6. 20-Acre Exempt Riparian Forestland

6.1 Introduction

The 1999 Washington State Legislature exempted certain forestland parcels from some riparian protection measures in the Forest Practices Rules that resulted from the 1999 Forests and Fish Report. Exempt parcels include those 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 commonly referred to as "exempt 20-acre parcels." While not subject to some forest practices riparian protection rules, exempt 20-acre parcels must still provide protection for public resources in accordance with the Forest Practices Act.

In arriving at their permitting decisions, the federal Services concluded that they would condition the Incidental Take Permits regarding 20-acre exempt forest practices. Conditions include:

- Requiring leave trees be left along Type Np (non-fish-bearing, perennial) waters for riparian function.
- Providing eligibility criteria for coverage of 20-acre exempt parcels under the Incidental Take Permits.
- Defining coverage thresholds for 20-acre exempt parcels in each watershed administrative unit and water resource inventory area.
- Identifying certain spawning and rearing habitat of bull trout (also known as "Bull Trout Areas of Concern") where Incidental Take Permit coverage may not apply.

6.2 Type Np Water Leave Tree Requirement

By law, DNR requires trees to be left on Np (non-fish-bearing, perennial) waters on 20-acre exempt parcels where needed to protect public resources, defined as water, fish, and wildlife. The Services concluded that leaving trees along Np waters is necessary in most situations. The Forest Practices HCP Incidental Take Permits says that "permittee (Washington State) shall require trees to be left along Type Np waters under the 20-acre exemption unless such leave trees are not necessary to protect covered species (public resources) and their habitats." In order to implement this permit condition, a guidance memo was written September 26, 2006 and delivered to DNR region forest practices staff clarifying that "henceforth Forest Practices Applications should be conditioned to require leave trees along Type Np waters within exempt 20-acre parcels unless DNR determines this is not necessary". See the 2007 Forest Practices HCP Annual Report for a copy of the guidance memo.

There were five Forest Practices Applications associated with 20-acre exempt parcels that had Type Np waters during FY 2012 (July 1, 2011 to June 30, 2012). Five of the applications were either conditioned according to the Np guidance memo (which reflects WAC 222-30-023(3)) or did not propose harvest within 29 feet of the Np water.

6.3 Watershed Administrative Unit and Water Resource Inventory Area Thresholds

In the Incidental Take Permits, the Services defined permit coverage thresholds for watershed administrative units (WAU) and water resource inventory areas (WRIA). The Services placed a 10 percent threshold on cumulative reduction in riparian function (as measured by the amount of recruitable large woody debris such as snags and tall trees that could fall across a stream or other water body) within a watershed administrative unit for 20-acre exempt parcels. Additionally, the Services placed a 15 percent stream length threshold within water resource inventory areas. The 15 percent threshold is based on the cumulative stream length of the affected streams within each WAU in the WRIA that has reached the 10 percent threshold. When a threshold within a watershed administrative unit or water resource inventory area is reached, subsequent Forest Practices Applications on 20-acre exempt parcels within those units or inventory areas will not be covered by the Incidental Take Permits unless the landowner chooses to follow standard Riparian Management Zone (RMZ) rules. Washington State has adopted a method, approved by the Services, to estimate cumulative percent reduction of potential large woody debris recruitment function, by watershed administrative unit, and percent cumulative stream length affected, by water resource inventory area.

6.4 Cumulative Reduction in Function Calculation Methodology

A formula called the Equivalent Area Buffer Index (Buffer Index) is used to estimate the percent reduction in function, as measured by potential large woody debris that could be recruited along fish-bearing streams. The Buffer Index was developed for the Forest Practices HCP Environmental Impact Statement (EIS) (USFWS et. al 2006) as a tool for comparing management alternatives in terms of the level of ecological function conserved through various management practices. The Buffer Index for large woody debris recruitment potential is a quantitative measure that evaluates the potential of a riparian forest to provide trees and other woody debris across and into streams originating from tree mortality, windthrow and bank undercutting. The Buffer Index is expressed as a function of slope distance from the stream channel in relationship to tree height. The methodology takes into account management activities within the buffer zone. The Buffer Index value is determined based upon the ‘mature conifer curve of large woody debris recruitment potential’ by McDade et al (1990). It relates the cumulative percent of large woody debris recruitment with the distance from the stream bank in terms of tree height. The Environmental Impact Statement (EIS) for the Forest Practices HCP provides average Buffer Indexes for western and eastern Washington. These averages are used each year to estimate the potential cumulative reduction in large woody debris recruitment function from 20-ac exempt Forest Practices Applications submitted to DNR during the fiscal year.

Example explaining Buffer Index formula for fish-bearing stream in Western Washington

- **Step 1 — Consider a fish-bearing stream (Type F).**

  The assumptions for this stream's Riparian Management Zone include a Channel Migration Zone (CMZ) that is 10-feet wide, followed by a 50-foot core zone of forest along the stream, followed by a 60-foot inner forest zone in which a light selection harvest is assumed (30 percent volume removal), followed by a 45-foot outer zone in which a moderately heavy selection harvest is assumed (70 percent volume removal). This gives a total RMZ width of 155 feet including the 10-foot CMZ. The total RMZ width of 155 feet is based on an average of Site Class II and III areas [(140+170)/2], which represent the most common site classes on forestland covered by the Incidental Take Permits.

- **Step 2 — Next, refer to the McDade (1990) mature conifer curve.**

  The McDade curve has been standardized for 155 feet, as the buffer distance that assumes full protection for the 100-year Site Potential Tree Height. This curve shows the cumulative percentage of large woody debris contribution in relation to the distance from the stream. In our example, we need to determine the percent of the total large woody debris contributed by the different RMZ zones (e.g., 0-10 feet, 10-60 feet, 60-120 feet and 120-165 feet). The values from McDade are 17 percent for the 0-10 foot zone, 62 percent for the 10-60 foot zone, 18 percent for the 60-120 foot zone, and 3 percent for the 120-165 foot zone.

- **Step 3 — Last, multiply the contribution percentage by the tree retention percentage for each RMZ zone, and sum them up.**

  (0.17 1.0) + (0.62 x 1.0) + (0.18 x 0 .7) + (0.03 x 0.3) = 0.925

- **Step 4 — Results**

  Therefore, the RMZ on Type F streams in Western Washington would provide for an estimated 92.5 percent of large woody debris recruitment potential, given the assumption that full recruitment potential is achieved at a buffer width equal to the 100-year Site Potential Tree Height.

Annual in-office calculations of reduction in function based on proposed harvests

An estimate of potential reduction in function by watershed administrative unit is calculated annually and reported in the Forest Practices HCP annual report. The impact is "potential" because the calculations are based on "proposed" harvests, not "completed" harvests and estimates of stream impact are made in-office from information supplied on the Forest Practices Applications (FPA), not on-the-ground measurements. Average Buffer Index values are used to calculate the overall possible reduction in function by watershed administrative unit (WAU). The average Buffer Index values used for the annual report calculations are taken from the Final EIS

(Appendix B page B-28) for the Forest Practices HCP. These average Buffer Index values were obtained through modeling harvests based on both Forests and Fish Rules, and pre-Forests and Fish Rules. Many assumptions went into the modeling effort including degree of harvest, width of riparian area, stream width, etc. An end result of the harvest modeling was the development of average values for an overall Buffer Index for eastern and western Washington for harvests complying with Forests and Fish Rules, as well as with pre-Forests and Fish Rules.

The EIS average Buffer Index values for Forests and Fish Rules are used in our calculations without modification; however, an additional 15 percent was added to the EIS average Buffer Index values for pre-Forests and Fish Rules because the 1999 Salmon Recovery Act required 20-acre exempt landowners to protect an additional 15 percent of riparian trees above pre-Forests and Fish Rules. The average reduction in function value was calculated by subtracting the pre-Forests and Fish Rules Buffer Index values from the Forests and Fish Rules Buffer Index values for a percent reduction in function.

Below are the Buffer Index values and reduction in function factors used for the Forest Practices HCP Annual Report.

Buffer Indexes for Western Washington:

Buffer Index average for Forests and Fish Rules = 0.93

Buffer Index average for Rules prior to Forests and Fish = 0.60

Buffer Index average for 20-acre exempt rules = 0.60 x 1.15 = 0.69

Average Reduction in function factor = 0.93 – 0.69 = 0.24

Buffer Indexes for Eastern Washington:

Buffer Index average for Forests and Fish Rules = 0.91

Buffer Index average for Rules prior to Forests and Fish = 0.67

Buffer Index average for 20-acre exempt rules = 0.67 x 1.15 = 0.77

Average Reduction in function factor = 0.91– 0.77 = 0.14

The estimated number of feet of fish bearing stream potentially affected by harvests through Forest Practices Applications is tracked throughout the year. The total number of feet in each watershed administrative unit is calculated for the fiscal year and then multiplied by 0.24 in Western Washington and 0.14 in Eastern Washington to derive the number of feet of large woody debris recruitment reduction in function. These numbers are summed over the years and then divided by the total fish bearing stream length in the watershed administrative unit to determine potential percent cumulative reduction in function.

During the 50-year permit period, if the 10 percent threshold is reached within a watershed administrative unit, all subsequent 20-acre exempt landowners submitting a Forest Practices

Application will be informed that their forest practice will not be covered by the Incidental Take Permits unless the landowner chooses to use standard Riparian Management Zone buffers.

The following table contains the cumulative in-office estimates of reduction in function by watershed administrative unit for the time period of June 5, 2006, to June 30, 2012. A visual representation of the 20-acre Exempt Forest Practices Applications accounted for in the following table can be found in Appendices #3a and #3b. The two maps in these appendices show the location of the 20-acre exempt applications for FY 2012 and the location of all 20-acre exempt applications since June 2006. Maps showing 20-acre exempt Forest Practices Applications in previous fiscal years can be found in previous Forest Practices HCP annual reports.

Estimated Potential Percent Loss of Large Woody Debris Recruitment Potential, by Watershed Administrative Unit	
Watershed Administrative Unit	Percent (%) Reduction in LWD Function in WAU
Abernathy	0.0219
Acme	0.0519
Antonie Creek	0.0187
Bangor-Port Gamble	0.0469
Bellingham Bay	0.0657
Bogachiel	0.0326
Blanchard Creek	0.0401
Bunker Creek	0.0859
Carbon	0.0270
Carpenter	0.0519
Cathlapotl	0.0816
Cedar Creek/Chelatchie Creek	0.2707
Chehalis Headwaters	0.0060
Chehalis Slough	0.1906
Chinook	0.0214
Church Creek	0.3326
Coal Creek	0.0924
Colvos Passage/Carr Inlet	0.0659
Connelly	0.1657
Corkindale	0.0966
Cottonwood Creek	0.0173
Cowlitz River/Mill Creek	0.0842
Damfino	0.1438
Davis Creek	0.0055
Day Creek	0.2473
Deadman Creek/Peone Creek	0.1259
Delameter	0.0048
Delezene Creek	0.0635
Diobsud Creek	2.3074
Discovery Bay	0.0333
Dragoon Creek	0.0307
Drayton	0.2734
Dyes Inlet	0.1312
East Creek	0.0311
East Fork Humptulips	0.0994
EF Satsop	0.0054
Electron	0.0211
Elk River	0.0073
Everett	0.0557
French-Boulder	0.0375
Friday Creek	0.7286

Estimated Potential Percent Loss of Large Woody Debris Recruitment Potential, by Watershed Administrative Unit	
Watershed Administrative Unit	Percent (%) Reduction in LWD Function in WAU
Gibson Ck.	0.0471
Gilligan	0.0950
Grays Bay	0.0338
Great Bend	0.0175
Haller Creek	0.0486
Hansen Creek	0.2059
Harstine Island	0.1057
Hoko	0.0037
Hope Creek	0.0130
Horseshoe Falls	0.2848
Huckleberry Creek	0.0192
Hutchinson Creek	0.1311
Independence Creek	0.1520
Johns River	0.0524
Jordan	0.0805
Key Peninsula	0.0120
Kiona	0.0863
L.Snoqualmie River/Cherry Creek	0.0050
Lacamas	0.0825
Lacamas Lake	0.2538
Lake Merwin	0.1562
Lake Whatcom	0.0700
Liberty Miller - Appletree	0.1125
Little Deep Creek	0.0456
Little Spokane/Deer Creek	0.0380
Little Washougal	0.1063
Long Beach	0.0855
Lost Creek	0.9051
Lower Chehalis/Elizabeth Creek	0.0128
Lower Coweeman	0.1013
Lower Cowlitz	0.0843
Lower Deschutes	0.0133
Lower Dosewllips	0.1723
Lower Humptulips River	0.0213
Lower Kalama	0.0570
Lower Naselle	0.0226
Lower NF Stilly	0.0279
Lower Newaukum	0.3056
Lower Pilchuck Creek	0.1576
Lower Pilchuck River	0.1392
Lower Skokomish	0.0658

Estimated Potential Percent Loss of Large Woody Debris Recruitment Potential, by Watershed Administrative Unit	
Watershed Administrative Unit	Percent (%) Reduction in LWD Function in WAU
Lower Willapa	0.1659
Lynch Cove	0.1833
Mashel	0.0167
Mason	0.0962
MF Satsop	0.0336
Middle Humptulips	0.0431
Mill Creek	0.0186
Mill Creek/Clugton Creek	0.0319
Mitchel	0.0377
Mox Chehalis	0.1067
Mt Zion	0.0318
Muck Creek	0.0061
Naselle Headwaters	0.0040
Nemah	0.0375
NF Granite Creek	0.0340
Nineteen Creek	0.1897
North Headwaters	0.0492
North-Middle Forks Deer Creek	0.0328
Olequa	0.1826
Ostrander	0.2156
Otter Creek	0.0406
Packwood Lake	0.2445
Patit Creek	0.0518
Pend Oreille/Cedar Creek	0.0398
Pilchuck Mtn.	0.0134
Port Angeles	0.1025
Porter Canyon	0.0305
Quilceda Creek	0.1820
Quillisascut Creek	0.1263
Quinault Lake	0.1143
Rock Creek	0.1346
S. Sinclair Inlet	0.0319
Salmon Creek	0.0455
Salt Creek	0.2125
Samish Bay	0.0904
Samish River	0.1117
Satsop	0.1019
Scatter Creek	0.0113
Sekiu	0.0216
Siebert McDonald	0.0627
SF Skokomish	0.0610

Estimated Potential Percent Loss of Large Woody Debris Recruitment Potential, by Watershed Administrative Unit	
Watershed Administrative Unit	Percent (%) Reduction in LWD Function in WAU
SF Skykomish River	0.0201
SF Willapa	0.0170
Silver Lake	0.1628
Smith Creek	0.0214
Smith Point	0.4110
Squalicum Creek	0.0709
St. Peter-Lambert	0.0248
Stillaguamish Flats	0.0163
Sultan River	0.0422
Sumas River	0.0472
Sutherland Aldwell	0.1677
Tacoma Creek	0.1030
Tanwax Creek	0.1279
Toandos Peninsula	0.0336
Toutle River	0.0750
Upper Chehalis/Rock Creek	0.0092
Upper Coweeman	0.0328
Vancouver	0.3764
Vashon Island	0.0502
Vedder	0.7609
Verlot	0.0333
Vesta Little N.	0.0054
Whidbey Island	0.1167
Winston Creek	0.0236
W. Kitsap	0.0077
Wishkah Headwaters	0.0812
Woodland Creek	0.1990
Woods Creek	0.0528
Wynochee River System	0.0097
Yacolt	0.1269
Yelm Creek	0.0851

The table above shows estimated percent of loss of potential large woody debris recruitment in each watershed administrative unit containing one or more Forest Practices Applications (FPAs) over the elapsed six year period of the Incidental Take Permits. There are a total of 846 watershed administrative units in the state, of which 154 have some measure of reduction in potential recruitment function. Currently, in-office calculations indicate that each watershed administrative unit affected by 20-Acre Exempt applications, except for one, has less than one percent cumulative reduction in function. The largest possible impact is in Diobsud Creek Watershed Administrative Unit in the Upper Skagit Watershed Resource Inventory Area (WRIA), which only has a total of 36,394 feet of fish-bearing stream in the entire unit. In-office

calculations of proposed applications show a possible 2.3 percent potential reduction of large woody debris recruitment function in Diobsud Creek unit. The Lost Creek unit in the Sanpoil WRIA, with 23,172 feet of fish-bearing stream, shows a possibility of 0.9 percent potential reduction of large woody debris recruitment function. There also are two watershed units that indicate a potential of 0.7 percent reduction in function; one at 0.4 percent; four at 0.3 percent; nine at 0.2 percent; and thirty-four at 0.1 percent. All other watershed administrative units listed in the above table show the possibility of less than 0.1 percent reduction in function since the 2006 issuance of the Incidental Take Permits.

6.5 Data Collection for Watershed Administrative Unit Threshold

Reduction in Function within Watershed Administrative Units

A non-scientific field review was initiated in September 2008 on a subset of 20-Acre Exempt Forest Practices Applications to help verify that the in-office method for estimating reduction in function is sufficient. In past annual reports the State has provided information from these field reports. However, in this 2012 Annual Report the State will not include data from the field visits. Since 2008, the State included a small sampling of 20 acre-exempt applications one time for the compliance monitoring program. Currently, the state is reviewing the intersection of these two processes. The information provided in next year's 2013 Forest Practices HCP Annual Report will depend on what is determined in the review.

Cumulative Stream Length for Water Resource Inventory Areas

A fish-bearing stream baseline length was calculated for all Water Resource Inventory Areas (WRIAs). As in-office calculations indicate that the 10 percent reduction-in-function threshold may be approached in a watershed administrative area, DNR will compare the total stream length on covered forestland in each watershed administrative unit to determine when the 15 percent stream-length threshold might be reached for the water resource inventory area. DNR then will inform landowners that subsequent Forest Practices Applications associated with 20-Acre Exempt parcels within the area no longer will be covered by the Incidental Take Permits, unless individual landowners choose to apply standard Riparian Management Zone rules on their 20-Acre Exempt forest practice. Currently, there are no watershed administrative units approaching the 10 percent threshold for reduction in function; therefore, no areas currently are at risk for reaching the 15 percent stream threshold.

6.6 Bull Trout Areas of Concern

The federal Services placed conditions on the Incidental Take Permits regarding specific, identified spawning and rearing habitat areas for bull trout. These areas are of concern because of extremely low populations of bull trout. The condition states that a forest practice that qualifies for and uses the 20-Acre Exempt riparian rules and falls within these bull trout areas of concern will not be covered by the Incidental Take Permits unless the forest practice is shown to not measurably diminish the level of riparian function. The function is measured by potential large

woody debris recruitment and is compared to the level of function that would have been provided by the standard Forest Practices Rules. The State and Services together developed a process to track forest practices in these bull trout areas of concern. The process was described in the 2009 Forest Practices HCP Annual Report (DNR 2009).

There was one Forest Practices Application associated with 20-Acre Exempt parcels in the bull trout areas of concern during the reporting period from July 1, 2011 through June 30, 2012. The FPA -2812061- was approved before the HCP Administrators became aware of it. The application was in the Hutchinson Creek WAU and had approximately 600 feet of fish-bearing stream associated with it. The application arrived through the Forest Practices Application Review System following approval, rather than at the usual time, prior to approval. As a result, an additional safeguard was included in the processing of applications to insure that 20-Acre Exempt applications are received at the start of the review process.

6.7 20-Acre Exempt Forest Practices Application Data

Of the 5,302 Forest Practices Applications processed throughout the year, 4,946 were approved, and of those, 84 were new, approved 20-Acre Exempt applications adjacent to fish-bearing streams.

Number of 20-Acre Exempt Forest Practices Applications for FY 2011

20-Acre Exempt Forest Practices Applications with Specific Characteristics	Number
Number of 20-Acre Exempt applications with fish-bearing water	84
Number of 20-acre Exempt applications that were conversions with fish-bearing water	0
Number of 20-Acre Exempt applications with fish-bearing water that were not conversions	84
Number of 20-Acre exempt applications that were in Bull Trout Areas of Concern	1

Twenty-acre exempt non-conversion applications along fish-bearing water comprised about 1.7 percent of all approved applications submitted during the 2010-2011 reporting period. This percent was calculated with non-conversion 20-acre Forest Practices Applications because the Incidental Take Permits do not cover Forest Practices Applications that are conversions.