6. 20-Acre Exempt Riparian Forestland

6.1 Introduction

In 1999, Washington's Legislature exempted certain forestland parcels from some riparian protection measure requirements adopted by the Board. 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 Forests and Fish riparian protection requirements, 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 Services concluded that they would condition the Incidental Take Permits regarding 20-acre exempt forest practices applications. Conditions require the State to do something in addition to what was proposed in the Habitat Conservation Plan (HCP). These 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 analysis unit and water resource inventory area.
- Outlining 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 Requirements

WAC 222-30-023(3) states that DNR will require trees to be left on Np waters on 20-acre exempt parcels where such practices are needed to protect public resources. The Services concluded that leaving trees along Np waters is necessary in most situations. The Incidental Take Permits have a condition which states "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 Incidental Take Permit condition, a guidance memo was written September 26, 2006 and delivered to DNR region forest practices staff clarifying that "henceforth FPAs should be conditioned to require leave trees along Type Np waters within exempt 20 acre parcels unless DNR determines this is not necessary". See 2007 Forest Practices HCP Annual Report for a copy of the guidance memo.

There were three forest practices applications associated with 20-acre exempt parcels that had Type Np waters during the period from July 1, 2008 to June 30, 2009. Two of the applications (or two-thirds) were conditioned according to the Np guidance memo which reflects WAC 222-30-023(3).

6.3 Watershed Analysis Unit and Water Resource Inventory Area Thresholds

In the Incidental Take Permits the Services defined permit coverage thresholds for watershed analysis units and water resource inventory areas. The Services placed a 10 percent threshold on cumulative reduction in riparian function as measured by recruitable large woody debris within a

watershed analysis units for 20-acre exempt parcels. In addition, the Services placed a 15 percent threshold for when the watershed analysis units that exceed the 10 percent reduction in function within a water resource inventory area have a cumulative stream length that exceeds 15 percent of the total stream length within the water resource inventory area. When a threshold within a watershed analysis units or water resource inventory area is reached, subsequent forest practices applications with 20-acre exempt parcels within those watershed analysis units or water resource inventory areas will not be covered by the Incidental Take Permits unless the landowner chooses to follow standard Riparian Management Zone (RMZ) rules instead of the 20-acre exempt RMZ rules. The State has adopted a method, approved by the Services, to estimate possible cumulative percent reduction of potential large woody debris recruitment function by watershed analysis 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 helping determine the possible percent reduction in function as measured by large woody debris along fish bearing streams. The Buffer Index was developed for the Forest Practices Habitat Conservation Plan (Forest Practices HCP) Environmental Impact Statement (EIS) as a tool for comparing alternatives in terms of the level of ecological function conserved by various management practices. The Buffer Index for large woody debris recruitment potential is a quantitative measure that compares the potential of a riparian area to provide woody debris to streams originating from tree mortality, windthrow, and bank undercutting (a function of slope distance from the stream channel in relationship to tree height). The Buffer Index 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) that relates cumulative percent of large woody debris recruitment with distance from the stream bank in terms of tree height. The Forest Practices HCP EIS 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 as represented by the 20-ac exempt forest practices applications submitted to DNR during the fiscal year.

An example explaining the Equivalent Area Buffer Index formula follows:

- Step 1 - Consider a fish-bearing or Type F stream in western Washington.
  The assumptions for the RMZ of this stream include a Channel Migration Zone (CMZ) that is 10 feet wide, followed by a 50-foot core zone, followed by a 60-foot inner zone in which a light selection harvest is assumed (30 percent volume removal), followed by a 45-foot outer zone in which a moderate-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, it is necessary to go 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 reads 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 ft., 10-60 ft., 60-120 ft., and 120-165 ft.). 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 - The last step is to multiply the contribution percentage by the tree retention percentage for each RMZ zone and sum them up.

  (0.17 x 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 full 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

An estimate of reduction in function by watershed analysis unit is calculated annually and reported in the Forest Practices HCP annual report. Average Buffer Index values are used to calculate the overall possible reduction in function by watershed analysis unit. The average Buffer Index values used for the annual report calculations are taken from the Forest Practices HCP EIS and can be found in Appendix B page B-28. These EIS average Buffer Index values were obtained through modeling harvests based on both forest and fish rules and pre-forest 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 forest and fish rules as well as with pre forest and fish rules.

The EIS average Buffer Index values for forest 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-forest 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-forest and fish rules. The average reduction in function value was calculated by subtracting the pre forest and fish Buffer Index values from the forest and fish 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.

Equivalent Area Buffer Indexes (EBAI)
Western Washington:
EBAI average for Forests and Fish Rules = 0.93
EBAI average for Rules prior to Forests and Fish = 0.60
EBAI average for New 20-acre exempt rules = 0.60 x 1.15 = 0.69
Average Reduction in function factor = 0.93 – 0.69 = 0.24

Eastern Washington:
EBAI average for Forests and Fish Rules = 0.91
EBAI average for Rules prior to Forests and Fish = 0.67
EBAI average for New 20-acre exempt rules = 0.67 x 1.15 = 0.77
Average Reduction in function factor = 0.91– 0.77 = 0.14

The number of feet of fish bearing stream impact by forest practices application is tracked throughout the year. The total number of feet in each watershed analysis 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 possible large woody debris recruitment potential reduction in function. These numbers are summed over the years and then divided by the total fish bearing stream length in the watershed analysis unit to determine percent cumulative reduction in function.

During the 50-year permit period, if the 10 percent threshold is reached within a watershed analysis unit, all subsequent 20-acre exempt landowners submitting an forest practices application will be informed that their forest practice application will not be covered by the Incidental Take Permits unless they choose to use standard RMZ buffers on their 20-acre parcel.

The following table contains the cumulative in-office calculations of possible reduction in function by watershed analysis unit for the time period of June 5, 2006, to June 30, 2009. In addition, three maps display the location of approved 20-acre exempt forest practices application for timber harvest for the following timeframes: FY 2007-2008 (Appendix H-1); FY 2008 to FY 2009 (Appendix H-2); and cumulatively from June 5, 2006 (when the Incidental Take Permit were signed) to June 30, 2009 (Appendix H-3).

Estimated Percent Loss of Large Woody Debris (LWD) Recruitment Potential by Watershed Analysis Unit (WAU)

Watershed Administrative Unit	% Reduction in LWD Function in WAU
Acme	0.0519
Antonie Creek	0.0187
Bellingham Bay	0.0243
Blanchard Creek	0.0401
Bunker Creek	0.0381
Cathlapotl	0.0397
Cedar Creek/Chelatchie Creek	0.1815
Chehalis Slough	0.1616
Chinook	0.0214
Church Creek	0.2563
Coal Creek	0.0542
Colvos Passage/Carr Inlet	0.0432
Connelly	0.1657
Cottonwood Creek	0.0173
Cowlitz River/Mill Creek	0.0842
Damfino/Diobsud Creek	0.1438
Deadman Creek/Peone Creek	0.0373
Delezene Creek	0.0551
Discovery Bay	0.0134
Dragoon Creek	0.0307
Drayton	0.0728
Dyes Inlet	0.1312
East Fork Humptulips	0.0994
Electron	0.0211
Elk River	0.0073

Friday Creek	0.2350
Gilligan	0.0479
Grays Bay	0.0079
Haller Creek	0.0430
Hansen Creek	0.0314
Harstine Island	0.1057
Hoko	0.0037
Horseshoe Falls	0.1846
Huckleberry Creek	0.0192
Hutchinson Creek	0.0927
Independence Creek	0.1275
Johns River	0.0052
Lower Pilchuck Creek	0.0473
L.Snoqualmie River/Cherry Creek	0.0050
Lacamas	0.0381
Lacamas Lake	0.0872
Lake Whatcom	0.0700
Little Spokane/Deer Creek	0.0380
Little Washougal	0.0556
Lost Creek	0.9051
Lower Chehalis/Elizabeth Creek	0.0128
Lower Coweeman	0.0587
Lower Humptulips River	0.0213
Lower Kalama	0.0545
Lower Naselle	0.0226
Lower NF Stilly	0.0100
Lower Newaukum	0.2003
Lower Pilchuck river	0.0420
Lower Willapa	0.1502
Lynch Cove	0.0135
Mashel	0.0167
Mason	0.0589
MF Satsop	0.0336
Middle Humptulips	0.0186
Mill Creek	0.0186
Mitchel	0.0377
Mox Chehalis	0.1067
Mt Zion	0.0318
Nineteen Creek	0.1897
North Headwaters	0.0492
North-Middle Forks Deer Creek	0.0328
Olequa	0.0211
Ostrander	0.2036
Otter Creek	0.0177
Packwood Lake	0.0827
Patit Creek	0.0518

Pend Oreille/Cedar Creek	0.0398
Quilceda Creek	0.0342
Quinault Lake	0.1143
Rock Creek	0.0093
S. Sinclair Inlet	0.0261
Salmon Creek	0.0377
Salt Creek	0.1358
Samish Bay	0.0355
Samish River	0.0836
Satsop	0.0546
Sekiu	0.0216
SF Skokomish	0.1134
SF Sky River	0.0201
SF Willapa	0.0170
Smith Creek	0.0214
Squalicum Creek	0.0709
St. Peter-Lambert	0.0248
Stillaguamish Flats	0.0163
Tacoma Creek	0.1030
Toutle River	0.0547
Upper Chehalis/Rock Creek	0.0092
Upper Coweeman	0.0328
Vancouver	0.0732
Vashon Island	0.0502
Vesta Little N.	0.0054
Whidbey Is.	0.0735
Whidby Island	0.0432
Winston Creek	0.0236
Wishkah Headwaters	0.0562
Woodland Creek	0.1761
Woods Creek	0.0107
Wynochee River System	0.0097
Yacolt	0.0735

The table above shows estimated potential percent loss of large woody debris recruitment potential in each watershed analysis unit containing one or more forest practices applications over the three year time period of the Incidental Take Permits. There are a total of 846 watershed analysis units in the state of which 104 have some measure of possible reduction in potential large woody debris recruitment function. Currently, in-office calculations indicate that all watershed analysis units have less than the possibility of 1 percent cumulative reduction in function. The largest possible impact is in Lost Creek Watershed Analysis Unit which only has a total of 23,172 feet of fish bearing stream length in the entire watershed analysis unit. In-office calculations of proposed forest practices applications show a possibility of 0.9 percent potential reduction of large woody debris recruitment function in Lost Creek Watershed Analysis Unit. There are four watershed analysis units that show a possibility of 0.2 percent reduction in function including Church Creek, Friday Creek, Lower Newaukum, and Ostrander Watershed Analysis Units. Sixteen watershed analysis units indicate the possibility of 0.1 percent reduction

in function and all other watershed analysis 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 Analysis Unit Threshold

Reduction in Function within Watershed Analysis Units

An ongoing field audit was initiated in September 2008 on a subset of 20-acre exempt forest practices applications to help verify that in-office possible reduction in function estimates are sufficient for tracking potential reduction in function and to ground-truth what is actually happening on the application sites. State forest practices staff collects data during routine compliance visits to the forest practices application sites including actual width of RMZ; percent of trees left after harvest; and length of RMZ.

Since September 2008, 29 20-acre exempt forest practices applications have been visited during normal compliance activities. On these 29 forest practices applications, 39 stream segments were observed. The field visits showed no harvest in the riparian area on 74 percent of the segments and a minimal 1 percent to 4 percent harvest on another 10 percent of the segments, or 84 percent of 20-acre exempt forest practices application with virtually no harvest in the riparian area. These numbers indicate the vast majority of 20-acre exempt landowners are treating the fish bearing riparian areas as no harvest areas. Additionally, the field data indicate that actual widths of riparian areas are sometimes wider than is required by the forest practices rules.

Field data will continue to be recorded and reported. This first year of field data supports the use of the adopted in-office estimating process for calculating possible reduction in function. The data shows that many landowners may be leaving more trees in the riparian area than required by 20-acre exempt rules. Given that, the in-office calculations may over estimate actual reduction in function by watershed analysis unit because landowners may be leaving more trees in riparian areas than was predicted when the EIS Equivalent Area Buffer Index averages were calculated.

Cumulative Stream Length for Water Resource Inventory Areas (WRIAs)

A fish-bearing baseline stream length was calculated for all water resource inventory areas. As in office calculations indicate that watershed analysis units may be reaching the 10 percent threshold, the State will compare the total stream length in each watershed analysis unit to determine when the 15 percent threshold by water resource inventory area could possibly be reached. The State will then be able to inform landowners that subsequent forest practices applications s within the water resource inventory area that are associated with 20-acre exempt parcels will no longer be covered by the Incidental Take Permits, unless individual landowners choose to apply standard RMZ rules on their 20-acre exempt forest practice. Currently, there are no watershed analysis units that show a possibility of being near the 10 percent threshold for reduction in function; therefore, no water resource inventory areas are currently at risk for reaching the 15 percent stream threshold.

6.6 Bull Trout Areas of Concern

The Services conditioned 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 which 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 recruitable large woody debris and is compared to the level of function that would have been provided by the standard forest practices rules. The State and the Services developed a process to track forest practices in these bull trout areas of concern. A copy of the process was included in last year's Forest Practices HCP Report. Since then, the process was modified slightly (Appendix I).

There was a single forest practices application associated with 20-acre exempt parcels in the bull trout areas of concern during the reporting period from July 1, 2008 through June 30, 2009. It was determined that the forest practices application did not measurably diminish function as no harvest occurred within 86 feet of the fish-bearing stream.

6.7 20-Acre Exempt Forest Practices Application Data

The total number of approved forest practices applications during the reporting period (July 1, 2008 to June 30, 2009) was 4849 (4041 excluding renewals). Following is additional data of interest regarding 20-acre exempt parcels.

Number of 20-acre Exempt Forest Practices Applications (FPAs) for FY 2009

Total # of 20-acre FPAs with fish-bearing water	47
Total # of 20-ac exempt FPAs that were conversions with fish-bearing water	7
Total # of 20-ac exempt FPAs with fish-bearing water that were not conversions	40
Total # of 20-ac exempt FPAs that were in Bull Trout Areas of Concern	1