "water typing" system that classifies surface water, including rivers, streams, lakes, ponds, impoundments, and tidal waters. The second is a "wetland typing" system that applies to both forested and non-forested wetlands, including bogs. The water or wetland type governs the level of protection for FPHCP-Covered Species and their habitats. These typing systems are the foundation for many riparian-related protection measures, some of which include riparian and wetland management zones, CMZs, ELZs, and operational restrictions to minimize soil, channel, and streambank disturbance. Below is a summary of the Water and Wetland Typing Systems.

Water Typing System:
Streams of the State will be classified according to this system by WDNR in cooperation with WDFW and WDOE, and in consultation with affected Indian tribes. The mapping will be based on a multi-parameter, field-verified Geographic Information System (GIS) logistic regression model. This model will be fish habitat-driven and use geomorphic parameters such as basin size, stream gradient, and elevation. Until these water type maps are available, an interim typing system will be used. Fish habitat water types will be reviewed and updated, as necessary, every 5 years based on observed field conditions.

The following three water types are identified:

- Type S: All waters inventoried as Shorelines of the State.
- Type F: Waters not classified as Type S, which contain fish habitat. It also includes some waters diverted for domestic and fish hatchery use.
- Type N: Waters not classified as Type S or F, which are either perennial streams or are physically connected by an above-ground channel system to downstream waters such that water or sediment initially delivered to such waters will eventually be delivered to a Type S or F water. Type N waters include two subcategories: seasonal (Ns) and perennial streams (Np).

Wetland Typing System:
Wetlands of the State will be classified according to this system by WDNR in cooperation with WDFW and WDOE, and in consultation with affected Indian tribes. The wetlands will be classified in order to distinguish those which require wetland management zones (WMZs) and those which do not. Wetlands which require WMZs shall be identified using the following criteria:

"Non-forested wetlands" means any wetland or portion thereof that has, or if the trees were mature would have, a crown closure (generally interpreted as canopy cover) of less than 30 percent.

- "Type A Wetlands" are all non-forested wetlands which are greater than 0.5 acre in size, including any acreage of open water where the water is completely surrounded by the wetland; and are associated with at least 0.5 acre of ponded or standing open water. The open water must be present on the site for at least 7 consecutive days between April 1 and October 1 to be considered for the purposes of these rules. All forested and non-forested bogs greater than 0.25 acres shall be considered Type A Wetlands.
- "Type B Wetlands" are all other non-forested wetlands greater than 0.25 acre.

"Forested wetland" means any wetland or portion thereof that has, or if the trees were mature would have, a crown closure of 30 percent or more.

The Riparian Strategy addresses practices affecting certain ecological functions that are important for creating, restoring, and maintaining aquatic and riparian habitats for Covered Species. The strategy protects these functions along typed waters by restricting forest practices activities from the most sensitive parts of riparian areas and by limiting activities in

other areas. The strategy accomplishes protection within the riparian management zone (RMZ) and the ELZs for typed waters. RMZs are areas adjacent to Type S, Type F, and Type Np waters where trees are retained so that ecological functions such as large woody debris (LWD) recruitment, shade, litterfall, streambank stability, and nutrient cycling are maintained. ELZs apply to Type Np and Type Ns waters and are areas where equipment use is limited so that forest practices-related erosion and sedimentation are minimized. Other riparian protection measures that apply to typed waters include restrictions on the salvage of down woody debris and the disturbance of stream banks. Some riparian requirements differ between western and eastern Washington.

Western Washington—Type S and F Waters

In western Washington, RMZs for Type S and F waters are divided into three zones along the stream: the core zone is adjacent to the bankfull width or CMZ outer edge and is closest to the water, the inner zone is adjacent to the core zone, and the outer zone is adjacent to the inner zone and is farthest from the water (See FPHCP Figure 4.5).

Core Zone

The core zone in western Washington is 50 feet in width. With the exception of approved road crossings and yarding corridors, no timber harvest or construction is allowed in the core zone. Any trees cut for or damaged by yarding corridors must be left on the site. Any trees cut as the result of road construction to cross a stream may be removed from the site, unless used as part of a LWD placement strategy or as needed to reach stand requirements (described below).

Inner Zone

The inner zone varies from 10 to 100 feet in width, depending on stream size, forestry site class of adjacent lands, and the management option selected (described below). Timber harvest in the inner zone is permitted only when the riparian characteristics of an existing stand exceed the riparian stand target requirement. The stand requirement is the number of trees per acre; basal area per acre; and the proportion of conifer, in the combined inner zone and adjacent core zone, that will provide target riparian stand conditions when the stand is 140 years old. This future stand is referred to as the desired future condition (DFC) and varies with the site class. Growth modeling is necessary to calculate whether a particular stand meets the stand requirement and is on a trajectory towards the DFC. The growth model is based on stand characteristics and on specific components identified in the Washington Forest Practices Board Manual. When the existing stand in the combined core and inner zone does not meet stand target requirements, no-harvest is permitted in the inner zone, except for the purpose of hardwood conversion (see below). Two management options are available when basal area exceeds the stand requirement. Widths of inner and outer zones differ between Option 1 and Option 2.

Option 1 for Inner Zones—Thinning from Below. If trees can be harvested and removed from the inner zone because of surplus basal area consistent with the stand target requirement, then Option 1, referred to as "thinning from below," can be implemented. The objective of thinning is to distribute leave trees in such a way as to shorten the time required to provide large wood for fish habitat and to protect water quality. This is achieved by

increasing the potential for leave trees to grow larger and more rapidly than they otherwise would without thinning. Trees harvested under Option 1 must comply with the following:

a) Residual trees left in the combined core and inner zones must meet stand target requirements necessary to be on a trajectory to DFC.

b) Thinning must be from below, meaning the smallest diameter (in diameter at breast height [dbh]) trees would be selected for harvest first, then selection would progress to successively larger diameters.

c) Thinning cannot decrease the proportion of conifer in the stand.

d) Shade retention to meet the shade rule must be confirmed by the landowner for any harvest inside of 75 feet from the bankfull width or edge of the CMZ, whichever is greater.

e) The number of residual trees per acre in the inner zone will equal or exceed 57.

Two other factors affect the amount of harvest under Option 1: 1) the presence of existing stream-adjacent parallel roads within the inner or core zone and 2) the use of yarding corridors across the RMZ. In both cases, the shortfall of basal area due to these factors has to be accounted for by reducing harvest elsewhere in the forest practice unit boundary. Implementation of an acceptable LWD placement plan can be used to make up for shortfalls due to stream-adjacent parallel roads.

Option 2 for Inner Zones—Leaving Trees Closest to the Water. If trees can be harvested and removed from the inner zone because of surplus basal area consistent with the stand target requirement, then Option 2 can be implemented. Option 2 applies only to RMZs on Site Classes I, II, and III (described below), on streams that are less than or equal to 10 feet wide, and to RMZs on Site Classes I and II for streams greater than 10 feet wide. Harvest must comply with the following:

a) Harvest is not permitted within 30 feet of the core zone for streams less than or equal to 10 feet wide, and harvest is not permitted within 50 feet of the core zone for streams greater than 10 feet wide.

b) Residual leave trees in the combined core and inner zone must meet the stand target requirements needed to be on a trajectory to the DFC.

c) A minimum of 20 riparian leave trees per acre must be retained in any portion of the inner zone where harvest occurs. These riparian leave trees are not counted or considered towards meeting applicable stand requirements, nor can the number be reduced below 20 for any reason.

d) Trees are selected for harvest starting from the outermost portion of the inner zone first, then selected progressively closer to the stream.

e) If the existing stand conditions in the core and inner zones result in surplus basal area per the stand target requirement, the landowner may take credit for the surplus by harvesting additional riparian leave trees required to be left in the adjacent outer zone on a basal-area-for-basal area basis. The number of leave trees in the outer zone cannot be reduced below 10 trees per acre (except for CMZ credit).

The presence of stream-adjacent parallel roads within the inner or core zone and the use of yarding corridors across the RMZ also affect the amount that can be harvested under Option 2. The shortfall of basal area due to these factors has to be accounted for by reducing harvest elsewhere in the forest practice boundary. Implementation of an acceptable LWD placement plan can be used to make up for shortfalls due to roads.

There are four classes of forest practices (Class I, Class II, Class III and Class IV).

Class I forest practices are those determined by the Board to have no direct potential for damaging a public resource. Examples of Class I forest practices include pre-commercial thinning outside riparian zones and road maintenance activities where there is no potential for sediment delivery to waters or wetlands.

Class II forest practices are those determined by the Board to have a less than ordinary potential for damaging public resources. Class II forest practices require submittal of written notification of the operation to WDNR. Class II forest practices involve timber harvest and/or road construction where no surface waters, wetlands, unstable slopes, threatened or endangered wildlife species and/or cultural resources are present on the site.

Class III forest practices include all operations other than those considered Class I, Class II, or Class IV. Class III applications typically include forest practices where streams, lakes, wetlands, threatened or endangered wildlife species and/or cultural resources are present on site.

Class IV forest practices are separated into two sub-classes: Class IV-Special and Class IV-General. Class IV-Special forest practices require compliance with the SEPA rules and forest practices SEPA guidelines because they have the potential for a substantial impact on the environment. Class IV-General forest practices are those activities determined by the Board to be related to land uses other than forestry.

Hardwood Conversion for Inner Zones. Landowners have the option of converting hardwood-dominated riparian stands to conifer-dominated stands in the inner zone of the RMZ in western Washington only. The riparian areas must be hardwood-dominated stands with evidence that conifers were dominant in the past. The objective of the hardwood conversion rule is to improve long-term riparian function by allowing landowners to remove most hardwoods in the conversion area and restock the area with conifers. There are numerous requirements and restrictions to implementing hardwood conversion. The following must apply for a landowner to obtain approval for hardwood conversion:

a) The combined core and inner zone do not meet stand target requirements.

b) There are fewer than 57 conifer trees 8 inches or larger in dbh per acre.

c) There are fewer than 100 conifer trees 4 inches or larger in dbh per acre.

d) Individual conversion areas are limited to 500 feet in length along a stream.

e) Landowners must own the land 500 feet above and below the harvest unit.

f) No stream adjacent parallel roads are present in the core or inner zone.

g) The landowner has performed post-harvest treatment to the satisfaction of the WDNR on previously converted hardwood-dominated stands.

Once hardwood conversion is approved, harvest is restricted by the following:

a) Conifer trees greater than 20 inches dbh shall not be harvested in the conversion area.

b) No more than 10 percent of the conifer trees greater than 8 inches dbh may be harvested.

c) The conversion area must be restocked with conifers and provided with post-harvest treatment to ensure conifer seedling survival.

The rule includes a component for tracking conversion rates on a watershed basis. The adaptive management program is charged with identifying adverse-effect thresholds for conversion levels on a watershed basis.

Outer Zone. Timber harvest in the outer zone must leave 20 riparian leave trees per acre after harvest. Riparian leave trees are trees that must be left after harvest in the outer zone in western Washington. These trees must be left uncut throughout all future harvests.

The riparian leave trees must be left on the landscape according to one of the following two strategies. The third strategy is available to landowners who agree to a LWD placement plan.

a) Dispersal strategy. Riparian leave trees, which means conifer species with a dbh of 12 inches or greater, must be left dispersed approximately evenly throughout the outer zone.

b) Clumping strategy. Riparian leave trees must be left clumped in the following way: clump trees, with a dbh of 8 inches or greater, in or around sensitive features (primarily seeps and springs, forested wetlands, areas that would provide windthrow protection, small unstable slopes, or archaeological or historic sites) to the extent these are present in the outer zone. If sensitive features are not present, then clumps must be well distributed throughout the outer zone, and the leave trees must be at least 12 inches dbh in size.

c) LWD in-channel placement strategy. A landowner may design a LWD placement plan in cooperation with WDFW. When a LWD placement plan is approved, the landowner may reduce the number of trees that have to be left in the outer zone to the extent provided in the approved LWD placement plan, but not below a minimum of 10 trees per acre (except for CMZ credit). The 20 riparian leave trees can be reduced in number in two situations: 1) if a landowner agrees to implement a placement strategy as described in the preceding paragraph, or 2) if trees are left in an associated CMZ. In the latter case, the landowner may reduce the number of trees that have to be left according to specified rules (WAC 222- 6 30-021*(1)(c)(iv)).

Western Washington—Type N Waters

In western Washington, two types of buffers are defined for Type N waters. First, an ELZ is defined for all Type N waters. Second, a 50-foot-wide buffer is required for at least 50 percent of Type N perennial streams. These are described below.

ELZs—Type N Waters. The area between the bankfull width edge of a Type N water and a line 30 feet from such an edge is established as an ELZ. Landowners must mitigate for the disturbance of more than 10 percent of the soil within any ELZ as a result of the use of ground-based equipment, skid trails, stream crossings (other then road crossings), or partially suspended cabled logs. A number of other rules designed to reduce soil disturbance, apply to cable yarding, skid trail location and construction, and other logging activities.

No-Harvest Buffers—Type N Perennial Waters. For Type N perennial streams, a 50-foot, no-harvest buffer is established along each side of the stream for at least 50 percent of the stream length. The locations for these buffers are to include a 500-foot length upstream from the junction of the Type N stream with a Type S or F stream and a specified area associated with sensitive sites (including soil zones perennially saturated from a headwall seep, a side-slope seep, a headwater spring of perennial flow for a Type N perennial water, an alluvial fan, or the point of intersection of two or more Type N perennial streams). If these sensitive sites do not add up to 50 percent of the stream, then the landowner must add buffers in specified priority areas. Additional acres equal to the number of acres occupied by an existing stream-adjacent parallel road within a specified sensitive site buffer or priority area must also be added. Landowners are also required to the extent reasonably practical, to avoid creating yarding corridors and road crossings through sensitive sites and to avoid soil compaction and vegetation removal in perennially moist areas.

Eastern Washington—Type S and F Waters

In eastern Washington, RMZs for Type S and F waters are also divided into three zones: the core zone is nearest to the water and adjacent to the bankfull width or CMZ outer edge, the inner zone is adjacent to the core zone, and the outer zone is adjacent to the inner zone and is farthest from the water.

Core Zone. The core zone in eastern Washington is 30 feet in width. With the exception of approved road crossings and yarding corridors, no timber harvest or construction is allowed

in the core zone. Any trees cut for or damaged by yarding corridors must be left on site. Any trees cut as the result of road construction to cross a stream may be removed from the site, unless used as part of a LWD replacement strategy.

Inner Zone. The inner zone varies from 45 to 70 feet in width, depending on stream size and site class of adjacent lands. The degree of timber harvest permitted in the inner zone varies by habitat type. Three habitat types are defined for eastern Washington based on elevation: ponderosa pine (0 to 2,500 feet), mixed conifer (2,501 to 5,000 feet), and high elevation (greater than 5,000 feet) habitat types.

Ponderosa Pine Habitat Type. No harvest within the inner zone is permitted unless the basal area of conifer and hardwoods is greater than 110 square feet per acre for trees greater than 6 inches dbh, or unless the basal area of conifer and hardwoods is less than 60 square feet per acre for trees greater than 6 inches dbh. Two other factors that must be considered relate to down wood and stream-adjacent parallel roads. At least 12 tons of down wood per acre must be left behind, with requirements on size. Also, when a stream-adjacent parallel road is present in the inner zone, and the minimum required basal area cannot be met due to the presence of the road, then inner zone harvest is restricted based on the stream size and the proximity of the road to the stream.

Mixed Conifer Habitat Type. No harvest is permitted within the inner zone unless the basal area of conifer and hardwoods for trees greater than 6 inches dbh is as follows:

- Greater than 110 or less than 70 square feet per acre on low site indexes (site index less than 90)
- Greater than 130 or less than 90 square feet per acre on medium site indexes (site index between 90 and 110)
- Greater than 150 or less than 110 square feet per acre on high site indexes (site index greater than 110)

If the basal area meets the requirements above, then harvest is permitted. Harvest must leave at least 50 trees per acre with at least a basal area of 70 square feet per acre on low site indexes, or 90 square feet per acre on medium site indexes, or 110 square feet per acre on high site indexes. If basal area is below the minimum and there are more than 120 trees per acre, the stand can be thinned down to 120 trees per acre.

Two other factors that must be considered relate to down wood and stream-adjacent parallel roads. At least 20 tons of down wood per acre must be left behind, with requirements on size. Also, when a stream-adjacent parallel road is present in the inner zone, and the minimum required basal area cannot be met due to the presence of the road, then inner zone harvest is restricted based on the stream size and the proximity of the road to the stream.

High Elevation Habitat Type. Restrictions on harvest within the inner zone for RMZs in eastern Washington high elevation habitat types are as defined for western Washington RMZs. However, only Option 1 is permitted because the narrower core and inner zone widths in eastern Washington do not make Option 2 feasible.

Two other factors that must be considered relate to down wood and stream-adjacent parallel roads. At least 30 tons of down wood per acre must be left behind, with restrictions on size. Also, when a stream-adjacent parallel road is present in the inner zone, and the minimum required basal area cannot be met due to the presence of the road, then inner zone harvest is restricted based on the stream size and the proximity of the road to the stream.

Outer Zone. This zone has three categories based on timber habitat type: Ponderosa pine, mixed conifer, and high elevation. The width of this zone is 0 to 55 feet depending on the site class and stream width. Tree counts that must be left per acre, regardless of the presence of an existing stream-adjacent parallel road in the zone, are as follows:

- Ponderosa pine habitat type—10 dominant or co-dominant trees.
- Mixed conifer habitat type—15 dominant or co-dominant trees.
- High elevation habitat type—See requirements for western Washington Type S and F waters.

An additional restriction for trees in the high elevation habitat type is that they must be left on the landscape according to one of two strategies: dispersal or clumping strategies.

Eastern Washington—Type N Waters

In eastern Washington, buffer zones for Type N waters are defined in two ways. First, an ELZ is defined for all Type N waters. Second, a buffer is required for Type N perennial streams. These are described below.

ELZs—Type N Waters. The area between the bankfull width edge of a Type N water and a line 30 feet from such edge is established as an ELZ. Landowners must mitigate for the disturbance of more than 10 percent of the soil within any ELZ as a result of the use of ground-based equipment, skid trails, stream crossings (other than road crossings), or partially suspended cabled logs.

Buffers—Type N Perennial Waters. For Type N perennial streams, within 50 feet of the bankfull width, the landowner must identify either a partial cut and/or clearcut strategy for each unit to be harvested as follows:

- For partial cuts-Basal areas must meet the timber-type-dependent basal areas required for the eastern Washington RMZ inner zone. The trees to be included in the basal area determination and left after harvest must include the 10 largest trees per acre, an additional 40 trees must be greater than or equal to 10 inches dbh or must be the largest of the remaining trees, and the other remaining 50 trees also have size and other restrictions.
- For clearcuts-The streamside boundary of the clearcut must not exceed 30 percent of the total stream reach in the harvest unit, must not exceed 300 continuous feet in length, must not be located within 500 feet of the intersection of a Type S or F water, and must not occur within 50 feet of a defined sensitive site. Also, the landowner

must simultaneously designate a no-harvest zone buffer that is equal in area to the clearcut portion of the stream reach in the harvest unit.

Additionally, if a road exists in an RMZ for Type N perennial water and the basal area required to be left cannot be met within 50 feet of the stream due to the presence of the road, then the shortfall of basal area has to be eliminated by shifting the RMZ location according to specified rules.

Riparian Management Zones for Exempt 20-acre Parcels

State law exempts parcels that are 20 contiguous acres or less and are owned by individuals whose total ownership is less than 80 forested acres statewide. These parcels are not subject to certain FPHCP riparian requirements. However, State law requires RMZs for Type S and Type F waters. The RMZ width cannot be less than 29 feet measured from the bankfull width (as opposed to bankfull width or CMZ as with standard Washington Forest Practices Rules) nor more than the maximum width listed in FPHCP Table 4.4. When the RMZ overlaps a Type A or B WMZ, the measure that best protects public resources must be applied.

Leave-tree requirements for Type S and Type F waters on exempt 20-acre parcels in western Washington are listed in FPHCP Table 4.5. The required ratio of conifer to deciduous leave trees-and the number and minimum diameters of leave trees-varies with water type and bankfull width. The number of leave trees also differs between gravel/cobble-bedded waters and boulder/bedrock waters. Landowners must still meet shade requirements on Type S and Type F streams; however, the 75-foot shade requirement would be measured from the bankfull width.

Along Type N perennial waters, WDNR can require tree retention on exempt 20-acre parcels where necessary to protect public resources. Washington Forest Practices Rules authorize WDNR to require the retention of at least 29 trees, 6 inches dbh, on each side of every 1,000 feet of stream length within 29 feet of the stream. More information on riparian protection on exempt 20-acre parcels in western Washington is contained in WAC 222-30-023(1).

In eastern Washington, RMZs for Type S and Type F waters in exempt parcels associated with partial harvests cannot be less than 35 feet or more than 58 feet. For other harvest types, buffers cannot be less than 35 feet, must average 58 feet, and are limited to a maximum width of 345 feet. Leave-tree requirements apply to these zones. When the RMZ overlaps a Type A or B wetland or WMZ, the measure that best protects public resources must be applied.

However, for eastern and western Washington, an exemption exists for situations where greater than 10 percent or more of the harvest unit lies within any combination of a RMZ of a Type S or F water, or a WMZ, then only 50 percent of the required trees must be left.

Along Type N perennial waters in eastern Washington, WDNR can require tree retention on exempt 20-acre parcels where necessary to protect public resources. Washington Forest

Practices Rules authorize WDNR to require the retention of a minimum of 29 trees of at least 6 inches dbh on each side of every 1,000 feet of stream length within 29 feet of the stream.

Statewide Requirements

In addition to the riparian protection measures that are specific to western and eastern Washington, the Washington Forest Practices Rules include riparian requirements that apply throughout the State. These include requirements for the retention of shade along Type S and Type F waters, restrictions on the salvage of down trees and woody debris, and requirements for the maintenance of streambank stability. Each set of protection measures is described below.

Shade Retention

Shade requirements differ for forestlands within the Bull Trout Overlay and lands outside the Bull Trout Overlay. The Bull Trout Overlay includes portions of eastern Washington streams containing bull trout habitat as identified on FPHCP Figure 4.7. Within the Bull Trout Overlay, all available shade must be retained within 75 feet of the bankfull edge or CMZ edge, whichever is greater.

Outside of the Bull Trout Overlay, a temperature-prediction method must be used to determine shade requirements. The temperature-prediction method is used to establish the shade level necessary to meet the temperature standard. If pre-harvest shade levels do not meet the shade requirement, no harvest is allowed within 75 feet of the bankfull edge or CMZ edge. If pre-harvest shade levels exceed the shade requirement, harvest in the RMZ inner zone is allowed provided that shade levels are not reduced below the minimum required and that all other applicable rules are met.

Salvage Logging

Washington Forest Practices Rules protect ecological functions and associated habitats by restricting salvage of down wood in typed waters, CMZs, and RMZs. Salvage logging is not allowed within the bankfull width of any typed water or within a CMZ, including salvage logging of any portion of a tree that may have fallen from outside the zone. Salvage logging within a RMZ for a Type S or Type F water is based on the sub-zone (core, inner, and outer zones) from which the tree originated, applicable stand requirements, and extent of previous harvest activity in the zone (FPHCP Table 4.8). Salvage logging is not allowed within a RMZ for Type Np water or associated sensitive site, but may occur adjacent to Type Ns waters and the unbuffered portions of Type Np waters.

Streambank Integrity

Activities in the RMZ core zone for Type S and Type F waters and in RMZs for Type Np waters must ensure streambank integrity is maintained. Activities must avoid disturbing stumps, root systems, and any logs embedded in the streambank, as well as brush and other similar understory vegetation. Where necessary, high stumps must be left to prevent felled and bucked timber from entering the water. Trees with large root systems embedded in the stream bank must also be left.

FPHCP Wetland Protection Strategy

The FPHCP includes measures to avoid, minimize, and mitigate forest practices-related impacts to wetland habitats. Measures are intended to protect important ecological functions such as LWD recruitment, shade retention, sediment filtration, and the maintenance of surface and shallow subsurface hydrology. Protection measures include a wetland typing system (described above), a WMZ adjacent to Type A and Type B wetlands, and the use of low-impact harvest systems in forested wetlands. Wetland protection measures are the same statewide.

Protection Measures for Forested Wetlands

The FPHCP allows harvest in forested wetlands. Harvest is limited to low-impact harvest systems to minimize effects on soils and hydrology. Low-impact harvest systems generally include ground-based equipment with tracks (e.g., shovel), cable-yarding machines, helicopters, and balloons. Also, when yarding logs, operators must keep at least one end of the log suspended when feasible.

When forested wetlands lie within a proposed harvest unit, landowners are encouraged to leave 30 to 70 percent of required wildlife reserve trees within the wetland. Wildlife reserve trees are defective, dead, damaged, or dying trees that provide or have the potential to provide habitat for wildlife species dependent on standing trees. In western Washington, the Washington Forest Practices Rules require the retention of three wildlife reserve trees and two green recruitment trees (i.e., trees left for the purpose of becoming future wildlife reserve trees) for each acre harvested. In eastern Washington, two wildlife reserve trees and two green recruitment trees must be retained for each acre harvested.

Protection Measures for Non-Forested Wetlands

Protection measures for Type A and Type B non-forested wetlands include limitations on harvesting in the wetlands. Harvest is not allowed in a Type A wetland that meets the definition of a bog. Individual trees or forested wetlands less than 0.5 acre in size that occur within a non-forested wetland, must be retained. They may be counted toward the WMZ leave tree requirement (see below). Harvest of upland areas or forested wetlands surrounded by a Type A or Type B wetland must be conducted in accordance with a plan that has been approved by WDNR in writing. No trees can be felled into or yarded across a Type A or Type B wetland without written approval from WDNR.

Non-forested wetlands are also protected through WMZs. WMZs must be established adjacent to all Type A and B wetlands. They are measured horizontally from the wetland edge or the point where the non-forested wetland becomes a forested wetland (see Forest Practices Board Manual Section 8 for delineation procedures). The required WMZ width depends on the wetland type and size. The average WMZ width must meet the requirement listed in FPHCP Table 4.12. To meet the average width, it can vary from the minimum width to the maximum width listed in FPHCP Table 4.12. When a WMZ overlaps a RMZ, the requirement that best protects public resources must be applied.

Harvest is allowed within WMZs according to several conditions. At least 75 trees per acre must be retained. These 75 trees should be greater than 4 inches in eastern Washington or 6

inches for western Washington. Of those 75 trees, 25 trees shall be greater than 12 inches dbh, of which 5 trees shall be greater than 20 inches dbh, where they exist. Leave trees shall be representative of the species found within the WMZ. The Washington Forest Practices Rules encourage that wildlife reserve trees should be located within the WMZ where feasible.

Partial cutting or removal of groups of trees within the WMZ is acceptable, within constraints of maximum width and spacing. Tractors, wheeled skidders, or other ground-based harvest equipment are not allowed within the minimum WMZ width without written approval from WDNR. And finally, when at least ten percent of a harvest unit lies within a WMZ, and either the harvest unit is a clearcut of 30 acres or less or the harvest unit is a partial cut of 80 acres or less, at least 50 percent of the 75 trees-per-acre requirement must be retained within that WMZ.

Protective Approaches in Logging Practices

The FPHCP includes protection measures that regulate the methods of harvest in riparian and wetland areas. Measures include limits on the felling and bucking of timber, on the use of ground-based equipment, and on cable yarding. Many of these measures are designed to minimize soil disturbance and reduce the potential for erosion and sedimentation and maintain other ecological functions as described below.

Felling and Bucking

Felling trees and bucking logs (cutting felled trees to length) in or adjacent to typed waters and RMZs must be conducted in a manner that protects riparian and in-stream habitat and water quality. Limitations on felling include no felling into the RMZ core zone of Type S or Type F waters, sensitive sites, or Type A or Type B wetlands. There is a limited exception for safety. Within the RMZ inner and outer zones of Type S and Type F waters, and within WMZ, felling must facilitate yarding away from typed waters. Trees may be felled into Type Np waters, but logs must be removed as soon as practical. Slash introduced to the Type Np water as a result of the falling must be removed. Reasonable care must be taken to fell trees in directions that minimize damage to residual trees. Bucking or limbing of any portion of a tree lying within the bankfull width of a Type S, Type F, or Type Np water; in the core zone of RMZs, in sensitive sites, or in open water areas of Type A or Type B wetlands is not allowed.

Ground-based Equipment

Ground-based equipment use is prescribed to limit direct physical impacts to waters and wetlands and to minimize indirect impacts such as soil disturbance and associated erosion and sedimentation. Ground-based equipment is not allowed in Type S or Type F waters except with approval by WDNR and with a Hydraulics Permit Application (HPA) issued by WDFW. Ground-based transport of logs across Type Np and Type Ns waters must minimize the potential for damage to public resources, and a HPA may be required. For Type A and Type B wetlands, ground-based equipment is not allowed. Where harvest occurs in forested wetlands, ground-based logging is limited to low-impact harvest systems. Ground-based

equipment operating in wetlands is only allowed during periods of low soil moisture or frozen soil conditions.

In RMZs, use of ground-based equipment within a RMZ must be approved in writing by WDNR. When yarding logs in or through a RMZ with ground-based equipment, the number of routes through the zone must be minimized. Logs must be yarded to minimize damage to leave trees and vegetation in the RMZ.

In WMZs, ground-based equipment is not allowed within the minimum WMZ width unless approved in writing by WDNR. Where feasible, logs must be skidded with at least one end suspended from the ground to minimize soil disturbance and minimize damage to leave trees and vegetation in the WMZ.

Finally, skid trails must be sized, shaped, and located to minimize the contribution to overland sediment transport, through erosion and other means. Placement of side-cast material is limited to above the 100-year flood level. Skid trails running parallel or near parallel to waters must be located outside the no-harvest portions of RMZs and at least 30 feet from the bankfull edge of unbuffered portions of Type Np or Ns waters, unless approved in writing by WDNR. Skid trails must cross the drainage point of swales at an angle that minimizes the potential for delivering sediment to typed waters or where channelization is likely to occur. Skid trails out of use must be water-barred to prevent soil erosion. Skid trails located within 200 feet of any typed water that directly delivers to the stream network must have water bars, grade breaks, and/or slash to minimize sediment delivery to the water. Water bars must be placed at a frequency that minimizes gullying and soil erosion. In addition to water barring, skid trails with exposed, erodible soil that may be reasonably expected to cause damage to a public resource must be seeded with a non-invasive plant species (preferably native to the State) and adapted for rapid revegetation of disturbed soil, or be treated with other erosion control measures acceptable to WDNR.

Cable Yarding

No cable yarding in or across Type S or Type F waters, except where logs will not materially damage the bed of waters, banks of sensitive sites or RMZ. Yarding corridors through RMZ of a Type S or Type F water must be no wider or more numerous than necessary to accommodate safe and efficient transport of logs. On Type S or Type F streams, logs must be fully suspended unless exempted by a HPA. On Type Np or Ns streams, logs must be fully suspended unless exempted by a Forest Practices permit. When yarding logs across flowing Type N waters, the log must be fully suspended. A Forest Practices permit cannot be used to allow partial-suspension yarding across flowing waters. Generally, yarding corridors should be located at least 150 feet apart (measured edge to edge), and each should be no wider than 30 feet. Total openings resulting from yarding corridors must not exceed 20 percent of the stream length associated with the forest practices application. When changing cable locations, care must be taken to move cables around or clear of the riparian vegetation to avoid damaging it. In Type A and Type B wetlands, cable yarding is not allowed without written approval from WDNR.

Yarding from or across FPHCP protected areas requires reasonable care to minimize damage to the vegetation that provides shade to the water, and to minimize disturbance to understory

vegetation, stumps, and root systems. Uphill yarding is preferred. Where downhill yarding is used, reasonable care must be taken to lift the leading end of the log to minimize downhill movement of slash and soils. When yarding parallel to a Type S or Type F water, and below the 100-year flood level or within the RMZ, reasonable care must be taken to minimize soil disturbance and to prevent logs from rolling into the water or RMZ.

Other Programs for Riparian Protection

The FPHCP includes two programs that provide for the long-term conservation of riparian and aquatic habitats. The Forestry Riparian Easement Program and the Riparian Open Space Program were established to acquire, through purchase or easement, the most ecologically important habitats for species covered under the FPHCP. Unlike most FPHCP protection measures, the Forest Riparian Easement Program and Riparian Open-Space Program are voluntary programs that complement the mandatory requirements of the Washington Forest Practices Act and Rules. As part of the complete set of protection measures, these voluntary programs will help ensure that the Forest Practices program meets its goals, resource objectives and performance targets.

Forestry Riparian Easement Program

The Forestry Riparian Easement Program provides long-term protection for aquatic resources by acquiring easements from small forest landowners in riparian areas and other ecologically important areas. Easement areas typically include CMZs, RMZs, and WMZs, but may also include other areas, such as unstable slopes. Landowners interested in participating in the Forestry Riparian Easement Program must meet the definition of a "small forest landowner," which is related to his/her prior 3-year average harvest level. Forestry Riparian Easement Program easements apply to "qualifying timber" and not the land on which the trees grow. "Qualifying timber" are trees that are covered by a forest practices application and that the small forest landowner is required to leave unharvested for the duration of the easement (i.e. 50 years). Landowners are compensated for the value of the qualifying timber between 50 and 100 percent of the value. This easement provides no public access to the property. The landowner may remove timber that is not part of the qualifying timber with the inner zone.

Riparian Open Space Program

Riparian Open Space Program ensures the long-term conservation of aquatic resources by acquiring a fee interest in, or easement on, lands and timber within a specific type of CMZ known as an "unconfined avulsing CMZ." These areas typically have very high ecological value as spawning and rearing habitat for salmon and other fish species. Under the Washington Forest Practices Rules, no timber harvesting or road construction may occur within CMZs due to their ecological importance. The Riparian Open Space Program provides financial compensation for landowners with these types of CMZs who voluntarily sell the land to WDNR or place a permanent easement on the trees, land, or both. Participation is based on available WDNR funding and priorities.

Upland Conservation Strategy: Section 4c of the FPHCP summarizes the Upland Strategy components of the operating conservation program.

The FPHCP Upland Strategy consists of protection measures that are implemented in upslope areas outside riparian zones and wetlands. These measures are intended to limit forest practices-related changes in physical watershed processes—such as erosion and hydrology—that may adversely affect the quality and quantity of riparian and aquatic habitat lower in the watershed. The goal of the Upland Strategy is to prevent, avoid, minimize, or mitigate forest practices-related changes in erosion and hydrologic processes and the associated effects on public resources. Specific objectives of the Upland Strategy include preventing forest practices-related landslides, addressing the affects of forest roads on fish passage at all life stages, limiting sediment delivery to all typed waters, surface water and other hydrologic management, woody debris passage, protecting streambank stability, minimize the construction of new roads, and ensure that there is no net loss of wetland function.

Unstable Slopes

Protection measures related to unstable slopes and landforms are outcome-based, rather than prescriptive. Measures are derived through a process in which, WDNR evaluates proposed timber harvest and road-construction activities on unstable slopes to determine if the activities will have a "probable significant adverse impact." The only exception to this outcome-based, decision-making process occurs in areas where a watershed analysis has been conducted and approved, management prescriptions are in place to address unstable slopes, the prescriptions are specific to the site or situation and do not call for additional analysis, and the prescriptions are followed on the proposed activities.

The FPHCP recognizes four classes of unstable slopes: 1) landforms typically associated with debris avalanches, flows, and torrents (inner gorges, bedrock hollows, and convergent headwalls with slopes greater than 35 degrees or 70 percent); 2) landforms susceptible to debris avalanches (toes of deep-seated landslides with slopes greater than 33 degrees or 65 percent and the outer edges of meander bends along valley walls or high terraces of unconfined meandering channels); 3) groundwater-recharge areas of deep-seated landslides in glacial sediments; and 4) areas with indicators of potential slope instability that cumulatively indicate the presence of unstable slopes.

The FPHCP summarizes the process through which unstable slopes are identified in forest practices applications, and the procedures by which management practices are derived for each area identified. When unstable slopes are identified, the application must include an expert geotechnical assessment. Additionally, WDNR staff conduct an evaluation of proposals involving unstable slopes.

After review, WDNR issues a decision under the SEPA considering several issues. The first is if the proposal is likely to increase the probability of mass movement on or near the site. The second issue is whether sediment or debris would be delivered to a public resource or be delivered in a manner that would threaten public safety. Finally, the WDNR will consider whether such movement and delivery are likely to cause significant adverse impacts.

If WDNR determines the effects are likely to be significant under SEPA, the WDNR will accord mitigation measures. These will range from avoiding unstable slopes to altering the methods or techniques used in timber harvest and/or construction operations. Unstable slopes avoidance is the most commonly used mitigation measure and results in the lowest

hazard and risk. Where timber harvest and/or construction activities occur on unstable slopes, a variety of mitigation measures are employed to reduce the likelihood of mass wasting. Harvest-related mitigation measures typically include minimum stand-density requirements to maintain rooting strength and slope hydrology, and full-suspension log yarding to reduce soil disturbance and damage to residual vegetation. Construction-related mitigation measures often relate to the design and/or location of roads and landings. Full-bench end-haul (i.e., no fill or side-cast material) construction techniques are routinely required on unstable slopes. Where fill material is necessary, the use of quarried rock rather than "native" soil or fill is often required to increase the structural strength of road prisms and stream crossings. These are just a few examples of the many mitigation measures used to address unstable slopes issues. The measures used in a given situation are dependent upon the nature of the impact being mitigated.

Forest Roads

The FPHCP includes the Washington Forest Practices Rules that are designed to minimize negative road impacts through the proper location, design, construction, maintenance, and abandonment of forest roads.

Location and Design

Roads must fit to the topography to minimize alteration of natural features. This includes avoiding at-risk areas such as surface waters, wetlands, CMZs, RMZs, sensitive sites, unstable slopes, and ELZs. The FPHCP prohibits new road construction that would lead to duplicative or unnecessary roads. Design standards are mainly related to construction techniques and water management. The FPHCP encourages road designs that utilize balanced cut-and-fill construction to avoid side-casting of excess fill material. In steep terrain (>60 percent slopes), the FPHCP requires "full-bench" designs in which no fill material is used to construct the road prism and waste material is end-hauled or over-hauled to stable locations (e.g., on slopes less than 60 percent). Water-management requirements focus on maintaining hydrologic flow-paths and minimizing sediment delivery by limiting road-induced rerouting of water. Forest practices under the FPHCP include design standards for culvert sizing and drainage-structure spacing. The Washington Forest Practices Rules also require that roads be designed so that ditch water is relieved onto the forest floor to facilitate infiltration and minimize sediment delivery.

Construction

Road-construction requirements focus on maintaining stable road prisms and water-crossing structures, and on minimizing sediment delivery to surface waters and wetlands. The requirements are also intended to limit impacts to habitat during the construction process. New roads must maintain stable, intact prisms and water crossing structures to control erosion and sediment delivery. Road prism-related measures include limiting the volume of organic matter that can be incorporated into the road prism, compacting fills, removing construction-related debris and slash from culvert inlets, installing ditches and drainage structures concurrent with construction, depositing waste materials in stable locations and preventing side-casting of excess fill material on steep slopes. Measures that focus on maintaining the stability of water-crossing structures require the installation of structures that

pass the 100-year flow, the construction of fills and embankments to withstand the 100-year flow, and the construction of headwalls and catch basins to accommodate the 100-year flow.

Road-construction measures in the FPHCP are designed to minimize sediment delivery from roads during and after construction. Requirements include limiting construction to periods of low soil moisture, end-hauling or over-hauling of waste material when side-casting would deposit sediment in areas where delivery to waters or wetlands may occur, sloping roads and landings to prevent water accumulation, and stabilizing exposed soils by seeding or other techniques approved by WDNR. If WDNR determines that the installation of a water crossing structure would result in unacceptable water quality impacts, the agency may require flow diversion around the site during construction.

Construction must also minimize impacts to riparian and in-stream habitats. The channel bed, stream banks, and riparian vegetation disturbance will be minimized. Disturbed areas must be stabilized and restored according to established schedules and procedures.

Maintenance and Abandonment

The FPHCP includes a road maintenance and abandonment program to prevent sediment- and hydrology-related impacts to public resources. Forest landowners must operate according to Road Maintenance and Abandonment Plans (RMAP) for roads within their ownership. Planning requirements differ for small and large forest landowners.

Large Landowners

The FPHCP requires large forest landowners to prioritize road maintenance and abandonment planning based on a "worst first" principle. Prioritization criteria include: 1) the presence of Federal or State listed threatened or endangered fish species or 303(d) listed water bodies; 2) the presence of sensitive geologic formations with a history of mass wasting; 3) the presence of planned or ongoing restoration projects; and 4) the presence of roads likely to have a high amount of forest-practices use in the future. Within each RMAP, maintenance and abandonment work is also prioritized: 1) removing fish blockages; 2) preventing or limiting sediment delivery; 3) disconnecting the road and stream networks; 4) repairing or maintaining stream-adjacent parallel roads; 5) restoring hydrologic flow-paths; and 6) capitalizing on operational efficiencies.

Small Landowners

Small forest landowners have two options for meeting road maintenance and abandonment planning requirements. Small forest landowners may follow the RMAP process for large landowners described above, or they may submit a "checklist" RMAP with each forest practices application or notification. Where watershed analysis has been conducted and approved, small forest landowners may elect to follow the watershed administrative unit-road maintenance plan rather than working under a RMAP. The smallest landowners (individual ownership of less than 80 acres of forestland in Washington and an application to operate on 20 acres or less) are not required to submit a RMAP or checklist RMAP for that parcel.

RMAP Implementation

Road maintenance and abandonment work carried out under a WDNR-approved RMAP must: 1) keep drainage structures functional; 2) divert captured groundwater from ditchlines

onto stable portions of the forest floor; 3) maintain road surfaces to minimize erosion and delivery of water and sediment to typed waters; and 4) slope or waterbar road surfaces to prevent water accumulation. When abandoning roads, landowners must slope or waterbar roads to minimize erosion and maintain drainage, leave ditches in a condition that minimizes erosion, block roads so that 4-wheel highway vehicles cannot pass the point of closure, and remove water-crossing structures and fills.

Practices Addressing Rain-on-Snow

The FPHCP addresses road-induced changes in hydrology by establishing standards for road construction, maintenance, and abandonment in areas affected by snowmelt. The Washington Forest Practices Rules address rain-on-snow effects in two ways in areas that either have or have not undergone watershed analysis. Watershed analysis in Washington State includes an assessment of timber-harvest-induced changes in rain-on-snow generated peak flows and potential impacts to fish habitat, water quality, and public capital improvements. Specific management prescriptions are developed to address rain-on-snow effects in parts of the Watershed Analysis Unit (WAU) where significant hydrologic change is likely to occur and resources are sensitive to those changes. Prescriptions typically involve limits on clearcut harvesting.

Where watershed analysis has not been performed, a forest practices rule commonly known as the "rain-on-snow rule" gives WDNR authority to set conditions on permits for forest practices applications and notifications that propose clearcut harvesting in the significant rain-on-snow zone. Under the rain-on-snow rule, WDNR may limit clearcut size when it determines that peak flows have caused material damage to public resources including water, fish, wildlife, and public capital improvements. WDNR has prepared conditioning guidelines for implementing the rain-on-snow rule (FPHCP Appendix M). The guidelines describe the process for evaluating forest practices applications and notifications, and rely on a risk-based approach when conditioning clearcut size. Maximum clearcut size decreases as the risk of rain-on-snow effects increases. The guidelines direct applicants and WDNR to consider alternatives to clearcutting in high-risk situations.

Alternate Plans

An alternate plan is a tool forest landowners can use to develop site-specific management plans for forest practices regulated under the Forest Practices Act. WAC 222-12-0401 describes the alternate plan process, including their review by interdisciplinary teams. An alternate plan may deviate from the standard Washington Forest Practices Rules, as long as the plan provides public resource protection at least equal in overall effectiveness to the protections afforded by the Washington Forest Practices Act and Rules. Each plan must contain: 1) a map of the area covered; 2) a description of how the alternate plan provides public resource protection to meet the WDNR approval standard; 3) a list of the Washington Forest Practices Rules that the alternate plan is intended to replace; 4) descriptions of any monitoring or adaptive management strategies associated with the plan; 5) a description of an implementation schedule; and 6) justification showing that sufficient common physical characteristics exist for forest practices applications submitted separately under the same alternate plan.

Upon receipt of a forest practices application associated with an alternate plan, WDNR appoints an interdisciplinary team to determine if the plan provides resource protection at least equal in overall effectiveness to the protections afforded by the Washington Forest Practices Act and Rules. The composition of the interdisciplinary team is determined by WDNR; however, representatives of FWS, NMFS, WDFW, WDOE, and affected Native American Tribes are invited to participate. The team determines if the proposal meets the WDNR approval standard. If the interdisciplinary team provides WDNR with a consensus recommendation regarding alternate-plan approval, conditional approval, or disapproval, the agency is directed to give substantial weight to that recommendation when making its decision.

Guidelines for alternate plans are in the Washington Forest Practices Rules and Board Manual and include template prescriptions specific for small forest landowners. Template prescriptions are prescriptions for common situations that are repeatedly addressed in alternate plans. If a small landowner chooses to follow a template, the standardization of a template alternate plan will make the plan layout and approval process more efficient, while continuing to maintain protection of public resources. An example of a small forest landowner template is provided for overstocked conifer stands in western Washington (Forest Practices Board Manual section 21). The template includes a forest practices application for the overstocked stand template that small forest landowners would fill out and submit to WDNR when proposing harvest in an overstocked conifer stand. The forest practice application includes information on how the prescriptions in this alternate-plan template provide for public-resource protection at least equal in overall effectiveness to the protections afforded by the Washington Forest Practices Act and Rules.

It is anticipated that the alternate-plan process for large and small forest landowners will continue to evolve and improve over the life of the FPHCP. Alternate plans for small forest landowners may incorporate longer timeframes and encompass a landowner's entire forestland property. WDNR's approval criteria for longer-term management plans will be developed in conjunction with the Federal agencies and will meet Federal ESA requirements. WDNR is responsible for conducting audits of landowners' compliance with the terms of alternate plans. The audit includes review and approval of each landowner's scheduled performance reports (either in the office or on-site) when a performance report is required. The audits will be consistent with the terms of any agreements with the Federal government regarding the protection of fish and water quality.

ADMINISTRATIVE FRAMEWORK

The FPHCP administrative framework is the structure within which program participants work cooperatively to develop, implement, and refine the Forest Practices program over time. The four administrative components are: 1) program participants, 2) program development, 3) program implementation, and 4) adaptive management (i.e., program refinement).

Program Participants

Participants in the Forest Practices program include the Washington Forest Practices Board, certain programs within the WDNR, the Forest Practices Appeals Board, cooperating

agencies, Native American Tribes, other natural-resource organizations, and the general public. These entities do the work of the program. They develop, implement, and refine the Forest Practices program to help it meet its goals.

The structure of the Forest Practices program and its participants is similar to that of state government; the Forest Practices Board as the rule-making body fills the legislative role, the executive role is filled by WDNR as the main coordinating agency, and the judicial role is filled by the quasi-judicial Forest Practices Appeals Board with its administrative review authority. Cooperating agencies and organizations as well as the general public represent stakeholders with each advocating policy positions that serve their individual interests or agency/organizational missions. While stakeholder positions may sometimes conflict, the administrative framework within which the Forest Practices program operates ensures each group has a role and voice in the process.

Program Development

Program development includes the processes by which the Washington Forest Practices Rules, Forest Practices Board Manual guidelines, internal policies, and technology-based tools are created. Forest-practices activities conducted on covered lands must adhere to the Washington Forest Practices Rules; therefore, the rules represent the habitat-protection measures for Covered Species. Forest Practices Board Manual guidelines, WDNR internal policies, and technology-based tools supplement the protection measures by providing WDNR staff, forest landowners, and cooperating agencies and organizations with additional direction and information related to rule implementation.

Much of the Forest Practices program related to the protection of aquatic resources has been developed and is in place. This occurred when the Board adopted permanent forest practices rules in July 2001 that were based on recommendations in the FFR. However, the approach to habitat conservation under the FPHCP involves an ongoing cycle of program development, implementation and adaptive management-driven refinement. Therefore, at some level, program development is always occurring.

Program Implementation

Forest Practices program implementation follows program development. As new or revised Washington Forest Practices Rules, Forest Practices Board Manual guidelines, internal policies, and technology-based tools are developed, WDNR works with those program participants affected by the change to implement the new program components. This typically includes forest landowners who must comply with provisions of the Washington Forest Practices Act and Rules, and cooperating agencies and organizations that support WDNR in program implementation.

Forest Practices program implementation includes multiple components. The first component is the WDNR-administered forest practices permitting process. Forest landowners are required to obtain approval from WDNR prior to conducting forest practices activities. The permitting process involves reviewing and approving forest practices application and notification, conducting compliance checks of ongoing forest practices activities and taking enforcement actions where necessary. A formal compliance monitoring program is currently being developed to measure landowner and operator compliance with

forest practices rules and to inform WDNR's routing compliance checks and enforcement action.

Compliance Monitoring

A number of efforts are ongoing that would address compliance monitoring of activities conducted under the FPHCP. They are as follows:

1. The existing forest practices enforcement program would continue whereby forest practices foresters check on a number of FPAs prior to, during, and following activities. Visits prior to activities may be conducted to verify existing pre-activity conditions and review the site for sensitive resources. Visits during activities may be conducted to ensure activities are occurring, or being avoided, as planned. Close-out visits may be conducted to verify that post-activity conditions meet applicable requirements. The specific FPAs to visit, and the timing of such visits, are determined by WDNR forest practices foresters. The amount and distribution of effort depends on the sensitivity of the resources involved as well as local and practical knowledge regarding the individual operations.

The State Legislature in 1999 re-emphasized the importance of these inspections and has established that WDNR shall make inspections of forest lands, before, during, and after the conducting of forest practices as necessary for the purpose of ensuring compliance with the Washington Forest Practice Rules and to ensure that no material damage occurs to the natural resources of the State as a result of such practices. Any authorized representative of WDNR shall have the right to access forest land at any reasonable time to enforce the provisions of the Washington Forest Practices Rules.

2. The WDNR's Forest Practices Division is coordinating a series of field audits to help ensure proper HCP implementation. The purpose of these audits is to evaluate delivery of the Forest Practices program at the region level, leading to improved consistency where needed. The first audit cycle, which will be completed in 2006, will evaluate implementation of key aspects of the Forest Practices Act and Rules. Subsequent cycles will examine external relations, program leadership within the region, and Forest Practices Division support.

3. The WDNR has initiated a FPHCP Compliance Monitoring Program. The Washington Forest Practices Rules, WAC 222-08-160 (4), define the WDNR compliance monitoring responsibilities as:

> "The department shall conduct compliance monitoring that addresses the following key question: "Are forest practices activities being conducted in compliance with the Washington Forest Practices Rules?" The department shall provide statistically sound, biennial compliance audits and monitoring reports to the Board for consideration and support of rule and guidance analysis. Compliance monitoring shall determine whether Washington Forest Practice Rules are being implemented on the ground. An infrastructure to support compliance will include adequate compliance monitoring, enforcement, training, education and budget."

This program resides within the WDNR Forest Practices Division and is still undergoing refinement. Preliminary data has been gathered and reported. This program's goal is to characterize the level of compliance that is occurring; therefore, a substantial emphasis is placed upon adequate sample sizes and unbiased procedures for site selection so that WDNR can determine if forest landowners/operators in the State of Washington are conducting forest practice activities in accordance with the Washington Forest Practices Rules. Over time, the information gained from this program will help the WDNR to more-effectively utilize limited forest practices resources. Information gathered will also assist the Washington Forest Practices Board in the development of new and/or revised Washington Forest Practices Rules.

In addition, the FWS conditioned the ITP to include the following Permit Condition:

- The permittee shall maintain sufficient compliance and enforcement personnel whose responsibilities include conducting on-the ground inspections of forest operations and documenting and reporting violations. The permittee shall ensure that these personnel are trained in forest practices regulations and enforcement procedures, and that they are equipped with vehicles and other necessary facilities and equipment. The permittee shall ensure that effective procedures are in place to identify operators who commit chronic or significant violations of forest practices regulations. The permittee shall take enforcement actions against violators, including but not limited to notices to comply, stop work orders, corrective action orders, civil penalties, disapproval of forest practices applications, financial assurance requirements, and criminal penalties, as appropriate to deter violations of these regulations.

4. The FWS and the NMFS jointly conduct monitoring of forest practices conducted under HCPs. The Services also assess compliance with other commitments made as part of those HCPs. In contrast to the FPHCP Compliance Monitoring Program administered by the WDNR, the Services do not focus on random sampling. The monitoring efforts are focused on topics, in specific areas, and with HCP provisions that are most likely to be non-compliant. The Services use all available information to identify individual projects which may not be in compliance. The focus is to maximize the opportunity to discover violations, determine the reasons for violations, and work toward correcting those underlying causes of violations. Once approved, the FPHCP would also be monitored under this effort. In addition, the Services are participating in the ongoing development and refinement of the FPHCP Compliance Monitoring Program as described in #4 above.

The second component of the program is WDNR technical support. Staff specialists within the Forest Practices Division provide expertise in the physical and biological sciences and support many aspects of program implementation.

Program implementation also includes an information, education and training component. This is the primary way WDNR communicates changes in the Forest Practices program to internal agency staff, forest landowners and cooperating agencies and organizations.

Reporting

Reports describing FPHCP implementation status will be prepared and submitted to the FWS annually. In addition, five-year review reports, which summarize all annual reports prepared to date, will be submitted to the FWS. The first annual report will be submitted one year following receipt of the ITP and every year thereafter throughout the life of the ITP. Likewise, five-year review reports will be submitted every five years throughout the life of the ITP.

The primary focus for these reports will be the monitoring and research activities carried out by the Adaptive Management program (FPHCP Section 4a-4.1); however, WDNR will also report on compliance monitoring activities (FPHCP Section 4a-3.1.3). Any substantive changes to the forest practices administrative or regulatory program will be included in these reports, however, any changes that materially impair the conservation plan would be subject to section 11.4 of the Implementing Agreement, which could result in permit suspension or termination. Table 1.1 in the FPHCP displays the program elements, examples of the projects/tasks included in each element as well as the report format and frequency. In general, each report will contain narrative status summaries for each program element, as well as summary data from completed projects. These and other commitments related to FPHCP implementation are included in the IA (FPHCP Appendix A).

Adaptive Management and Program Refinement

The adaptive management program was established to produce science-based recommendations and technical information to assist the Forest Practices Board in determining if and when it is necessary or advisable to adjust the Washington Forest Practices Rules and guidance to achieve the performance goal and resource objectives. The Washington Legislature established the adaptive management program as the primary means by which regulations could be modified (FPHCP, Appendix C, subsection 1.3.1.2). The adaptive management program has three guiding principles: 1) ensure certainty of change as needed to protect covered resources; 2) ensure predictability and stability of the process of change so that landowners, regulators, and interested members of the public can anticipate and prepare for change; and 3) ensure that quality controls are applied to scientific study design, project execution, and interpreted results. The performance goal for the adaptive management program is to ensure that forest practices, either singularly or cumulatively, would not significantly impair the capacity of aquatic habitat to: 1) support harvestable levels of salmonids; 2) support the long-term viability of other Covered Species; and 3) meet or exceed water quality standards, including protection of beneficial uses, narrative and numeric criteria, and anti-degradation. Resource objectives consist of functional objectives and performance targets and are designed to ensure that the aforementioned performance goal is met. Functional objectives are broad statements regarding major watershed functions potentially affected by forest practices. Performance targets are measurable criteria defining specific target forest conditions and processes. Functional objectives and performance targets have been established for water temperature, large woody debris/litterfall, sediment, hydrology, and forest chemical inputs and are listed in the FPHCP Appendix N.

The primary components of the adaptive management program include the Forest Practices Board, the TFW/FFR Policy Group, or similar collaborative forum; the Cooperative Monitoring, Evaluation, and Research (CMER) Committee; the Adaptive Management

Program Administrator; and the Scientific Review Committee. The role of each of these program components is described below.

Forest Practices Board
The Forest Practices Board manages the adaptive management. The Forest Practices Board approves CMER members, establishes key research and monitoring questions and resource objectives, approves research and monitoring priorities and projects, approves CMER budgets and expenditures, oversees fiscal and performance audits of CMER, participates in the dispute resolution process, and considers recommendations from TFW/FFR Policy Group or similar collaborative forum for adjusting Washington Forest Practices Rules and guidance.

TFW/FFR Policy Group
TFW/FFR Policy Group, or a similar collaborative forum, makes recommendations to the Forest Practices Board regarding CMER priorities and projects, final project reports, and Washington Forest Practices Rules and/or guidance amendments. Policy membership is self-selecting and generally includes WDNR, WDFW, and DOE, Federal agencies (including NMFS, FWS, EPA, and the USDA Forest Service), timber landowners, Tribal governments, county governments, environmental interests, and the Governor's Office.

CMER Committee
The CMER Committee oversees and conducts research and monitoring related to the established resource objectives. The primary purpose of the CMER Committee is to advance the science needed to support the adaptive management process. The committee is charged with developing and managing: 1) scientific advisory groups and sub-groups; 2) research and monitoring programs; 3) a set of protocols to define and guide the execution of the process; 4) a baseline dataset used to monitor change; and 5) a process for policy approval of research and monitoring projects and use of external information. The CMER Committee is composed of individuals that have expertise in scientific disciplines that will help address forestry, fish, wildlife, and landscape process issues including mass wasting, hydrology, and fluvial geomorphology. Membership is approved by the Forest Practices Board and is open to Washington DNR, WDFW, Ecology, Federal agencies (including NMFS, FWS, and EPA), timber landowners, Tribal governments, county governments, and environmental interests.

Adaptive Management Program Administrator
The Adaptive Management Program Administrator is a full-time employee of WDNR and is responsible for overseeing the adaptive management program and supporting CMER. The Administrator makes regular reports to Policy and the Forest Practices Board on program and project priorities, status, and expenditures. The Administrator has credentials as a program manager, scientist, and researcher.

Scientific Review Committee
The Scientific Review Committee carries out an independent peer review process to determine if work performed by CMER is scientifically sound and technically credible. The Scientific Review Committee is comprised of individuals with experience in scientific research and has no affiliation with the CMER Committee. Scientific Review Committee members are selected by the Committee editor and can be nominated by the CMER

Committee. CMER determines what products should be subject to review by the Scientific Review Committee, but at a minimum, the Scientific Review Committee reviews final reports of CMER funded studies, certain CMER recommendations, and pertinent studies not published in a CMER-approved, peer-reviewed journal. Other products that may require review include external information or data, work plans, requests for proposal, study proposals, final study plans, and progress reports.

The adaptive management process involves all program components detailed above. A process framework for implementing the program is described in the FFR (FPHCP Appendix B) and WAC 222-12-045. A more detailed process guide has been developed and included in the Forest Practices Board Manual (Section 22). The Forest Practices Board adopted Board Manual Section 22 in August 2005. The Forest Practices Board Manual guide will serve as a procedures manual for the adaptive management program and will further define the roles and responsibilities of the various program components described in the FFR and regulations. The adaptive management Board Manual will also include the CMER Protocols and Standards Manual that describes the operational aspects of the program's research and monitoring branch. The Protocols and Standards Manual will further define the roles and responsibilities of the CMER Committee, its members, and its Scientific Advisory Groups described in the FFR and regulations. The Protocols and Standards Manual, under development, will also describe processes such as project prioritization, project management, data and document management, budgeting, accounting, contracting, and dispute resolution. The CMER Committee produces a work plan each year that describes the various research and monitoring programs, associated projects, and work schedule. The Forest Practices Board adopted the 2006 work plan in August 2005 (FPHCP Appendix H). The CMER Work Plan is intended to inform CMER participants, policy constituents, and members of the public about CMER activities. The Plan is a document that is to be revised in response to research findings, changes in policy objectives, and funding. A summary of the CMER Committee's research and monitoring programs follows.

Effectiveness and Validation Monitoring

Effectiveness monitoring is designed to evaluate the degree to which Washington Forest Practices Rules and guidance meet performance targets and resource objectives. Validation monitoring will determine if the performance targets are appropriate for meeting the stated resource objectives. Effectiveness and validation monitoring are sometimes referred to as "prescription" or "best management practice" (BMP) monitoring because they are conducted at a site-scale and generally focus on specific rule prescriptions or practices. The CMER Committee has identified 16 effectiveness and validation monitoring sub-programs (CMER Work Plan 2004). Each sub-program has several associated projects, some of which have been scoped and are currently underway while others have not yet reached the scoping phase.

Extensive Monitoring

Extensive monitoring evaluates the statewide status and trends of key watershed processes and habitat conditions across covered lands. Extensive monitoring is a landscape-scale assessment of the effectiveness of Washington Forest Practices Rules to attain specific performance targets. This is different from effectiveness monitoring, which evaluates the effect of specific prescriptions or practices at the site scale. Extensive monitoring is designed

to provide periodic measures of rule effectiveness that can be used in the adaptive management process to determine if progress is consistent with expectations. The CMER Committee has identified four extensive monitoring sub-programs (CMER Work Plan 2004). Currently, all extensive monitoring sub-programs are in the scoping and design phase.

Intensive Monitoring

Intensive monitoring is a watershed-scale research program designed to evaluate cumulative effects and to provide information that will improve understanding of the interactions between forest practices and covered resources. An evaluation of cumulative effects at a watershed scale requires an understanding of how individual actions or practices influence a site and how the associated responses propagate downstream through the system. This understanding is designed to enable the evaluation of the effectiveness of forest practices applied at multiple locations over time. Evaluating biological responses is similar and requires an understanding of how various actions interact to affect habitat conditions and how system biology responds to habitat changes. The CMER Committee has identified four research topics suitable for inclusion in an intensive monitoring program (CMER Work Plan 2004). Currently, scoping is underway to identify critical questions and hypotheses.

Rule Implementation Tools

Rule implementation tools are projects designed to develop, refine, or validate protocols, models, and targets used to facilitate forest practices rule implementation. Two types of rule tool projects have been identified. The first type is known as Methodological Projects. These projects involve the development, testing, or refinement of field protocols and models used in the identification and location of important landscape features such as water type breaks, unstable slopes, and sensitive sites. The second type is known as Target Verification Projects. Projects in this category are designed to assess the validity of performance targets thought to have an uncertain scientific foundation such as the DFC basal area targets for RMZs. The CMER Committee has identified nine rule implementation tool sub-programs consisting of 23 projects (CMER Work Plan 2004). The CMER Committee and WDNR have agreed to assign management and oversight of rule implementation tools to WDNR Forest Practices Division. WDNR advises the CMER Committee

Changed and Unforeseen Circumstances

Changed and unforeseen circumstances are described in Sections 1-2.4 and 1-2.5 of the FPHCP and Sections 8.0 and 10.0 of the IA. Provided that the State has complied with its obligations under the FPHCP, the IA, and the Permit, the FWS may require the State to provide mitigation beyond that provided for in the FPHCP only in accordance with the "No Surprises" regulations at 50 C.F.R. § § 17.22(b)(5) and 17.32(b)(5). The State identified five changed circumstances that may occur. Four of the changed circumstances apply to types of environmental events: flooding and landslides, climate change, disease and pest outbreak, and wildfires and wind storms. Flooding and landslide changed circumstances are addressed by the rules in the FPHCP. Chapter 1-2.5 of the FPHCP describes these minimization and mitigation measures. The Adaptive-Management program, described in Section 4a-4 of the FPHCP, will be used to respond to the remaining changed circumstances in determining if and when it is necessary or advisable to adjust the forest practices rules and guidance to

achieve the FPHCP's resource objectives or to respond to monitoring results, evaluation, or research. The fifth changed circumstance, if a new species, not covered by the permit, is listed under the ESA and occurs in the FPHCP area, the FWS will determine if there is a potential for incidental take of the species to occur while conducting forest management activities covered by the FPHCP. If so, the State can choose to adopt rules that ensure incidental take of the species will be avoided, and/or request the FWS to add the newly listed species to the ITP in accordance with the provisions in the IA and FPHCP, and in compliance with the provisions of Section 10 of the ESA.

The FPHCP relies on the State's Forest Practice program as the primary measures to minimize and mitigate any take being authorized, and such State programs are authorized by State law and subject to change only in the manner provided by the State's constitution and other applicable State law. Therefore, the State's officials cannot commit through the FPHCP, the Permit, the IA, or otherwise to alter such State programs in any manner not authorized by the State's constitution and applicable State law. If the FWS determines that current or future Federal "No Surprises" provisions would require suspension or termination of the FPHCP and Permit unless changes are made in State laws, rules, or administrative policies, the FWS will notify the State and allow a reasonable time for the State to consider making such changes. If the State determines not to make changes the FWS considers necessary for the FPHCP and Permit to remain in effect, the State shall so notify the FWS. Pursuant to 50 C.F.R. 17.22(b)(8) and 17.32(b)(8) the FWS retains the authority to revoke the Permit, in response to an unforeseen circumstance or otherwise, if we find that continuation of the take permitted under the permit would appreciably reduce the likelihood of the survival and recovery of a listed species.

Changes made between Draft and Final FPHCP

The Notice of Availability for the draft FPHCP was published in the Federal Register on February 11, 2005 (70 FR 7245 - 7247). Public comment was solicited and lasted through May 12, 2005. The public comment period on the draft FPHCP (WDNR 2004) and its associated environmental documents enabled the FWS to gather comments from interested parties. The process of reviewing and considering these comments led to the development of changes to the original proposed FPHCP. These changes were clarifications, updates, corrections, and additional information. The final FPHCP was modified accordingly and is incorporated herein by reference (WDNR 2005). The FEIS and final FPHCP were made available to the public for review on January 27, 2006 (71 FR 4609). The major changes from the draft to the final FPHCP are summarized as follows:

Final FPHCP Subsection	Page # in the final FPHCP	Summary of Major Changes Made to the draft FPHCP that appear in the final FPHCP
FPHCP	Throughout	The number of acres that the FPHCP covers was refined from 9.1 million aces to 9.3 million acres. GIS analysis for the draft missed approximately 228,000 acres of State land on the east side.
FPHCP	Throughout	Appendix B reference was changed to Appendix N.

Final FPHCP Subsection	Page # in the final FPHCP	Summary of Major Changes Made to the draft FPHCP that appear in the final FPHCP
		Appendix N is a new appendix for Schedule L-1.
Executive Summary – The Forest Practices Habitat Conservation Plan	iv	Clarification made that landowners are not legally required to participate in the non-regulatory, collaborative elements of the Forest Practices program.
Executive Summary – Alternative 3	vii	Updated information about the No Surprises Rule in reason #4.
Section 1-2.3 Funding	7	Information about Forest Practices program funding was added, including Federal and State funding and in-kind contribution from stakeholders.
Section 1-2.3 Funding	8	Figure 1.1 added: "Appropriations for Forests and Fish 1999-2005."
Section 1-2.4	10	An updated description of the No Surprises Rule as it relates to the FPHCP, the Permits, and the Implementation Agreement was added. The history of No Surprises Rule was removed.
Section 1-2.5	10-13	A more detailed description of changed circumstances was added - including natural events such as wildfire, winds, floods, disease/pest outbreaks or listing of new species.
Section 1-4	15, 16	A new subsection was added that more specifically describes non-covered activities and lands.
Section 1-5	17	Footnote #2 was added, clarifying the types of lands that are shown in Figure 1.2.
Section 1-5	19	Footnote #3 was added, clarifying the types of lands that are shown in Figure 1.3.
Section 1-5	20	Minor adjustment to several figures in Table 1.2.
Section 2-1	46	Discussion was included on the reasons why watershed analysis may have been a prohibitive process for some landowners and that many of the issues addressed in watershed analysis were important components of FFR. Correction was made to the number of completed watershed analyses statewide.
Section 2-1	47	Corrections made to the figures from the 1988-1991 DNR rate of harvest study.
Section 2-1	47	Information was added about the 1991-1993 DNR rate of harvest study.
Section 2-1	47	Updates on the protection of Northern Spotted Owls were added.
Section 2-1	51	Update on RMAP rules for small forest landowners based on FPB action in August 2005 was added.
Section 2-1	52	Updates about the cultural resource watershed analysis

Final FPHCP Subsection	Page # in the final FPHCP	Summary of Major Changes Made to the draft FPHCP that appear in the final FPHCP
		module and rule package and the Cultural Resources Protection and Management Plan were added.
Section 2-3.6	67	Update on Washington's Water Quality Management Plan to Control Nonpoint Source Pollution (Nonpoint Plan) was added.
Section 2-3.6	69, 70	Update on the annual report of accomplishments in implementing the Nonpoint Plan was added.
Section 2-3.9	72	Added a new section describing WDFW's Hydraulic Project Approval (HPA) process and its relationship with the Forest Practices program. An update on the integration of the forest practices permitting process with the HPA process was also added.
Section 4a-1.3	144	Update on the integration of the forest practices permitting process with the HPA process was added.
Section 4a-3.1	160-166	The section describing DNR's Compliance Monitoring program was reorganized. New information was added about the preliminary assessment of the RMZ rules including sample size and population; data collection; measurement techniques; sampling unit; sampling method; preliminary assessment results; and preliminary assessment review. The future direction of the Compliance Monitoring program was updated, including a proposed timeline for rule review.
Section 4a-3.1	163	Added Table 4.1 - Western Washington Type 1 - Type 3 RMZ Preliminary Assessment Results.
Section 4a-3.1	163	Added Table 4.2 - Eastern Washington Type 1 - Type 3 RMZ Preliminary Assessment Results.
Section 4a-3.1	166	Added Table 4.3 - Proposed Forest Practices Compliance Monitoring Timeline.
Section 4a-4	173	Information was added about Schedule L-1 of the FFR and it's relationship to the Adaptive Management program. Added information about the process followed if there are changes proposed to resource objectives, performance targets, and research and monitoring priorities.
Section 4a-4.2	178, 179	A summary of two completed high priority CMER studies was added: Type N Stream Demarcation Study and Desired Future Condition Study.
Section 4b	181, 182	Information was added on the role of Schedule L-1 as it relates to the conservation objective of the riparian strategy.
Section 4b-1	182, 183	Update was added on the FPB's action regarding the water typing system – to continue following the original interim rule (WAC 222-16-031) while using new water type maps.

Final FPHCP Subsection	Page # in the final FPHCP	Summary of Major Changes Made to the draft FPHCP that appear in the final FPHCP
Section 4b-3.3	206	Footnote #1 of Figure 4.7 was added clarifying the lands managed under existing HCPs and the relationship to the lands covered by the FPHCP.
Section 4c	217	Information was added on the role of Schedule L-1 as it relates to the conservation objective of the upland strategy.
Section 4c-2.3	224	Data was added about the number of approved RMAPs from July 2001 to December 2004.
Section 4c-2.3	224	Update was added on RMAP rules for small forest landowners based on FPB action in August 2005.
Section 4c-2.3	226	Table 4.13 was added detailing the Family Forest Fish Passage Program accomplishments from 2003-2005.
Section 4d-1.1	236, 237	Revised "Exempt 20-Acre Parcels" in section 4d-1.1 – Riparian Management Zones: Providing Large Wood Debris and Shade.
Section 4e-2	251	Information was added regarding recommendations from the recently completed CMER study – Type N Stream demarcation Study.
Section 4e-3	252-254	Acreage and percentage figures were revised for the critical area acres under the minimal effects strategy and the FPHCP strategy. Acreage and percentage figures reported in the draft FPHCP were not consistent with acreage and percentage figures reported in Appendix K, and were updated based on revised stream mile figures.
Section 4e-3.1	254	Clarification added under "Implications" section regarding figures associated with the critical area acres identified in the minimal effects strategy.
Section 4e-4	263	Acreage and percentage figures were revised for the critical area calculations under the minimal effects strategy and the FPHCP strategy.
Appendix H		2005 CMER Work Plan was replaced with 2006 CMER Work Plan.
Appendix J		New information added characterizing implementation of the 20-Acre Exempt Rule – how many 20-acre exempt applications are Class IV General forest practices (likely conversions), and on post-harvest RMZ characteristics for 20-acre exempt forest practices.
Appendix K		Critical acres were updated based on revised stream-mile figures.

Analysis of Effects

As set forth in more detail under Section III.2, the FWS has determined that the impacts likely to result to listed and unlisted Covered Species as a result of issuance of the proposed Permit and approval of the FPHCP would be minimized and mitigated to the maximum extent practicable by measures described in the FPHCP and the Permit.

Section 4e of the FPHCP, Chapter 4 of the FEIS, and the Effects of the Action section of the Opinion, fully analyze the effects of the proposed action.

The provisions of the FPHCP were derived through a multi-stakeholder effort to consider the adverse and beneficial environmental effects of conducting forest practices activities under the Washington Forest Practices Rules. The condition of the comprehensive environmental baseline for the FPHCP Action Area is a reflection of historical forest practices and other non-forestry related activities. The FPHCP provisions reduce, minimize, and/or mitigate the effects of forest practices to improve riparian and aquatic conditions in the FPHCP Action Area. These provisions include: (1) riparian buffers on all fish-bearing streams and at least 50 percent of perennial non-fish-bearing streams; (2) equipment limitation zones; (3) RMAPs; (4) road BMPs; (5) regulations governing the identification and protection of potentially unstable slopes including the Landslide Hazard Zonation and Regional Landform Identification Projects; (6) the Family Forest Fish Passage Program, Riparian Open Space Program, and Forestry Riparian Easement Program for small forest landowners; and (7) Class IV-Special SEPA review. These provisions are designed to provide adequate wood recruitment and to reduce and minimize temperature changes and sediment inputs. RMAPs, road BMPs, and the small forest landowner programs are designed to reduce and minimize sediment inputs directly related to roads and culverts. Unstable slope identification and protection and Class IV-Special SEPA review are expected to reduce and minimize slope failures and mass wasting as a result of forest practices activities. These provisions of the FPHCP work collectively to reduce and/or minimize adverse effects from reduced LWD recruitment and increases in sediment and stream temperatures.

In addition, adverse effects from FPHCP implementation are expected to be spatially and temporally dispersed within riparian areas on over 9.3 million acres of forest land over a 50-year Permit term. However, even if individual forest practices in some areas are not spatially or temporally dispersed, adverse effects would continue to be minimized. Also, adverse effects are expected, in some cases, to be minimized for individual forest practice activities because of site-specific conditions and based on the type of forest practice activity conducted. Many forest practices are expected to provide benefits to FPHCP covered species. For example, the requirement that all fish passage barriers on FPHCP covered lands be removed by July 1, 2016, provides substantial benefits to covered fish species. These long-term benefits are expected to far outweigh the short-term adverse effects from the construction and repair work to upgrade or replace these barriers. Another example is the provision of the Desired Future Conditions for both westside and eastside riparian stands on fish-bearing streams. The long-term benefits from achieving these desired future conditions are expected to outweigh the short-term adverse effects from harvesting in the Inner Zone of riparian stands on fish-bearing streams.

There are some adverse effects from forest practices that do pose risks to covered species. In areas where there is greater exposure to adverse effects from forest practices, such as the upper portions of non-fish-bearing streams that may not receive buffers, there is risk to covered amphibian species that occur in these areas. These same forest practices also pose some risk to the upper portions of some fish-bearing streams due to the expected reduction of LWD recruitment and some increases in stream temperature and sediment input in these areas. However, in our weighing of the benefits of the FPHCP, that are expected to grow over the life of the 50-year Permit term and beyond, the risks are reduced and minimized. All covered species are expected to be sufficiently resilient to these adverse effects, with no appreciable reduction in their likelihood of survival and recovery resulting from this action. Even in areas where there is high risk, such as certain local populations of bull trout, the benefits of full fish passage on all streams on FPHCP covered lands and highly functional riparian buffers on all fish-bearing streams, at least 50 percent of perennial non-fish-bearing streams, and the protection of sensitive sites and unstable slopes outweighs the adverse effects of up to the remaining 50 percent of perennial non-fish-bearing streams not receiving buffers, and the short-term effects of construction and repair to remove fish-passage barriers.

Overall, as a result of the FPHCP, we expect improvements in riparian and aquatic habitat quality and function, that would provide conservation benefits to covered species, when compared to current baseline conditions. Over the next 50 years, we expect increases in the quality and quantity of pools, reductions in embedded stream substrates, improvements to stream shade, and improvements to in-channel habitat conditions, compared to current baseline conditions.

The FWS anticipates that the proposed action is likely to result in the incidental take of Covered Species in the form of capture, harm, and harass. The FWS anticipates incidental take of individuals of these species would typically be difficult to detect for the following reasons: 1) there is a low likelihood of finding injured or dead individuals of affected species due to one or more of the following factors: relatively low population density, secretive behavior (such as fossorial or log-dwelling species), concealing habitat (e.g., aquatic species), small size, and sporadic distribution; 2) the large area associated with implementation of the proposed activities covered by the FPHCP Permit; 3) the delayed effects of many of the activities that could take species; 4) the rapid rate of decomposition of some of the species after death; 5) the high probability of scavenging of dead individuals by predators; and 6) the transport of affected individuals to downstream areas. For these reasons, the FWS used the amount of activities as a surrogate for expressing the anticipated amount of incidental take in the form of harm or harass. Changes in habitat conditions are a reasonably good indicator of those forms of take because impacts to habitat occupied by Covered Species from permit-related activities are the cause of the incidental take.

Most take of all Covered Species is expected to be in the form of harass as a result of habitat degradation caused by permit-covered activities that create the likelihood of sub-lethal injury by significantly disrupting their breeding, feeding, or sheltering behavior. A lesser amount of take of all Covered Species is expected to be in the form of sub-lethal harm as a result of habitat degradation caused by Permit-covered activities that actually

injures Covered Species by significantly disrupting their breeding, feeding, or sheltering behavior. The least amount of take is expected to be in the form of harm as a result of habitat degradation caused by Permit-covered activities that actually kills Covered Species by significantly disrupting their breeding, feeding, or sheltering behavior. Direct take from capture, dewatering, instream LWD placement, and instream heavy equipment use related to culvert and bridge repair, maintenance, and installation is expected to be in the form of sub-lethal or lethal "harm" take.

The FWS estimates that about 2.5 percent of all habitat degradation in riparian management areas caused by Permit-covered activities is expected to occur in association with 20-acre exempt parcels. This degradation is expected to cause incidental take of Covered Species in the form of harm.

Threatened Species

Bull trout

Bull trout inhabit both eastern and western Washington. The Puget Sound Management Unit consists of the following eight core areas: (1) Chilliwack, (2) Lower Nooksack, (3) Lower Skagit, (4) Upper Skagit, (5) Stillaguamish, (6) Snohomish-Skykomish, (7) Chester Morse Lake, and (8) Puyallup. Within these core areas, there are a total of 57 local populations. The Olympic Peninsula Management Unit consists of the following six core areas: (1) Skokomish, (2) Dungeness, (3) Elwha, (4) Hoh, (5) Queets, and (6) Quinault. Within these core areas, there are a total of 10 local populations.

Core areas within the Columbia River population segment that completely or partially lie within Washington State include: (1) Pend Oreille, (2) Priest Lakes, (3) Asotin Creek, (4) Entiat, (5) Klickitat, (6) Lewis, (7) Methow, (8) Touchet, (9) Tucannon, (10) Walla-Walla, (11) Wenatchee, (12) Yakima, (13) Lake Pend Oreille, and (14) Lake Coeur d'Alene. In these core areas there are a total of approximately 88 local populations.

The FWS expects three types of effects that may result in take due to the implementation of FPHCP over the 50-year Permit term. The types of effects and the authorized take anticipated are related to increases in sediment, increases in water temperature, and decreases in large wood. The direct take of bull trout will occur as a result of capture and handling and the implementation of CEMR research. Take associated with CMER research may be necessary for the purposes of adaptive-management. The amount of take associated with CMER research is expected to be minimal. Take associated with capture and handling of bull trout is necessary to further reduce the level of incidental take that would otherwise occur during in-water construction. An action may result in more than one type of effect, with the potential for take of individual bull trout for each type of effect.

1. Take of bull trout may occur through the impairment of essential foraging, rearing, and spawning behaviors associated with the direct and indirect effects of sediment delivery in spawning and rearing streams and FMO habitat. Covered activities that are likely to generate sediment include: timber harvest and harvest-related activities adjacent to fish-and non-fish-bearing streams; and construction, maintenance, decommissioning, and use of roads (especially stream-adjacent roads) including the

replacement of stream crossing structures. Cumulatively, these covered activities may result in the take of bull trout via sediment inputs to spawning and rearing streams and in FMO habitat. Adverse effects from sediment that may lead to the take of bull trout are not anticipated to occur in all streams that support bull trout spawning and rearing. Life-history forms that may be taken by elevated sediment levels in spawning and rearing streams as a result of the implementation of the FPHCP are primarily eggs and alevins, but may also include fry, juveniles, and, in some instances, sub-adult and adult bull trout. Adverse effects from sediment that may lead to the take of bull trout are not anticipated to occur in all streams that support foraging, migrating, and overwintering. Life-history forms that may be taken by elevated sediment levels in FMO habitat as a result of the implementation of the FPHCP consist of only adult and sub-adult bull trout.

2. Take may occur through the impairment of foraging, rearing, and spawning behaviors associated with increases in stream temperatures. Covered activities that are likely to lead to temperature increases include: timber harvest adjacent to fish-and non-fish-bearing streams (potential increases in sediment and decreases in shade and large wood); and the construction, maintenance, decommissioning, and use of stream-adjacent roads including the replacement of stream crossing structures (potential sediment inputs and reduction of shade due to limited tree clearing). Cumulatively, these covered activities may result in the take of bull trout by increasing stream temperatures via the loss of shade to spawning and rearing habitat. Adverse effects from temperature that may lead to the take of bull trout are not anticipated to occur in all streams that support bull trout spawning and rearing. Life-history forms that may be taken by elevated stream temperatures are expected to be primarily eggs and alevins, but may also include fry and juveniles. Sub-adult and adult bull trout are less likely to be taken as they are more mobile and have the ability to avoid areas of warm water. Although we anticipate some take, temperature increases as a result of implementation of the FPHCP are not expected to affect bull trout in FMO habitat to the same degree as bull trout in spawning and rearing habitat. This is because FMO habitats are typically larger bodies of water, generally contain streams with warmer water temperatures, and are used seasonally by bull trout life stages (adult and sub-adult) that have less sensitive or less restrictive habitat requirements. Life-history forms that may be taken by elevated temperature levels in FMO habitat as a result of the implementation of the FPHCP consist of only adult and sub-adult bull trout.

3. Take of bull trout may occur through the impairment of foraging, rearing, and spawning behaviors associated with the loss of large wood recruitment potential. Riparian harvest adjacent to fish-and non-fish-bearing streams has the potential to reduce the amount of large wood available over the 50-year Permit term. A reduction in large wood in bull trout streams has the potential to result in reduced pool formation, increased sediment loads, the loss of cover, and a reduction in stream diversity and complexity. Take associated with the reduction of large wood will be more acute in headwater (Np and Ns) streams with steep hill slopes adjacent to or immediately upstream of bull trout spawning and rearing habitat. Adverse effects from the reduction of large wood that may lead to the take of bull trout are not

anticipated to occur in all streams that support bull trout spawning and rearing, especially streams that derive most of their large wood from near-stream sources. Life-history forms that may be taken by the reduction of large wood are primarily eggs and alevins, but may also include fry, juveniles, and, in some instances, sub-adult and adult bull trout. Although we anticipate some take, the reduction of large wood as a result of implementation of the FPHCP is not expected to affect bull trout in FMO habitat to the same degree as bull trout in spawning and rearing habitat. Life-history forms that may be taken by reduction in large wood in FMO habitat as a result of the implementation of the FPHPC consist of only adult and sub-adult bull trout.

4. Direct take of bull trout may occur as a result of CMER research and fish capture and handling activities including the use of seines, dipnets, blocknets, electrofishing, or other methods used to capture bull trout. Life-history forms that may be directly taken include alevins, fry, juveniles, and, in some instances, sub-adult and adult bull trout.

Unlisted Fish Species

Effects to the covered native fish species were analyzed in three areas of the Opinion: 1) General Effects; 2) Effects to Guilds; 3) and Effects to Species. The effects that could contribute to take are: 1) excessive sediment to fish-bearing streams from roads, riparian timber harvest, and stream-crossing projects (culvert, bridge installation, and potentially other approved crossing methods); 2) increases in stream temperature due to riparian tree removal that provides shade; 3) the prevention of riparian trees from growing that could provide shade – primarily by riparian roads; 4) removal of riparian trees that could potentially provide LWD; 5) the prevention of riparian trees from growing that could ultimately provide LWD – primarily by riparian roads; and 6) capture and handling of fish for instream projects, primarily road crossings.

The table provided in the appendix identifies FPHCP native fish Covered Species and Water Resource Inventory Area (WRIA) distribution. This is based on the best available information.

Dolly Varden
Mountain and Pygmy Whitefish
Olympic mudminnow

The proposed action will have short-to long-term adverse effects on sediment, large wood, and temperature. These effects would be most severe from unbuffered Type Np streams and their downstream effects that result in disruption of natural riparian and aquatic processes and functions in Type F streams. These effects to the aquatic environment may result in impairment of essential foraging, rearing, and spawning behavior of the above names species. It is difficult to predict the severity of these effects because effects to these fish will vary from activity to activity depending on the specific riparian prescription applied, the

location, historical management practices, geological characteristics of the watershed, and the biotic community present.

Activities covered under the FPHCP are expected to have direct and indirect adverse affects to adult and juvenile fish ranging from mortality to sub-lethal effects. Direct injury and death to these species would likely occur during some stream-crossing construction activities (stream dewatering and fish rescue and relocation, and blockage of upstream migration during construction). Alterations of the riparian and aquatic environment will reduce the ability of streams to support prey species, thus reducing the fish's ability and success at finding forage in these streams. In a degraded environment, increased competition with and predation by other species is anticipated. This could affect the growth and survival of juvenile and adult fish.

Westslope Cutthroat Trout and Coastal Cutthroat Trout
Coastal Rainbow Trout and Redband Trout
Kokanee

The proposed action will have short-to long-term adverse effects on sediment, large wood, and temperature. These effects would be most severe from unbuffered Type Np streams and their associated downstream effects that result in disruption of natural riparian and aquatic processes and functions. These effects to the aquatic environment may result in impairment of essential foraging, rearing, and spawning behavior of the above listed species. It is difficult to predict the severity of these effects because effects to these fish will vary from activity to activity depending on the specific riparian prescriptions applied, the location, historical management practices, geological characteristics of the watershed, and the biotic community present.

Activities covered under the FPHCP are expected to have direct and indirect adverse affects to adult and juvenile cutthroat trout ranging from mortality to sub-lethal effects. Direct injury and death to the above named species would likely occur during some stream crossing construction activities (stream dewatering and fish rescue and relocation, and blockage of upstream migration during construction). Alterations of the riparian and aquatic environment will reduce the ability of streams to support prey species, thus reducing the fish's ability and success at finding forage in these streams. In a degraded environment, increased competition with and predation by other species is anticipated. This could affect the growth and survival of juvenile and adult fish.

Pacific, River and Western Brook Lamprey

The proposed action will have short-to long-term adverse effects on sediment, large wood, and temperature. These effects would be most severe from unbuffered Type Np streams and their associated downstream effects that result in disruption of natural riparian and aquatic processes and functions. These effects to the aquatic environment may result in impairment of essential foraging, rearing, and spawning behavior of Pacific, river, and brook lamprey. It is difficult to predict the severity of these effects because effects to these fish will vary from activity to activity depending on the specific riparian prescription applied, the location,

historical management practices, geological characteristics of the watershed, and the biotic community present. Because of the inherent and expected patchiness of lamprey habitat occupancy, adverse effects to lamprey from the FPHCP will vary in response to the lamprey's location in the watershed. An activity associated with the FPHCP may be detrimental to lampreys in some locations, but the same activity conducted in another location may have less of an impact to lampreys.

Activities covered under the FPHCP are expected to have direct and indirect adverse affects to amulets and adult lamprey ranging from mortality to sub-lethal effects. Direct injury and death to lamprey would likely occur during some stream crossing construction (stream dewatering and lamprey rescue and relocation, and blockage of upstream migration during construction). Alterations of the riparian and aquatic environment would reduce the ability of streams to support prey species, thus reducing the amulets ability to successfully forage in these streams. In a degraded environment increased predation by other species is anticipated. This could affect the growth and survival of amulets and adult lamprey.

Chiselmouth
Peamouth

The proposed action would have short-to long-term adverse effects on sediment. These effects would be most severe from unbuffered Type Np streams and their downstream effects that result in disruption of natural riparian and aquatic processes and functions in Type F streams. These effects to the aquatic environment may result in impairment of essential foraging behavior of these species. It is difficult to predict the severity of these effects because little is know about chiselmouth and peamouth habitat requirements and effects to these fish will vary from activity to activity depending on the specific riparian prescriptions applied, the location, historical management practices, geological characteristics of the watershed, and the biotic community present.

Activities covered under the FPHCP are expected to have direct and indirect adverse affects to adult and juvenile chiselmouth and peamouth ranging from mortality to sub-lethal effects. Direct injury and death to these fish would likely occur during some stream crossing construction activities (stream dewatering and fish rescue and relocation, and blockage of upstream migration during construction). Increased sediment levels could reduce available habitat and prey items for these species. This could affect the growth and survival of juvenile and adult chislemouth and peamouth.

Redside shiner
Longnose sucker and Salish sucker

The proposed action will have short-to long-term adverse effects on sediment, large wood, and temperature. These effects would be most severe from unbuffered Type Np streams and their downstream effects that result in disruption of natural riparian and aquatic processes and function in Type F streams. These effects to the aquatic environment may result in impairment of essential foraging, rearing, and spawning behavior of these species. It is difficult to predict the severity of these effects because habitat limiting factors for this species

are not well understood and effects to their habitat would likely vary from activity to activity depending on the specific riparian prescriptions, the location of the activity, historical management practices, geological characteristics of the watershed, and the biotic community present.

Activities covered under the FPHCP are expected to have direct and indirect adverse affects to adult and juvenile fish ranging from mortality to sub-lethal effects. Direct injury and death to these species would likely occur during some stream crossing construction activities (stream dewatering and fish rescue and relocation, blockage of upstream migration during construction). Increased sediment levels could reduce available habitat and prey items for these species. This could affect the growth and survival of juvenile and adult fish.

Speckled dace
Longnose and Nooksack dace
Leopard dace and Umatilla dace

The proposed action will have short-to long-term adverse effects on sediment, large wood, and temperature. These effects to the aquatic environment may result in impairment of essential foraging, rearing, and spawning behavior of these species. It is difficult to predict the severity of these effects because habitat limiting factors for these species are not well understood and effects to their habitat would likely vary from activity to activity depending on the specific riparian prescriptions, the location of the activity, historical management practices, geological characteristics of the watershed, and the biotic community present.

Activities covered under the FPHCP are expected to have direct and indirect adverse affects to adult and juvenile dace ranging from mortality to sub-lethal effects. Direct injury and death to dace would likely occur during some stream crossing construction activities (stream dewatering, fish rescue and relocation, and blockage of upstream migration during construction). Increased sediment levels could reduce available habitat and prey items for these species. This could affect the growth and survival of juvenile and adult fish.

Northern pikeminnow

The proposed action will have short-to long-term adverse effects on sediment, large wood, and temperature. These effects to the aquatic environment may result in impairment of essential foraging, rearing, and spawning behavior of northern pikeminnow. It is difficult to predict the severity of these effects because effects to their habitat would likely vary from activity to activity depending on the specific riparian prescriptions, the location of the activity, historical management practices, geological characteristics of the watershed, and the biotic community present.

Activities covered under the FPHCP are expected to have direct and indirect adverse affects to adult and juvenile northern pikeminnow ranging from mortality to sub-lethal effects. Direct injury and death to northern pikeminnow would likely occur during some stream crossing construction activities (stream dewatering, fish rescue, and relocation, blockage of upstream migration during construction). Increased sediment levels could reduce available

habitat and prey items for northern pikeminnow. This could affect the growth and survival of northern pikeminnow. In general the population is well distributed and healthy in Washington, and no further effects to the species, other than those analyzed above, are anticipated.

Lake Chub

The proposed action will have short-to long-term adverse effects to Chub from sediment. These effects to the aquatic environment may result in impairment of essential spawning behavior of lake chub. It is difficult to predict the severity of these effects because effects to their habitat would likely vary from activity to activity depending on the specific riparian prescriptions, the location of the activity, historical management practices, geological characteristics of the watershed, and the biotic community present.

Activities covered under the FPHCP are expected to have direct and indirect adverse affects to adult and juvenile lake chub ranging from mortality to sub-lethal effects. Direct injury and death to lake chub would likely occur during some stream crossing construction activities (stream dewatering and fish rescue and relocation, blockage of upstream migration during construction. Effects are expected to be limited to very short sections of streams, at stream reach levels or less. Spawning success may be reduced in some circumstances, but it is not expected to affect populations of the lake chub at the watershed level. Resilience of the lake chub population will remain unaffected by the FPHCP.

Tui Chub

No effects to the Tui chub are expected from the FPHCP, because they are very limited in distribution and do not occur in an area that would be affected by the FPHCP.

Largescale sucker

The proposed action will have short-to long-term adverse effects to largescale sucker from sediment. These effects to the aquatic environment may result in impairment of essential spawning behavior of largescale sucker. It is difficult to predict the severity of these effects because effects to their habitat would likely vary from activity to activity depending on the specific riparian prescriptions, the location of the activity, historical management practices, geological characteristics of the watershed, and the biotic community present.

Activities covered under the FPHCP are expected to have direct and indirect adverse affects to adult and juvenile largescale sucker ranging from mortality to sub-lethal effects. Direct injury and death to largescale sucker would likely occur during some stream crossing construction activities (stream dewatering, fish rescue and relocation, and blockage of upstream migration during construction). Effects are expected to be limited to very short sections of streams, at stream reach levels or less. Although spawning success may be reduced in some circumstances, it is not expected to affect populations of the largescale sucker at the watershed level. Persistence of the largescale sucker population will remain unaffected by the FPHCP.

Bridgelip sucker and Mountain sucker

The proposed action would have short-to long-term adverse effects on sediment, large wood, and temperature. These effects would be most severe from unbuffered Type Np streams and their downstream effects that result in disruption of natural riparian and aquatic processes and functions in Type F streams. These effects to the aquatic environment may result in impairment of essential foraging, rearing, and spawning behavior of mountain and bridgelip suckers. Feeding behavior may be altered under some circumstances affecting individual fitness and survival. Pool depth could be reduced, modifying habitat use and ultimately survival. It is difficult to predict the severity of these effects because effects to these fish will vary from activity to activity depending on the specific riparian prescriptions applied, the location, historical management practices, geological characteristics of the watershed, and the biotic community present.

Activities covered under the FPHCP are expected to have direct and indirect adverse affects to adult and juvenile mountain and bridgelip suckers ranging from mortality to sub-lethal effects. Direct injury and death to suckers would likely occur during some stream crossing construction activities (stream dewatering, fish rescue and relocation, and blockage of upstream migration during construction). Increased sediment levels could reduce available habitat and prey items for mountain and bridgelip suckers. This could affect the growth and survival of juvenile and adult mountain and bridgelip suckers.

Three-spine stickleback

The proposed action would have short-to long-term adverse effects on sediment, large wood, and temperature. These effects would be most severe from unbuffered Type Np streams and their downstream effects that result in disruption of natural riparian and aquatic processes and functions in Type F streams. These effects to the aquatic environment may result in impairment of essential foraging behavior of three-spine sticklebacks, which may affect individual fitness and survival. It is difficult to predict the severity of these effects because effects to these fish will vary from activity to activity depending on the specific riparian prescriptions applied, the location, historical management practices, geological characteristics of the watershed, and the biotic community present.

Activities covered under the FPHCP are expected to have direct and indirect adverse affects to adult and juvenile three-spine sticklebacks ranging from mortality to sub-lethal effects. Direct injury and death to three-spine sticklebacks would likely occur during some stream crossing construction activities (stream dewatering, fish rescue and relocation, and blockage of upstream migration during construction). Increased sediment levels could reduce available habitat, foraging ability, and prey items for three-spine sticklebacks. This could affect the growth and survival of juvenile and adult three-spine sticklebacks.

Sandroller
Native Sculpins: Coastrange, Prickly, Reticulate, Riffle, Shorthead, Torrent, Slimy, Paiute, Margined, and Mottled

The proposed action would have short-to long-term adverse effects on sediment, large wood, and temperature. These effects would be most severe from unbuffered Type Np streams and their downstream effects that result in disruption of natural riparian and aquatic processes and functions in Type F streams. These effects to the aquatic environment may result in impairment of essential foraging, rearing, and spawning behavior of sandroller and sculpins. Feeding behavior may be altered under some circumstances affecting individual fitness and survival. Available suitable substrate could be reduced, modifying habitat use and ultimately survival. It is difficult to predict the severity of these effects because effects to these fish will vary from activity to activity depending on the specific riparian prescriptions applied, the location, historical management practices, geological characteristics of the watershed, and the biotic community present. Many of the aquatic habitats the species resides in will see little to no effect from the proposed action.

Activities covered under the FPHCP are expected to have direct and indirect adverse affects to adult and juvenile sandroller and sculpins ranging from mortality to sub-lethal effects. Direct injury and death to sandroller and sculpins would likely occur during some stream crossing construction activities (stream dewatering, fish rescue and relocation, and blockage of upstream migration during construction). Increased sediment levels could reduce available habitat and prey items for sandroller and sculpins. This could affect the growth and survival of individual juvenile and adult sand rollers and sculpins.

Longfin Smelt

The longfin smelt is an isolated population. Isolated populations of species are prone to extirpation from catastrophic events, both natural or man-caused. Frequent and severe disturbances could also affect the Lake Washington longfin smelt population. Implementation of the FPHCP will not increase the risk of a catastrophic event to the Lake Washington longfin smelt population. Effects from the FFHCP will not be of the duration or magnitude to reduce the chance of this species persisting.

Burbot

There may be some sediment effects from the FPHCP to habitats occupied by burbot. Sediment that may affect burbot is most likely to come from road crossings of Type S and F streams. These effects are expected to be very minor and not influence the population or distribution in the Action Area.

White sturgeon

It is not anticipated that there will be effects to large wood or temperature that would affect sturgeon habitat. Any effects from increased sediment to white sturgeon habitat as a result of the FPHCP are expected to be negligible and are not expected to affect the distribution, abundance or survival of the species.

Unlisted Amphibian Species

The Cascade torrent salamander is known to occur in parts or all of the following Water Resource Inventory Areas (WRIAs): 11, 23, 26, 27, 28 and 29. The Columbia torrent salamander is known to occur in parts or all of the following WRIAs: 22, 23, 24, 25 and 26. The Olympic torrent salamander is known to occur in parts or all of the following WRIAs: 16, 17, 18, 19, 20, 21, 22, 23, and 24. The Coastal tailed frog is known to occur in parts or all of the following WRIAs: 1, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 38, 39, 45, 46, 47, and 48. The Rocky Mountain tailed frog is known to occur in parts or all of the following WRIAs: 32 and 35.

The above amphibian species would be adversely affected by changes in overstory riparian canopy, through timber harvest, that are expected to increase solar radiation along non-buffered portions of Type Np and Ns streams, thus warming the water in shallow stream margins. Direct damage to streambank conditions through yarding timber within riparian yarding corridors is expected on occasion and would also adversely affect these species. These effects are expected to reduce the quality of habitat, reduce the numbers, and reduce the reproductive potential of these amphibians at times throughout the proposed 50-year term of the Permit. However, the distribution of these species is not expected to be altered because the above effects will be localized and temporally and spatially staggered across their ranges within the FPHCP Action Area during the proposed 50-year term of the Permit.

Riparian timber harvest along Type Np and Ns streams, especially non-buffered portions, is expected to reduce the amount of wood recruited to streams. This would reduce the capacity for sediment storage, reduce substrate for aquatic invertebrate production, and possibly alter stream channel morphology. Increased sedimentation is expected to reduce the habitat quality for these species by filling interstitial spaces in stream substrate that impairs movement, egg deposition, and larval development. A reduction in aquatic invertebrate production would reduce food for these species. Possible changes in stream channel morphology could degrade stream margins and thus habitat. Increased sedimentation, decreased invertebrate production, and possibly changes in channel morphology are expected to reduce the quality of habitat, reduce the numbers, and reduce the reproductive potential of these amphibians throughout the proposed 50-year term of the Permit. However, the distribution of these species is not expected to be altered because the above effects will be localized and temporally and spatially staggered across their ranges within the FPHCP Action Area during the proposed 50-year term of the Permit.

Increased sediment inputs from hydrologically connected forest roads or from road construction across Type Np and Ns streams would adversely affect these species by filling interstitial spaces in stream substrate that impairs movement, egg deposition, and larval development. Electrofishing (related to adaptive management research and instream fish salvage for culvert and bridge maintenance and installation) would adversely affect these species in the form of stress, wounding, or mortality. Also, culvert and bridge maintenance and installation could adversely affect these species through short-term (i.e., days to weeks) sediment inputs and riparian and instream heavy equipment use. Increased sediment inputs from forest roads, road crossings, and culvert and bridge maintenance and installation is expected to reduce the quality of habitat, reduce the numbers, and reduce reproductive potential of these species at times throughout the proposed 50-year term of the Permit.

However, the distribution of these species is not expected to be altered because the above effects will be localized and temporally and spatially staggered across their ranges within the FPHCP Action Area during the proposed 50-year term of the Permit. Electrofishing is expected to affect few individuals through stress, wounding, and direct mortality over the proposed 50-year Permit term for the FPHCP.

The probability of adverse effects to these species (especially those effects that would directly injure or kill) is low for any particular forest practice activity in a single location. However, the probability that habitat quality, numbers of individuals, and reproductive potential of these species would be reduced across the FPHCP covered lands during the proposed 50-year Permit term is reasonably certain to occur many times in many locations.

The Dunn's salamander is known to occur in parts or all of the following WRIAs: 22, 23, 24, 25, and 26. The Van Dyke's salamander is known to occur in parts or all of the following WRIAs: 10, 11, 16, 19, 20, 21, 22, 23, 24, 25, 26, and 27.

The Dunn's salamander and the Van Dyke's salamander would be adversely affected by changes in overstory riparian canopy, through timber harvest, that are expected to increase solar radiation that reaches the riparian ground surface, especially along non-buffered portions of Type Np and Ns streams. Direct damage to riparian ground conditions through yarding timber and yarding corridors within RMZs along Type S, F, and Np streams and also along non-buffered Type Np and Ns streams would also adversely affect the Dunn's salamander and the Van Dyke's salamander. These effects are expected to reduce the quality of habitat, reduce the numbers, and reduce the reproductive potential of the Dunn's salamander and the Van Dyke's salamander at times throughout the proposed 50-year term of the Permit. However, the distribution of the Dunn's salamander and the Van Dyke's salamander is not expected to be altered because the above effects will be localized and temporally and spatially staggered across their ranges within the FPHCP Action Area during the proposed 50-year term of the Permit.

Riparian timber harvest along Type S, F, Np, and Ns streams, especially non-buffered portions of Type Np and Ns streams, is expected to reduce the amount of wood recruited to the Riparian Zone of influence. This would reduce the amount of habitat available for Dunn's salamanders and the Van Dyke's salamander. These adverse effects are expected to reduce the quality of habitat, reduce the numbers, and reduce the reproductive potential of the Dunn's salamander and the Van Dyke's salamander at times throughout the proposed 50-year term of the Permit. However, the distribution of the Dunn's salamander and the Van Dyke's salamander is not expected to be altered because the above effects will be localized and temporally and spatially staggered across their ranges within the FPHCP Action Area during the proposed 50-year term of the Permit.

Culvert and bridge maintenance and installation, and road construction and maintenance, could adversely affect the Dunn's salamander and the Van Dyke's salamander through direct mortality from equipment or degradation to riparian habitat adjacent to work areas. These adverse effects are expected to reduce the quality of habitat, reduce the numbers, and reduce the reproductive potential of the Dunn's salamander and the Van Dyke's salamander at times

throughout the proposed 50-year term of the Permit. However, the distribution of the Dunn's salamander and the Van Dyke's salamander is not expected to be altered because the above effects will be localized and temporally and spatially staggered across their ranges within the FPHCP Action Area during the proposed 50-year term of the Permit.

The probability of adverse effects to Dunn's salamanders and the Van Dyke's salamander (especially those effects that would directly injure or kill salamanders) is low for any particular forest practice activity in a single location. However, the probability that habitat quality, numbers of individuals, and reproductive potential of these species would be reduced across the FPHCP covered lands during the proposed 50-year Permit term is reasonably certain to occur many times in many locations.

II. PUBLIC COMMENT

A Notice of Intent (NOI) to prepare an EIS for the Federal action associated with the project was published in the Federal Register on March 17, 2003 (68 FR 12676). This NOI announced a 30-day public scoping period, during which other agencies, Tribes, and the public were invited to provide comments and suggestions regarding issues and alternatives to be included in the EIS. Public scoping meetings were also announced in the NOI, and held at four locations throughout the State. The public meetings involved a mix of informational and formal presentations, and a variety of informational material related to the proposed action was made available to attendees.

A Notice of Availability of the DEIS, with a public review period of 90 days, was published in the Federal Register on February 11, 2005 (70 FR 7245 – 7247). Comments were requested by May 12, 2005. A total of 743 comment letters were received from Federal and State agencies, Tribes, private landowners, environmental organizations, and the general public. Primary issues raised in the comments related to the ESA, EIS process and EIS alternatives, technical issues about the proposed action, economics, and Tribal and cultural issues. Many of the comments and suggestions were incorporated into the Final FPHCP and FEIS. Volume II of the FEIS contains a summary of comments received on the draft documents and the Services' responses, including a description of changes made to the draft FPHCP and DEIS.

A Notice of Availability of the FEIS was published in the Federal Register on January 27, 2006 (71 FR 4609). During the review period, 10 comment letters were received and are summarized in Appendix B of the Services' Record of Decision. A review of the comments revealed that a majority of the issues had already been raised in public comments on the DEIS and draft FPHCP, and had been addressed in the preparation of the FEIS and final FPHCP. The remainder of the comments were considered during the Services' decision-making process. The FEIS subsection 1.4 describes the public involvement for this action in detail.

III. INCIDENTAL TAKE PERMIT CRITERIA – ANALYSIS AND FINDINGS

1. The taking will be incidental.

The FWS finds that the taking of Covered Species under the FPHCP will be incidental to otherwise lawful activities. The activities for which incidental take coverage are sought under the Permit include road and skid trail construction, road maintenance and abandonment, final and intermediate harvesting, pre-commercial thinning, reforestation, salvage of trees, and brush control. In addition, adaptive-management research and monitoring activities—some of which include experimental treatments—are also covered by the plan. Any take of Covered Species resulting from these covered activities will be incidental to, and not the purpose of, these lawful activities.

2. The Permittee will, to the maximum extent practicable, minimize and mitigate the impacts of such taking.

The FWS finds that the State and landowners and operators to whom the Permit coverage extends will minimize and mitigate the impacts of take of the Covered Species to the maximum extent practicable. The State has developed the FPHCP and IA, pursuant to the incidental take permit requirements codified at 50 CFR 17.22(b)(1) and 50 CFR 17.32(b)(1), which requires measures to minimize and mitigate the effects the take. Under the provisions of the FPHCP, the impacts of take will be minimized, mitigated, and monitored in accordance with the requirements of Permit Number PRT-TE121202-0 through the following measures:

(a) Incorporation of the current State Forest Practices Regulatory Program and Rules (described in the Conservation Strategy section above).

(b) Establishment of State Forest Practices Regulatory Program refinement procedures that occur through an adaptive-management process. Adaptive management is designed to assess the effectiveness of the protection measures in achieving established resource objectives. It also includes programs to monitor the status and trends of key environmental parameters and to evaluate watershed-scale cumulative effects (described in the Conservation Strategy section above).

(c) The ability and commitment of the Permitte to ensure funding to fully implement the FPHCP, the IA and the Permit. (described in Section 3, below).

The minimization and mitigation measures proposed by the Permittee were developed based on the 1999 FFR, the forestry module of a larger comprehensive statewide effort to protect aquatic species, their habitats, and water quality. The NMFS and FWS participated in FFR negotiations as it was the intent of the State legislature that adoption of FFR would satisfy the regulatory requirements of the ESA. The FFR process, together with input through the public Section 10/NEPA process, allowed the FWS to consider baseline environmental conditions, the types of conservation necessary to avoid and/or address impacts within the Action Area, and the ability of the State to implement prescriptions and procedures that are practicable in the context of their regulation of forest practices activities on 9.3 million acres of non-Federal, non-Tribal forest lands in Washington State.

To make the finding that the conservation strategy included in the FPHCP minimizes and mitigates the impacts of take to the maximum extent practicable, the FWS must first evaluate whether the conservation strategy is rationally related to the level of incidental take anticipated under the Plan. In effect, the minimization and mitigation measures need to address the biological needs of the Covered Species in a manner that is commensurate with the impacts to the species allowed under the FPHCP. The FWS believes the level of minimization and mitigation provided for in the FPHCP is commensurate with the level of the impacts of the take of each Covered Species that will or could potentially occur under the Plan.

The FWS views the FPHCP, like most other habitat-based conservation plans, as having integrated its minimization and mitigation measures with the other activities for which the applicant seeks incidental take authorization. In other words, the FWS finds it difficult to separate the environmental effects of covered activities from the effects of measures intended to minimize those effects. A site-scale example of such integration is the designation of protective buffers of unharvested trees around certain ecological features used by Covered Species. Incidental take does not result from the leaving of an unharvested buffer. Instead, leaving the buffer minimizes the effects of other harvest within the landscape in which the harvest occurs. However, it is important to remember that the assessment of whether this criterion for issuance of an ITP has been met is conducted for the plan as a whole, not for individual activities or measures.

The specific FPHCP minimization and mitigation measures are found in Chapter 4 of the FPHCP, Chapter 2 of the FEIS, and in the FPHCP Conservation Strategy section described above. These measures include two parts, an administrative framework and protection measures made up of two parts; a riparian conservation strategy and an upland conservation strategy. The conservation objective of the riparian strategy is to restore function to high levels on lands covered by the FPHCP and to maintain those levels once they are attained (WAC 222-30-010(2)). Riparian functions include large-wood recruitment, sediment filtration, streambank stability, shade, litterfall and nutrients, in addition to other processes important to riparian and aquatic systems.

The approach to restoring riparian function differs for different parts of the State. In western Washington, protection measures place riparian forests on growth trajectories toward a DFC, which is defined as the condition of a riparian forest stand at 140 years of age. In eastern Washington, protection measures are intended to provide for stand conditions that vary over time. Varying stand conditions are designed to mimic natural disturbance regimes within a range that meets resource objectives and maintains general forest health. Further, the riparian strategy from the FPHCP consists of three separate but related sets of protection measures:

- Riparian and wetland management zones that provide large-wood recruitment, shade, and other ecological functions through tree retention.
- Limitations on equipment use in and around waters and wetlands to minimize erosion and sedimentation and maintain hydrologic flowpaths.
- Streamside land and timber acquisitions for the long-term conservation of aquatic resources.

The goal of the upland strategy is to prevent, avoid, minimize, or mitigate forest practices-related changes in erosion and hydrologic processes and the associated effects on public resources. The upland strategy in the FPHCP consists of protection measures that are implemented in upslope areas outside RMZs and wetlands. These measures are intended to limit forest practices-related changes in physical watershed processes, such as erosion and hydrology that may adversely affect the quality and quantity of riparian and aquatic habitat lower in the watershed. The upland strategy includes Washington Forest Practices Rules, guidance from the Forest Practices Board Manual, and guidance issued through the WDNR Forest Practices Division related to unstable slopes and landforms; the location, design, construction, maintenance, and abandonment of forest roads; and harvest-induced changes in rain-on-snow peak flows. Specific objectives of some of the protection measures of the upland conservation strategy are found in the FFR (FPHCP Appendix B) and the Washington Forest Practices Rules, are listed in Section 4c of the FPHCP, and cover unstable slopes/mass wasting, forest roads, and hydrology.

Further, the effectiveness and validation monitoring component of the FPHCP (as described in Section 4a-4.2) is designed to evaluate the degree to which the Washington Forest Practices Rules and guidance meet performance targets and resource objectives. Validation monitoring will determine if the performance targets are appropriate for meeting the stated resource objectives. The CMER Committee has identified 15 effectiveness and validation monitoring programs (FPHCP Appendix H). Each program has several associated projects, some of which are currently underway, while others have not yet reached the scoping phase.

"The Services believe it is important to have a reasonably accurate expectation of the level of compliance in order to correctly anticipate the conservation benefits provided by each alternative (FPHCP). The Services believe that expectation can be established by a review of the existing DNR compliance program and the compliance monitoring program proposed in the FPHCP." (NMFS and FWS, FEIS, Vol. II, Response to Comments, Subsection 3.11.)

The proposed action will result in take of Covered Species. Most take of Covered Species is expected as a result of habitat degradation caused by Permit-covered activities (described in the Analysis of Effects section above). The taking of covered species under the ITP associated with the FPHCP would likely occur from the following sources:

Riparian timber harvest that has potential to reduce the delivery of large wood to streams; Riparian timber harvest that has potential to reduce shade and result in increases in stream temperatures; Riparian timber harvest that has potential to deliver sediment to streams; Road construction, maintenance, and abandonment that has the potential to introduce sediment to streams; and direct take which may occur from operation of equipment near and within streams.

Riparian timber harvest that has potential to reduce the delivery of large wood to streams: The likelihood of take has been greatly minimized along fish-bearing streams. The majority of potential stream-side recruitment is provided by buffers along fish-bearing streams. This is also the case for wood of key-piece size which is important along larger streams and is

provided in greater proportion in proximity to streams than the smaller sizes of wood. As additional wood is added to streams it can have a diminishing return for some functions such as pool formation. Along fish-bearing streams, increasing buffer widths would only achieve marginal increases in wood recruitment (See Opinion, Effects of the Action-Wood).

Along fish-bearing streams, management may occur within buffers. Hardwood conversion is allowed as it will improve the riparian condition in the long-term, in spite of some short-term effects to recruitment of hardwoods. Management of westside riparian areas is allowed that will retain riparian areas on a trajectory toward a desired future condition. This will often allow attainment of key-piece sized wood at an accelerated rate. Management of eastside riparian stands would increase the resiliency of over-stocked stands. Over-stocking, especially by "off-site species" is a major concern in central and eastern Washington that is often a stressor contributing to reduction in forest health.

Along perennial streams without fish, the lower 300 to 500 feet (or the lower 50 percent) of these streams is expected to provide large wood, as are sensitive sites. Smaller pieces of wood can function in sediment storage and channel morphology within smaller streams. Wood is also likely to be recruited between timber-harvest rotations. In steeper terrain, where debris flows may deliver some wood to fish-bearing streams, unstable features would also be buffered, including inner gorges. Some reaches of streams would not receive large pieces of wood that may be important for amphibians; however, some of these reaches may be interspersed with reaches receiving 50-foot no-harvest buffers that would provide such wood. Some riparian harvest along streams without fish may reduce the level of functional wood delivered downstream to fish-bearing streams, but the level of effect is dependent on gradient and geomorphology, and other physical features.

In summary, providing wider or more-restrictive buffers on fish-bearing streams would come at a considerable cost to landowners and would generally add only a small increase in riparian and aquatic function, if any at all. Providing additional buffers on perennial streams without fish would come at a great cost to landowners due to the prevalence of such streams. The buffers provided under the FPHCP on the sensitive sites and lower reaches of non-fish-bearing streams is expected to provide the majority of the riparian and aquatic functions for the Covered Species. (See Opinion, Effects of the Action-Wood)

Riparian timber harvest that has potential to reduce shade and result in alteration of the stream temperatures: Riparian buffers along fish-bearing streams will continue to provide the majority of shade. Buffers along fish-bearing streams in eastern Washington may receive less shade in areas without bull trout. The 300 to 500 foot long buffers at the lower end of perennial streams without fish are expected to reduce or minimize stream temperature warming to downstream fish-bearing streams. Stream warming would likely occur on some streams without fish that flow through recently harvested areas and would have some adverse effects on covered amphibians. The buffers along portions of those streams should reduce or minimize the level of warming that may occur downstream to fish-bearing streams. However, some reduced effectiveness of thermal refugia may occur and may persist for several years following such harvest. It is difficult to predict in which situations, such

warming would not be ameliorated to adequate levels. Impacts to stream temperatures are expected to be minimized to very low levels by the proposed actions.

Riparian timber harvest that has potential to deliver sediment to streams: Along unbuffered reaches of streams without fish, equipment may operate in riparian areas. This may result in some delivery of sediment to streams, but is anticipated to be minimized by the requirements of the equipment limitation zones. If more than 10 percent of the soil surface of the riparian area is disturbed, mitigation would be required by WDNR. The retention of buffers along most perennial streams and all fish-bearing streams is anticipated to protect those steams from equipment operation within those buffers, as well as serve in filtering sediment that may come from outside the riparian buffers. Buffers along perennial streams should provide large wood that helps moderate the delivery of sediment to downstream areas.

Incidental but direct mortality which may occur from operation of equipment near and within streams: Equipment may injure or kill amphibians when it operates within riparian zones. It is unclear how often such injury would occur, but is not anticipated to be significant at the population level on FPHCP covered lands. Equipment would seldom be used within streams. However, equipment may be used within streams during work on road crossings. This work may injure or kill Covered Species. This work is essential to provide improved passage of water, wood, bedload, as well as fish. The level of incidental but direct mortality is expected to be very small as a result of these site-specific activities. Steps to minimize such incidental but direct mortality include de-watering stream segments and fish salvage; although, these activities intended to minimize incidental but direct mortality often result in some injury and death of Covered Species. Overall, the impact of these actions is very small at any population of Covered Species.

Road construction, maintenance, and abandonment that has the potential to introduce sediment: Such road management has the potential to deliver sediment at the time work is conducted, for a period of time following major work, and chronically during the life of road segments and crossings. These effects may take covered species at and below road crossings and where stream-adjacent parallel roads deliver sediment to streams. The effects of such taking are anticipated to be greatly reduced by the Best Management Practices that would be implemented. In addition, the effects would be further minimized and mitigated by the RMAPs and their implementation. RMAPs are expected to minimize the delivery of road-generated sediment to streams. In addition, requirements of RMAPs to identify and rectify fish-passage barriers for all species and all life stages will provide access to currently unavailable habitats that will mitigate for the impacts associated with road management.

In summary, the level of protection from the FPHCP is anticipated to reduce and minimize effects, often to very low levels. The level of protection is considered to be commensurate with the level of effect.

As described in the Services' Record of Decision (Services 2006), several alternatives to the proposed action, including those that did not result in incidental take of Covered Species, were considered, and the proposed FPHCP was selected as the environmentally preferred alternative. This alternative, together with the IA, and specific provisions and conditions of

the ITP, provides the most long-term protection and conservation for riparian and aquatic habitat for Covered Species. The FWS expects the Adaptive-Management Program to have the most participation by Forests and Fish stakeholders as compared with all other alternatives. The FWS also expects the Adaptive-Management Program to receive the most State and other funding under the FPHCP, as compared with all other alternatives. Further, the FWS expects that the FPHCP landowners may be less likely to convert their forestlands to other, non-forestry uses that would take those lands out of the FPHCP-covered land base as compared to several alternatives.

In addition, the State appropriated funding, described below does not include the in-kind contributions associated with stakeholder participation in the Adaptive-Management Program, forgone landowner revenue associated with more-protective forest practices rules, and direct landowner operating expenses incurred developing and implementing RMAPs. That cost is estimated to be approximately $200 million (as of November 2005) forgone and spent by landowners each year (WFPA, pers. comm. May 2006). This estimate was partially based on an internal WFPA analysis (on riparian buffers and unstable slope protections) done during the FFR negotiations and presented to the legislature. A discounted cash flow approach was used to estimate regional values for an acre of land and timber. This was multiplied by regional estimates of land inside riparian and unstable slope buffers. Allowances were made for partial harvest in the inner and outer riparian buffers. Two percent of the landscape was assumed to be set aside for steep and unstable slope protections. The remainder of the $200 million estimate, for operational and road costs, was based on a Cost Benefit Analysis (Perez-Garcia 2001). The net result is a net present value impact of over $3.5 billion to landowners, or nearly $200 million per year, if annualized.

The Cost Benefit Analysis estimate actually came up with higher overall costs for riparian buffers, but not all costs would be incurred by landowners. WFPA felt that the Cost Benefit Analysis overestimated the cost of riparian buffers. Further, the Cost Benefit Analysis did not estimate the cost for unstable slope protections.

The FWS has approved a number of forest-related HCPs since 1996 that address fish and or stream-associated amphibians. Cautious comparisons can be made between HCPs to inform the assessment of whether a particular HCP minimizes or mitigates to the maximum extent practicable. However, each HCP is tailored to an applicant's specific objectives and to the conservation needs of each species covered on their permit. The prescriptions in the Plum Creek Native Fish HCP are perhaps the most comparable to the prescriptions in the FPHCP. The Plum Creek Native Fish HCP is no longer in effect in Washington State; however, at the time of issuance, it included lands both east and west of the Cascade crest. The prescriptions in the Plum Creek Native Fish HCP are very similar to the proposed FPHCP and the Plum Creek Native Fish HCP also includes an aggressive adaptive-management program. Some aspects remain difficult to compare, for instance, the Plum Creek Native Fish HCP provides protective measures with respect to grazing and land disposition and covered lands in three different States. However, as stated in the response to comments in the FEIS for the Native Fish HCP (USFWS and NMFS 2000) "The Services have determined that the riparian and road measures of the NFHCP and FFR provide similar conservation benefits."

Finally, the FWS included specific, nondiscretionary terms and conditions in the ITP that were necessary to meet the conservation benefits of the FPHCP and to minimize and mitigate to the maximum extent practicable. Specifically, the permit condition for leave trees on Type Np streams on 20-acre exempt parcels was necessary to meet the conservation benefits of the FPHCP and to minimize and mitigate to the maximum extent practicable.

In consideration of all the above facts, the FWS finds that: a) the mitigation is commensurate with the impacts; b) the FPHCP is consistent with the long-term survival and recovery of Covered Species (also see III. 4., below); and c) the FPHCP minimizes and mitigates the effects of take to the maximum extent practicable. These findings are based on the fact that benefits to the species will be demonstrable, especially compared to existing conditions or those conditions expected to occur absent the FPHCP.

3. The Permittee will ensure that adequate funding for the plan and procedures to deal with unforeseen circumstances will be provided.

The FPHCP relies on the State's Forest Practices program as the primary measures to minimize and mitigate any take being authorized, and such State programs are authorized by State law and subject to change only in the manner provided by the State's constitution and other applicable State law. Therefore, the State's officials cannot commit through the FPHCP, the Permit, the IA, or otherwise to alter such State programs in any manner not authorized by the State's constitution and applicable State law.

The FWS finds that the Permittee will ensure funding adequate to implement the FPHCP. The following mechanisms were considered that demonstrate the State has the ability and commitment to fully implement the FPHCP, the IA and the Permit:

Existing program and laws: The FWS believes that the Forest Practices Program is sufficiently vigorous in providing the base mitigation strategy or initial minimization and mitigation measures. Washington's Forest Practices Program, directed by the Forest Practices Act, the Washington Forest Practices Rules, and the Forest Practices Board, has been in place and operational since the mid-1970s. The evolution of the Forest Practices Rules, the historic and comprehensive FFR and the resultant changes to the rules represent a state-wide approach to addressing aquatic resource issues – one that is supported by a broad, scientific and landowner community and one that, through the adaptive-management process, is designed to change over time as new information and knowledge develop.

The Forest Practices Program includes staff and managers in each region, as well as oversight in the headquarters office in Olympia. Many standardized procedures and interpretations have been developed over the years, by WDNR, in cooperation with other TFW stakeholders, and also through the courts. These procedures and interpretations are supported by: 1) staff that make consistent findings and determinations in the field; 2) a series of training classes provided in cooperation with other TFW stakeholders; 3) standardized operating guidance; 4) procedures for automated public involvement; 5) oversight and technical participation by TFW stakeholders; and 6) legal staff in the State's Attorney General's office.

Historical Financial Backing: While it is necessary to be familiar with the costs of implementation, the FWS does not believe it requires a specific budget for the term of the plan, particularly for a long-term plan. It is reasonable to anticipate the costs of administration of the Forest Practices Regulatory Program in the near-term. Tables 1, 2, and 3 are summaries of State funding appropriated for biennial budget years 2001-2003, 2003-2005, and 2005-2007. Over the long-term, however, costs become more speculative. Similarly, estimates of near-term costs of the Adaptive-Management Program to address known research priorities may be reasonably foreseeable (See Table 2 below), but longer-term costs associated with unknown research needs are not. Adequate resources are essential to the Adaptive-Management Program. The primary method to provide adequate resources is to obtain adequate funding. The State has committed three million dollars over the last five years to the Adaptive-Management Program (since the implementation of the current Washington Forest Practices Rules in effect since January 1, 1999). The Federal government has also provided approximately four million dollars per year for six years to the Adaptive-Management Program. The Federal funds are primarily used for CMER research. Some of the funds enable WDOE and WDFW to fully participate in the Adaptive-Management Program. While appropriations of State funding are solely within the discretion of the Washington State Legislature, the FWS notes that the legislature passed the Forests and Fish Law (Special Session 1999 ESHB 2091, RCW 76.09.370) directing the Forest Practices Board to adopt permanent Rules representing the recommendations of the FFR, including Adaptive-Management and requiring that an HCP be pursued.

Table 1 depicts State appropriations provided for the processing, reviewing, and making decisions on forest practices applications and notifications. Staff conducts forest practices compliance and enforcement activities, as well as brief adjudicated processes for appealing Notices to Comply. The Forest Practices Program develops and issues forest practices operational guidance; reviews and approves road maintenance and abandonment plans; supports the Forest Practices Board; and develops and updates the Forest Practices Board Manual and Rules affecting small forest landowners.

Table 1: Appropriations for Forest Practices Act and Rules

Appropriation Period	General Fund, State (in $)	All Other Funds (in $)	Full Time Employees	Total (in $)
2001-2003	16,218,517	2,786,426	141.9	19,004,943
FY 2004	11,977,000	1,019,000	139.6	12,996,000
FY 2005	9,006,000	1,040,000	137.5	10,046,000
FY 2006	11,028,000	419,000	132.0	11,447,000
FY 2007	11,258,000	991,000	134.0	12,249,000

State of Washington, Office of Financial Management, "Agency Activity Summary," http://www.ofm.wa.gov/budget/manage/default.asp, accessed on April 17, 2006. All Other Funds includes State and non-State funding sources.

Table 2 depicts State appropriations provided for the Forest Practices Adaptive Management Program that manages CMER projects. The research is used to improve the administration and effectiveness of forest practice rules.

Table 2: Appropriations for Forest Practices – Manage Adaptively

Appropriation Period	General Fund, State (in $)	All Other Funds (in $)	Full Time Employees	Total (in $)
2001-2003	1,272,585	66,000	3.0	1,228,585
FY 2004	527,000	93,000	8.3	620,000
FY 2005	533,000	93,000	8.3	626,000
FY 2006	638,000	3,000	4.5	641,000
FY 2007	638,000	3,000	4.5	641,000

State of Washington, Office of Financial Management, "Agency Activity Summary," http://www.ofm.wa.gov/budget/manage/default.asp, accessed on April 17, 2006. All Other Funds includes State and non-State funding sources.

Table 3 depicts State appropriations provided for the Small Forest Landowner Office. This office helps small forest landowners meet the requirements of the Forest and Fish Act. Activities also include administering the Riparian Easement Program, providing technical assistance to family forest owners, supporting the Small Forest Landowners Office's Advisory Committee, and supporting the Forest Practices Board's Family Forest Joint Policy Technical Task Force.

Table 3: Appropriations for Small Forest Landowner Office

Appropriation Period	General Fund, State (in $)	All Other Funds (in $)	Full Time Employees	Total ($1)
2001-2003	987,187	597,775	9.9	1,584,692
FY 2004	501,000	82,000	8.8	583,000
FY 2005	510,000	82,000	8.3	592,000
FY 2006	8,000	547,000	5.9	555,000
FY 2007	8,000	588,000	5.9	596,000

State of Washington, Office of Financial Management, "Agency Activity Summary," http://www.ofm.wa.gov/budget/manage/default.asp, accessed on April 17, 2006. All Other Funds includes State and non-State funding sources.

Note: Tables 2 and 3 are separate funding allocations and are not subsets of Table 1.

Section 7.1 of the IA binds the State to promptly notify the FWS of any appreciable reduction in available funding below the amount expended in the 2003-05 Biennium for administration of the Department of Natural Resources' forest practices regulatory program, measured in 2005 dollars, or any material change in its financial ability to fulfill its obligations under the FPHCP. The State will cooperate with the FWS to the extent possible in order to minimize any adverse effects of such changes on achievement of the conservation goals of the FPHCP.

In addition, the State Legislature made two significant steps in securing long-term funding for implementation of the FPHCP. First, the State supplemental budget includes an appropriation of $2.5 million for the sole purpose of supporting Tribal involvement in Forests and Fish for State FY 2007. This appropriation would lapse if the Federal government were to provide funding to the Tribes for this effort. Second, Substitute Senate Bill 6874 was signed by the Governor on March 29, 2006. Section 2 of the bill adds a surcharge of 0.052 percent to the Business and Occupation Tax imposed on the forestry sector to be deposited in an account created in the bill. It is called the "Forest and Fish Support Account", created in the State Treasury. Expenditures from the account shall be used for activities related to the State's implementation of the Forests and Fish Report, including, but not limited to, Adaptive-Management, Monitoring, and participation grants to Tribes, State and local agencies, and not-for-profit public interest organizations. There are provisions for suspending the tax surcharge under a few conditions that would mean either other funding or enough funding is available. This account is a dedicated account; expenditures are subject to appropriation by the Legislature. The account and tax surcharge will be in place until 2024. The surcharge is expected to generate almost $4 million per year based on estimates from recent data. This revenue is anticipated to grow through time, however, if forest-related activity levels decline, revenue could subsequently decline as well.

Finally, the State appropriated funding does not include the in-kind contributions associated with stakeholder participation in the Adaptive-Management Program, forgone landowner revenue associated with more-protective forest practices rules, and direct landowner operating expenses incurred developing and implementing RMAPs. That cost is estimated to be approximately $200 million (as of November 2005) forgone and spent by landowners each year (WFPA, pers. comm. May 2006). This estimate was partially based on an internal WFPA analysis (on riparian buffers and unstable slope protections) done during the FFR negotiations and presented to the legislature. A discounted cash flow approach was used to estimate regional values for an acre of land and timber. This was multiplied by regional estimates of land inside riparian and unstable slope buffers. Allowances were made for partial harvest in the inner and outer riparian buffers. Two percent of the landscape was assumed to be set aside for steep and unstable slope protections. The remainder of the $200 million estimate, for operational and road costs, was based on a Cost Benefit Analysis (Perez-Garcia 2001). The net result is a net present value impact of over $3.5 billion to landowners, or nearly $200 million per year, if annualized.

The Cost Benefit Analysis estimate actually came up with higher overall costs for riparian buffers, but not all costs would be incurred by landowners. WFPA felt that the Cost Benefit Analysis overestimated the cost of riparian buffers. Further, the Cost Benefit Analysis did not estimate the cost for unstable slope protections.

Collaboration: The State Legislature is likely to continue funding the FPHCP adequately because a broad range of citizens and interest groups state-wide have a strong stake in ensuring the plan's viability. Stakeholders who developed FFR and who participate in its implementation under the Washington Forest Practices Rules include traditionally competing interests (caucuses) who are now mutually dependent upon one another for its success. If one caucus were to fail to support funding for the Adaptive-Management Program or

otherwise frustrate the program by lack of participation, it is reasonable to assume another would ensure that the consequences of that failure are well known and thoroughly considered by policy-makers at all levels, including by members of the Forest Practices Board. Included among potential consequences is non-compliance with the provisions of the FPHCP, whether caused by a lack of adequate funding or otherwise. Non-compliance can give rise to the suspension or revocation of the ITP (further described below).

Suspension or Revocation: Another basis for concluding that the State will ensure adequate funding for the plan is that the State and covered timber operators could lose the permit if funding is not provided. Sections 6.2 and 7.2 of the IA provide that the FWS may suspend or revoke the Permit if the State fails to provide adequate funding. Section 7.1 of the IA requires the State notify the FWS of any appreciable reduction in available funding below the most-recent level appropriated for the forest practices program.

The Service finds that the FPHCP includes procedures to address unforeseen circumstances. The FPHCP and the IA include procedures for determining the occurrence of both changed circumstances and unforeseen circumstances (see Changed and Unforeseen Circumstances Section above).

4. The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild.

The FWS finds that the taking to be authorized under the proposed Permit will not appreciably reduce the likelihood of the survival and recovery of the Covered Species in the wild. The ESA's legislative history establishes the intent of Congress that this issuance criterion be identical to a finding of "no jeopardy" pursuant to section 7(a)(2) of the ESA and the implementing regulations pertaining thereto (50 C.F.R. 402.02). As a result, the FWS has reviewed the FPHCP under section 7 of the ESA. In the Opinion, the FWS has concluded that the issuance of the proposed Permit is not likely to jeopardize the continued existence of the 47 species covered under the Permit. The FWS's finding that the Covered Species are not likely to be jeopardized as a result of the take authorized under the proposed Permit is discussed in detail in the Opinion and summarized below. In addition, the FWS concludes that critical habitat for the threatened bull trout is not likely to be destroyed or adversely modified by the proposed Permit.

Bull trout

Implementation of the HCP and issuance of the Permit will not appreciably reduce the likelihood of the survival and recovery of bull trout for the following reasons: 1) take associated with sediment generated from timber-harvest activities is likely to be short-term as buffers on all fish-bearing streams and buffers and equipment-limitation zones on non-fish-bearing streams will intercept most sediment from such activities; 2) sediment associated with road construction, maintenance, and use including the replacement of stream crossing structures is expected to also be short-term and reduced in scope over the Permit term; 3) increases in stream temperatures are expected to be situational (i.e., site-specific conditions and the type of forest practices activities conducted) and are not likely to occur at all locations where Type Np and Ns streams enter fish-bearing waters. Such increase in

temperatures from Type Np and Ns streams are also expected to equilibrate to some degree as affected water flows through buffered sections and/or mixes with fish-bearing streams; 4) buffers along fish-bearing streams are expected to be adequate to protect against temperature increases; 5) direct take other than CMER research will need to be authorized through the issuance of a section 10(a)(1)(A) permit by the FWS including capture and handling during fish salvage operations associated with stream-crossing replacements; 6) the Permit was conditioned (described in Section 5, below); and 7) the protection measures committed to in the final FPHCP, directly or indirectly, minimize and mitigate potential impacts from covered activities to this species. The specific conservation measures include the following: 1) RMAP requirements; 2) removal of all fish passage barriers; 3) no-harvest RMZs along Type S and F streams and the shade rule; 4) unstable slope protections; and 5) riparian buffers along fish-bearing streams; 6) BMPs for roads; and 7) ELZs.

Native Fish Species: Kokanee; Coastal Rainbow Trout and Redband Trout; Dolly Varden; Westslope Cutthroat Trout and Coastal Cutthroat Trout; Western Brook Lamprey, River Lamprey and Pacific Lamprey; Mountain Whitefish and Pygmy Whitefish; Olympic Mudminnow; Chiselmouth; Redside Shiner; Longnose/Nooksack Dace; Speckled Dace; Leopard Dace and Umatilla Dace; Northern Pikeminnow; Lake and Tui Chub; Peamouth; Largescale Sucker; Salish and Longnose Sucker; Bridgelip and Mountain Sucker; Three-spine Stickleback; Sandroller; Paiute Sculpin, Prickly Sculpin, Coastrange Sculpin, Torrent Sculpin, Reticulate Sculpin; Riffle Sculpin; Shorthead Sculpin; Mottled Sculpin; Slimy Sculpin; Margined Sculpin, Longfin Smelt, Barbot, and White Sturgeon

After review of the current status of the above native fish species; the environmental baseline for the Action Area; the effects of the proposed action and the cumulative effects; the FWS concludes in the Opinion that should these species be listed in the future, issuance of the Permit will not appreciably reduce the likelihood of the survival and recovery of these species because: 1) the effects to the species are not at a scale or magnitude that would affect the overall abundance or distribution of the species in the Action Area; 2) the Permit was conditioned (described in Section 5, below); and 3) the protection measures committed to in the final FPHCP, directly or indirectly, minimize and mitigate potential impacts from covered activities to this species. The specific conservation measures include the following: 1) RMAP requirements; 2) removal of all fish passage barriers; 3) no-harvest RMZs along Type S and F streams and the shade rule; 4) unstable slope protections; 5) riparian buffers along fish-bearing streams; 6) BMPs for roads; and 7) ELZs.

Cascade Torrent Salamander, Columbia Torrent Salamander, Olympic Torrent Salamander, Coastal Tailed Frog, Rocky Mountain Tailed Frog

After review of the current status of the above amphibian species; the environmental baseline for the Action Area; the effects of the proposed action and the cumulative effects; the FWS concludes in the Opinion that should these species be listed in the future, issuance of the Permit will not appreciably reduce the likelihood of the survival and recovery of these species because: 1) the effects will be localized and temporally and spatially staggered across its range within the FPHCP Action Area during the proposed 50-year term of the Permit; 2) the Permit was conditioned (described in Section 5, below); and 3) the protection

measures committed to in the final FPHCP, directly or indirectly, minimize and mitigate potential impacts from covered activities to this species. The specific conservation measures include the following: 1) no-harvest RMZs on at least 50 percent of Type Np streams; 2) sensitive site protections (e.g., seeps, springs, Type Np intersections, perennial initiation points; and 3) unstable slope protections.

Dunn's Salamander, Van Dyke's Salamander

After review of the current status of the Dunn's and Van Dyke's salamander; the environmental baseline for the Action Area; the effects of the proposed action and the cumulative effects; the FWS concludes in the Opinion that should these species be listed in the future, issuance of the Permit will not appreciably reduce the likelihood of the survival and recovery of these species because: 1) the effects will be localized and temporally and spatially staggered across their ranges within FPHCP Action Area during the proposed 50-year term of the Permit; 2) the Permit was conditioned (described in Section 5, below); and 3) the protection measures committed to in the final FPHCP, directly or indirectly, minimize and mitigate potential impacts from covered activities to these species. The specific conservation measures include the following: 1) no-harvest RMZs along Type S, F, and at least 50 percent of Type Np streams; 2) Inner and Outer Zone RMZ restrictions along Type S and F streams; and 3) ELZs.

5. Other measures, as required by the Director of the Fish and Wildlife Service, as necessary or appropriate for purposes of the plan will be met.

The FWS finds that additional measures required by the FWS as necessary or appropriate for the FPHCP were not included in the FPHCP, IA and/or the Permit and conditioned the ITP as follows:

1. All sections of Title 50 *Code of Federal Regulations*, Parts 13, 17.22, and 17.32 are conditions of this permit. If any such regulations are modified, any future action taken with respect to this permit shall be in accordance with such regulations in existence at the time such action is taken except as specifically otherwise provided for by law or in the executed Implementing Agreement.

2. The authorization granted by this permit is subject to full and complete compliance with, and implementation of, the Washington State Forest Practices Habitat Conservation Plan (FPHCP) and executed Implementing Agreement, both of which are hereby incorporated into the permit. The permit, FPHCP, and Implementing Agreement are binding upon the permittee and all persons conducting "covered activities" on "covered lands" as those terms are defined in sections 1-4 and 1-5 of the FPHCP.

3. The Forest Practices Habitat Conservation Plan (FPHCP) is generally described in Chapter 4 of the document entitled "Washington State Forest Practices Habitat Conservation Plan," and is approved as constituted on the date of permit issuance. Any changes to the FPHCP shall be subject to the provisions of the Implementing Agreement for the Final FPHCP, section 11.0 on Modifications and Amendments.

4. A copy of this permit, including the accompanying FPHCP and Implementing Agreement, must be available to State personnel at the WDNR Forest Practices Division office in Olympia, Washington, and each of the regional offices. Permittee shall ensure that all persons carrying out activities covered by the permit are made aware of its applicable requirements.

5. The permittee shall maintain sufficient compliance and enforcement personnel whose responsibilities include conducting on-the ground inspections of forest operations and documenting and reporting violations. The permittee shall ensure that these personnel are trained in forest practices regulations and enforcement procedures, and that they are equipped with vehicles and other necessary facilities and equipment. The permittee shall ensure that effective procedures are in place to identify operators who commit chronic or significant violations of forest practices regulations. The permittee shall take enforcement actions against violators, including but not limited to notices to comply, stop work orders, corrective action orders, civil penalties, disapproval of forest practices applications, financial assurance requirements, and criminal penalties, as appropriate to deter violations of these regulations.

6. The Permittee and all persons conducting "covered activities" on "covered lands" as those terms are defined in sections 1-4 and 1-5 of the FPHCP are authorized pursuant to section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended, (USC 1531 et seq.)(Act) to incidentally take only the covered species, as listed in Table 1, in the course of otherwise lawful conduct of covered activities as described in the Permittee's application and supporting documents, and as conditioned herein. Take authorization would become effective for the currently unlisted species concurrent with the listing of these species under the Act. If any of these species is listed, take is authorized to the extent that take of these species would otherwise be prohibited under section 9 of the Act and its implementing regulations, or pursuant to a special rule promulgated under section 4(d) of the Act. Such take is authorized only when incidental to otherwise lawful activities associated with forest practices and when consistent with the FPHCP and Implementing Agreement, and as conditioned herein.

7. The Permittee shall refer to permit number PRT-TE121202-0 in all correspondence and reports concerning permit activities. Any questions about this permit should be directed to the Project Leader, U.S. Fish and Wildlife Service, Western Washington Fish and Wildlife Office, 510 Desmond Drive SE, Suite 102, Lacey, Washington 98503, telephone (360) 753-9440.

8. Reports described in Table 1.1 of the HCP and section 9.1 of the Implementing Agreement shall be submitted to the Project Leader, U.S. Fish and Wildlife Service, Western Washington Fish and Wildlife Office, 510 Desmond Drive SE, Suite 102, Lacey, Washington 98503, and to the Assistant Regional Director, Ecological Services, U.S. Fish and Wildlife Service, 911 NE 11th Avenue, Portland, Oregon 97232.

9. Under the 20-acre exemption provision (FPHCP section 4b-3.1.3 [WAC 222-30-023(1) for western Washington] and FPHCP section 4b-3.2.3 [WAC 222-30023(2) for eastern Washington]), the Permit shall only apply to the following:

(a) Forestlands owned by a person who affirms in writing on a forest practices application of qualifying as an eligible person under the "20-acre exemption" as of and since the date of Permit issuance.

(b) Forestlands that are purchased, inherited, or otherwise lawfully obtained by a person who affirms in writing on a forest practices application of qualifying at the time that person takes possession of the forestlands under the following provisions:

(i) The forestlands have continually been qualified for the "20-acre exemption" since the date of Permit issuance; or,

(ii) The forestlands have not been subject to commercial harvest under the jurisdiction of the Washington Forest Practices Act since the date of Permit issuance and are being converted to forestland from another land use.

(c) Forestlands subject to a Class IV General Forest Practices Application only when the otherwise-qualifying applicant indicates on the application that he or she is not converting those forestlands to another use within three years.

(d) Forestlands in any Watershed Administrative Unit (WAU) for which the permittee has previously established, with the review and approval by the FWS, an estimate of the length of streams on FPHCP Covered Lands. The permittee shall establish, with review and approval of the FWS, a method to reasonably estimate post-harvest the length of classified streams on a 20-acre exempt site and the proportion of riparian function as measured by recruitable LWD from the site when compared to that which would have been provided under the standard riparian strategies. The permittee shall monitor 20-acre exempt timber harvest activities and maintain a reasonable estimate of the cumulative change in riparian function provided by FPHCP Covered Lands as measured by recruitable LWD in each WAU that results from 20-acre exempt forest practices covered by this Permit.

(i) The Permit shall not apply to forestlands subject to subsequent 20-acre exempt forest practices applications when the permittee anticipates that forest practices on those forestlands will result in a cumulative reduction in riparian function as measured by recruitable LWD greater than 10 percent of what would have been provided under the standard riparian strategies.

(ii) The Permit shall not apply to forestlands subject to subsequent 20-acre exempt forest practices applications in a WRIA once the WAUs within the WRIA exceeding the "10 percent limit" (above) represent more than 15 percent of the total stream length on FPHCP Covered Lands in the WRIA.

(iii) The Permit shall not apply to 20-acre exempt forestlands in any WAU where there is found the spawning and rearing habitat of bull trout populations identified in Table 3-51 of the Opinion until the permittee has established, with review and approval of the FWS, that forest practices under the 20-acre exempt provisions will not measurably diminish the level of riparian function provided by FPHCP Covered Lands in the WAU as measured by recruitable LWD when compared to that which would have been provided under the standard riparian strategies.

10. The permittee shall require trees to be left along Type Np waters under the 20-acre exemption unless it is determined that such leave trees are not necessary to protect covered species and their habitats. Unless determined by WDNR to be unnecessary, leave at least 29 conifer or deciduous trees, 6 inches in diameter or larger, on each side of every 1,000 feet of stream length within 29 feet of the stream. These leave trees may be arranged to accommodate the forest practices operation.

11. Chemical applications (e.g., the use of pesticides, herbicides, and fertilizers) are not covered activities under this permit.

12. Each year, prior to commencement of electrofishing surveys or other activities involving capture and handling of listed species for adaptive-management research and monitoring (including validation of the water-typing model), the permittee shall submit an estimate of the amount of stream surveys or electrofishing activities to be conducted and an estimate of the number of listed fish (or miles of listed-species habitat) to be affected by these activities. The permittee shall also provide the names and qualifications of the staff, contractors, or cooperators who will be supervising the field work. The permittee shall provide the FWS with a copy of the operating protocols designed to reduce effects to listed fish while maintaining the efficiency of the surveys and monitoring. This incidental take permit does not apply to operational water typing by individual landowners or to fish-salvage operations; these activities would need incidental take authorization through other means.

Following the conclusion of the field season and prior to the next field season, the permittee shall provide a report to the Project Leader, U.S. Fish and Wildlife Service, Western Washington Fish and Wildlife Office, 510 Desmond Drive SE, Suite 102, Lacey, Washington 98503, documenting the level of stream-survey and electrofishing activity and describing any listed fish encounters. This report shall document any effects that may rise to the level of incidental take (including mortality) and shall include the apparent condition of all listed fish specimens encountered. Results of surveys and monitoring shall be incorporated into the appropriate FPHCP periodic reports. The permittee shall obtain all needed Federal and State permits and shall abide by the conditions of each. This includes following the guidelines provided by NMFS (NMFS 2000). If the NMFS guidelines are subsequently revised, the permittee shall follow the revised guidelines. The permittee shall follow the guidelines unless proposed operating protocols described above are otherwise approved by FWS and NMFS, or additional restrictions are imposed by the FWS.

The IA, an agreement with the FWS and the State, governs implementation of the plan, and binds the Permittee to fully implement and fund the FPHCP.

6. **The FWS has received the necessary assurances that the plan will be implemented.**

The FWS finds that the FPHCP and IA provide the necessary assurances that the plan will be carried out by the State. By accepting their Permit, the State is bound to fully implement the provisions of the FPHCP in accordance with the IA.

IV. GENERAL CRITERIA AND DISQUALIFYING FACTORS—FINDINGS

The FWS has no evidence that the Permit application should be denied on the basis of the criteria and conditions set forth in 50 C.F.R. 13.21(b) – (c).

V. RECOMMENDATION ON PERMIT ISSUANCE

Based on the foregoing findings with respect to the proposed action, I recommend approval of the issuance of Permit Number PRT-TE121202-0 in accordance with the FPHCP and its supporting IA.

Acting Deputy Regional Director
Region 1

References

National Marine Fisheries Service and U.S. Fish and Wildlife Service. 2005. Draft Environmental Impact Statement for the Proposed Issuance of Multiple Species Incidental Take Permits or 4(d) Rules for the Washington State Forest Practices Habitat Conservation Plan. Lacey, Washington.

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Weiss, Josh. Washington Forest Protection Association. Personal Communication. May 5, 2006. Olympia, Washington.

Washington, State of, U.S. Fish and Wildlife Service, and National Marine Fisheries Service. 2005. Implementation Agreement for the State of Washington Forest Practices Habitat Conservation Plan. Olympia and Lacey, Washington.

Appendix: FPHCP native fish Covered Species and Water Resource Inventory Area (WRIA) distribution. Table does not include bull trout.

Bridgelip Sucker	Burbot	Chiselmouth	Coastrange Sculpin	Cutthroat Trout, Coastal	Cutthroat Trout, Westslope	Dolly Varden	Kokanee Salmon	Lake Chub
22	31	26	1	1	34	1	1	42
23	33	27	3	2	37	3	11	49
24	37	30	4	3	38	4	16	50
26	40	31	5	4	39	20	18	52
27	44	33	7	5	44	21	19	53
28	46	34	8	6	45		20	58
30	47	37	9	7	46		21	59
31	48	38	10	8	47		22	60
32	49	39	11	9	48		27	61
33	50	40	12	10	49		29	
34	51	45	13	11	59		32	
35	53	46	14	12	60		34	
37		49	15	13	61		38	
38		51	16	14	62		39	
39		52	17	15			40	
43		53	18	16			44	
45		54	19	17			45	
47		55	20	18			46	
48		56	21	19			47	
49		57	22	20			48	
53		58	23	21			49	
60		59	24	22			50	
61		60	25	23			51	
		61	26	24			53	
		62	27	25			54	
			28	26			55	
				27			58	
				28			60	
				29			61	
				30			62	
				34				

Native Fish Table continued.

Largescale Sucker	Leopard Dace	Longfin Smelt	Longnose Dace	Longnose Sucker	Margined Sculpin	Mottled Sculpin	Mountain Sucker	Mountain Whitefish
1	26	8	1	31	32	31	26	3
3	27		3	37	35	33	27	4
4	28		5	40		37	30	5
5	32		7	45		39	33	10
7	33		8	46		45	35	11
8	35		9	47		52	37	16
9	37		10	48		53	38	18
10	45		11	49		54	39	20
11	49		13	50		55	45	21
12			21	51		61		22
13			22	52				26
21			23	53				27
22			24	54				29
23			25	55				30
24			26	56				32
25			27	57				35
26			28	58				37
27			29	59				38
28			30	60				39
29			32	61				40
30			35	62				41
31			37					44
32			38					45
33			39					46
34			48					47
35			48					48
37			49					49
38			52					50
39			55					52
43			58					53
47			59					54
48			60					55
49			61					58
52			62					59
53								60
54								61
55								62
56								
57								
59								
61								
62								

Native Fish Table continued.

Northern Pikeminnow	Olympic Mudminnow	Pacific Lamprey	Paiute Sculpin	Peamouth	Prickly Sculpin	Pygmy Whitefish	Rainbow Trout, Coastal	Rainbow Trout, Redband
8	8	1	32	5	1	8	1	29
11	13	3	35	7	3	19	3	30
20	14	5	37	8	4	39	4	31
22	20	7	39	14	5	47	5	32
23	21	9	45	20	7	62	6	33
25	22	11		21	8		7	34
26	23	13		25	9		8	35
28		15		26	10		9	37
32		16		27	11		10	38
33		17		28	13		11	39
34		18		29	14		13	40
35		19		30	15		14	44
37		20		32	16		15	45
38		21		34	17		16	46
39		22		35	18		17	47
40		23		38	21		18	48
44		24		39	22		19	49
45		25		45	23		20	50
46		26		46	24		21	51
47		27		47	26		22	52
48		28		48	27		23	53
49		29		49	28		24	54
50		30		50	29		25	55
51		31		51	30		26	56
53		32		52	38		27	57
54		33		53	48		43	58
55		34		55	49			59
56		35		58	58			60
57		37		59	61			61
58		40		60				62
59		45		61				
60		47		62				
61		48						
62								

Native Fish Table continued.

Redside Shiner	Reticulated Sculpin	Riffle Sculpin	River Lamprey	Salish Sucker	Sandroller	Shorthead Sculpin	Slimy Sculpin	Speckled Dace
1	9	8	1	1	25	7	47	8
3	10	9	3	3	26	8	55	9
5	11	10	5	4	27	9	58	10
7	13	11	7	5	28	10	60	11
8	14	13	8	7	29	11	62	13
9	16	14	9	8	30	15		14
10	19	15	10	9	31	16		15
11	20	16	16	10	35	19		19
19	21	19	20	11	37	20		20
20	22	20	21	16	56	21		21
21	23	21	22			22		22
23	24	22	26			23		23
24	25	23	28			25		24
25	26	24	29			26		25
26	27	25	31			27		26
27	28	26	32			28		27
28	29		37			38		28
29			39			39		29
30						45		30
32						46		31
33						47		32
34						48		34
35						60		35
37								37
38								38
39								39
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44								43
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48								47
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58								55
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62								59
								59
								60
								61
								62

Native Fish Table continued.

Three-Spine Stickelback	Torrent Sculpin	Tui Chub	Umatilla Dace	Western Brook Lamprey	White Sturgeon
1	5	41	31	1	8
3	7		37	3	22
5	8		40	5	24
7	9		45	7	25
8	10		48	8	26
9	11		49	9	27
10	12		59	10	28
11	13		61	11	29
12	14			13	30
13	15			14	31
14	16			15	32
15	19			16	33
16	20			17	34
17	21			18	35
18	22			19	37
19	23			20	38
21	24			21	39
22	26			22	
23	27			23	
24	30			24	
25	32			26	
26	35			27	
27	45			29	
28	46			32	
29	47			35	
30	48			37	
31	49			39	
37	51				
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