



May 6, 2009

MEMORANDUM

TO: Forest Practices Board

FROM: Marc Engel, Acting Assistant Division Manager, Policy and Services

SUBJECT: Proposal Initiation for a Fixed-Width Rule

On March 31, 2009 the Board directed staff to develop an information packet to begin Stage 1 of the adaptive management process to develop the fixed-width riparian management rule concept. This process is outlined in Board Manual Section 22, part 3.1, "Initiation and Screening of Proposals." The Board intended that this information be forwarded to Darin Cramer, Adaptive Management Program Administrator, in May.

The packet is enclosed for your review. I'll be available at the May 20 meeting to answer your questions and request that you direct staff to forward the packet to Darin Cramer.

Enclosures



May 20, 2009

MEMORANDUM

To: Darin Cramer, Adaptive Management Program Administrator

From: Peter Goldmark, Chair
Forest Practices Board

Subject: Proposal Initiation: Fixed-width Riparian Rule

The Forest Practices Board requests that the adaptive management program investigate a proposal to add a fixed-width, no-entry riparian management option for riparian areas adjacent to Type S and F Waters on forest lands subject to the Forest Practices rules.

The following information is offered for your consideration. It is presented in the order listed in the in Board Manual Section 22, page M22-7.

1. *The affected forest practices rule, guidance, or DNR product.*

The Board requests Policy examination and development of a “fixed-width, no-entry” management option to be added to **WAC 222-30-021(1) Western Washington RMZs for Type S and F Waters**. The concept is a no-touch buffer which in effect extends the core zone out a specified number of feet depending on site class and eliminates the inner and outer zones.

Many forest landowners have expressed to the Board that the management options in current rule are onerous in their complexity and implementation costs. The effect is often a forfeiture of timber income. The Board wants to offer a simpler riparian management option than those currently available to landowners, that achieves a comparable level of riparian function as expected from the use of the existing management options. It eliminates the requirement to conduct extensive tree counting and use of a growth model.

The Board’s preliminary vision encompasses the following elements:

- An extended no-touch core zone.
- No inner or outer zone.
- One width for each site class for all stream sizes.
- The maximum length of the harvest unit is 1,000 feet.
- The required distance between harvest units is either the length of the harvest unit or 300 feet, whichever is the greater distance.
- The option is available to all landowners, however only for small harvest units 20 acres or less.

Table 1 shows the Board’s proposed zone widths per site class.

**Table 1
Proposed Fixed-Width Option
for Small Harvest Units Less Than 20 Acres**

Site Class	Fixed-Width Core Zone (feet) (measured from outer edge of bankfull width or outer edge of CMZ of water)
I	130
II	110
III	90
IV	80
V	80

Tables 2 and 3 are offered to show the comparison between the proposed no-entry buffer widths per site classes I–V, and the RMZ widths under current rule. Please note:

1. Under current rule, inner zone management is possible if a stand meets or exceeds the basal area stand requirement;
2. If a landowner chooses to apply the fixed-width proposal, no management is possible within the fixed-width core zone regardless of stand condition within the zone; and
3. The average of the fixed-width proposal across all site classes is 98 feet (see Table 3).

Table 2

Comparison of zone widths						
Site class	Current rule zone widths (feet)				Fixed-width, no-entry concept (feet)	
	Core + inner zones (management may occur in the inner zone)		Outer zone		Fixed-width, no-entry zone (no management may occur) All stream sizes	Outer zone
	Small streams	Large streams	Small streams	Large streams		
I	133	150	67	50	130	N/A
II	113	128	57	42	110	N/A
III	93	105	47	35	90	N/A
IV	73	83	37	27	80	N/A
V	60	68	30	22	80	N/A

Table 3

Comparison of no-harvest widths			
Current rule Options 1 and 2			Fixed-width no-entry proposal ¹
	Small streams	Large streams	All stream sizes
Option 1: Thinning may occur to the 50-foot core zone boundary	50 feet	50 feet	Average of widths for all site classes: 98 feet
Option 2: Minimum no-harvest width	80 feet	100 feet	

2. *The urgency based on scientific uncertainty and resources risk.*

The Board considers this to be a high priority. On March 31, 2009 the Board passed a motion indicating the desire to receive an Adaptive Management recommendation regarding this proposal at the earliest possible time. See the estimated timeline below.

3. *Any outstanding TFW, FFR, or Policy agreements supporting the proposal.*

The authors of the Forests and Fish Report acknowledged that the modification to and the adoption of certain forest practices rules "...will impose substantial additional financial burdens on forest landowners" and the "...impacts may be experienced disproportionately by different landowners."¹ The Board is interested in adding a fixed-width, no-entry option for landowners that will help mitigate economic impacts of the rules and increase likelihood of landowners retaining forest lands for forestry use.

On two occasions the Forests and Fish caucuses have discussed the efficacy of a "fixed-width" alternative to the current riparian rule structure – both at the Board's request. On July 21, 2008 Board staff convened a workshop to discuss feasibility of several proposals including a fixed-width option. And on March 12, 2009, Policy and CMER held a workshop focused solely on the fixed-width proposal distributed for 30-day review. Summaries of these workshops are listed in item 5 below and are enclosed.

4. *How the results of the proposal could address Adaptive Management Program key questions and resource objectives or other rule, guidance, or DNR product.*

The Board's intention is that the Adaptive Management-recommended proposal will maintain comparable levels of riparian function as expected from the current riparian management rules while lowering overall economic impact.

¹ Forests and Fish Report, section E. *Economic Impacts*

5. *Available literature, data and other information supporting the proposal.*

The Board recognizes that much scientific literature exists on riparian management and function, and requests that relevant and available literature be consulted.

In September 2008, the Department of Natural Resources' Forest Practices Program entered into an interagency agreement with the University of Washington, College of Forest Resources. The purpose was to investigate and analyze all available research and literature to assess the long-term value, appropriate species and piece size requirements, and the optimal recruitment zone for large woody debris. The resulting literature review and summary by Dr. Andrew D. Hill is enclosed.

Also enclosed are summaries of workshops described in item 3, and draft language for consideration.

Estimated Timeline: The Board expects a progress report from the Adaptive Management Program Administrator on August 12, 2009, and a petition for rule making from Policy prior to the Board's November 4, 2009 meeting. The following is a timeline that will accomplish these goals.

Late May – late June 2009	Adaptive Management Program Administrator conducts an assessment pursuant to Board Manual Section 22 guidelines.
End of June 2009 prior to July 2, 2009 Policy meeting	Adaptive Management Program Administrator recommends a proposal development track to Policy.
July, August, September 2009	Policy develops a fixed-width riparian rule for the Board's consideration.
August 12, 2009	Adaptive Management Program Administrator provides status report of Policy's progress to the Board.
Mid September – early October 2009	Policy co-chairs prepare the petition for rule making.
Early October mailing to the Board prior to November 4 Board meeting	Adaptive Management Program Administrator submits a Policy petition and rule proposal to the Board.
November 4, 2009	Forest Practices Board considers the petition and subsequent actions.

If you have questions or need additional information please contact Marc Engel, Acting Forest Practices Assistant Division Manager.

GR/

Enclosures: Draft language
 UW literature review
 July 21, 2008 "Caucus Recommendations" summary
 March 23, 2009 memorandum from Policy co-chairs to the Forest Practices Board

Forest Practices Board
March 2009
Fixed Width Option for Riparian Zones

WAC 222-30-021 *Western Washington riparian management zones.

These rules apply to all typed waters on forest land in Western Washington, except as provided in WAC 222-30-023. RMZs are measured horizontally from the outer edge of the bankfull width or channel migration zone, whichever is greater, and extend to the limits as described in this section.

See ~~the~~ board manual section 7 for riparian design and layout guidelines.

~~*(1) Western Washington RMZs for Type S and F Waters, have three zones: The core zone is nearest to the water, the inner zone is the middle zone, and the outer zone is furthest from the water. (See definitions in WAC 222-16-010.) RMZ dimensions vary depending on the site class of the land, the management harvest option, and the bankfull width of the stream. See tables for management options 1 and 2 below. Landowners may choose between four riparian management zone buffer options for these waters: Fixed width, conifer harvest options 1 and 2, and hardwood conversion.~~

None of the limitations on harvest in each of the three zones listed below will preclude or limit the construction and maintenance of roads for the purpose of crossing streams in WAC 222-24-030 and 222-24-050, or the creation and use of yarding corridors in WAC 222-30-060(1).

The shade requirements in WAC 222-30-040 must be met regardless of harvest opportunities provided in the inner zone RMZ rules. See ~~the~~ board manual section 1.

The department, in consultation with the departments of ecology and fish and wildlife, will monitor the implementation of the fixed width option as outlined in (a) of this subsection and report to the board one year after subsection (a) becomes effective and annually thereafter as directed by the board.

(a) **Fixed width option.** The landowner may choose for small timber harvest units less than or equal to twenty acres in size, to have one zone: The core zone. The width of the core zone varies depending on the site class of the land. (See definitions in WAC 222-16-010.) No timber harvest or road construction is allowed within the core zone except operations related to forest roads as detailed in subsection (1) of this section. The width of the core zone is determined by site class as shown in the "Fixed Width Option" table below. Any trees cut for or damaged by yarding corridors within the core zone must be left on the site. Any trees cut as a result of road construction to cross a stream may be removed from the site, unless used as part of a large woody debris placement strategy. The maximum length of the timber harvest unit adjacent to the stream for this option is 1,000 feet. The distance between harvest units must be equal to the harvest unit with the greater stream length, or 300 feet, whichever is greater.

Fixed Width Option
for Small Harvest Units Less Than 20 Acres

<u>Site Class</u>	<u>Fixed Width Core Zone</u> <u>(measured from outer edge of bankfull</u> <u>width or outer edge of CMZ of water)</u>
<u>I</u>	<u>130'</u>
<u>II</u>	<u>110'</u>
<u>III</u>	<u>90'</u>
<u>IV</u>	<u>80'</u>

(b) Conifer harvest options. Timber harvest units have three RMZ zones: The core zone is nearest to the water, the inner zone is the middle zone, and the outer zone is furthest from the water. (See definitions in WAC 222-16-010.) The dimensions of the RMZ vary depending on the site class of the land, the management harvest option, and the bankfull width of the stream. See tables for management options 1 and 2 below.

(i) Core zones. No timber harvest or construction is allowed in the core zone except operations related to forest roads as detailed in subsection (1) of this section. Any trees cut for or damaged by yarding corridors in the core zone must be left on the site. Any trees cut as a result of road construction to cross a stream may be removed from the site, unless used as part of a large woody debris placement strategy or as needed to reach stand requirements.

(bi) Inner zones. Forest practices in the inner zone must be conducted in such a way as to meet or exceed stand requirements to achieve the goal in WAC 222-30-010(2). The width of the inner zone is determined by site class, bankfull width, and management option. Timber harvest in this zone must be consistent with the stand requirements in order to reach the desired future condition targets.

"Stand requirement" means a number of trees per acre, the basal area and the proportion of conifer in the combined inner zone and adjacent core zone so that the growth of the trees would meet desired future conditions. The following table defines basal area targets when the stand is 140 years old.

Site Class	Desired future condition target basal area per acre (at 140 years)
I	285 sq. ft.
II	275 sq. ft.
III	258 sq. ft.
IV	224 sq. ft.
V	190 sq. ft.

Growth modeling is necessary to calculate whether a particular stand meets stand requirement and is on a trajectory towards these desired future condition basal area target. The appropriate growth model will be based on stand characteristics and will include at a minimum, the following components: The number of trees by diameter class, the percent of conifer and hardwood, and the age of the stand. See the board manual section 7.

(iA) Hardwood conversion in the inner zone. When the existing stands in the combined core and inner zone do not meet stand requirements, no harvest is permitted in the inner zone, except in connection with hardwood conversion.

(AI) The landowner may elect to convert hardwood-dominated stands in the inner zone to conifer-dominated stands. Harvesting and replanting shall be in accordance with the following limits:

(1aa) Conversion activities in the inner zone of any harvest unit are only allowed where all of the following are present:

- Existing stands in the combined core and inner zone do not meet stand

requirements (WAC 222-30-021 (1)(b)(ii));

- There are fewer than 57 conifer trees per acre 8 inches or larger dbh in the conversion area;
- There are fewer than 100 conifer trees per acre larger than 4 inches dbh in the conversion area;
- There is evidence (such as conifer stumps, historical photos, or a conifer understory) that the conversion area can be successfully reforested with conifer and support the development of conifer stands;
- The landowner owns 500 feet upstream and 500 feet downstream of the harvest unit;
- The core and inner zones contain no stream adjacent parallel roads;
- Riparian areas contiguous to the proposed harvest unit are owned by the landowner proposing to conduct the conversion activities, and meet shade requirements of WAC 222-30-040 or have a 75-foot buffer with trees at least 40 feet tall on both sides of the stream for 500 feet upstream and 500 feet downstream of the proposed harvest unit (or the length of the stream, if less);
- If the landowner has previously converted hardwood-dominated stands, then post-harvest treatments must have been performed to the satisfaction of the department.

(Hbb) In addition to the conditions set forth above, permitted conversion activities in the **inner zone** of any harvest unit are limited by the following:

- Each continuous conversion area is not more than 500 feet in length; two conversion areas will be considered "continuous" unless the no-harvest area separating the two conversion areas is at least half the length of the larger of the two conversion areas.
 - ◆ Type S and F (Type 1, 2, or 3) Water: Up to 50% of the inner zone area of the harvest unit on one side of the stream may be converted provided that:
 - ◆ The landowner owns the opposite side of the stream and the landowner's riparian area on the opposite bank meets the shade requirements of WAC 222-30-040 or has a 75-foot buffer of trees at least 40 feet tall or:
- The landowner does not own land on the opposite side of the stream but the riparian area on the opposite bank meets the shade requirements of WAC 222-30-040 or has a 75-foot buffer of trees at least 40 feet tall.
- Not more than 25% of the inner zone of the harvest unit on both sides of a Type S or F Water may be converted if the landowner owns both sides.

(Hcc) Where conversion is allowed in the **inner zone**, trees within the conversion area may be harvested except that:

- Conifer trees larger than 20 inches dbh shall not be harvested;
- Not more than 10% of the conifer stems greater than 8 inches dbh, exclusive of the conifer noted above, within the conversion area may be harvested; and
- The landowner must exercise reasonable care in the conduct of harvest activities to minimize damage to all residual conifer trees within the conversion area including conifer trees less than 8 inches dbh.

(Vdd) Following harvest in conversion areas, the landowner must:

- Reforest the conversion area with **conifer** tree species suitable to the site in accordance with the requirements of WAC 222-34-010; and
- Conduct post-harvest treatment of the site until the conifer trees necessary to meet acceptable stocking levels in WAC 222-34-010(2) have crowns above the brush or until the conversion area contains a minimum of 150 conifer trees greater than 8 inches dbh per acre.
- Notify the department in writing within three years of the approval of the forest practices application for hardwood conversion, if the hardwood conversion has been completed.

(Vee) **Tracking hardwood conversion.** The purpose of tracking hardwood conversion is to determine if hardwood conversion is resulting in adequate enhancement of riparian functions toward the desired future condition while minimizing the short term impacts on functions. The department will use existing or updated data bases developed in cooperation with the Washington Hardwoods Commission to identify watershed administrative units (WAUs) with a high percentage of hardwood-dominated riparian areas and, thus have the potential for excessive hardwood conversion under these rules. The department will track the rate of conversion of hardwoods in the riparian zone: (1) Through the application process on an annual basis; and (2) at a WAU scale on a biennial basis as per WAC 222-30-120 through the adaptive management process which will develop thresholds of impact for hardwood conversion at the watershed scale.

(#B) **Harvest options.**

(AI) No inner zone management. When the existing stands in the combined core and inner zone do not meet stand requirements, no harvest is permitted in the inner zone. When no harvest is permitted in the inner zone or the landowner chooses not to enter the inner zone, the width of core, inner and outer zones are as provided in the following table:

No inner zone management RMZ widths for Western Washington

Site Class	RMZ width	Core zone width (measured from outer edge of bankfull width or outer edge of CMZ of water)	Inner zone width (measured from outer edge of core zone)		Outer zone width (measured from outer edge of inner zone)	
			stream width ≤10'	stream width >10'	stream width ≤10'	stream width >10'
I	200'	50'	83'	100'	67'	50'
II	170'	50'	63'	78'	57'	42'
III	140'	50'	43'	55'	47'	35'
IV	110'	50'	23'	33'	37'	27'
V	90'	50'	10'	18'	30'	22'

(BII) Inner zone management. If trees can be harvested and removed from the inner zone because of surplus basal area consistent with the stand requirement, the

harvest and removal of the trees must be undertaken consistent with one of two options:

(4aa) **Option 1. Thinning from below.** The objective of thinning is to distribute stand requirement trees in such a way as to shorten the time required to meet large wood, fish habitat and water quality needs. This is achieved by increasing the potential for leave trees to grow larger than they otherwise would without thinning. Thinning harvest under option 1 must comply with the following:

- Residual trees left in the combined core and inner zones must meet stand requirements necessary to be on a trajectory to desired future condition. See board manual section 7 for guidelines.
- Thinning must be from below, meaning the smallest dbh trees are selected for harvest first, then progressing to successively larger diameters.
- Thinning cannot decrease the proportion of conifer in the stand.
- Shade retention to meet the shade rule must be confirmed by the landowner for any harvest inside of 75 feet from the outer edge of bankfull width or outer edge of CMZ, whichever is greater.
- The number of residual conifer trees per acre in the inner zone will equal or exceed 57.

Option 1. Thinning from below.

Site class	RMZ width	Core zone width (measured from outer edge of bankfull width or outer edge of CMZ of water)	Inner zone width (measured from outer edge of core zone)		Outer zone width (measured from outer edge of inner zone)	
			stream width ≤10'	stream width >10'	stream width ≤10'	stream width >10'
I	200'	50'	83'	100'	67'	50'
II	170'	50'	63'	78'	57'	42'
III	140'	50'	43'	55'	47'	35'
IV	110'	50'	23'	33'	37'	27'
V	90'	50'	10'	18'	30'	22'

(Hbb) **Option 2. Leaving trees closest to the water.** Management option 2 applies only to riparian management zones for site class I, II, and III on streams that are less than or equal to 10 feet wide and RMZs in site class I and II for streams greater than 10 feet wide. Harvest must comply with the following:

- 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;
- Residual leave trees in the combined core and inner zone must meet stand requirements necessary to be on a trajectory to desired future condition. See board manual section 7 for calculating stand requirements;
- A minimum of 20 conifers per acre, with a minimum 12-inch dbh, will be retained in any portion of the inner zone where harvest occurs. These

1 riparian leave trees will not be counted or considered towards meeting
 2 applicable stand requirements nor can the number be reduced below 20
 3 for any reason.

- 4 • Trees are selected for harvest starting from the outer most portion of the
 5 inner zone first then progressively closer to the stream.
- 6 • If (II) of this subsection results in surplus basal area per the stand
 7 requirement, the landowner may take credit for the surplus by harvesting
 8 additional riparian leave trees required to be left in the adjacent outer
 9 zone on a basal area-for-basal area basis. The number of leave trees in the
 10 outer zone can be reduced only to a minimum of 10 trees per acre.

11 **Option 2. Leaving trees closest to water.**

Site class	RMZ width	Core zone width (measured from outer edge of bankfull width or outer edge of CMZ of water)	Inner zone width				Outer zone width (measured from outer edge of inner zone)	
			stream width ≤10'	stream width ≤10'	stream width >10'	stream width >10'	stream width ≤10'	stream width >10'
				minimum floor distance		minimum floor distance		
			(measured from outer edge of core zone)	(measured from outer edge of core zone)	(measured from outer edge of core zone)	(measured from outer edge of core zone)		
I	200'	50'	84'	30'	84'	50'	66'	66'
II	170'	50'	64'	30'	70'	50'	56'	50'
III	140'	50'	44'	30'	**	**	46'	**

13 **Option 2 for site class III on streams >10' is not permitted because of the minimum floor (100')
 14 constraint.

15
 16 | **(iiiC) Where the basal area components of the stand requirement cannot be met**
 17 within the sum of the areas in the inner and core zone due to the presence of a
 18 stream-adjacent parallel road in the inner or core zone, a determination must be made
 19 of the approximate basal area that would have been present in the inner and core
 20 zones if the road was not occupying space in the core or inner zone and the shortfall
 21 in the basal area component of the stand requirement. See definition of "stream-
 22 adjacent parallel road" in WAC 222-16-010.

23 | **(AI)** Trees containing basal area equal to the amount determined in (iii) of this
 24 subsection will be left elsewhere in the inner or outer zone, or if the zones
 25 contain insufficient riparian leave trees, substitute riparian leave trees will be

left within the RMZ width of other Type S or F Waters in the same unit or along Type Np or Ns Waters in the same unit in addition to all other RMZ requirements on those same Type S, F, Np or Ns Waters.

(BII) When the stream-adjacent road basal area calculated in (iii) of this subsection results in an excess in basal area (above stand requirement) then the landowner may receive credit for such excess which can be applied on a basal area-by-basal area basis against the landowner's obligation to leave trees in the outer zone of the RMZ of such stream or other waters within the same unit, provided that the number of trees per acre in the outer zone is not reduced to less than 10 trees per acre.

(EIII) When the basal area requirement cannot be met, as explained in (iii) of this subsection, the shortfall may be reduced through the implementation of an acceptable large woody debris placement plan. See board manual section 26 for guidelines.

(+D) If a harvest operation includes both yarding and harvest activities within the RMZ, all calculations of basal area for stand requirements will be determined as if the yarding corridors were constructed prior to any other harvest activities. If trees cut or damaged by yarding are taken from excess basal area, these trees may be removed from the inner zone. Trees cut or damaged by yarding in a unit which does not meet the basal area target of the stand requirements cannot be removed from the inner zone. Any trees cut or damaged by yarding in the core zone may not be removed.

(eiii) Outer zones. Timber harvest in the outer zone must leave 20 riparian leave trees per acre after harvest. "**Outer zone riparian leave trees**" are trees that must be left after harvest in the outer zone in Western Washington. Riparian leave trees must be left uncut throughout all future harvests:

Outer zone riparian leave tree requirements

Application	Leave tree spacing	Tree species	Minimum dbh required
Outer zone	Dispersed	Conifer	12" dbh or greater
Outer zone	Clumped	Conifer	12" dbh or greater
Protection of sensitive features	Clumped	Trees representative of the overstory including both hardwood and conifer	8" dbh or greater

The 20 riparian leave trees to be left can be reduced in number under the circumstances delineated in ~~(e)(+)(iii)(D)~~ of this subsection. The riparian leave trees must be left on the landscape according to one of the following two strategies. A 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 diameter measured at breast height (dbh) of 12 inches or greater, must be left dispersed approximately evenly throughout the outer zone. If riparian leave trees of 12" dbh or greater are not available, then the next largest conifers must be left. If conifers are not present, riparian leave trees must be left according to the clumping strategy in subsection **(+B)** below.

(+B) Clumping strategy. Riparian leave trees must be left clumped in the following way:

(A1) Clump trees in or around one or more of the following sensitive features to the extent available within the outer zone. When clumping around sensitive features, riparian leave trees must be 8 inches dbh or greater and representative of

1 the overstory canopy trees in or around the sensitive feature and may include both
2 hardwood and conifer species. Sensitive features are:

3 (~~I~~aa) Seeps and springs;

4 (~~H~~bb) Forested wetlands;

5 (~~H~~cc) Topographic locations (and orientation) from which leave trees
6 currently on the site will be delivered to the water;

7 (~~I~~dd) Areas where riparian leave trees may provide windthrow protection;

8 (~~V~~ee) Small unstable, or potentially unstable, slopes not of sufficient area to
9 be detected by other site evaluations. See WAC 222-16-050 (1)(d).

10 (~~V~~ff) Archaeological or historical sites registered with the Washington state
11 department of archaeology and historic preservation. See WAC 222-16-050
12 (1)(g); or

13 (~~V~~gg) Sites containing evidence of Native American cairns, graves or
14 glyptic records. See WAC 222-16-050 (1)(f).

15 (~~B~~II) If sensitive features are not present, then clumps must be well distributed
16 throughout the outer zone and the leave trees must be of conifer species with a dbh
17 of 12 inches or greater. When placing clumps, the applicant will consider
18 operational and biological concerns. Tree counts must be satisfied regardless of the
19 presence of stream-adjacent parallel roads in the outer zone.

20 (~~#~~C) **Large woody debris in-channel placement strategy.** A landowner may design a
21 LWD placement plan in cooperation with the department of fish and wildlife. The plan
22 must be consistent with guidelines in the board manual section 26. The landowner may
23 reduce the number of trees required to be left in the outer zone to the extent provided in
24 the approved LWD placement plan. Reduction of trees in the outer zone must not go
25 below a minimum of 10 trees per acre. If this strategy is chosen, a complete forest
26 practices application must include a copy of the WDFW approved hydraulics project
27 approval (HPA) permit.

28 (~~#~~D) **Twenty riparian leave trees must be left after harvest** with the exception of the
29 following:

30 (~~A~~I) If a landowner agrees to implement a placement strategy, see (iii) of this
31 subsection.

32 (~~B~~II) If trees are left in an associated channel migration zone, the landowner may
33 reduce the number of trees required to be left according to the following:

34 (~~I~~aa) Offsets will be measured on a basal area-for-basal area basis.

35 (~~H~~bb) Conifer in a CMZ equal to or greater than 6" dbh will offset conifer in
36 the outer zone at a one-to-one ratio.

37 (~~H~~cc) Hardwood in a CMZ equal to or greater than 10" dbh will offset
38 hardwood in the outer zone at a one-to-one ratio.

39 (~~I~~dd) Hardwood in a CMZ equal to or greater than 10" dbh will offset conifer in
40 the outer zone at a three-to-one ratio.

41 *** (2) Western Washington protection for Type Np and Ns Waters.**

42 (a) **An equipment limitation zone** is a 30-foot wide zone measured horizontally from the
43 outer edge of the bankfull width of a Type Np or Ns Water where equipment use and other
44 forest practices that are specifically limited by these rules. It applies to all perennial and
45 seasonal streams.

46 (i) On-site mitigation is required if any of the following activities exposes the soil on more
47 than 10% of the surface area of the zone:

48 (A) Ground based equipment;

49 (B) Skid trails;

- (C) Stream crossings (other than existing roads); or
 - (D) Cabled logs that are partially suspended.
 - (ii) Mitigation must be designed to replace the equivalent of lost functions especially prevention of sediment delivery. Examples include water bars, grass seeding, mulching, etc.
 - (iii) Nothing in this subsection (2) reduces or eliminates the department's authority to prevent actual or potential material damage to public resources under WAC 222-46-030 or 222-46-040 or any related authority to condition forest practices notifications or applications.
- (b) **Sensitive site and RMZs protection along Type Np Waters.** Forest practices must be conducted to protect Type Np RMZs and sensitive sites as detailed below:
- (i) A 50-foot, no-harvest buffer, measured horizontally from the outer edge of bankfull width, will be established along each side of the Type Np Water as follows:

Required no-harvest, 50-foot buffers on Type Np Waters.

Length of Type Np Water from the confluence of Type S or F Water	Length of 50' buffer required on Type Np Water (starting at the confluence of the Type Np and connecting water)
Greater than 1000'	500'
Greater than 300' but less than 1000'	Distance of the greater of 300' or 50% of the entire length of the Type Np Water
Less than or equal to 300'	The entire length of Type Np Water

- (ii) No timber harvest is permitted in an area within 50 feet of the outer perimeter of a soil zone perennially saturated from a headwall seep.
- (iii) No timber harvest is permitted in an area within 50 feet of the outer perimeter of a soil zone perennially saturated from a side-slope seep.
- (iv) No timber harvest is permitted within a 56-foot radius buffer patch centered on the point of intersection of two or more Type Np Waters.
- (v) No timber harvest is permitted within a 56-foot radius buffer patch centered on a headwater spring or, in the absence of a headwater spring, on a point at the upper most extent of a Type Np Water as defined in WAC 222-16-030(3) and 222-16-031.
- (vi) No timber harvest is permitted within an alluvial fan.
- (vii) At least 50% of a Type Np Waters' length must be protected by buffers on both sides of the stream (2-sided buffers). Buffered segments must be a minimum of 100 feet in length. If an operating area is located more than 500 feet upstream from the confluence of a Type S or F Water and the Type Np Water is more than 1,000 feet in length, then buffer the Type Np Water according to the following table. If the percentage is not met by protecting sensitive sites listed in (b)(i) through (vii) of this subsection, then additional buffers are required on the Type Np Water to meet the requirements listed in the table.

1 **Minimum percent of length of Type Np Waters to be buffered when more than 500 feet**
 2 **upstream from the confluence of a Type S or F Water**

Total length of a Type Np Water upstream from the confluence of a Type S or F Water	Percent of length of Type Np Water that must be protected with a 50 foot no harvest buffer more than 500 feet upstream from the confluence of a Type S or F Water
1000 feet or less	refer to table in this subsection (i) above
1001 - 1300 feet	19%
1301 - 1600 feet	27%
1601 - 2000 feet	33%
2001 - 2500 feet	38%
2501 - 3500 feet	42%
3501 - 5000 feet	44%
Greater than 5000 feet	45%

3
 4 The landowner must select the necessary priority areas for additional 2-sided buffers according to
 5 the following priorities:

- 6 (A) Low gradient areas;
- 7 (B) Perennial water reaches of nonsedimentary rock with gradients greater than 20% in
 8 the tailed frog habitat range;
- 9 (C) Hyporheic and ground water influence zones; and
- 10 (D) Areas downstream from other buffered areas.

11 Except for the construction and maintenance of road crossings and the creation and
 12 use of yarding corridors, no timber harvest will be allowed in the designated
 13 priority areas. Landowners must leave additional acres equal to the number of
 14 acres (including partial acres) occupied by an existing stream-adjacent parallel road
 15 within a designated priority area buffer.

16 (c) None of the limitations on harvest in or around Type Np Water RMZs or sensitive sites
 17 listed in (b) of this subsection will preclude or limit:

18 (i) The construction and maintenance of roads for the purpose of crossing streams in WAC
 19 222-24-030 and 222-24-050.

20 (ii) The creation and use of yarding corridors in WAC 222-30-060(1).

21 To the extent reasonably practical, the operation will both avoid creating yarding
 22 corridors or road crossings through Type Np Water RMZ or sensitive sites and
 23 associated buffers, and avoid management activities which would result in soil
 24 compaction, the loss of protective vegetation or sedimentation in perennially moist
 25 areas.

26 Where yarding corridors or road crossings through Type Np Water RMZs or sensitive
 27 sites and their buffers cannot reasonably be avoided, the buffer area must be expanded
 28 to protect the sensitive site by an area equivalent to the disturbed area or by providing
 29 comparable functions through other management initiated efforts.

30 Landowners must leave additional acres equal to the number of acres (including partial
 31 acres) occupied by an existing stream-adjacent parallel road within a Type Np Water

1 RMZs or sensitive site buffer.
2
3

4 **WAC 222-16-010 General definitions.**

5 ...

6 "RMZ core zone" means:

7 (1) For Western Washington, the buffer of a Type S or F Water, measured horizontally from the
8 outer edge of the bankfull width or the outer edge of the channel migration zone, whichever is
9 greater. For timber harvest units [following either inner zone conifer harvest options 1 or 2, or the](#)
10 [hardwood conversion option](#) the core zone is fifty feet in width. [For timber harvest units following the](#)
11 [fixed width option, the core zone is determined based on site class.](#) (See WAC 222-30-021.)

12 (2) For Eastern Washington, the thirty foot buffer of a Type S or F Water, measured horizontally
13 from the outer edge of the bankfull width or the outer edge of the channel migration zone,
14 whichever is greater. (See WAC 222-30-022.)

15 ...

A Brief Overview of Large Woody Debris (LWD) Literature

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ABSTRACT

In the Washington Forest and Fish Rules there are five ecological functions that trees along riparian areas are thought to perform: Rule, WAC 222-16-010 states the five riparian function includes bank stability, the recruitment of woody debris, leaf litter fall, nutrients, sediment filtering, shade, and other riparian features that are important to both riparian forest and aquatic system conditions. This report focuses on LWD, its generation, and the appropriate buffer widths to allow recruitment of 85% of potential LWD by volume.

Large Woody Debris (LWD) is a cornerstone of fully functional riparian areas, as it provides structure both in streams and on land for habitat and it influences the form of the land on which it rests. For example, LWD when present in streams serves as a catalyst to create a deeper, narrower channel. The deeper, narrower channel is then more resistant to warming and provides more habitats for fish and other aquatic life (Lindenmayer and Franklin 2002). The structures that LWD provides adjacent to the stream are of equal importance for long-term stream bank ecological structure and for providing a reserve of LWD as the stream bed shifts and LWD that was adjacent to the stream moves into the stream bed. To that end, this report examines the following: LWD long-term ecological value, the size of pieces that would qualify as LWD, appropriate species for LWD recruitment, and the optimal recruitment zone for LWD.

This report then examines a proposed fixed width riparian buffer zone in light of these findings. The model used by Gary Graves for determine potential LWD recruitment seems to be conservative, and it is likely that a 75 ft. buffer would work in all cases for both large and small streams.

This report is also currently being reviewed at the School of Aquatic and Fishery Sciences.

LWD Long-term ecological value.

In general, a large old-growth Douglas-fir tree in the Pacific Northwest (PNW) is thought to have an ecological value lasting at least 1000 years (Lindenmayer and Franklin 2002). A tree's value as LWD can last for several hundred years, both as a snag and then as LWD after it falls to the ground or into a stream (Harmon, Franklin et al. 1986). A tree's ecological value in a riparian area can be thought of as composing two possible states: in the stream and out of the stream (Latterell and Naiman 2007). The ecological value exists whether the tree is in the stream or not. However, how the LWD functions is dependent on its relationship to the stream.

A piece of LWD can act as a habitat in and of itself if the organism of interest is sufficiently small, while a large set of LWD, such as found in stream blocking logjams, can have impacts far beyond the immediate set of wood in the jam. This being the case, LWD on the bank of the stream acts as a source of food and shelter for many animals that are tied to the stream for part of their life cycles, but dependent on the water for reproduction or food. LWD provides long-term ecological value to aquatic animals by creating a heterogeneous habitat in the stream. LWD serves to create pools and logjams that serve as habitats for fish, amphibians, and insects.

Given the long-term decay time of LWD, some of these features created by LWD in the water can have significant impact in the aquatic environment for longer than 100 years. This is especially true of conifer trees, which have a slower decay rate than hardwoods and are generally larger than hardwoods. It can be argued that conifer is a more important type of LWD based on its persistence in the environment (Opperman 2005). However, hardwoods can also provide a significant source of short-term (e.g., < 50 years for dead individual pieces) LWD to streams. In addition, hardwood LWD is sometimes living and serves in providing extremely stable key pieces in logjams (Opperman 2005).

LWD also has a significant impact on the morphology of streams (Bilby and Ward 1991; Nakamura and Swanson 1993; Hyatt and Naiman 2001; Faustini and Jones 2003; Benda, Hassan et al. 2005; Czarnomski, Dreher et al. 2008). LWD impacts the creation of pool, sediment storage, channel formation, island creation, as well as the depth and temperature of the stream. In short, LWD is a significant part of creating micro-habitats in riparian zones. It is generally now thought that the earlier practice of cleaning streams of LWD was in error. The supposed benefits of easing passage for fish were outweighed by the degradation of habitat for young fish.

So in summary, LWD has significant long-term ecological value. Both hardwood and conifer species contribute to the value of LWD in riparian zones. LWD provides habitat to both terrestrial and aquatic life. LWD serves as an important key in keeping streams livable for fish. So this leads us to the question of what would qualify as LWD in a stream.

Size of pieces that would qualify as LWD.

Generally, researchers have qualified as LWD any piece of wood larger than 10 cm (4 inches) in diameter in the middle and 1.5 meters (5 feet) long (McDade, Swanson et al. 1990; Vansickle and Gregory 1990; Bilby and Ward 1991; Young 1994; Benda, Bigelow et al. 2002; Acker, Gregory et al. 2003; Opperman 2005; Young, Mace et al. 2006). However, this is a research convention, and as things play out in nature what we see is that in general pieces that are longer than channel width have the greatest potential to provide some of the key ecological functions discussed above. For example, a piece of LWD with a 3 meter (10 foot) length would potentially provide a key piece of habitat in a stream 3 meter (10 foot) or less in width. So what qualifies as LWD for research purposes may not be functional LWD in the environment. For example a 1.5 m (5 foot) by 10 cm (4 inch) log is not going to provide much value in 10 m (33 foot) wide river, but it would provide value in a 1 m (3 foot) wide stream, and yet in a research context the piece would be counted in both.

In addition to length, diameter also serves a function in providing ecological value in LWD. The larger the diameter of a piece of LWD, the longer it takes to decay, the harder it is to dislodge, and the more likely it is to be a key piece in a logjam providing riparian function. In fact, even alone a large piece of LWD can have more function than a collection of smaller pieces.

The direct answer to the question posed above is that size to qualify depends on stream size. I believe the guidelines in the Forest Board Practices Manual Section 26, page M26-3 (shown below) are reasonable as guidance for pieces that could be foundational in debris jams. It should be noted that once the debris jams start to form, many small pieces of LWD can accumulate and together make a significant contribution to the function the LWD plays in the stream.

BFW (in feet)	Minimum Diameter
< 5 feet	12 inches
> 5 and < 16 feet	16 inches
> 16 and < 32 feet	22 inches
> 32 feet	26 inches

Appropriate species for LWD recruitment.

The general consensus of the literature is that any species of LWD is good LWD (Harmon, Franklin et al. 1986; Berg 1995; Keim, Skaugset et al. 2000; Hyatt and Naiman 2001; Opperman 2005). Since hardwoods have a shorter decomposition time—about 80% decomposed in 50 years—than conifers over the long-term, conifer recruitment is important unless there is perpetual stand of hardwoods providing LWD on a shorter time-frame than would a conifer stand. In general, hardwoods are recruited less than 10 m (33 feet) from the stream edge, with over 60% coming from within 2 m (7 feet) from the stream edge (McDade, Swanson et al. 1990; Opperman 2005). Recruitment of conifers can happen with trees that are up to 120 m (394 feet) from the stream edge (Harmon, Franklin et al. 1986; Bilby and Ward 1991; Naiman, Bilby et al. 2000; Czarnomski, Dreher et al. 2008). In most streams in the PNW, conifers are the primary source of LWD based on volume. This follows as conifers in the PNW grow many times larger by volume than hardwoods and can last much longer in the riparian system. In one case it was found that a cedar log had been active in a stream channel for 1400 years (Hyatt and Naiman 2001). These findings imply that over the longer term management for conifer in riparian areas should take priority over hardwoods.

It is generally consistent with stand development patterns in the PNW that first hardwoods inhabit a disturbed site, then, as they die out, conifer trees come to dominate the landscape. Therefore, in a management schema that is looking at riparian areas for centuries, hardwoods cannot be excluded from planning considerations because they will supply LWD until they are replaced on the landscape by conifers.

Optimal recruitment zone for LWD.

There is no optimal recruitment zone for LWD as a general rule. There are numerous site specific factors that need to be accounted for in a generalized rule or statement. These factors include tree height, slope, mortality rates, stand density, and stand treatments.

In every study I examined, the maximum distance for recruitment of hardwoods was 10 m (33 feet). The maximum distance from the stream for conifers was about 100 m (328 feet). Of primary interest in this process is not only the maximum distance from the stream, but the distance at which extending the buffer causes a diminishing return. The general form of the function is an exponential function. The empirical data on which these models are based show that most (> 90%) conifer LWD is recruited from less than 30 m (98 feet) from the stream (McDade, Swanson et al. 1990; Vansickle and Gregory 1990; Benda, Bigelow et al. 2002; Welty, Beechie et al. 2002).

The empirical data used to create models show that recruitment happens up to 100 m (328 feet) from the stream edge, but only about 5% comes from beyond 30 meters (98 feet) from the stream. In contrast, the models developed from these data exaggerate the impact of trees farther from the stream. For example, the McDade et al. (1990) model uses a random fall scenario to model LWD inputs into the riparian system. In general this approach puts about 21% of total recruitable wood into the stream system. Research in the past several years has shown that trees in riparian areas fall toward the stream, rather than at random (Naiman, Bilby et al. 2000; Liquori 2006; Sobota, Gregory et al. 2006). This implies that, as the graphs in these studies show, bias must be taken into account in understanding why the models consistently overpredict the actual distance from stream side that a tree might contribute to the LWD found in a stream.

There are several hypotheses that are used to explain this bias (Wondzell and Swanson 1999; Naiman, Bilby et al. 2000; Liquori 2006; Latterell and Naiman 2007). First, the water table acts as a hardpan by creating an anaerobic environment close to the surface, which causes the trees in riparian areas grow shallow root systems. Second, since even small stream openings create an area of increased light, trees have more crown on the stream side, so when trees do fall they fall towards the heavier side. There is also the thought that since the land in streams tends to slide toward the stream the trees are being pushed streamward way as they grow and the land slides. Last, the landforms effect on the prevailing wind direction might influence fall direction.

Theoretical models show that at 2/3 tree height about 85% of LWD can reach the stream (McDade, Swanson et al. 1990; Vansickle and Gregory 1990; Benda, Bigelow et al. 2002). In all cases these models rely on tree height as the driving variable in the equation. These models also assume that the fall of a tree and its potential contribution is not intercepted before it meets the stream. These two assumptions could explain why we seem to see that at 30 m (98 feet) from the stream edge trees seem to stop contributing significant volume to the stream as LWD. Since the data that is used to create the models shows that trees beyond 30 m (98 feet) do not contribute significant LWD volume to the stream and volume of the individual pieces is the most important factor in determining the ecological value of LWD, we could argue that 30 m (98 feet) is the limit of the optimal recruiting zone of LWD.

How and at what rate mortality occurs is also a driving factor in the rate of LWD input in a stream. Most models assume that mortality is constant, with some fixed coefficient that generates a consistent input into the stream system. However, this assumption is generally held as false even when it is used. Mortality is instead thought to be episodic; that is, there is a burst of LWD inputs, then there is a period where very little LWD is being input, then another burst of LWD falls into the stream (Harmon, Franklin et al. 1986; Robison and Beschta 1990; Vansickle and Gregory 1990; Hairston-Strang and Adams 1998; Bragg 2000; Benda, Bigelow et al. 2002; Liquori 2006; Van Pelt, O'Keefe et al. 2006). For example, in a study by Acker, Gregory et al.

(2003) lasting 20 years, 65 % of the LWD volume input happened in a single year. In the same 2003 study by Acker, Gregory et al., in at least one case 90% of the LWD in a stream was due to one tree.

This implies that managing mortality might be an option for placing LWD into streams. It should be fairly obvious that LWD with rootwads attached will come from close to the stream. These pieces will perform a significant ecological function in terms of increased ability to stay in place in the stream compared to a piece of similar volume without a rootwad (Braudrick and Grant 2000). However, since many pieces of LWD do not have rootwads, it may be possible to actively fell trees from farther away from the stream to increase the amount of LWD in a way that mimics nature. Provided we leave trees close the stream intact, and cut the trees felled into the stream in lengths that exceed stream width, I believe this would significantly contribute to riparian function.

Additionally, since volume of the individual pieces of LWD seems to be the most important factor in how LWD affects riparian function, having felled some trees will create growing space for the remainder of the trees in the buffer, which in turn will increase their growth rate, provided the crown ratios of the tree left in the stand is 30% or more. This increased growth should, in turn, decrease the time until the next episode of significant LWD input.

Evaluation of proposed fixed width riparian buffer zone in light of empirical findings and models.

First, it should be noted that all the theoretical models cited above based on empirical data are conservative in their prediction of LWD recruitment. This is because in all cases there is a small set of data that comes from much farther away from the stream than most does, and this makes the function stretch out so that the probability of trees closer to the edge is reduced. In addition, all the models assume random fall direction, while more current research shows that tree fall in riparian areas is biased towards the stream (Acker, Gregory et al. 2003; Liquori 2006). Also, most of the models focus on the number of pieces recruited, not the volume of the pieces recruited. This will also tend to cause the effective recruitment distance to be larger.

What this means in terms of the proposed fixed width riparian buffer zone is that it is probably under predicting the amount of LWD that will fall into a stream and that the proposed 120 ft buffer for streams with a bankfull width greater than 10 feet is probably too wide. The 100 ft buffer for streams with a bankfull width less than 10 feet is also most likely wider than is needed. In general, the proposed fixed width riparian buffer zone will generate enough LWD that with the required leave trees in the outer zone enough LWD will be generated to meet the 85% threshold required by law.

The two best examples of this are found in the work by McDade et al. (1990) and Benda et al. (2002). In the McDade et al. paper we see in their published Figure 4 a graph of the empirical data and the models he developed. This graph shows that a 25 m (82 feet) buffer in a mature conifer stand would achieve about a 90% total input of LWD into the stream. In contrast, the theoretical model McDade et al. used shows that for a stand that is 40 m (131 feet) tall, 85% LWD will not be inputted into the stream in a buffer less than 32 m (105 feet). This is because McDade et al. assume a random fall direction and are predicting number of pieces, not volume.

Benda et al. (2002) also demonstrate the need to closely examine the modeling assumptions used, as in some cases they differ substantially from the data collected to create the models. In a few cases in Benda et al. (2002), exceptional data causes the regression line used to substantially cause under prediction, so that a 25 m (82 feet) buffer looks like a poor fit. However, most of the data they collected and present show that a 25 m (82 feet) buffer would be wide enough to meet the 85% recruitment requirement at age 140.

Additional support for the proposed fixed width riparian buffer zone comes from some simple calculations based on potential tree height. Using McArde's (1949) work we can calculate the maximum distance from the stream for the best site class I: $232\text{ft} \times 2/3 = 155\text{ft}$. According to the theoretical models this would be the upper limit for a reasonable buffer. However, this calculation is based on the number of pieces of LWD that a stand age 140 might generate, not the volume of the pieces. Since we have evidence that first 30 m (98 feet) seems to generate nearly 100% of the LWD volume, evidence would suggest that the formulations above is about 77 ft too wide.

Furthermore, sites as good as the one used in the calculation above are very rare. In fact, in McArde's (1949) work, only 1 stand out of 245 was this productive, with most sites being low site class II ($n = 51$) and high site class III ($n = 42$). What this suggests is that if we are to adopt a uniform rule, a buffer width based on the most productive sites would be overly restrictive more than 99.5% of the time, while a rule based on the most frequent site class would underperform—if we believe the theoretical models—32% of the time. But these models' accuracy is in doubt, so it is likely that we would exceed the volume goal with a buffer width of 25 m (80 ft).

So in summary, it looks as if Mr. Graves's modeling efforts using McDade's model are conservative in terms of LWD inputs. I believe that the proposed fixed width riparian buffer zone will meet the riparian function for LWD spelled out in the DFC rules.

Cautions and notes.

First caution: LWD inputs are at a minimum when a stand is mature. So in the case for these specific rules and proposals, I think most of the wood will come in the first 10 or so years after harvest via blow down. This may clear enough growing space that no competitive mortality takes place for many years into the future. Then when the mortality does take place, it will be fairly slow, but the volume of the inputs will be fairly massive.

Second caution: Blowdown will be the main cause of mortality after harvest in riparian areas. In all cases that I am aware of, blowdown is biased heavily toward the stream. This will generate a good supply of LWD while the stand matures. However, since blowdown affects the former interior edge more than the side toward the stream, buffers that are too wide will actually inhibit the ability of LWD caused by blowdown to reach the stream.

Third caution: I am beginning to think that active management of the riparian zone is needed to achieve DFC. I am not sure passive management is really going to get us there in the time line set by the rules.

First Note: There is no research on how trees respond to riparian buffer in terms of growth. Since we are trying to make policy based on science, this is research that needs to be done, and sooner rather than later. If we get a good response to more space, we could decrease the buffer width and still get the LWD we need. Or we may find the opposite. We just don't know. I have some ideas about how to do this that won't be too expensive in terms of time or money.

Second Note: It is probably true that even a 75 foot no cut core zone with an average of 20 leave trees per acre in the outer zone would generate enough wood. However I would be more comfortable with an 80 ft. no cut core zone buffer with required leave trees in the outer zone. This is about 25 m and all the literature suggests that this will be enough, at least in the majority of cases. I don't really think this should be contentious. The information is fairly plain and uniform. Even in old-growth stands 30 m (98 feet) is where significant volume generation ends as far as I have been able to discover. (This is only supported by two studies, which is why I did not emphasize it above, but they publish their data so they have more validity than studies that don't.)

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CAUCUS RECOMMENDATIONS

DFC Evaluation Workshop

Sawyer Hall

July 21, 2008

The following outlines the recommendations of each Forests and Fish caucus regarding concepts for further consideration for long-term DFC forest practices rules.

The terms used by the caucus participants in this meeting were:

- “Industry proposal.” Refers to the proposal offered by the industry in 2007 during discussions about DFC rule proposals.
- “Fixed-width, no entry proposal.” Refers to a proposal conceptualized by Mark Hick, DOE, in which a riparian zone of some width (for example 120-ft for site classes 1, 2, 3, and 85-ft for site classes 4, 5) would be established as an option in the rules for landowners who prefer a simple approach.
- UW concepts 1, 2, 3, 4, and 5 refer to the five conceptual alternatives for DFC modeling offered by Dr. Andrew D. Hill and Dr. Eric C. Turnblom in a July 14, 2008 paper.
- “Support.” A caucus recommends that the Forest Practices Board gives further consideration to a concept for the DFC rules.

State Caucus

Supports further consideration of:

- Industry proposal, with caveats:
 - Thinning table is validated or modified to achieve DFC.
 - More discussion and agreement takes place regarding the concept of thinning below the floors.
- Fixed-width, no entry. Need to continue discussion about appropriate RMZ widths.
- UW concept 1, as it utilizes existing data.
- UW concept 2, as it utilizes existing data.

The State Caucus does not support further consideration of UW concepts 3, 4, or 5 because small gains in proportion to costs in time and money.

Local Government Caucus

In general supports further consideration of the proposals that move away from dependence on a growth model and provide simpler options for landowners. Supports further consideration of:

- Industry proposal, if the caucuses can agree on the thinning table.
- Fixed-width, no entry if caucuses can agree on widths and site classes aren't part of the concept.
- UW concept 1.

Federal Caucus

In general favors simple approaches which will require a minimum of time and money to develop. Supports further consideration of:

- Industry proposal with validation of the thinning table.
- Fixed-width, no entry; simpler option for landowners; paper work would need to be done for the HCP.
- UW concept 1.
- UW concept 2.

Tribal Caucus

Support further consideration of:

- Industry proposal.
- Fixed-width, no entry.
- UW concept 3 (riparian stand data for tables) if no CMER money is spent.

Don't object to UW concepts 4 or 5; it would be good to have more riparian stand data - but costs will be prohibitive. Oppose spending CMER dollars!

Do not support UW concepts 1 or 2 – they don't buy us what we want.

Conservation Caucus

Support further consideration of fixed-width, no entry option.

Do not support Industry proposal.

No Conservation Caucus opinion yet on the five UW concepts.

If continue to use a model, should have a good model built on riparian stand data.

Should concentrate on how prescriptions are used, and how often.

Landowner Caucus

Support concepts that landowners receive prescriptions from look-up tables.

Encourage landowners to manage RMZs and provide multiple-entry opportunities.

Avoid taking any funding from CMER. Give high priority to effectiveness monitoring.

Can support further consideration of:

- Industry proposal.
- Fixed-width, no entry concept if more research on the right width/s; provides another option for landowners.
- UW concept 1. Can live with the current model if updated, and if it develops realistic and useable thinning prescriptions. Use existing data.

Look at combining UW concepts 1 and 3.

March 23, 2009

MEMORANDUM

TO: Forest Practices Board

FROM: Tom Robinson, Forests and Fish Policy Co-Chair
Stephen Bernath, Forests and Fish Policy Co-Chair



SUBJECT: Policy/CMER Workshop on Fixed Width Riparian Management Zone Proposal

At the February 11, 2009 Forest Practices Board meeting the Board initiated a 30-day review/comment on a fixed width riparian management zone (RMZ) proposal for small harvest units. The Board also directed Policy and CMER to review and comment on the proposal during the 30-day period. Since it was not feasible to develop a consensus opinion from Policy and CMER within the 30-day period, we held a workshop on March 12, 2009 in order to review the proposal. A total of 34 people attended the workshop for at least part of the day, which included six CMER members and seven Policy representatives. Not every caucus had both a CMER member and Policy representative in attendance, but each caucus was represented by at least one person.

The State caucus presented the background/context for the proposal and answered clarifying questions. Each caucus was provided time to meet individually and draft substantive and/or procedural comments and suggestions regarding the proposal. Each caucus then presented those comments and suggestions to the group. Following the caucus reports, comments and suggestions were displayed to the group to ensure they were recorded accurately (attached). While this may not be what the Board was expecting by way of a response, it's the best we could do within the time allowed. Below is a summary of the comments.

Procedural Comments/Suggestions

There were no areas of complete consensus with regard to process.

Four of six caucuses supports moving the proposal forward, but at least two of those four are concerned about procedural risk. They are unsure of what process will be used should the proposal move forward, and one of those two would like a clear articulation of the process steps so procedural risk can be evaluated. One of the four thought the proposal was within the Board's decision space given the broad and vague rule making petition forwarded to the Board from Policy (regarding DFC), and the Board's subsequent request for a simple RMZ alternative. One of the four noted the legislative direction to provide "*alternate harvest restrictions*" that meet resource protection goals and lower costs for small forest landowners (SFLOs), and that directive was not contingent upon CMER oversight. This caucus also thought development of this proposal was consistent with Forests and Fish process. Two of the four were not interested in proceeding if the proposal would require an amendment to the Forest Practices Habitat Conservation Plan (FP HCP).

Two of six caucuses did not make clear statements of support for the proposal, and expressed concerns about inconsistency with the Adaptive Management process. One supports efforts to assist SFLOs to stay in forestry, but expressed concerns about the process whereby this proposal was developed. Both thought that any proposal, should it be advanced, needs to be aimed only at SFLOs and be consistent with the Adaptive Management process since ad-hoc solutions set bad precedent. One of the two caucus expressed concerns about being excluded from discussion regarding development of the proposal regardless of what process is being used.

Substantive Comments/Suggestions

There were also no areas of complete consensus with regard to substance.

Again, four of six caucuses support moving the proposal forward. Two of those four noted potential reductions in LWD recruitment and shade, but thought the reductions were likely small enough that they weren't significant concerns and/or could be addressed through other constraints. One of the four thought there should be a fixed width RMZ option for all landowners, and riparian function concerns could be addressed by having different options for large and small landowners. One of the four thought there may still be some harvest unit adjacency issues that need to be addressed prior to advancing the proposal.

Two of six caucuses noted that effectiveness of the current RMZ prescription is unknown; one of those two did not think there was scientific rationale to narrow the RMZ. The other caucus noted that any alternative RMZ should be couched in terms of the DFC validation data, those (and potentially other) data are available and could be used to develop a fixed width RMZ. In any case, if the Board wants CMER review they need to provide very specific direction; there are several possible approaches to assess equivalency with the current rule but they would all take time under the CMER process. One of the two expressed concern about ownership pattern and cumulative effects of the proposal, particularly if large landowners were eligible to use it, and would like to see a limit by stream length. The other caucus mentioned the "low impact" assumption of the proposal could be acknowledged and evaluated within the review.

Three of six caucuses supported implementation monitoring as an important element to the proposal should it advance. One of the three questioned DNR's ability to fund and effectively carry out implementation monitoring, and another noted that the details of implementation monitoring need to be addressed before the proposal advances.

Conclusion

The lack of consensus illustrated by this Policy/CMER review limits any attempt at providing recommendations. There is majority support for providing a fixed width RMZ option to the SFLO community. There is no consensus on the adequacy of the current Board process. Attempting to achieve consensus on any proposal will likely require considerable time and effort with no guarantee of success.

dc/
Attachment

March 12, 2009 Fixed Width RMZ Workshop - Caucus Comments/Suggestions

Caucus	Substantive Comments/Suggestion/Support	Procedural Comments/Suggestion/Support
Large Landowners	<ul style="list-style-type: none"> LWD: approximately 1.6% recruitment reduction if changed from 100 ft to 90 ft - relatively small change. Sediment: less concern Shade: approximately 2.6% reduction if changed from 100 ft to 90 ft - relatively small change. Litter fall: less concern Bank Stability: less concern Implementation Monitoring: Support 	<ul style="list-style-type: none"> Support proposal moving forward; however, it's unclear as to what process is and will be used to advance proposal. Would like the state to clearly articulate the path forward so process risk can be evaluated - show the pathway through the Forest Practices Act. Want to make sure it's not subject to litigation as a result of process foul. Don't want this proposal to put the HCP at risk; don't support if requires amendment to HCP.
Small Landowners	<ul style="list-style-type: none"> Current rules to complex for SFLO and they are disproportionately impacted. Efforts to date to address these two issues have not been satisfactory to SFLO's. The fixed width proposal addresses the complexity issue and would help make F&F work for SFLO's. Disproportionate impact needs to be addressed as a second step by developing a statewide strategic plan of tax and legislative options to offset those impacts. This proposal increases RMZ protection by increasing the no harvest area. 	<ul style="list-style-type: none"> SFLO's see this as being within the F&F process and want to see it move forward. If this process details they will consider other options.
Tribal	<ul style="list-style-type: none"> LWD: How much is enough? We don't know what we're getting now. Concerned about wind throw. Don't know if buffers we have are effective or not because they are a moving target. No science to support narrowing exiting buffer. What sort of analysis has been done to support this proposal? Implementation Monitoring: Concerned about ability to monitor abuse (adequate budget). Would support it being only for SFLO, much less 	<ul style="list-style-type: none"> Tribes support AM process and want to see it work; however, process is already broken and dysfunctional, this proposal didn't break it. Tribes were excluded. Feel separation between AM process and the state. Tribes weren't involved as another government/co-manager.

March 12, 2009 Fixed Width RMZ Workshop - Caucus Comments/Suggestions

	<p>chance of abuse. Keep in mind cumulative effect of large amount of small harvests in RMZs.</p> <ul style="list-style-type: none"> • Other: Limit to SFLO (as defined in rule) and limit stream length. Concerned about ownership pattern effects (large land owners). Tribes, CMER and others have data relevant to this issue that wasn't used. Do we want to bring this back into the AM process? 	
Conservation Caucus	<ul style="list-style-type: none"> • Effectiveness of the current rule is unknown. Use data from DFC validation study - follow-up work could still be done and used to inform a different RMZ approach. Final proposal needs to be couched in terms of the DFC validation study. Would like a clear directive from FPB to CMER. There are a lot of different ways to determine equivalency but it takes time under CMER's process. • Uncertainty about the frequency of SFLO harvest and size of harvest (low impact) could be acknowledged in the review. 	<ul style="list-style-type: none"> • Willing to work to keep SFLOs in forestry, but also want to stick to the science process. Support this only for SFLOs. Concerns with stepping away from F&F process. • Don't make exceptions to AM process; ad-hoc solutions set bad precedent. Anything that comes out of this proposal needs to be consistent with prescribed AM process.
Counties	<ul style="list-style-type: none"> • Support fixed width buffer for all landowners. Fixed width proposal could be different for large and small. 	<ul style="list-style-type: none"> • Policy dumped this on the Board and therefore we are responsible. FPB is operating with in their decision space.
State	<ul style="list-style-type: none"> • LWD: provides a little bit less than the current rules. (For site class III large streams provides less protection) • Implementation Monitoring: details need to be worked out. • Concern about adjacency issues; however the proposal wouldn't have gotten to this place if we didn't feel it was good enough to move to rule making process. Goal is less cost for SFLOs in terms of rule implementation while still protecting the resources. 	<ul style="list-style-type: none"> • Don't want to trigger an amendment to HCP - Is it consistent with existing processes? • Need to figure out how we are going to work better together in the future.
Federal	Nothing to add	Nothing to add

October 26, 2005

To: Senate Natural Resources, Parks & Shorelines
Senate Environment, Energy & Water
Senate Ways and Means Committee
House Natural Resources Committee
House Agriculture and Ecology Committee
House Appropriations Committee
House Capital Budget Committee
Joint Administrative Rules Review Committee

From: Pat McElroy, Chair
Forest Practices Board

On behalf of the Forest Practices Board, I submit the following two reports: (1) information on the Forests and Fish Report and the permanent forest practices rules, as required by RCW 76.09.380, and (2) a report on the Riparian Open Space Program, established by RCW 76.09.040. As required by WAC 222-23-025, the report reviews and provides recommended amendments to the Riparian Open Space Program.

(1) Forests and Fish Report

The Forest Practices Board is required to provide a summary of modifications made to the Forests and Fish Report after January 1, 2000, and a summary of modifications to the permanent rules via the adaptive management process. To date, there have been no modifications to the Forests and Fish Report. The only modifications to the permanent Forest Practices rules that are specific to aquatic resources and salmon recovery are changes to the Road Maintenance and Abandonment Plan requirements for small landowners per SSHB 1095.

While the adaptive management process has so far not resulted in any modifications to the permanent rules, the diligence and hard work of the Forests and Fish stakeholders, supported by department staff, has resulted in the completion of the first two Cooperative Monitoring, Evaluation, and Research studies for the Adaptive Management Program: *Type N Stream Demarcation Study* and *Validation of the Western Washington Riparian Desired Future Condition (DFC) Performance Targets*. On September 15, 2005, the Board initiated the rule making process to modify permanent rule language based on the results of these studies.

(2) Riparian Open Space Report

See attached.

If you have any questions or would like more information on this report, please contact me at 360-902-1603.

C: Forest Practices Board and liaisons
Omroa Bhagwandin, Riparian Open Space Program Manager

The Forest Practices Board's Report to the Legislature:

RIPARIAN OPEN SPACE PROGRAM RCW 76.09.040, Chapter 222-23 WAC

Program Review, Recommended Modifications, Points of Interest

The legislature added the Riparian Open Space (ROS) Program to the Forest Practices Act in 1999 as part of ESHB 2091. As directed in this law, the Forest Practices Board adopted rules in 2001 to implement the ROS Program. The rules require a Board report to the legislature that reviews and recommends amendments to this program. What follows is that report.

Background

The ROS Program provides landowners compensation for lands within unconfined avulsing channel migration zones that cannot be harvested due to the Forest Practices permanent rules. The law and rules direct the Department of Natural Resources (department) to purchase qualifying land in order to manage that land for ecological protection or fisheries enhancement. Lands may be purchased either as fee land or as a perpetual timber conservation easement. The department may retain and manage these lands or transfer the land or easement to another state agency, a local governmental agency, or a private non-profit nature conservancy program.

Summary

Since the inception of the ROS Program in 2001, the department has purchased 583 acres of qualifying channel migration zone lands for a total value of \$1,470,000. The first two applications of this current biennium are in process, representing an estimated 310 acres for a value of \$780,000.

All lands have been purchased as perpetual timber conservation easements. These eight easements have been purchased from three landowners. The lands are located in Jefferson County along the Hoh River, in Clallum County along the Hoko and Bogachiel Rivers, and in Snohomish County along the Stilliguamish River. The department currently retains all eight easements, that is, the department has not transferred ownership to any other entity.

Fifteen applications submitted to the department did not result in successful purchases. A CMZ that does not qualify, a low timber value, and landowner concerns about potential transfers of timber easements to a third party have been the three most frequent reasons for the lack of a final transaction.

Please see Appendix A, DNR Riparian Open Space Program Application Status and History, for further details.

Review of the ROS Program

In the first biennium of the program (2001-03), the department utilized the entire \$1,000,000 allocated by the legislature to purchase 387 acres in three easements valued at \$958,259 and for program administration costs. In the second biennium (2003-05), the department was unable to utilize the entire \$1,000,000 allocated by the legislature. The department was only able to purchase 197 acres in five easements valued at \$510,973 plus administration costs, despite repeated Requests for Proposals to the public. Upon request of the department, the legislature reappropriated the remaining funds to the current biennium. Additionally, the legislature newly appropriated \$1,500,000 for the 2005-07 biennium. The current applications of the new biennium have an estimated value of \$780,000, leaving approximately \$1,220,000 available for the 2005-07 biennium.

These eight perpetual timber conservation easements were purchased from three landowners: Rayonier Forest Resources LP with six easements, Western Rivers Conservancy, and Pacific-Denkman Company. The department currently retains all eight easements. Two applications under current review are from New Milwaukee Forest LLC and Cascade Land Conservancy in Jefferson and Kittitas counties, respectively.

Of the 23 applications submitted to the department, 15 applications were either disqualified by the department or withdrawn by the landowner. All five disqualifications were because the proposed channel migration zone lands did not qualify as unconfined avulsing channels (see Recommendations). Eighty percent of the ten withdrawn applications were due to two issues: landowner concerns with management by a third party if the department exercises the option to transfer the easement (see Point of Interest) and the minimal value of the channel migration zone timber.

To date, the department has completed all its required processing tasks for each application within the required 90 day time period, so landowners have claimed no compensation adjustments. This includes the four applications that were delayed over survey requirement standards (see Point of Interest).

The department's administrative costs for the ROS Program have been approximately \$45,000 per fiscal year. Cost per application is most dependent on the time required to determine whether or not the land (CMZ) qualifies for the program. Department responsibilities for each application include, in part, application review for completeness, field review to confirm CMZ type and delineate the final CMZ boundary, timber cruise to appraise the timber value, Requests for Proposals to the public encouraging participation in the program, and reporting to the Office of Financial Management (per SSB 5401 and ESSB 6094).

Recommended Amendment

Open the ROS Program to landowners with all types of CMZs. While there are many types of CMZs, the ROS Program applies exclusively to "unconfined avulsing" CMZs. The elimination of other types of CMZs limits the potential for all forest landowners with

CMZs to participate in the program, limits perpetual ecological protection and fisheries enhancements along all CMZs, and increases the cost of administering the ROS program.

If the program was open to all CMZs, more forest landowners would be eligible for compensation resulting in a greater number of successful transactions that would protect habitat and enhance salmon recovery on a larger scale across the state. In addition, the program could be implemented at a lower cost per transaction due to staff not having to spend time distinguishing “unconfined avulsing” channels from other types of CMZs.

Points of Interest

Transfer of Timber Conservation Easements. Landowners have rejected participating in this program, including withdrawing their applications in process, over concerns about the program’s management responsibility and easement transfer options. The issue is the department’s authority to transfer the easement to a non-governmental third party that would then have management authority and/or easement interest to that portion of their land.

In Perpetuity. Landowners who initially applied for the program have chosen to withdraw their application because participation involves transferring a permanent interest in their land. A landowner must either sell their fee ownership or lock up the timber interest in perpetuity. Public comment received from landowners considering the ROS Program indicate a preference for the Forestry Riparian Easement Program’s 50 year easement term.

Survey Requirements. Program staff will be reviewing rule language on the ROS Program’s survey standards to ensure there is no conflict with RCW 58.24.040, survey standards for state agencies. Agency survey staff have indicated this potential conflict, and if a conflict exists, a correction to the ROS Program rules will be proposed to the Forest Practices Board.