

## STAFF REPORT

Agenda Item No.:	2
Work Plan:	Private Forests Work Plan
Topic:	Water Quality Protection
Presentation Title:	Additional Analyses of Riparian Prescriptions and Considerations for Board Decisions
Date of Presentation:	July 23, 2015
Contact Information:	Peter Daugherty, Private Forests Division Chief 503-945-7482, <a href="mailto:Peter.Daugherty@Oregon.gov">Peter.Daugherty@Oregon.gov</a> Jeremy Groom, Monitoring Coordinator, Private Forests 503-945-7394, <a href="mailto:Jeremy.Groom@Oregon.gov">Jeremy.Groom@Oregon.gov</a> W. Terry Frueh, Monitoring Specialist, Private Forests, 503-945-7392, <a href="mailto:Terry.Frueh@Oregon.gov">Terry.Frueh@Oregon.gov</a>

### SUMMARY

This agenda item presents the results of the analyses completed since the June 2015 Board of Forestry (Board) meeting, outlines policy decisions and background and offers staff recommendations. Attachment 1 contains the completed Decision Matrix, including additional results requested by the Board and information not included in the June meeting material. The requested results include temperature estimates for south-sided buffer prescriptions and information on alternate prescriptions. The new information also includes fish response by prescription and acres encumbered and their value by geographic region. Attachment 2 describes the additions to the matrix and presents additional analyses, including marginal returns for temperature and wood recruitment, effective shade from additional north-sided buffers on streams with east-west orientation, geographic regions, and stream extent. Attachment 2 also presents a policy analysis framework for the Board's use in discussing alternatives and presents alternative packages, utilizing the policy framework. Attachment 3 presents a summary of riparian rules of neighboring states.

There are three primary decisions for the Board to make at the July 23, 2015 meeting:

1. Which prescription(s), if any, to move into rule language,
2. The geographic extent to which these prescriptions apply, including:
  - o Which Geographic Regions, and
  - o Which small and medium streams [i.e., those with Salmon/Steelhead/Bull Trout, ODF fish-bearing (Type F), or some combination thereof], including the extent upstream to avoid warming from contributing waters; and
3. Whether the rules are regulatory, voluntary, or a combination thereof.

The Board's deliberation of these decisions occurs under the ORS527.714 findings; the remaining ORS 527.714 findings are:

- Restrictions on practices directly relate to, and substantially advance the objective 527.714(5)(d)
- Must choose the least burdensome alternative 527.714(5)(e) and resource benefits achieved by the rule must be proportional to the harm caused by the forest practices 527.714(5)(f).

While the core decisions relate to the Board's responsibility to meet the Protecting Cold Water (PCW) water quality criterion, Board members have raised concerns about the effects of any rule change on fish and other aspects of the stream protection rules. Key recurring themes that have arisen out of Board deliberations on the riparian rule analysis include the desired future condition (DFC) of fish-bearing streams and the potential for unintended consequences from their decisions.

## **CONTEXT**

The Board of Forestry's (Board) 2011 *Forestry Program for Oregon* supports an effective, science-based, and adaptive Oregon Forest Practices Act (FPA) as a cornerstone of forest resource protection on private lands in Oregon (Objective A.2). The discussion of Goal A recognizes that the FPA includes a set of best management practices designed to ensure that forest operations would meet state water quality standards adopted under the federal Clean Water Act. The Board's guiding principles and philosophies includes a commitment to continuous learning, evaluating and appropriately adjusting forest management policies and programs based upon ongoing monitoring, assessment, and research (Value Statement 11).

The overall goal of the water protection rules is to provide resource protection during operations adjacent to, and within, streams, lakes, wetlands and riparian management areas so that, while continuing to grow and harvest trees, the protection goals for fish, wildlife, and water quality are met. This rule analysis constitutes another step in the Board's adaptive management process of ensuring an effective and science-based FPA by considering regulatory and non-regulatory routes to meet water quality standards. The rule analysis process (ORS 527.714) requires that the Board determine that the proposed rule reflects available scientific information and that appropriate factors have been considered. The analysis will seek to minimize the regulatory burden on forestland owners and operators, keep working forests working, and recognize the diverse forest management objectives throughout Oregon.

## **BACKGROUND**

At their January 2012 meeting, the Board initiated a rule analysis of riparian protection standards on small and medium fish streams. The monitoring results leading to this analysis identified an issue with the Protecting Cold Water (PCW) criterion as based on sample sites in the Coast Range and Interior Geographic Regions of Oregon. At their April 2012 meeting, the Board adopted the following rule objective focused on this criterion (rather than on the complete set of goals for the water protection rules):

Establish riparian protection measures for small and medium fish-bearing streams that maintain and promote shade conditions that insure, to the maximum extent practicable, the achievement of the Protecting Cold Water criterion.

The Board also approved a plan for developing alternatives (April 2012), including non-regulatory approaches, for the rule analysis of riparian protection standards on small and medium fish streams. The plan included a decision timeline on findings (an "informal checklist") to be made at each step of the process to provide the Board clear information about the legal on-ramps, off-ramps and safety nets that define their decision space at each step.

At their July 2012 meeting, the Board approved a range of rule alternatives (13) to analyze in the rule analysis. At their November 2012 meeting, the Board directed the department to develop an approach to reviewing science related to the rule alternatives, as per ORS 527.714(5)(c). The department, in consultation with stakeholders and technical experts, developed a protocol for a systematic review of this science. The Board approved this protocol in March 2013 and the findings in November 2013. In November 2013, the Board directed the Department to develop prescriptions for a new Riparian Protection Rule, considering: a) Variable retention buffers, b) No-cut buffers, and c) appropriate criteria for a Plan for Alternate Practice, with the overall goal of protecting sufficient shade to meet the Protecting Cold Water criterion and facilitating flexibility in harvest approaches. The Board also directed the Department to include Forest Practices Act and Forest Management Plan alternatives within the variable retention alternatives considered, and to develop prescriptions collaboratively with stakeholders.

The department updated the Board on progress at the April 2014 meeting, and discussed emerging policy issues and challenges. The Board directed the department to hold a workshop to assist their understanding of available information regarding their rule analysis process for protecting cold water, including relevant science, policy, and legal aspects, stakeholder perspectives and to provide an opportunity to discuss policy choices and potential outcomes. The workshop was held in June 2014. At the September 2014 meeting, the Board received a summary of this workshop, and directed the department to continue with the riparian rule analysis, and in conjunction with the Regional Forest Practice Committees and stakeholders, develop prescriptions for a new Riparian Protection Rule designed to meet the PCW criterion and continue analysis of where these prescriptions should apply. The Board also directed the department to develop preliminary economic and ecological information, including impacts on large wood recruitment.

At the April 2015 meeting, staff presented the methods for developing and assessing prescriptions. In June 2015, the department presented descriptions of prescriptions and results for predicted temperature change, changes in restrictions (acres/mile of stream), economic information, large wood recruitment, and decreases in percent shade.

## **ANALYSIS**

### ***Decision Matrix Additions***

*Further information for south-sided buffer prescriptions* – The matrix contains estimates for temperature outcomes associated with south-sided buffer prescriptions. We did not use the predicted model results because of the number of assumptions required. We relied on two papers from one study included in the November 2013 systematic review. We also estimated equivalent fixed widths for the buffers, encumbered acres, and modeled wood recruitment volumes relative to unharvested stands.

*Fish response* – The department received responses from the five fish biologists about fish response to the proposed prescriptions. The fish biologists represent state and federal agencies, landowners, and the environmental community. The rows in the decision matrix represent the summary responses received from the biologists. A response could be “Positive” (+), “Negative”

(-), “Unchanged” (0), or “Unknown” (?). The biologists provided a brief narrative containing any thoughts, uncertainties, or assumptions about potential fish responses. (See Attachment 2)

The biologists made different assumptions and used different metrics, including fish response, potential growth, and population response. The decision matrix reflects the complexity and uncertainty regarding quantifying fish response at the stream reach level, as evidenced by many “unknown” fish responses. Accurately attempting to predict fish response on a watershed scale without including factors such as large wood recruitment, food availability, climate change, cumulative effects, and a host of other variables was a barrier to response predictions. Increases in stream temperature at a site or reach scale of around 1°C are difficult to evaluate in terms of overall fish response given the complex nature of the physical and biological stream systems. To provide this detail, fish response would need to be evaluated on using multiple space and time scales.

*Additional acres encumbered and land and timber values* – The matrix contains acres encumbered and land and timber values for each prescription by stream type, geographic region, and ownership type. The equivalent width of the prescription buffer and the miles of streams by region primarily determine these values. Wider buffers encumber more acres per mile of stream and the amount of stream-miles for salmon, steelhead and bull trout (SSBT) and fish-bearing (Type-F) streams varies by regions.

The Coast Range has the most stream miles for each type and ownership, except the Interior has the most miles within the Non-Industrial ownership on Type-F streams. The Interior has the second highest stream miles, followed by the Siskiyou. The Western Cascades has the least miles of SSBT streams for both ownerships, whereas South Coast has the least miles of Fish streams for both ownerships. SSBT streams account for about 30% of western Oregon (all five regions) fish stream miles.

### ***Additional Analyses***

*Marginal returns for temperature and wood recruitment* – Attachment 2 provides marginal curves for stream temperature change and wood recruitment relative to an equivalent no-cut buffer width. Temperature change and wood recruitment marginal curves behave similarly. These curves identify zones where temperature and wood recruitment improvements are expected to be the largest per change in buffer width, where significant improvements are still gained but diminish per additional width, and where the threshold for further gains has likely been reached.

*RipStream temperature results and other scientific studies* – This section summarizes the temperature results discussed at the June 2014 Board workshop and places the Riparian Function and Stream Temperature (RipStream) results in the context of other scientific studies. The Board has heard testimony about various studies and their relative strengths and weaknesses. These discussions often frame results of studies as opposed to each other, rather than viewing the body of science as complementary, forming a coherent whole to inform policy.

*Effective shade from northern side buffers* – Department staff collaborated with the Department of Environmental Quality (DEQ) to estimate effective shade for northern side buffers using the Heat Source model. Model results identify where gains in effective shade with additional no-cut buffer width on the northern side of streams add little or no value for temperature.

*Geographic Regions and Stream Reach Extent* – These sections describes the basis of the geographic regions and risks of extrapolating monitoring findings into other regions and the linkages between the PCW rule language, available science on downstream cooling of warmed waters, and the necessary Board decision on stream reach extent. The variability in available data and literature indicate that the science provides no conclusive recommendation.

### ***Considerations for Board Decisions and Policy Analysis Framework***

This section identifies the three Board decisions and provides context for their discussion as framed by current policy and concerns raised by earlier deliberations. The overall policy goals and desired future condition of fish-bearing streams as described in rule are discussed, followed by a framework to use as a roadmap for ensuring these rule elements and the Board’s specific areas of concern are addressed.

There are two tables to facilitate discussion, associating the Board decisions with key factors such as FPA stream protection goals, vegetative desired future conditions for fish-bearing streams, and unintended consequences. The first table groups proposed riparian protection prescriptions according to expected outcomes for stream temperature and then associates these groups with potential implications relative to FPA goals and unintended consequences. The second table focuses on Board decisions regarding spatial extent of the rule analysis. Together, these tables illustrate the range of choices and possible consequences as the Board moves the dials from less to more restrictive streamside protection packages, allowing the Board to evaluate various potential scenarios and outcomes.

### ***Riparian Prescription Packages***

Using the two tables described above, we developed a range of potential Board decision combinations and anticipated outcomes as packages with associated themes. Given the large number of potential “packages”, these packages are intended only to frame Board discussion and possibly form the basis for its remaining statutory findings.

## **RECOMMENDATIONS**

The Department recommends that the Board discuss the policy issues, using the above framework and all the information it has received to develop a set of prescription components that meet the PCW criterion to the maximum extent practicable, consistent with the ORS 527.765 factors and required ORS 527.714 findings.

The Department also recommends that the Board include more than one prescription choice, e.g., a no-cut prescription, a variable retention prescription, and/or alternate prescription approach to increase forestland owner flexibility and minimize unintended consequences.

**NEXT STEPS**

If the Board directs the Department to develop rule language around one or more prescriptions, staff will develop a proposed project timeline for the September 2015 Board meeting. This timeline will describe anticipated work products necessary to complete the formal Secretary of State rule change process. Engagement with the Regional Forest Practice Committees, stakeholders and Department field staff will be a critical element. The timeline will be dependent on the complexity of the rule language to be developed and the amount of review needed prior to submitting notice of proposed rule language.

**ATTACHMENTS**

- (1) Decision Matrix
- (2) Riparian Rule Analysis: Additional analyses of riparian prescriptions and considerations for Board decisions
- (3) Summary of Riparian Rules for Neighboring States