

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 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

WAC 222-30-023(3) states that DNR will require trees to be left on Np (non-fish-bearing, perennial) waters on 20-acre exempt parcels where such practices are needed to protect public resources. Public resources are defined in WAC 222-16-010 as including water, fish, and wildlife. 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 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 eleven Forest Practices Applications associated with 20-acre exempt parcels that had Type Np waters during FY 2011 (July 1, 2010 to June 30, 2011). Nine 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—available 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 Habitat Conservation Plan (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 area to provide trees and other woody debris across and into streams originating from tree mortality, windthrow and bank undercutting. It is expressed as 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). 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.

An example explaining the Buffer Index formula follows:

- **Step 1** - Consider a fish-bearing or Type F stream in western Washington. 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, 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 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** - The last step is to multiply the contribution percentage by the tree retention percentage for each RMZ zone, and sum them up.

$$(0.17 \times 1.0) + (0.62 \times 1.0) + (0.18 \times 0.7) + (0.03 \times 0.3) = 0.925$$

- **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

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 Application (FPA), not on-the-ground measurements. Average Buffer Index values are used to calculate the overall possible reduction in function by watershed administrative unit. The average Buffer Index values used for the annual report calculations are taken from the Forest Practices HCP EIS (Appendix B page B-28). 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 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, 2011. A visual representation of the 20-acre Exempt Forest Practices Applications accounted for in the following table can be found in Appendices #4a and #4b. The two maps in these appendices show the location of the 20-acre exempt applications for FY 2011 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 | % Reduction in LWD Function in WAU |
| Abernathy | 0.0103 |
| Acme | 0.0519 |
| Antonie Creek | 0.0187 |
| Bangor-Port Gamble | 0.0469 |
| Bellingham Bay | 0.0243 |
| Bogachiel | 0.0326 |
| Blanchard Creek | 0.0401 |
| Bunker Creek | 0.0859 |
| Carpenter | 0.0178 |

| Estimated Potential Percent Loss of Large Woody Debris Recruitment Potential, by Watershed Administrative Unit | |
|---|---|
| Watershed Administrative Unit | % Reduction in LWD Function in WAU |
| Cathlapotl | 0.0556 |
| Cedar Creek/Chelatchie Creek | 0.2441 |
| Chehalis Slough | 0.1616 |
| Chinook | 0.0214 |
| Church Creek | 0.3326 |
| Coal Creek | 0.0924 |
| Colvos Passage/Carr Inlet | 0.0640 |
| Connelly | 0.1657 |
| Corkindale | 0.0450 |
| Cottonwood Creek | 0.0173 |
| Cowlitz River/Mill Creek | 0.0842 |
| Damfino/Diobsud Creek | 0.1438 |
| Davis Creek | 0.0055 |
| Day Creek | 0.2473 |
| Deadman Creek/Peone Creek | 0.1259 |
| Delameter | 0.0048 |
| Delezene Creek | 0.0551 |
| Discovery Bay | 0.0134 |
| Dragoon Creek | 0.0307 |
| Drayton | 0.2115 |
| 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 | 0.0489 |
| French-Boulder | 0.0375 |
| Friday Creek | 0.7286 |
| Gibson Ck. | 0.0471 |
| Gilligan | 0.0950 |
| Grays Bay | 0.0338 |
| Haller Creek | 0.0430 |
| Hansen Creek | 0.2059 |
| Harstine Island | 0.1057 |
| Hoko | 0.0037 |
| Hope Creek | 0.0130 |
| Horseshoe Falls | 0.2273 |
| Huckleberry Creek | 0.0192 |
| Hutchinson Creek | 0.0927 |
| Independence Creek | 0.1520 |
| Johns River | 0.0524 |
| Kiona | 0.0863 |
| L.Snoqualmie River/Cherry Creek | 0.0050 |
| Lacamas | 0.0599 |
| Lacamas Lake | 0.1424 |

| Estimated Potential Percent Loss of Large Woody Debris Recruitment Potential, by Watershed Administrative Unit | |
|---|---|
| Watershed Administrative Unit | % Reduction in LWD Function in WAU |
| Lake Merwin | 0.0993 |
| Lake Whatcom | 0.0700 |
| Little Deep Creek | 0.0456 |
| Little Spokane/Deer Creek | 0.0380 |
| Little Washougal | 0.1062 |
| Long Beach | 0.0855 |
| Lost Creek | 0.9051 |
| Lower Chehalis/Elizabeth Creek | 0.0128 |
| Lower Coweeman | 0.0960 |
| Lower Cowlitz | 0.0019 |
| Lower Dosewllips | 0.1723 |
| Lower Humptulips River | 0.0213 |
| Lower Kalama | 0.0545 |
| Lower Naselle | 0.0226 |
| Lower NF Stilly | 0.0279 |
| Lower Newaukum | 0.2808 |
| Lower Pilchuck Creek | 0.1077 |
| Lower Pilchuck river | 0.1036 |
| Lower Skokomish | 0.0658 |
| Lower Willapa | 0.1539 |
| Lynch Cove | 0.0238 |
| Mashel | 0.0167 |
| Mason | 0.0647 |
| MF Satsop | 0.0336 |
| Middle Humptulips | 0.0186 |
| Mill Creek | 0.0186 |
| Mill Creek/Clugton Creek | 0.0319 |
| Mitchel | 0.0377 |
| Mox Chehalis | 0.1067 |
| Mt Zion | 0.0318 |
| Nemah | 0.0375 |
| NF Granite Creek | 0.0340 |
| Nineteen Creek | 0.1897 |
| North Headwaters | 0.0492 |
| North-Middle Forks Deer Creek | 0.0328 |
| Olequa | 0.1722 |
| Ostrander | 0.2156 |
| Otter Creek | 0.0406 |
| Packwood Lake | 0.1483 |
| Patit Creek | 0.0518 |
| Pend Oreille/Cedar Creek | 0.0398 |
| Pilchuck Mtn. | 0.0134 |
| Porter Canyon | 0.0305 |
| Quilceda Creek | 0.1820 |
| Quillisascut Creek | 0.1263 |
| Quinault Lake | 0.1143 |

| Estimated Potential Percent Loss of Large Woody Debris Recruitment Potential, by Watershed Administrative Unit | |
|---|------------------------------------|
| Watershed Administrative Unit | % Reduction in LWD Function in WAU |
| Rock Creek | 0.0819 |
| S. Sinclair Inlet | 0.0261 |
| Salmon Creek | 0.0455 |
| Salt Creek | 0.1979 |
| Samish Bay | 0.0904 |
| Samish River | 0.0932 |
| Satsop | 0.0739 |
| Scatter Creek | 0.0113 |
| Sekiu | 0.0216 |
| SF Skokomish | 0.0610 |
| SF Skykomish River | 0.0201 |
| SF Willapa | 0.0170 |
| Silverlake | 0.0741 |
| Smith Creek | 0.0214 |
| Squaticum Creek | 0.0709 |
| St. Peter-Lambert | 0.0248 |
| Stillaguamish Flats | 0.0163 |
| Sultan River | 0.0175 |
| Sumas River | 0.0472 |
| Sutherland Aldwell | 0.1677 |
| Tacoma Creek | 0.1030 |
| Tanwax Creek | 0.0415 |
| Toandos Peninsula | 0.0336 |
| Toutle River | 0.0750 |
| Upper Chehalis/Rock Creek | 0.0092 |
| Upper Coweeman | 0.0328 |
| Vancouver | 0.2007 |
| Vashon Island | 0.0502 |
| Vedder | 0.7609 |
| 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 | 0.0444 |
| Wynochee River System | 0.0097 |
| Yacolt | 0.1269 |
| Yelm Creek | 0.0551 |

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 over the five year time period of the Incidental Take Permits. There are a total of 846 watershed administrative units in the state of which 140 have some measure of reduction in potential recruitment function. Currently, in-office calculations indicate that each watershed

administrative unit has less than one percent cumulative reduction in function. The largest possible impact is in Lost Creek Watershed Administrative Unit which only has a total of 23,172 feet of fish-bearing stream length in the entire watershed administrative 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 Administrative Unit. There are two watershed administrative units that indicate a potential of 0.7 percent reduction in function, one at 0.3 percent, eight at 0.2 percent and twenty-six 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

An ongoing 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. The field review also serves to ground-truth what is actually happening on the application sites. State Forest Practices staff collect data during routine compliance visits to the application sites—including width of RMZ, percent of trees left after harvest, and length of RMZ.

Since September 2008, 76 20-acre exempt Forest Practices Applications have been visited during normal compliance activities. In FY 2011, staff visited 25 application sites that had Riparian Management Zones along a total of 12,325 feet of fish bearing stream. The 2010 - 2011 field visits showed no harvest in the 20-acre exempt riparian area on 9,825 feet or 79 percent of the 12,325 feet. Cumulatively, since September 2008, field visits show no harvest within the Riparian Management Zones along 74 percent of the 41,271 feet of fish bearing stream length found in the 76 forest practices applications visited. The field reviews seem to indicate that landowners are leaving more trees in riparian areas than was predicted when the Environmental Impact Statement Buffer Index averages were calculated. The field data for 20-acre exempt applications is recorded on an ongoing basis and reported annually.

The Forest Practices Compliance Monitoring Program collected additional field data on 20-acre exempt Forest Practices Applications during the 2008 field season. The [2008/2009 Forest Practices Compliance Monitoring Report](#), issued February 2011, contains a summary of the collected data for 20-acre exempt landowner applications. Unlike the on-going in-office calculations (described above) which calculate potential harvest effect of recruitable large woody debris and the on-going field visits (also described above) which look at percent trees harvested in the riparian area, this Compliance Monitoring Program report compared all forest practices actually conducted on the application site to the proposed forest practices as stated on the Forest Practices Application. Forty-five applications were assessed with 62 percent found to be in compliance with the application (Washington DNR, 2011). The data indicated that what the landowner planned to do on the Forest Practices Application was not always what was implemented. A compliance action plan was developed, based on the findings that were captured in the 2008/2009 Compliance Monitoring Program report and then presented to the Forest Practices Board in May 2011. The action plan included proposed actions for areas requiring further attention, including 20-acre exempt applications. The proposed actions were intended to

help improve compliance rates for their respective focus areas. Proposed actions for 20-acre exempt Forest Practices Applications include the following:

- Add approval condition on each 20-acre exempt riparian harvest FPA that the applicant must notify the forest practices program 48-hours prior to beginning harvest operations,
- Forest practices forester will make a minimum of two on-site evaluations during active period of FPA,
- Continue compliance monitoring surveys of 20-acre exempt harvests.

For more detail see compliance action plan document in Appendix #5.

Cumulative Stream Length for Water Resource Inventory Areas (WRIAs)

A fish-bearing stream baseline length was calculated for all water resource inventory areas. As in-office calculations indicate that watershed administrative units may be reaching the 10 percent threshold, the State will compare the total stream length in each watershed administrative unit to determine when the 15 percent threshold could possibly 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 water resource inventory 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 that show a possibility of being near 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 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 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 were no Forest Practices Applications associated with 20-acre exempt parcels in the bull trout areas of concern during the reporting period from July 1, 2010 through June 30, 2011.

6.7 20-Acre Exempt Forest Practices Application Data

Of the 5,219 Forest Practices Applications processed throughout the year, 4,222 were approved; and of those 97 were new, approved 20-acre exempt applications adjacent to fish-bearing streams.

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

| | |
|---|----|
| Total # of 20-acre forest practices applications with fish-bearing water | 97 |
| Total # of 20-ac exempt forest practices applications that were conversions with fish-bearing water | 5 |
| Total # of 20-ac exempt forest practices applications with fish-bearing water that were not conversions | 92 |
| Total # of 20-ac exempt forest practices applications that were in Bull Trout Areas of Concern | 0 |

Twenty-acre exempt non-conversion applications along fish-bearing water comprised approximately 2.2 percent of all approved applications submitted during the 2010-2011 reporting period. This percent was calculated with non-conversion 20-acre Forest Practices Applications. Previous reports included conversion 20-acre exempt applications in the percent calculations. Future reports will not include conversion 20-acre applications in the calculation because the Incidental Take Permits do not cover forest practices applications that are conversions.