written version of zoom testimony from 6/6/24 meeting

Becca Nielsen <beccanielsen@earthlink.net>

Thu 6/20/2024 9:56 PM

To:FORESTRY Boardof * ODF <boardofforestry@odf.oregon.gov>

6/6/24 zoom testimony of Rebecca Nielsen

(you requested written version of testimony)

My family has lived at the base of Davis Ridge for 97 years. We knew nothing of your plans to clear cut 200 acres from Sylvandale Lane to Gnat Creek until the article ran in the Astorian newspaper 3 days after the comment period ended so I am commenting now.

Clear cutting David Ridge and Mothball Hill flies in the face of decades of research showing clear cutting damages water, salmon and other species. It devalues adjacent property and puts homeowners at risk of mudslides, wildfires and pesticides. And it contributes to negative climate effects.

Clear cutting is a 19th century solution to 21st century issues. Have we learned nothing in 150 years? The State wants to have it both ways: while touting green sustainable tourism and the Oregon Plan for Salmon and watersheds it's proposing devastating clear cuts up against personal property lines of residents. I would like know what options have been reviewed. Has there been an environmental assessment? Oregonians whose properties and quality of life are being negatively effected should be allowed meaningful consultation. Yet the ODF only plans to notify us after the decision has been made and its a done deal.

Forests enhance everyone, not just adjacent property owners.

Your plan will destroy every bit of green visible from my property excluding my neighbors yards. Your pesticides and pollutants will run down the ridge and soak into my hay field and Davis Creek which runs through my property and eventually ends up in the Columbia River . My land will never be the same. And I will have to see, hear and smell the destruction for months.

As a 3rd generation Oregonian I think we can do better. Let the people of Brownsmead and any others effected by the David Ridge - Mothball Hill clear cut plan and alternatives have a say in their homes and future.

General

oregon-gov-web-services@egov.com <oregon-gov-web-services@egov.com>

Sat 6/8/2024 6:43 PM

To:FORESTRY Boardof * ODF <boardofforestry@odf.oregon.gov>

1 attachments (2 KB)

formsubmission.csv;

Name	Heather Ikeler
Email	heatherikeler@yahoo.com
Subject	General
Comments	Chair Kelly and Members of the Board, I attended the most recent Board of Forestry meeting in Troutdale (it was great that it was only a 20 minute drive from my house!) and while I did not provide testimony the comments of both Grace Brahler and Michael Lang very much covered my own concerns. During the June 6th meeting Board members expressed an interest in avoiding “hot button issues” that come up around the work that the B of F is charged with. Having attended the March 7th meeting in Salem I can certainly understand this! There the hot button issue of Timber Industry jobs brought out a group of what I assume were pro timber industry folks and multiple large logging trucks which they used to block the parking area directly in front of the entrance to ODF headquarters where the meeting was being held. While I did find this a little intimidating initially my concern grew as several people, both in the building and later when I recounted the experience to others, expressed concerns about my safety. I do hope that going forward the Board will be able to focus on the relevant law, legislation and science to make decisions that will deliver the Greatest Permanent Value for ALL Oregonians and not be distracted by these kinds of heavy handed tactics. For this Oregonian the Greatest Permanent Value lies in a stable climate, clean water and the protection of biodiversity. With my sincere thanks for all of your time and effort, Heather Ikeler

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Submission ID: 8150f893-c360-43cf-aa46-50576ff26133

Record ID:

May 17, 2024

Kate Perkins, M.S.
Water Scientist and Environmental Researcher
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Oregon Department of Forestry
92219 OR-202, Astoria, OR 97103
503-325-5451
odf.sfcomments@odf.oregon.gov

Re: Mothball Hill clearcutting as part of the 2025 Annual Operating Plan

Dear Oregon Department of Forestry,

Thank you for the opportunity to comment on the proposed clearcutting at Mothball Hill as part of the 2025 Annual Operations Plan. I am a lifelong resident of the Pacific Northwest and a scientist specializing in water quality. I have worked extensively on water quality projects in the Columbia, Klamath, and Clark Fork River Basins, and I care deeply about preserving our watersheds for future generations.

The Columbia River is a culturally, environmentally, and economically important river that is home to four species of fish that have been listed for protection under the Endangered Species Act and are aquatic anchors in the rivers and streams of the project area. I am concerned that the Mothball Hill timber harvest will put further pressure on these important fish species. In the Pacific Northwest we put great effort, including financial resources, into improving salmonid populations in our rivers and streams. Clearcutting a steep hillside directly alongside a main artery and lifeline for the Pacific Northwest, the Columbia River, seems counterproductive to our goals of improving fish populations. Additionally, the project is directly adjacent to the Lewis and Clark National Wildlife Refuge, putting pressure on habitat we designated as protected in the Columbia River Estuary.

More specifically, **my first concern regarding the Mothball Hill harvest is the steepness of the project site and the potential for sediment, pesticides, and herbicides to enter the Columbia River in surface runoff from the clearcut zone**. The representative slope in large parts of the project area is more than 40%, while some parts of the project have a representative slope greater than 70% (Figure 1, left). The soil erosion potential is listed as severe and very severe for much of the project area by the NRCS, which is especially concerning given the proximity of the project to the Columbia River and the Lewis and Clark National Wildlife Refuge (Figure 1, right). Has a sediment erosion survey been completed for the Mothball Hill project? Do we have an understanding of potential landslides given the steep slopes of the project area? Is there reporting regarding the cumulative effects of the project on water quality, including both the direct and indirect effects of the harvest on the watershed?

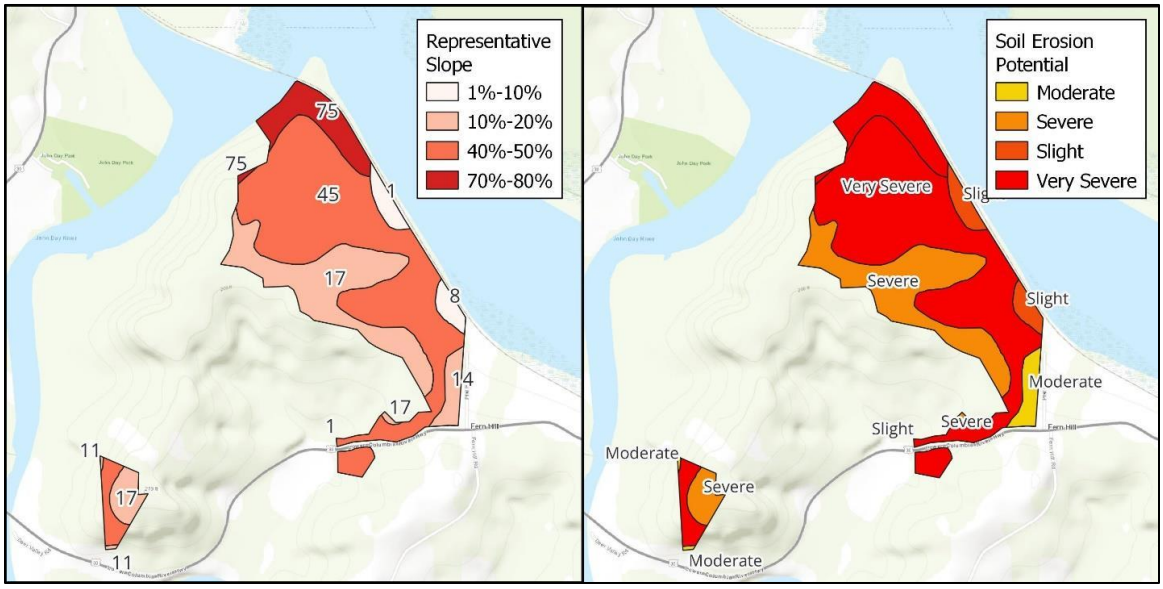


Figure 1. The representative slope (left) and soil erosion potential (right) for the Mothball Hill timber harvest project area. All slope data were acquired from the Web Soil Survey (https://websoilsurvey.nrcs.usda.gov/app/).

My second concern is the proximity of the project to the Columbia River and the seeming lack of riparian protections in some parts of the project that contain wetlands. In the project map, presented on the ODF ArcGIS online server, it appears the riparian zone is demarcated with blue in the center of the project. However, parts of the project boundary with the Columbia River are not designated riparian zones, as circled in red (Figure 2). Why is an area demarcated as a freshwater forested/shrub wetland by the U.S. Department of Fish and Wildlife not noted as such in the project area?

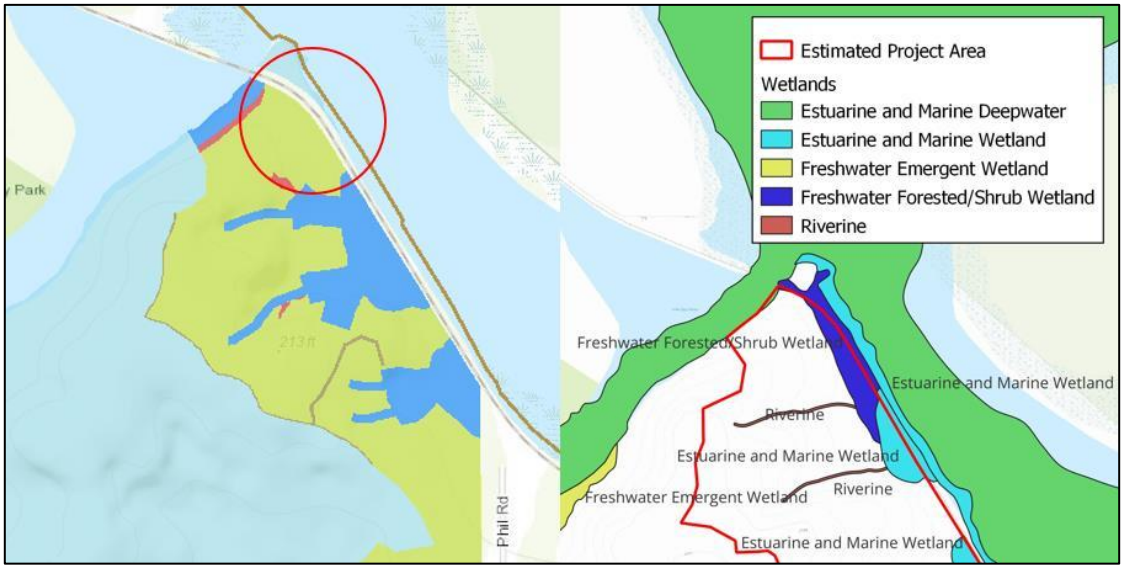


Figure 2. Areas of the project without riparian designations in the project that appear to be wetlands based on data from the U.S. Fish and Wildlife Service (https://www.fws.gov/program/national-wetlands-inventory/download-state-wetlands-data).

Third, **it appears there are two river systems just outside the project area that drain into a wetland and into the John Day River** (Figure 3). Not only does the John Day River drain directly into the Columbia River, but it is also essential salmonid habitat as defined by the Oregon Department of State Lands (https://maps.dsl.state.or.us/esh/). Are protections in place for these important streams located just outside the project boundary?

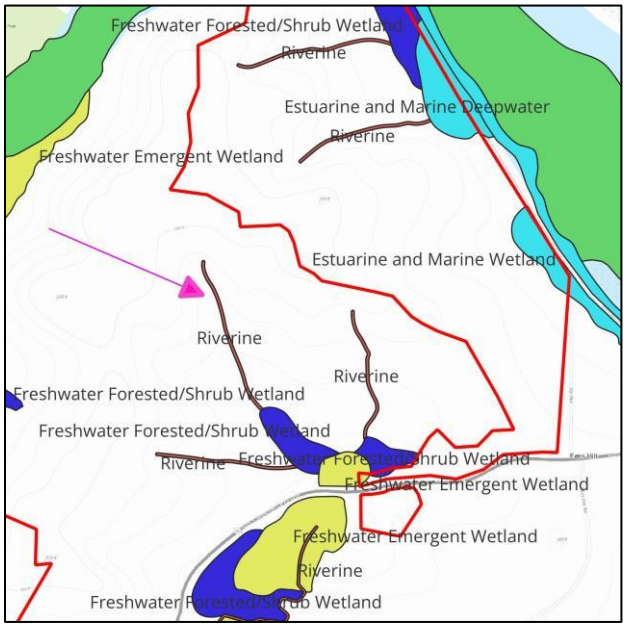


Figure 3. Riverine systems just outside the estimated project boundary, as highlighted by the pink arrow, that drain into the John Day River.

Finally, **given that the project area is highly visible from the river, as well as parts visible from busy Highway 30, I am concerned that the Mothball Hill project will harm the viewshed and therefore be a detriment to tourism in the area**. Kayakers and boaters peruse the Lewis and Clark National Wildlife Refuge and John Day Channel, including Lois Island directly across from the project area. The clearcut forest will be an unnecessary scar on our landscape in one of Oregon's most popular tourist destinations.

Thank you for taking the time to review the information presented in this comment. I look forward to more information regarding the concerns raised in this letter about the Mothball Hill timber harvest.

Thank you,

Kate Perkins, water scientist and concerned resident of the Pacific Northwest

To: Chair Kelly, Members of the Oregon Board of Forestry
Cc: State Forester Mukumoto, State Forest Division Chief Michael Wilson
Date: 5/31/2024
Re: Implementation of the Climate Change and Carbon Plan

Dear Chair Kelly and Members of the Board of Forestry:

On the behalf of the State Forest Coalition member groups, we thank you for managing state forests for the greatest permanent value for all Oregonians. We appreciate that you are moving forward to finalize the Habitat Conservation Plan for Western Oregon State Forests (HCP), as the best means of complying with the mandatory requirements of the federal Endangered Species Act (ESA). We also appreciate the approval of the Climate Change and Carbon Plan (CCCP) in November 2021. Recent draft documents of the Forest Management Plan, the Adaptive Management Plan, and the Vision for Oregon's Forest all mention implementing the CCCP. We urge the Board of Forestry and the Department of Forestry to publicly demonstrate meaningful, measurable progress on implementing the CCCP.

1) **Carbon sequestration and storage targets**

For the near future, 2030 to 2050, we urge you to ensure the state forests are managed for optimal carbon storage. Former Governor Brown's Executive Order 20-04 directed the Oregon Global Warming Commission, now renamed the Oregon Climate Action Commission, to set state goals for carbon sequestration and storage for Oregon's natural and working lands, including forests, in coordination with the Departments of Forestry and Agriculture and the Oregon Watershed Enhancement Board.

According to the CCCP:

> "The Department has worked with the Oregon Global Warming Commission (OGWC) to establish a goal for natural working lands (i.e., forests, agriculture, tidal wetlands, etc.) as outlined in Executive Order 20-04. **The OGWC recommendation is an additional 5 MMTCO2e can be sequestered on an annual basis by 2030 and an additional 9.5 MMTCO2e annually by 2050."**

We ask the BOF to set targets for the contribution of state forests towards the additional sequestration goals for the target dates of 2030 and 2050.

2) **Carbon inventory of state forests.**

In order to set targets for increased carbon sequestration and storage, we must have a baseline for the current status of carbon storage and rate of sequestration for state forests. HB 3409 requires the Oregon Climate Action Commission to develop a natural and working lands net biological carbon sequestration and storage inventory, allowing for a public comment process. HB 3409 set a deadline of 1/1/2025 for establishing biological carbon sequestration goals of Oregon's natural and working lands. The inventory must 1) Be based on the best available field-based and remote sensing data on biological carbon sequestration; 2) Be developed using methods consistent with methods used to assess greenhouse gas fluxes related to land use, land change and forestry for the United States Environmental Protection Agency's Inventory of U.S. Greenhouse Gas Emissions and Sinks.

While the CCCP has elements that affect forests in other ownership classes in Oregon and urban forestry, the Board of Forestry (BOF) and Oregon Department of Forestry (ODF) have direct control of state forests and should concentrate on establishing measurable carbon sinks in these forests. ODF must do its part to accurately provide the data necessary for developing an accurate carbon baseline.

What is the status of the current carbon inventory on state forests? The most recent update we could find that ODF presented to the BOF was September 7, 2022.

3) **Habitat Conservation Areas (HCAs) and Riparian Conservation Areas (RCAs) can and should be managed as carbon reserves.**

It would be helpful to have baseline carbon inventory for these conservation areas and a separate carbon inventory for production stands; inoperable stands (such as steep slopes) located outside of conservation areas could be assessed in either inventory. Since timber harvest within conservation areas is limited to actions that will benefit listed species habitat, we can expect significant increases in carbon sequestration and storage in these stands by 2050. There should be a projection of carbon storage in HCAs over the lifetime of the HCP. All management decisions within HCAs and RCAs need to first prioritize benefitting listed species, then ODF should manage for carbon storage. This would limit carbon losses from silvicultural treatments, avoid post-fire logging, and avoid impacts from road-building within HCAs.

Analyzing the carbon baseline in production stands should include not only the harvested timber, but the carbon emissions from logging, slash management, transport to the mill and milling waste, plus the positive contribution of long-lived wood products. The production stands should be at least carbon-neutral to be sustainable over time, and to be considered climate-smart forestry, a *carbon sink* by implementing longer harvest rotations, retention of more

older trees, snags, and downed woody debris during harvest, and possibly creating biochar as alternative slash management.

A time interval should be established for repeated carbon inventories in the state forests. We would recommend biennial inventories initially, so the BOF, ODF and the public can see if progress is being made to achieve the 2030 target. Following this there should be continued monitoring to determine if ODF is on a trajectory to meet the 2030-2050 higher target.

4) **Climate-smart Forestry.**

The CCCP and other documents include an aspiration for the ODF to be a national model of climate-smart forestry. We support the following definition of climate-smart forestry:

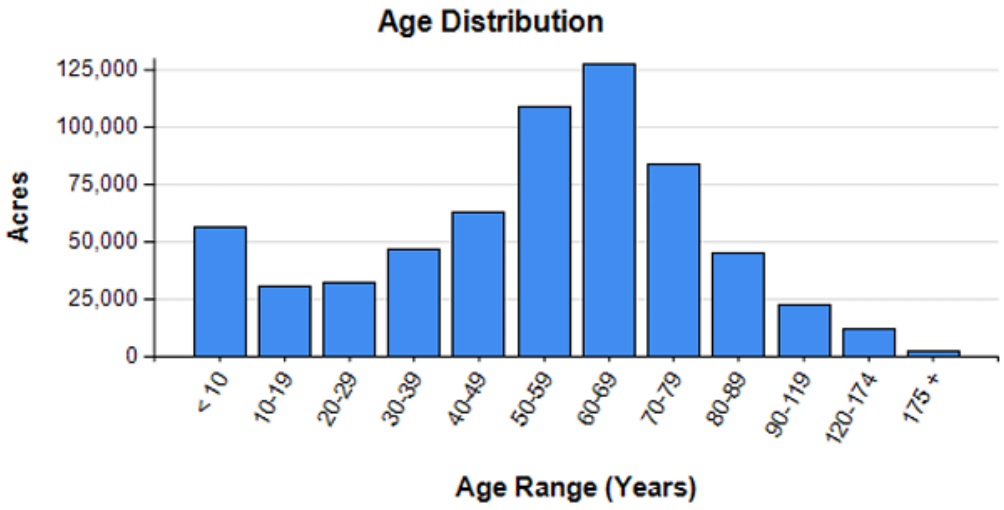
> "Climate smart forestry optimizes forest carbon sequestration, carbon storage and forest resilience while minimizing greenhouse gas emissions. Practices include longer harvest rotations, protecting old growth and mature forests, and maintaining a diversity of species, ages, and structure." *MCAT, Mobilizing Climate Action Together*

Climate mitigation is the core principle of climate smart forestry. As stated in the CCCP:

> "Oregon's forests, particularly those in the western Cascade Mountains and the Oregon Coast Range, have the potential for some of the highest rates of carbon sequestration and storage in the world. Therefore, Oregon's forest productivity has potential for significant climate mitigation benefits."

As we stated above, we support managing conservation areas as carbon reserves in addition to their habitat value for listed species covered by the HCP.

Extended harvest rotations cannot be achieved on a sustainable, climate smart basis by simply cutting older stands. The majority of stands proposed for timber harvest in the AOP 2025 are over 55 years of age, with many in the 80-100 year range. According to the 2020 Western Oregon Forest Management Plan, the current age structure on state forest lands is relatively lacking in stands greater than 80-years old and scarce in stands exceeding 100-years old. **As these older trees store the most carbon, are most fire resistant, and provide habitat for terrestrial listed species (such as Northern Spotted Owl and Marbled Murrelet), they should be preserved and not harvested.** See the age distribution table from the draft HCP:



According to the ODF's proposed HCP, *"[s]tand age is a major indicator of current forest condition and this non-uniform age distribution has significant implications related to forest management planning."* (see Public Draft W. OR State Forests HCP, .2-35).

Thus, harvest rotation planning should combine age at harvest with preservation of trees 80 years in age and older, and enough younger trees that can grow into future old growth. Mature and old-growth trees and forests store the vast majority of carbon in forests. Due to past management activities, there is a deficit of old-growth in Oregon, and especially on state forest lands. We encourage the protection and recovery of mature and old-growth forests as a climate-smart management strategy.

5) **Forest Carbon Finance and Markets.**

The CCCP discusses the possible implementation of a forest carbon offset market, if resources were available for its development. The BOF and ODF should explore carbon projects *within* the state forests. These could be in areas of high risk—such as unstable slopes that can be logged, but might have higher risks of landslides and higher costs to harvest. An excellent carbon project area would be sites proposed for harvest within the Cook Creek Aquatic Anchor. The Coalition is particularly concerned about proposed timber sales in the AOP 2025 in this watershed, Tin Pants and Cook Creek Overlook, totaling 858 acres. Harvesting these could pose a direct threat to Cook Creek and its tributaries. See the Coalition letter, Comments of Oregon Department of Forestry's FY 2025 Annual Operating Plans (AOPS), dated May 17, 2024.

The State Lands Commission and Department of State Lands are planning a carbon project in the Elliott State Research Forest for additional income to manage the forest without increasing proposed harvest levels. The ODF could collaborate with the DSL in developing carbon projects.

Nationally, there are forest carbon offsets for biochar. As an alternative slash management technique, biochar can be created in portable forest kilns, where slash is burned in a low-oxygen environment to create a stable form of soil carbon. This can reduce greenhouse gas emissions and provide funding for the higher labor costs of this management technique. The BLM and USFS are piloting a project on Holiday Farm Fire sites on BLM land, utilizing a CharBoss, to manage burned debris from the fire. This could be investigated for potential application in state forest harvest projects.

We ask the Board of Forestry and Department of Forestry to act with urgency to implement the Climate Change and Carbon Plan that was approved by the BOF 2 ½ years ago. The "Revision Timeline" section of the CCCP states, "[t]o achieve adaptive management and the goals in this plan, agency staff will periodically bring progress assessments to the Board." This is a good time to do so. The CCCP is mentioned in all the current plans, but true implementation requires measurable baseline forest carbon inventory, measurable targets for increasing the carbon sequestration and storage on state forests and scheduled re-inventories to assess progress to meet these targets.

Thank you for your consideration of these recommendations.

Sincerely,

Darlene Chirman
Great Old Broads for Wilderness
Cascade-Volcanoes Chapter

Joseph Youren
Audubon Society of Lincoln City

Brenna Bell
350PDX

Joe Liebezeit
Bird Alliance of Oregon

Damon Motz-Storey
Oregon Chapter Sierra Club

Grace Brahler
Cascadia Wildlands

Michael Lang
Senior Policy Manager
Wild Salmon Center

Rand Schenck
Forestry and Natural Lands Lead
Mobilizing Climate Action Together

Testimony for BOF Meeting on June 5-6, 2024

Scott Killops <scott.killops@gmail.com>
Fri 5/31/2024 2:58 PM
To:FORESTRY Boardof * ODF <boardofforestry@odf.oregon.gov>
Cc:Scott Killops <scott.killops@gmail.com>

To: Oregon Board of Forestry

From: Scott Killops

Subject: Written Testimony for the Board of Forestry Meeting on June 5-6, 2024
Regarding the *Vision for Oregon's Forests* and the *Draft FMP Performance Measures*

Date: May 31, 2024

Thank you for the opportunity to provide written testimony on the Board of Forestry's (Board) and Department of Forestry's (ODF) shared strategic plan, the *Vision for Oregon's Forests (Vision)*. My testimony regards the Vision's "Priority: Climate Leadership" section.

The Climate Leadership strategies included in the Vision are simply a restatement of the goals from ODF's *Climate Change and Carbon Plan (CCCP)* which was approved by the Board in November 2021. Two and a half years following approval of the CCCP I expected to see more than a restatement of goals. I expected to see referenced a CCCP implementation plan that includes actions, allocation of resources, a schedule, and a commitment from the Board to review progress on at least a biannual basis. I also expected to see new developments taken into account, such as working with the *Oregon Climate Action Commission (OCAC)* on implementation of the Natural Climate Solutions provisions of *HB 3409.*

The *agenda for the June 5-6, 2024 Board meeting* includes this statement:

"BOARD WORK PLANS: Board of Forestry (Board) Work Plans result from the board's identification of priority issues. Each item represents the commitment of time by the Board of Forestry and Department of Forestry staff that needs to be fully understood and appropriately planned. Board Work Plans form the basis for establishing Board of Forestry meeting agendas. The latest versions of these plans can be found on the Board's website at: https://www.oregon.gov/odf/Board/Pages/AboutBOF.aspx."

With this in mind, I would like to call the Board's attention to its *Climate Change and Forest Carbon Work Plan 2022-2024*. There has not been a Board review of progress on this work plan nor of the CCCP in over two years. With only six months remaining in 2024, I would like to request that the Board schedule a review of progress on both of these plans before the end of the year.

On a related note, *Forest carbon accounting* is foundational to setting and measuring progress towards ODF's carbon sequestration and storage goals. On September 7, 2022 ODF presented an update to the Board on *State Forests Carbon and Inventory*. That update included plans for an Enhanced Forest Inventory (EFI) system. EFI is the planned data source for several *Performance Measures (PMs)* for the *Draft Western Oregon State Forests Forests Management Plan (FMP)*. However, it's not clear from more recent reports like the *2023 Stand Level Inventory (SLI) Annual Report* whether EFI is ready for use. I would like to request that the Board schedule a review of ODF's forest carbon accounting program including the status of EFI.

Thanks again for the opportunity to provide written testimony on the Vision and the Draft FMP PMs and for all the hard work that the Board and ODF perform on behalf of all Oregonians.

Respectfully,
Scott Killops
350PDX Forest Defense Team Member

DATE: June 4, 2024

TO: Jim Kelly, Chair, Oregon Board of Forestry
Cal Mukumoto, State Forester, Oregon Department of Forestry

FROM: Wild Salmon Center

RE: Public Comments on the Proposed Post-Disturbance Harvest Rulemaking

Dear Chair Kelly, Members of the Board, and State Forester Mukumoto:

Thank you for the opportunity to provide comments on the proposed Post-Disturbance Harvest Rulemaking. The Wild Salmon Center is a nonprofit organization based in Oregon that works to protect and restore healthy forests and abundant clean water to support thriving wild salmon populations in the state and across the Pacific Rim. Our organization is one of the Private Forest Accord (PFA) Authors as part of the conservation coalition and has engaged in the PFA process from the beginning in 2020.

The draft rules before the Board are fundamentally a compromise. They represent an effort to improve upon existing standards and to maintain no-harvest protections for forested buffers around fish streams and on steep slopes as part of the PFA following catastrophic natural disturbance events. The draft rules were developed to meet the commitments of the PFA and are the result of ongoing conversations between conservation and timber industry groups to meet those commitments.[1] As per SB 1501, the new adaptive management process established under the PFA does not apply to this rulemaking.

Post-disturbance logging occurs when operators harvest dead and dying trees following natural catastrophic disturbance events, such as fire, ice and wind storms or insect damage. Logging dead or dying trees near streams after disturbances removes critical habitat for fish and wildlife that rely on these sources of large wood. Logging in these areas compacts fragile soils, increasing runoff and sedimentation in streams. After harvest, spraying herbicides and replanting with dense conifer stands transforms more fire-resilient forests into plantations. Post-disturbance logging prioritizes uncertain economic value at high ecological cost to healthy forests, clean water, and abundant habitat for fish and wildlife.

Key changes under the proposed rules include establishment of a stand level mortality threshold for when the rules apply, a 75-foot no-harvest "inner zone" for fish streams (Type F and SSBT)

[1] *See* SB 1501: SECTION 6. (1) Pursuant to the authority granted by ORS 527.710 and subject to the procedures set forth in ORS 527.714 for rules described in ORS 527.714 (1)(c), the State Board of Forestry shall initiate rulemaking concerning the post-disturbance harvest of trees that, but for the disturbance, would not be harvested under rules adopted, amended or repealed as part of the rule package described in section 2 of this 2022 Act.
(2) The rulemaking:
(a) Must be completed on or before November 30, 2025.
(b) Is not subject to the requirements of section 39 of this 2022 Act.

INTERNATIONAL HEADQUARTERS
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info@wildsalmoncenter.org • www.wildsalmoncenter.org

with related restrictions on herbicide application, equipment limitation zone restrictions in the "outer zone" for fish streams and for small nonfish perennial streams, and restrictions on steep slopes.

We support the Board's finding of degradation at the February 2024 meeting that "there is monitoring or research evidence that documents that degradation of resources maintained under ORS 527.710(2) or (3) is likely if forest practices continue under existing rule." The draft rules under consideration seek to improve upon existing standards and to maintain no-harvest protections for forested buffers around fish streams and on steep slopes as part of the PFA following catastrophic natural disturbance events. Forested no-harvest buffers are critical to ensure that the riparian habitats that support healthy fish and amphibian populations are cold, clean, connected, and complex.

Wild Salmon Center submitted comments into the record during the public comment period for this draft rule, and have included as attachments the comments submitted into the public record on this rulemaking by the Oregon Department of Environmental Quality (DEQ), the Oregon Department of Fish and Wildlife (ODFW), and the U.S. Environmental Protection Agency (USEPA). These comments provide substantive analysis regarding the draft rules and provide alternatives for future consideration by the Board.

Thank you for your consideration of these comments.

Sincerely,

Stacey Detwiler
Oregon Policy Director
Wild Salmon Center

Attachment 1:	Public comments submitted into the record, Oregon Department of Environmental Quality (DEQ), dated May 1, 2024
Attachment 2:	Public comments submitted into the record, Oregon Department of Fish and Wildlife (ODFW), dated May 1, 2024
Attachment 3:	Public comments submitted into the record, U.S. Environmental Protection Agency (USEPA), dated April 30, 2024

REGION 10
SEATTLE, WA 98101

April 30, 2024

Nicole Stapp (nicole.l.stapp@odf.oregon.gov)
Oregon Department of Forestry Rules Coordinator
2600 State Street
Salem, OR 97310
ODF.FRDrules@odf.oregon.gov

RE: Notice of Proposed Rulemaking: Post-disturbance harvest rulemaking directed by Senate Bill 1501 (2022).

Dear Ms. Stapp,

The Environmental Protection Agency, Pacific Northwest Region 10, appreciates the opportunity to provide comments on the Post-Disturbance Harvest Rulemaking directed by Senate Bill 1501 (2022). The Oregon Department of Forestry specifically requested public comment on whether other options should be considered for achieving the rule's substantive goals while reducing negative economic impact of the rule on business.

The EPA commends the work of ODF and its partners for developing forest practices that support the harvest of timber while reducing impacts to natural resources and protected species. The forest practice rules play an important role in protecting water quality and helping Oregon meet its obligations under the Clean Water Act.

We understand the Oregon Board of Forestry determined that degradation of resources is likely to occur if forest practices continue under the existing rules for Alternative Vegetation Retention Prescriptions (629-643-0300). And that ODF staff proposed rule revisions relying upon the 2022 Private Forest Accord Report and ODF Staff Report and Post-Disturbance Harvest Literature Review presented in the Meeting Materials for the February 23, 2024, Board of Forestry Meeting.

We thank ODF and the Board for considering the attached EPA comments on the post-disturbance harvest rulemaking. Please contact me at brown.dan@epa.gov or 503-326-6832 for any questions related to these comments.

Sincerely,

DANIEL BROWN
Digitally signed by DANIEL BROWN
Date: 2024.04.30 16:03:13 -07'00'

Daniel J. Brown
Natural Resource Advisor - Forest Sector
EPA Region 10, Pacific Northwest

cc: Ms. Jenifer Wigal
Oregon Department of Environmental Quality
Mr. Steve Mrazik
Oregon Department of Environmental Quality
Mr. Josh Seeds
Oregon Department of Environmental Quality
Mr. Josh Barnard, ODF
Oregon Department of Forestry

Attachment: EPA Comments on ODF Post-Disturbance Harvest Rulemaking directed by Senate Bill 1501 (2022).

1) General Comment:
EPA's September 30, 2022, comment letter to ODF on the Forest Practices Act rule revisions[1] noted that Section 629-643-0300 Alternative Vegetation Retention Prescriptions was at odds with the PFA Report and legislative direction in SB 1501. EPA noted the short-term fixes proposed at that time did not account for significant advances in habitat and water quality protections provided by the PFA agreement that legislators directed ODF to adopt. We maintain this concern following our review of the post-disturbance harvest rulemaking and the materials ODF staff relied on to support the proposed rule revisions.

The proposed rule is an alternative vegetation retention prescription that an operator can choose to implement, if applicable, and does not prescribe regulations or restrictions for those not applying it. The proposed rule allows operators to harvest dying or recently dead trees in areas that they would otherwise not be able to harvest due to the advances in habitat and water quality protections provided by the PFA report[2]. The ODF Staff report[3] indicates the proposed rule language is the least burdensome to landowners and timber owners while still achieving the desired level of protections. ODF considered repealing the existing rule which would result in no alternative vegetation retention prescription. However, ODF determined the "repeal option" would be the most burdensome to landowners and unlikely to achieve the desired level of protection because the increased burden could decrease the likelihood of any intervention the literature review indicated could be needed.

EPA did not find any specific conditions in the ODF staff report's literature review indicating clear cases where the alternative vegetation retention prescription would achieve desired future condition more quickly than the standard options. To the contrary, the literature review seemed to indicate more tree retention would be needed to meet water quality standards and desired future conditions, findings that seem more supportive of repealing the alternate vegetation retention prescriptions.

OAR 629-643-0000 (5) states that "In many cases, the operator may achieve the desired future condition for streams by applying the standard vegetation retention and small forestland owner minimum option prescriptions as described in OAR 629-643-0100, 629-643-0105, 629-643-0120, 629-643-0125, 629-643-0130, 629-643-0135, 629-643-0141, 629-643-0142, 629-643-0143, and 629-643-0145. In other cases, the existing streamside vegetation may not be able to develop into the desired future condition in a timely manner. In these cases, the operator may apply an alternative vegetation retention prescription as described in OAR 629-643-0300 or develop a site-specific vegetation retention prescription as described in OAR 629-643-0400. For the purposes of these water protection rules, "in a timely manner" means that the trees within

[1] September 30, 2022, letter to Lisa Appel, Oregon Department of Forestry, RE: Notice of Proposed Rulemaking: Forest Practices Act rule revisions directed by the enrollment of Senate Bills 1501 and 1502. Submitted to sb1501.rulemaking@oregon.gov.
[2] 2022 Private Forest Accord Report at https://www.oregon.gov/odf/aboutodf/documents/2022-odf-private-forest-accord-report.pdf
[3] https://www.oregon.gov/odf/board/bof/20240223-bof-item-01.pdf

the riparian management area will substantially move towards the desired future condition more quickly than if the trees are left untreated."

EPA believes the intention of paragraph 629-643-0000(5) is to allow the alternative vegetation retention prescription to be applied "if applicable" in those instances when the existing streamside vegetation resulting from the standard vegetation retention and small forestland owner minimum option (hereafter referred to collectively as "the standard options") will not develop into desired future conditions as quickly as they would if they were managed according to the alternative vegetation prescription. If that is the case, EPA recommends rephrasing of the last sentence of paragraph as follows: "For the purposes of these water protection rules, "in a timely manner" means that the **existing** trees within the riparian management area will substantially move towards the desired future condition more quickly ~~than~~ if the trees are left untreated."

To utilize the alternative vegetation retention prescription, ODF and landowners will need to make case-by-case determinations for each harvest site to demonstrate the alternative vegetation retention prescription "is applicable" because it will achieve desired future condition more quickly than the standard options. This does not seem much more burdensome than the provisions for site specific prescriptions in section 629-643-0400. Therefore, ODF's determination that the "repeal option" would be the most burdensome to landowners and unlikely to achieve the desired level of protection needs further clarification. If ODF cannot specify those instances where existing streamside vegetation resulting from "the standard options" will not develop into desired future conditions as quickly as they would if managed according to the alternative vegetation prescription, EPA recommends ODF reconsider repealing section 629-643-0300.

2) Western Oregon Type F and Type SSBT streams
The proposed rule, for Type F and Type SSBT streams in Western Oregon requires a 75-foot no harvest buffer and allows harvest of only dying or recently dead trees in the remainder of the RMA (out to 100 or 110 feet). ODF indicates this is an increase in buffer and tree retention requirements in comparison to the current alternative vegetation prescription rule. However, as noted in our September 30, 2022, comment letter, the current rule does not reflect the significant advances in habitat and water quality protections provided by the PFA agreement that legislators directed ODF to adopt. The proposed 75-foot harvest buffer is significantly less protective than the tree retention requirements agreed to in the PFA Report. While the Notice of Proposed Rulemaking indicates the PFA Report was relied upon to inform this rulemaking, it's not clear to what extent ODF considered the literature cited in PFA Report.

The ODF staff report indicates studies synthesized in the literature review for this rulemaking suggest that increased tree retention near streams increases large wood availability and reduces sediment delivery. The literature review also found that faster-growing hardwoods provide short-term benefits to water quality and fish and wildlife by contributing to early post-disturbance stream shade, bank stability, and large wood delivery. One study called out in the literature review found that salvaged areas had significantly less stream canopy cover than unharvested and stream reaches in salvaged areas received significantly more sunlight than those in unharvested.

As noted in comment #1 above, the ODF literature review seems to support maintaining "the standard options" for tree retention buffers on Type F and SSBT streams in Western Oregon. There is no information suggesting reducing the buffer to 75-feet is an intervention needed to achieve the desired level of protection nor that pursuing the alternative vegetation retention prescription will achieve desired future condition more rapidly than the standard options. To meet the intent of SB 1501 ODF should provide further evidence to support maintaining this option.

3) Small Type N Streams in Western Oregon
For small Type Np streams in Western Oregon, the proposed rule allows harvest of dying or recently dead trees in the RMA. ODF indicates this results in increased tree retention in comparison to current rule. However, the current rule language in paragraph 629-643-0300(3)(b) requires the landowner to "Retain all live and dead trees within 20 feet of the high-water level of large and medium streams and 10 feet of the high-water level of small streams." Thus, the current rule requires leaving more dead and dying mature trees on small streams, including small type N streams, than the revised rule. Furthermore, neither the current rule nor proposed revisions reflect the significant advances in habitat and water quality protections provided by the PFA agreement that legislators directed ODF to adopt.

The Board of forestry determined that forest practices continuing under the existing rule, requiring retention of dead and dying trees within 10 feet of small streams, was likely to result in degradation of resources. This determination was made based on the ODF staff report indicating "studies synthesized in the literature review suggested that increased tree retention near streams increases large wood availability and reduces sediment delivery. The literature review also found that faster-growing hardwoods provide short-term benefits to water quality and fish and wildlife by contributing to early post-disturbance stream shade, bank stability, and large wood delivery." The ODF staff report literature review indicated that "unmanaged riparian stands tend to be dominated by hardwoods rather than conifers." "In the absence of live trees, dead trees provide more stream shade than no trees." "Rapidly growing hardwoods, particularly red alder (Alnus rubra), provide better stream shade than slowly growing conifers in the time period immediately after a disturbance."

It is difficult to understand how the proposed rules address the Board's deficiency determination. If leaving dead and dying trees within 10 feet of a small stream results in a degredation of resources, how does removing those trees increase protection given the conclusions of the ODF staff report? The staff report literature review does not include any clear indication of conditions where the alternative vegetation retention prescription would be applicable by achieving desired future condition more quickly than the standard options. To meet the intent of SB 1501, ODF should provide further evidence to support the rule revisions. Specifically, ODF should identify how the proposed rules address the deficiency determination and under what conditions the alternative vegetation retention prescription would achieve desired future condition more quickly than the standard options.

4) Units experiencing stand level mortality that contain slope retention areas.
For units experiencing stand level mortality that contain slope retention areas the proposed

rules for alternative vegetation retention prescriptions allow for harvest of dying or recently dead trees in certain slope retention areas. Neither the ODF staff report literature review nor the PFA report support this provision.

The literature review has no information specific to post disturbance harvest on steep slopes or slope retention areas. The Large Woody Debris section of the review lends some context that is contrary to allowing harvest in slope retention areas. Noting for example that several studies showed that post-disturbance harvest can deplete the LWD supply in ways that impair riparian and aquatic ecological function; and when certain disturbances extend into upland forests, they can create a supply of riparian wood that may be delivered to streams over time.

The alternative vegetation retention prescriptions for slope retention areas directly conflict with the PFA report and are not supported by the ODF staff report literature review. Chapter 3 of the PFA report emphasizes retaining trees on slope retention areas and does not support the harvest of dying or recently dead trees in the slope retention areas identified under OAR 629-630-0910(3). The PFA report notes that forest lands in Oregon include steep land naturally prone to initiating landslides and debris flows that contribute wood and sediment to drainage networks downslope. Large wood and boulders help increase physical habitat complexity, store spawning gravels, and regulate transport of fine sediments downstream. And that processes, including timber harvest and fire, can increase the frequency of landslides as well as alter the amount and characteristics of the material delivered to aquatic habitats.

The PFA report mentions several strategies that have been applied in mountainous terrain to reduce and mitigate the effects of forest management on steep slopes and to encourage beneficial outcomes. These include leaving standing and downed trees and other vegetation in areas likely to initiate a landslide or transport a debris flow as a source of large wood for fish-bearing streams; adding wood to debris-flow-prone non-fish-bearing streams; and decreasing the frequency and magnitude of occurrence of human-caused landslides by reducing timber harvest volumes, avoiding potentially unstable slopes, and modifying logging systems to reduce compaction.

The PFA report seeks to provide the beneficial elements of landslides while mitigating the potential negative effects of forest management activities on shallow, rapid hillslope failures. The goals of the PFA commitments regarding timber harvest on steep slopes is to provide large wood and sediment consistent with maintaining or improving aquatic habitat within large basins over long timeframes. To accomplish this, sediment sources and debris flow runout paths will be identified and a subset of these will be managed during timber harvest activities to retain trees and other vegetation. These actions, together with other Habitat Conservation Plan commitments, are intended to provide high-quality habitat to support recovery and long-term conservation of the species covered by an HCP on private forestlands.

The alternative vegetation retention prescriptions allowing harvest of dying or recently dead trees in slope retention areas is not supported by the ODF staff report literature review or the PFA report. To meet the intent of SB 1501 ODF should provide further evidence to support the rule revisions. Specifically, ODF should identify conditions in which the alternative vegetation retention prescription would achieve desired future condition more quickly than the standard

options.

5) Terminal Type N
   In Eastern Oregon, the proposed rule allows for the harvest of dying or recently dead trees in the outer zone of Terminal Type Np streams, effectively establishing a 30-foot no harvest buffer. As with comments 2 and 3 above, it is not clear how the literature review and PFA report support this alternative vegetation retention prescription. To meet the intent of SB 1501 ODF should provide further evidence to support the rule revisions. Specifically, ODF should identify conditions in which the alternative vegetation retention prescription would achieve desired future condition more quickly than the standard options.

6) Effectiveness Monitoring
   The uncertainty in identifying conditions in which the alternative vegetation retention prescription would achieve desired future conditions more quickly than the standard options emphasizes the need for effectiveness monitoring. EPA understands the Adaptive Management Planning Committee is advancing the inclusion of effectiveness monitoring and we strongly encourage this to proceed expeditiously. As noted in our September 30, 2022, comment letter, effectiveness monitoring is critical to enabling the Board of Forestry to meet its duty under ORS 527.765 to ensure nonpoint source pollutants from forest operations do not impair the achievement and maintenance of water quality standards established by the Environmental Quality Commission.

In summary, the proposed rules for alternative vegetation retention prescriptions are not supported by the findings reported in the ODF staff report literature review or the PFA report. ODF considered repealing the existing rule which would result in no alternative vegetation retention prescription and rejected this option since it would increase the burden for implementing any intervention the literature review indicate could be needed. However, in its review of the literature, EPA did not find any documentation of needed interventions. Instead, the literature review and PFA report appear to lend stronger support for repealing the alternative retention prescriptions and maintaining the standard practices that reflect the significant advances in habitat and water quality protections provided by the PFA agreement that legislators directed ODF to adopt.

To meet the intent of SB 1501 ODF should reconsider repealing the existing alternative vegetation retention prescriptions or provide further evidence to support the proposed rule revisions. Specifically, ODF should identify conditions in which the alternative vegetation retention prescription would achieve desired future conditions more quickly than the standard options. In addition, ODF should articulate how it will work with landowners to verify the alternative vegetation retention prescription is applicable because it will achieve desired future conditions more quickly than the standard options on any harvest site choosing to utilize the alternative vegetation retention prescription.

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RE: Notice of Proposed Rulemaking: Post-disturbance harvest rulemaking directed by SB1501 (2022)

Oregon Department of Environmental Quality is grateful for the opportunity to provide comment on the proposed post-disturbance riparian management rule (OAR 629-643-0300). We appreciate the efforts of Oregon Department of Forestry staff on this rule, both scientifically and with regard to inclusion of other state agencies and interested parties throughout the process. We agree that the current rule is not protective of water quality and aquatic ecosystems and is likely to result in degradation and failure to meet desired future conditions. The proposed rule is a substantive and important improvement in water quality protection. DEQ does have concerns about the adequacy of the proposed rule, particularly for non-fish-bearing streams and steep slopes, detailed below, and the evidence suggests that these interventions are unlikely to accelerate achievement of the Desired Future Condition for riparian areas in a post-disturbance environment and may in fact do the opposite. We suggest some alternative approaches the proposed rule could take to increase riparian and aquatic protections. DEQ did not evaluate the adequacy of the current forest practice rules for water quality standards and Total Maximum Daily Loads. We only considered the question of whether the proposed post-disturbance riparian rules are less likely to achieve water quality goals than the standard riparian prescriptions in Division 643.

Before starting on our comments on the proposed rule, DEQ would like to take a moment to express our appreciation for the staff and managers at the Oregon Department of Forestry. At every step of this process, ODF consulted with DEQ and listened to our ideas: study design, review questions, call for literature, response patterns found in the literature, and consultation on our interacting regulatory roles. ODF staff have done excellent work and applied the systematic review process fairly. We appreciate the friendly, respectful, and team-oriented relationship we have with ODF personnel and look forward to continued collaboration.

Relationship to Water Quality Standards and Total Maximum Daily Loads

Under ORS 527.765, ODF and the Board of Forestry must ensure nonpoint source pollutants from forest operations do not impair the achievement and maintenance of water quality standards established by the Environmental Quality Commission. For riparian forest management in general, including post-disturbance activities, the most relevant water quality standards are antidegradation (OAR 340-41-0004),

general drinking water and aquatic life protection (OAR 340-41-0007(10)), sedimentation (OAR 340-41-0007(11)), biocriteria (OAR 340-41-0011), dissolved oxygen (OAR 340-41-0016), temperature (OAR 340-41-0028), and turbidity (OAR 340-41-0036). In addition, implementation of Total Maximum Daily Loads is affected by riparian management (OAR Chapter 340, Division 42) and has implications for ODF's ability to successfully act as the Designated Management Agency for TMDLs such as the Willamette Basin Mercury TMDL and temperature TMDLs throughout Oregon (OAR 340-42-0080(2); see also 2021 DEQ-ODF Memorandum of Understanding). Our analysis and evaluations are primarily focused on stream shade and temperature and sediment processes (including erosion, recruitment of large woody debris, and stand growth towards the Desired Future Condition of a mature riparian forest).

Relevant temperature targets DEQ evaluates are based on anthropogenic temperature changes rather than absolute temperature. In this case, we are evaluating whether post-disturbance riparian harvest would result in temperature increases beyond those caused by the natural disturbance itself. While the temperature standard has biologically-based numeric criteria (OAR 340-41-0028(4)), these are used as thresholds for determining impairment. The policy of the EQC is to minimize or prevent anthropogenic temperature changes (-0028(2)), captured in the Protecting Cold Water (-0028(11)) and Human Use Allowance (-0028(12)(b)) criteria, which limit cumulative, total anthropogenic temperature change to +0.3°C across all sources combined at the point of maximum impact.

Temperature impairments occur across much of Oregon. Where TMDLs are in place, the load allocations for the forestry sector are a portion of the +0.3°C total HUA, typically between +0 and +0.1°C. Along with load allocations, TMDLs assign ecotype-specific shade targets as surrogate measures to implement the load allocations. Besides temperature, other water quality standards and TMDLs based on those standards may be related to temperature and/or shade. For example, dissolved oxygen TMDLs may have shade targets designed to limit instream primary production in order to limit oxygen consumption by decaying organic matter. In summary, limiting reductions in stream shade and/or increases in temperature relative to unmanaged, natural conditions is a common requirement of water quality standards and TMDLs.

Protection of drinking water and aquatic life from suspended and bedded sediment eroded from uplands, stream banks, and stream beds is enforced through sediment and aquatic life protection narrative criteria, biocriteria, and turbidity. Generally speaking, these standards prohibit conditions that negatively affect aquatic life and drinking water. The turbidity standard specifically prohibits increases in turbidity greater than 10% relative to a control point upstream of the activity. Implementation of other standards may also have implications for sediment and erosion process. For example, the Willamette Basin Mercury TMDL was developed to achieve toxic substance water quality standards that apply to mercury (OAR 340-042-0040(c); OAR 340-041-0033(1); OAR 340-041-8033(1) Table 30; OAR 340-041-8033(3) Table 40), but it uses total suspended solids as a surrogate measure for mercury reductions because aerially-deposited mercury is carried into water bodies through soil erosion. The Willamette Mercury TMDL requires substantial (up to 97%) reductions in erosion within the various subbasins of the Willamette Valley. Forestry is identified as a sector requiring erosion reductions, and ODF is responsible as DMA for TMDL implementation on nonfederal forestlands. Therefore, ensuring forest practices do not increase erosion on hillslopes, streambeds, and banks after natural disturbance over and above the erosion generated by the natural disturbance itself is necessary for meeting sediment-related water quality standards and TMDLs.

Review and Analysis Methods

Literature Review and Synthesis

In addition to the post-disturbance management studies used in ODF's review and the review itself, DEQ drew on scientific literature examining factors and processes that influence stream temperature and erosion/sediment generation and transport and how those factors and processes are affected by management. We reviewed post-disturbance studies to describe how those processes might be affected by management decisions after a severe natural disturbance such as wildfire. Our synthesis describes these processes, probable effects of management decisions, and the implications for water quality goals and beneficial uses.

Forest Vegetation Simulator + Heat Source modeling

The modeling study goal is to evaluate the impact of post-fire riparian management on stream temperature, comparing four riparian management scenarios after a severe natural disturbance, such as a high severity fire. (We are not comparing the proposed post-disturbance riparian rule to undisturbed riparian zones.) DEQ modeled managed and unmanaged stand growth responses after a severe fire (80% tree mortality) and combined those results with stream shade and temperature modeling, comparing the current large and medium fish-bearing stream 110ft (34m) no-harvest Riparian Management Area (RMA) with potential riparian management alternatives including the proposed rule for fish-bearing streams (75ft no-harvest width; 23m), the default Plan for Alternate Practice used after the 2020 Labor Day wildfires (35ft no-harvest width; 11m), and without a no-harvest buffer. The stand growth model allows us to track changes in management scenarios through ten years post-fire, with any logging occurring the year following the fire. The Forest Vegetation Simulator (FVS; US Forest Service) was selected to simulate post-fire forest growth with and without management. The FVS outputs (such as species, snag and live tree canopy covers, tree heights and counts, etc.) provide inputs for the Heat Source model, which is a DEQ tool to simulate shade and temperature profiles along streams and rivers. As study locations, we used vegetation and other data from three sites from ODF's Riparian Function and Stream Temperature Study (RipStream). The modeling time period runs from June through August to capture the warmest part of the year. Additional information on methods can be found in Appendix A (pg. 22).

Forest Vegetation Simulator and Heat Source Model Results

DEQ modeled the effects of salvage logging on riparian area performance relative to the default 110ft no-harvest prescription for fish-bearing (Type F and Type SSBT) streams. We modeled the high-severity wildfire as occurring in an established stand in 2020 followed by salvage logging in 2021. The area outside the riparian zone was subject to clearcut logging and replanting with any no-harvest buffer being allowed to respond to the wildfire without management. The specific questions we examine are:

1. How does salvage logging impact post-fire snag canopy cover and forest composition in comparison to unmanaged recovery?
2. How do the changes in riparian buffer width and canopy cover translate into changes in stream temperature?
3. How do the above effects change over a 10-yr period post-fire?

Table 1 shows the changes in canopy over time by harvest type: REGEN (no logging with unmanaged natural regeneration of tree species, both hardwood and conifer), NEW (clearcut salvage logging with

replanting at 130 trees per acre), and SL (clearcut salvage logging with replanting at 400 trees per acre). A 110ft no-harvest buffer applies the REGEN scenario throughout the RMA, a 35ft no-harvest buffer applies REGEN for the inner 35ft and SL for the outer 75ft of the 110ft RMA, and the no buffer scenario applies the SL results for the entire 110ft RMA. For modeling the 75ft no-harvest buffer, we applied REGEN for the inner 75ft and NEW for the outer 35ft of the RMA to best approximate the proposed rule for Type F/SSBT streams.

Table 2 shows the results of the Heat Source model for the control reaches at three RipStream study sites for various buffer widths. Temperature results are assessed through the 7-day mean of the daily maximum temperature and are derived from the median of multiple Heat Source model runs. In the first model year post-harvest (2022), temperature change relative to 110ft no-harvest width had an average across sites of +0.10°C for 75ft (proposed rule), +0.49°C for 35ft, and +5.3°C for no buffer. In the fourth model year post-harvest (2022), temperature change relative to 110ft no-harvest width had an average across sites of +0.063°C for 75ft (proposed rule), +0.74°C for 35ft, and +8.3°C for no buffer. In the tenth model year post-harvest (2031), temperature change relative to 110ft no-harvest width had an average across sites of +0.01°C for 75ft (proposed rule), +0.4°C for 35ft, and +3.0°C for no buffer. These temperature differences are due to riparian management options and in addition to temperature increases due to wildfire impacts. Two sites (#5556 and #5201) had absolute temperatures that reached harmful levels in excess of the numeric criteria for cold water species core habitat and rearing and migration (16°C and 18°C, respectively). Graphs of longitudinal Heat Source model results can be found in Appendix A (pg. 24-29).

Variation between sites is notable. For example, site #5502 is both a small stream and a longer study reach, both factors expected to increase sensitivity of the temperature response. However, this site had the best performance for both 75ft and 35ft no-harvest buffers, and its “no buffer” response in the first year following the salvage harvest is similar to the other sites. It also had the coolest absolute temperatures, possibly due to groundwater inflows and/or topographic shade. Modeling of additional sites would aid understanding of how management decisions interact with factors such as stream size (flow volume), groundwater inflow, aspect, and topographic shading.

Most site/buffer scenario combinations show a decreasing temperature difference over time, relative to the 110ft no-harvest riparian area. This is due to growth of new vegetation (planted and natural) combined with changes to snag cover in unharvested areas. Canopy cover within the unharvested and unplanted areas decreases during the immediate years post-fire due to breakage and toppling of residual snags, when new tree growth has yet to reach full height. Fast growing hardwoods such as red alder and big leaf maple begin to add stream shade quickly. It is expected that temperature differences would continue to decrease over time with increases in canopy cover. The apparent longevity of the differences in some management options should be explored further due to the implications for stream temperature and aquatic biota.

Site	Year	Harvest type	Average height (m)	Average total canopy cover (%)
5556 (medium)	2022	REGEN	18.1	44.9
		NEW	12.4	16.9
		SL	12.4	17.0
	2025	REGEN	15.8	43.3
		NEW	5.3	18.6
		SL	3.6	19.0
	2031	REGEN	11.6	45.1
		NEW	8.4	32.7
		SL	6.8	46.0
5502 (small)	2022	REGEN	14.7	58.4
		NEW	15.7	29.3
		SL	15.7	29.3
	2025	REGEN	12.1	57.7
		NEW	7.7	32.3
		SL	4.6	33.0
	2031	REGEN	8.7	60.5
		NEW	9.6	41.4
		SL	6.5	48.7
5201 (medium)	2022	REGEN	21.7	43.2
		NEW	12.0	14.8
		SL	12.0	14.8
	2025	REGEN	19.1	41.5
		NEW	4.7	16.7
		SL	3.1	17.8
	2031	REGEN	11.1	42.4
		NEW	7.5	30.7
		SL	6.1	45.4

Table 1: Modeled canopy cover change by harvest type (from FVS model)
Site = RipStream study site number. Year = model year with wildfire in 2020 and salvage logging in 2021; 2022 is first year post-harvest, and 2031 is tenth year post-harvest. "Harvest type" = stand management practice: REGEN = no logging with natural regeneration, NEW = salvage logging with lower density replanting per proposed rule, SL = salvage logging with replanting at 400 trees/acre. "Average height" = average of all tree heights, living and dead.

Site	Year	Buffer scenario	7DADM* temperature at outlet (°C)	7DADM temperature difference vs. 110ft scenario at POMI *(°C)
5556 (0.8km, medium)	2022	110ft	16.39	na
		75ft	16.44	0.11
		35ft	16.95	0.80
		no buffer	21.08	5.10
	2025	110ft	16.98	na
		75ft	17.00	0.08
		35ft	17.53	0.97
		no buffer	23.87	6.92
	2031	110ft	17.56	na
		75ft	17.56	0.02
		35ft	17.78	0.44
		no buffer	18.65	2.11
5502 (2.4km, small)	2022	110ft	11.27	na
		75ft	11.27	-0.02
		35ft	11.30	-0.13
		no buffer	13.78	5.20
	2025	110ft	11.52	na
		75ft	11.53	0.01
		35ft	11.72	0.33
		no buffer	17.37	11.46
	2031	110ft	14.59	na
		75ft	14.59	-0.01
		35ft	14.60	0.10
		no buffer	16.79	5.33
5201 (0.8km, medium)	2022	110ft	18.08	na
		75ft	18.15	0.22
		35ft	18.73	0.79
		no buffer	23.54	5.68
	2025	110ft	18.39	na
		75ft	18.46	0.10
		35ft	19.25	0.91
		no buffer	24.62	6.46
	2031	110ft	22.92	na
		75ft	22.94	0.02
		35ft	23.10	0.66
		no buffer	24.14	1.62

Table 2: Modeled stream temperature change variation with no-harvest width (from Heat Source)
Site = RipStream study site number. Year = model year with wildfire in 2020 and salvage logging in 2021; 2022 is first year post-harvest, and 2031 is tenth year post-harvest. Buffer scenario = no-harvest riparian width. "7DADM*temperature at outlet" = 7-day mean of the daily maximum temperature at the outlet of the modeled stream segment. "7DADM temperature difference vs. 110ft scenario at POMI" = net change in modeled stream temperature relative to a no-harvest 110ft buffer at the Point of Maximum Impact (POMI), which may be a different location than the stream outlet.

Evaluation of Proposed Rule for Type F and SSBT Streams

Temperature

As described in ODF's literature review, dead trees (snags) provide a substantial and important source of stream shade. While leaf/needle contributions are reduced or destroyed, the boles and limbs block solar radiation and shade the water. In the absence of further disturbance, rapidly-growing hardwood trees and shrubs provide additional layers of shade, further insulating the stream from solar radiation. The concern DEQ has with the Type F/SSBT provision is not in the overall design of the rule, which we support, but in the specific no-harvest width. We are not aware of evidence that clearcut harvest of riparian zones with replanting decreases temperature and sediment impacts, and the ODF literature review presents evidence that post-disturbance logging does indeed increase temperature and sediment inputs relative to natural recovery.

Results from shade and temperature studies including ODF's Riparian Function and Stream Temperature Study (RipStream) demonstrate that riparian buffers are key to maintaining stream shade and preventing management-related temperature increases. Groom et al (2018) presented an empirically-based Bayesian statistical model of buffer width and shade change showing that on average a no-harvest width of 90ft is necessary to keep temperature increases below 0.3°C for a single harvest along a fish-bearing stream; an average width of 120ft is necessary to keep change at 0.0°C. The analysis in Groom et al 2011 showed that State Forest no-harvest widths of 100ft had an average temperature change of 0.0°C, with variation around that mean. This body of work indicates that, in order to avoid temperature increases from salvage logging, the entire default no-harvest areas will need to be maintained, as narrower buffers would likely increase thermal loading and stream temperature beyond the increases due to a natural disturbance.

DEQ's FVS + Heat Source modeling for the first year post-harvest estimates that the average difference between allowing the entire 110ft Riparian Management Area (RMA) of a Type F/SSBT stream to recover naturally without harvest and the proposed 75ft rule is +0.10°C, which does meet the PCW criterion but does not meet TMDL load allocations. The difference is larger for 35ft and 0ft buffer scenarios (+0.49°C and +5.3°C, respectively), demonstrating that the proposed rule is more effective for retaining shade and stabilizing temperature after severe wildfire than clearcutting without buffers or the default Plan for Alternate Practice allowed after the 2020 Labor Day fires. This pattern continues to hold with time, with the proposed rule averaging +0.063°C after four years and +0.01°C after ten.

Summary: Proposed Type F/SSBT rule would likely cause additional anthropogenic warming in fish-bearing streams beyond the natural disturbance in excess of TMDL load allocations for at least four years, relative to default RMA requirements. With regard to the PCW criterion of +0.3°C cumulatively, exceedance is possible but less certain for single harvests, but we recommend considering this at the watershed scale.

Erosion and Large Woody Debris

Mature forest riparian buffers contribute more to riparian wood recruitment as width increases (e.g. 1m (3.3ft) =11% of unharvested recruitment, 15m (49.2ft) =70%, 20m (65.6ft) =80%, 26m (85.3ft) =~90%), but gains in wood recruitment with increased buffer width accrue more slowly farther than 20m from the stream (McDade et al 1990, Meleason et al 2003). Recruitment of large woody debris would decrease by approximately 10% for 75ft (22.9m) no-harvest compared to 110ft (33.5m) (Figure 4, McDade et al

1990). While this difference is not large, it does indicate that there would likely be a decrease in large wood recruitment directly to fish-bearing streams under the proposed rule when streams in Oregon are often deficient in large wood and other habitat structures. We do not expect substantial management-related increases in near-stream sediment generation and transport from the proposed rule relative to leaving the entire RMA unmanaged in a post-disturbance environment due to the width of the proposed no-harvest area, although on steep terrain with high-severity wildfire, a wider no-harvest width and/or required erosion mitigation measures may be necessary (Robichaud et al 2021).

The proposal to allow planting at a lower density in the managed portions of F/SSBT RMAs and the restrictions on herbicide use are ecologically beneficial and should allow development of stands with species and structural diversity and with greater ecological resiliency when compared to stands planted at higher densities with one or two conifer tree species.

Summary: Proposed Type F/SSBT rule would cause a small decrease in large wood recruitment relative to default RMA requirements. Anthropogenic riparian erosion and sediment transport in addition to that generated by the natural disturbance is unlikely to be significantly different than the default RMA requirements except in extreme cases (steep slopes and high soil burn severity). We did not find evidence that the proposed rule would meet Desired Future Conditions more quickly than unmanaged riparian recovery.

Evaluation of Proposed Rule for Type D, Large & Medium Type N Streams

The proposed rule does not change management practices for Type D streams nor large and medium Type N streams in a post-disturbance environment. DEQ supports this approach as it prevents management disturbance in addition to the effects of the natural disturbance itself. Because the approach on these stream types would not result in management changes, there is no additional risk to water resources beyond those of the natural disturbance itself and the default riparian rules.

Summary: Because riparian management on these stream types does not differ from default RMA requirements, no additional anthropogenic impacts are expected.

Evaluation of Proposed Rule for Type Np (western) and Terminal Np (eastern) Streams

Temperature

The physical processes of stream heating do not differ between fish- and non-fish-bearing streams. The biological implications do differ for salmonid species, yet non-fish streams are important habitat for amphibians and provide an important water source and food subsidy for fish-bearing streams (McDonald and Coe 2007, Luce and Danehy 2022). Non-fish streams typically have lower flow volumes and are therefore more sensitive to temperature increases due to lost shade/increased solar radiation. The Bayesian model in Groom et al (2018) indicates that the median temperature increase in studied streams with no buffer is ~2°C and with a 50 ft no-harvest buffer is ~1.2°C after a single harvest, although small streams typically had greater temperature increases than medium streams. McIntyre et al (2018), at non-fish stream sites with no-harvest widths of 50ft on 100% of the Type-N network, found summer temperature increases ranging from +0.5-2.3°C. Both of these studies are typical of the literature.

Impacts to these perennial headwater streams increase thermal loading to downstream fish-bearing streams, so total additional heat loads and relative flow contributions are critical to assessing the impact of warming in non-fish streams on downstream waters. Significant amounts of surface flow to fish-bearing streams come from non-fish tributaries, so conditions in fish streams are closely linked to tributaries (McDonald and Coe 2007). For example, a 2°C increase in a series of small non-fish streams will have a temperature impact in receiving fish-bearing streams exceeding the PCW criterion if they contribute more than 15% of the total surface flow *assuming no additional heat loading from management in the riparian zone of the fish-bearing stream*. Load allocations for temperature TMDLs are usually applied to all perennial and fish-bearing streams, so these allocations (0.0-0.1°C) would apply directly to these non-fish streams. Therefore, the post-disturbance thermal regime of the small Np stream, including all shade from live and dead trees, would need to be maintained without additional management-driven increases in heat loads and temperature in order to meet TMDL load allocations. The temperature water quality standard is not only concerned with individual site-level impacts but also the collective effects of numerous management actions (e.g. Cole and Newton 2013).

Temperature increases in small streams are often ameliorated by dilution and limited heat loss. Davis et al (2015) showed that there was an average 56% reduction in temperature increases after a 300m downstream recovery reach. Zwieniecki and Newton (1999) saw reductions in the average temperature increase from +1.09°C to +0.4°C after 350-1600m recovery distance in shaded downstream reaches. In McIntyre et al (2018), the magnitude of the temperature increases as measured at sites ~100m downstream from treatment reaches also showed reductions in temperature increases with travel distance (range of +0.7-3.4°C cooling to +0.2-1.6°C), with recovery being most dramatic in reaches with significant groundwater inflow. These studies examined individual harvest units. The Trask Watershed Study showed amelioration of temperature increases from multiple harvest units as water flowed downstream (Bladon et al 2018). For example, two separate downstream sites in the Trask Paired Watershed study had increases of +0.8°C while there were much larger increases (+1.4-3.8°C) at harvest units 1045-1380m upstream, showing some decrease in the absence of downstream disturbance. However, this study did not characterize groundwater inflows, nor did it take place within watersheds that had extensive natural disturbance such as a large wildfire. Furthermore, after more than a kilometer of recovery distance, temperature increases in this study still far exceeded the PCW criterion and TMDL load allocations. Indeed, measurable downstream impacts in excess of water quality regulations occurred in all the above studies, even after shaded recovery distances that in some cases were greater than a kilometer-and-a-half.

The majority of apparent temperature recovery is due to dilution by cool groundwater rather than loss of gained heat (Johnson 2004). Across multiple studies, reductions in the magnitude of temperature increases are tied to groundwater inflows rather than loss of heat (Mellina et al 2002, Moore et al 2003, Story et al 2003, Wilkerson et al 2006). This suggests that significant groundwater inflows may be necessary for rapid stream cooling, a condition that does not occur uniformly on the landscape and is difficult to predict without measuring flow at multiple points along a stream. Mellina et al (2002), Moore et al (2003), and Story et al (2003) did not evaluate the effects of upstream harvests, only the cooling rates in the study reaches, so recovery towards pre-harvest temperatures could not be determined within those studies. The results suggest that where groundwater inflows are high, streams could be less sensitive to harvest-induced warming; conversely, where groundwater inflows are relatively low, dilution of heat cannot be counted upon to mitigate harvest effects on stream temperature (Mellina 2006).

DEQ's FVS + Heat Source modeling estimates that the average difference between the default 75ft no-harvest area of a small perennial Type N stream flowing into an SSBT stream and the proposed rule (0ft) is +5.2°C in the first year post-harvest, which does not meet the PCW criterion or TMDL load allocations and would result in significant heat loading into receiving fish-bearing waters, causing those waters to exceed the PCW criterion if only 5.8% of SSBT surface flow is derived from these non-fish tributaries. The average difference is smaller between 0ft and 35ft no-harvest buffer scenarios (+4.8°C) but remains substantial. The average difference between a 75ft no-harvest area and a 35ft non-harvest area is +0.39°C; this exceeds TMDL load allocations and would cause receiving SSBT waters to exceed the PCW criterion if the non-fish tributaries with this management account for more than 77% of total flow in the fish-bearing streams. In all cases, flow proportions with regard to the PCW criterion assume no additional management-related heat loading in the receiving fish-bearing streams themselves. Overall, our modeling indicates that any reduction in riparian buffers on non-fish streams will likely cause significant additional increases in stream temperature at the site and in receiving fish-bearing waters.

In conclusion, thermal recovery in non-fish streams prior to their confluences with fish-bearing streams requires undisturbed downstream reaches to allow some loss of heat and cold groundwater inflows, but undisturbed reaches will be absent or limited following severe natural disturbances. Given that small Np streams flowing into fish-bearing waters typically have buffers with a maximum length of 1150m directly above the confluence, it is expected that there would be no undisturbed reaches for thermal recovery if these proposed rules were implemented. Therefore, reductions in these buffers would result in a net export of heat to fish-bearing streams that could result in measurable anthropogenic temperature increases in excess of regulatory limits, relative to natural riparian forest recovery in the default RMA prescriptions.

Summary: Proposed Type Np rules would likely cause additional anthropogenic warming in both the Np stream itself and downstream fish-bearing streams beyond the natural disturbance itself, in excess of the PCW criterion and TMDL load allocations relative to default RMA requirements. (Most temperature TMDL load allocations apply to perennial streams, regardless of fish presence.)

Erosion and Large Woody Debris

Understory vegetation and woody debris of all sizes have important effects for sediment and erosion regimes in and around small streams. There are two major processes in which large wood and riparian vegetation modify erosion processes (especially in a post-disturbance environment): 1) prevention of sediment generation and transport in near-stream areas (including bank stabilization), and 2) retention and routing of sediment within streams (including reducing bed scour and sorting of sediments). We address these separately, but realistically these are part of the same set of interacting processes that control aquatic and riparian habitat and water quality.

Interception of precipitation by live and dead vegetation, ground cover, and surface roughness all reduce generation and transport of sediment by reducing rainfall impact forces that detach soil particles, by promoting water infiltration into soil, and by trapping mobilized sediment on the forest floor behind roughness elements such as coarse and fine woody debris, rocks, or topographic relief features (Richardson and Béraud 2014). Residual, resprouting, and newly growing vegetation; dead vegetation including snags; fine and coarse woody materials; fallen needles and leaves (litter); and other surface cover slow rainfall and protect soil particles from being dislodged and washed downslope (e.g. Larsen et al 2009, Cole et al 2020, Prats et al 2021). Ground vegetation and roughness elements (e.g. coarse wood,

stones, litter) trap soil which has been mobilized by slowing and infiltrating the water carrying the soil and/or filtering particles out of the water. Generally, ground cover reduces sediment generation and soil surface sealing especially during intense weather, allowing time for water to infiltrate in the soil and drain through soil pore pathways (Cooke et al 2005, May 2007).

The process of felling and yarding during logging can crush regenerating vegetation and disturb the soil surface, breaking up soil cohesion and facilitating erosion (Gomi et al 2004, Gomi et al 2005, Rashin et al 2006). Slesak et al (2015) compared bare ground exposure and erosion on unmanaged and salvage logged post-fire sites and found that salvaged sites had 3-4 times greater amounts of mean erosion and substantial decreases in ground cover (5-20% compared to 70-80% in non-salvage areas). Soil compaction decreases infiltration capacity and increases risk of surface runoff (Cooke et al 2005). Logging can add surface roughness elements in the short term because of the fine woody debris generated during falling and yarding operations (Cole et al 2020, Leverkus et al 2020). The loss of snags and fallen trees can also reduce surface roughness over time, and compaction/smoothing of surface features would also decrease efficacy of a slope at trapping surface water and mobilized sediment.

Conversely, disruption of hydrophobic soil crusts formed during high-temperature fire could have a positive effect on infiltration. However, recent research has not found that these hydrophobic soil layers are primary drivers of erosion, but rather that rainfall or snowmelt on bare, disturbed, or compacted soils promotes erosion while wood and vegetation cover inhibit erosion (Sather and May 2008, Wagenbrenner et al 2015, Cole et al 2020, Prats et al 2021). Fire-affected soils with their aggregate structure and organic matter damaged by fire are especially vulnerable (McIver and Starr 2000, Lanini et al 2009, Robichaud et al 2021). Unmanaged areas with dense ground vegetation provide a filter to capture sediment mobilized from upslope before it enters waterbodies (Rashin et al 2006), so keeping riparian areas as a sediment sink and preventing them becoming a sediment source is a water quality priority (Jackson et al 2022). Widths of 10m (33ft) to 30m (98ft) are often sufficient in the absence of channelized flows (Sweeney and Newbold 2014, see also ODF review), although in high-severity fires, no-harvest zones may need to be substantially wider (Robichaud et al 2021). Any salvage harvest near streams requires careful application of best management practices (e.g. skid trail placement, slash/mulch additions) to prevent sediment movement into streams, especially after high-severity fires (Wagenbrenner et al 2023). Practices such as mulching, cross-contour log placement, and sediment traps may also be necessary (Girona-Garcia et al 2021, NRCS).

Broadcast herbicide use after harvest suppresses and kills early successional vegetation (forbs, shrubs, and deciduous trees) that compete for light, water, and nutrients with replanted conifer trees (Dinger and Rose 2009). This substantially reduces ground cover that protects the soil surface, increasing erosion risk, whereas typically erosion rates decrease rapidly as early successional vegetation covers the site (Wagenbrenner et al 2015). Whether broadcast herbicide use throughout harvest units specifically increases erosion after harvest is research question that has not been closely examined, despite the practice being common for decades. Recent investigations found increased soil mobilization after salvage logging followed by broadcast herbicide treatment (Slesak et al 2015, Wagenbrenner et al 2015). Herbicide use within the riparian area increases the risk of upland and riparian sediment transport into streams by suppressing ground cover and roughness from early successional vegetation.

Removal of all trees in these riparian areas will create short- and long-term reductions in large wood recruitment into the stream network (Martens et al 2020). Mature forest riparian buffers contribute more to riparian wood recruitment with increasing width (e.g. 1m (3.3ft) =11% of unharvested recruitment,

15m (49.2ft) =70%, 20m (65.6ft) =80%, 26m (85.3ft) =~90%), and gains in wood recruitment with increased buffer width accrue more slowly farther than 20m from the stream (McDade et al 1990, Meleason et al 2003). Long-term reductions in large wood supply over time reduces habitat for riparian and aquatic species (amphibians, invertebrates). Most non-fish streams have existing LWD deficits.

Large woody debris (LWD) contribute to the formation of a stable channel structure by increasing channel roughness, providing mechanical trapping of sediment and reducing bed scour (Hassan et al 2005, Gomi et al 2006, Bryant et al 2007). The root systems of vegetated riparian areas also act to maintain soil structure and bank stability. Large wood pieces must be of sufficient size to be stable (Spies et al 2013). Smaller diameter woody debris (e.g. 10cm) can be effective in small streams, and larger diameter pieces are more stable in space and time (Jackson et al 2001, Hassan et al 2005). Trapping fine sediment in small Type N streams reduces filling of interstitial spaces in fish-bearing stream substrates including spawning gravels and prey habitat (Bjornn and Reiser 1991, Jensen et al 2009, Tonina and Buffington 2009). Trapping fines upstream also reduces direct physical and behavioral impacts to fish from elevated suspended sediment/ turbidity (Lapointe et al 2004, Grieg et al 2005) and to drinking water provision from surface water (Gomi et al 2005, Freeman et al 2008). Overall, in-stream large wood in non-fish streams is necessary for both local habitat and structure, downstream water and substrate quality, and potential downstream transport (May 2007, Richardson and Danehy 2007, Luce and Danehy 2022).

The lack of buffer zone in a post-disturbance environment creates risks of negative effects on aquatic species and drinking water sources (Karr et al 2004, Reeves et al 2006, Lindenmayer et al 2008). In contrast, there is little evidence that salvage logging is beneficial to riparian or forest recovery in most cases; evidence demonstrates that delaying or avoiding salvage logging reduces negative effects (Leverkus et al 2020). Salvage logged areas tend to re-burn more frequently with higher intensity (Thompson et al 2007), and conifer plantations are more likely to burn at high severity than more structurally- and species-diverse forest stands (Zald and Dunn 2018). Riparian vegetation diversity, adaptations of that vegetation to disturbance and riparian environments, and access to water generally lead to faster riparian ecosystem recovery without management intervention (Reeves et al 2006).

Summary: Proposed Type Np would eliminate post-disturbance large wood recruitment from riparian no-harvest zones that would otherwise be present with consequent negative effects for aquatic and riparian habitat and downstream water quality. Anthropogenic riparian erosion and sediment generation and transport, in addition to that generated by the natural disturbance, is likely to be significantly higher than the default RMA requirements, especially in extreme cases (steep side slopes and high soil burn severity), with negative implications for aquatic life and drinking water provision. We did not find evidence that the proposed rule would meet Desired Future Conditions more quickly than unmanaged riparian recovery.

Evaluation of Proposed Rule for Steep Slopes

The proposed steep slope post-disturbance rule provision is unclear in terms of how the management on landslide-prone hillslopes will differ after natural disturbances and on which locations this rule is applicable. If the post-disturbance rule allows removal of dead and dying trees on Sediment Source Areas that would otherwise be protected with no-harvest areas, then this undermines the slope stability, water quality, and aquatic habitat goals of the western Oregon landslide-prone steep slope forestry rule set. The steep slope rules adopted under the Private Forest Accord are geographically limited in extent, covering

less than 10% of western Oregon landslide-prone areas predicted to deliver wood and sediment directly to fish-bearing streams. The tiered approach taken in the PFA rules focuses protection on the slopes most likely to fail and carry debris to fish-bearing streams, making the rules disproportionately protective of fish-bearing streams for the area encumbered. The sites most vulnerable to shallow landslides and debris flows are fairly discrete types of locations. (Burnett and Miller (2007) found that 25% of initiation sites occupied only 2.5% of the landscape; 75% of initiation sites occupied 19% of the landscape.) Allowing harvest on these otherwise protected slopes following natural disturbances reduces the protection footprint further during the very time period when the sensitivity to further disturbance is highest and when there is increased hazard of landslides occurring on other landslide-prone slopes not eligible for no-harvest protection under the PFA rules. Salvage on landslide-prone steep slopes increases failure probability and risks to water resources while removing the large wood that provides habitat and water quality benefits from slope failures (Reeves et al 1995).

The physical effects of harvest activities on these sites can increase slope failure hazard through several interacting mechanisms: soil disturbance; damage and destruction of remaining/regenerating vegetation and suppression of early successional vegetation; and loss of canopy interception of precipitation due to snag and vegetation removal. Most western Oregon slope failures are triggered by intense precipitation and snowmelt events that saturate soils, pushing soil grains apart and causing loss of cohesion and mechanical failure (Sidle et al 1985, Montgomery and Dietrich 1994, Robison et al 1999, Sidle and Ochiai 2006, Montgomery et al 2009, Turner et al 2010, Stewart et al 2013). Once a section of soil fails and slumps downward, the pressure on downslope areas causes compression, elevating soil pore pressures and propagating soil structure failure, generating a landslide (Godt et al 2008, Mirus et al 2016, Mirus et al 2017). Soil disturbance can further increase failure probability through surface erosion and by compressing soil pores and thereby reducing the water volume needed for saturation (Johnson et al 2000, Mills et al 2001, Page-Dumroese et al 2007).

Destruction of vegetation reduces or eliminates evapotranspiration that utilizes soil water and the root growth in early successional plants that adds tensile strength to the soil during the time period when roots of dead trees are decaying and losing strength (Ziemer 1981, Schmidt et al 2001, Dhakal and Sidle 2003, Sakals and Sidle 2004, Montgomery et al 2009, Slesak et at 2015). Tree and shrub canopies intercept precipitation, delaying and/or lowering the amount of precipitation reaching the forest floor and reducing the effective rate of precipitation at the ground surface as water is temporarily stored in the canopy (Keim and Skaugset 2003, Johnson et al 2007). Tree and shrub canopy dampens and lags spikes in rainfall intensity relative to soil water content, reducing short-term soil saturation peaks. The combination of lost evapotranspiration capacity and lost ability for plant canopies (at all levels) to intercept precipitation increases the hazard of slope failure and landslide/debris flow initiation during the most sensitive time period (Mills et al 2001, Sidle and Ochiai 2006, Lindenmayer et al 2008). Logging on these features post-disturbance would raise the failure hazard and the risk to water resources, drinking water, and aquatic life.

Removal of dead and dying trees greatly reduces the ecological benefit when a slope failure does occur. Slope failure likelihood is increased by both severe natural disturbances and by clearcut logging (e.g. Reeves et al 1995, Robison et al 1999, Schmidt et al 2001, May 2002, Miller and Burnett 2007, Turner et al 2010, Wolter et al 2010, Stewart et al 2013). Given that slope failures are more likely to occur after natural disturbance, a priority for aquatic ecology and drinking water protection is that any failures which do occur generate the ecological benefits of large woody debris (LWD) being introduced along with the sediments of the slope itself (see discussion of LWD benefits in Type-N section above). Wood-laden

landslides and debris flows tend to be smaller in size, travel shorter distances, and create more durable stream structures than those devoid of large wood (Robison et al 1999, Johnson et al 2000, Lancaster et al 2003, May and Gresswell 2003, Bunn and Montgomery 2004, Miller and Burnett 2008). Debris flow deposits have greater relative importance in log jam formation in managed forests due to smaller sizes of riparian-recruited wood (Montgomery et al 2003). In addition, wood jams and other channel obstructions reduce downstream transport of fine sediment, protecting spawning gravels and drinking water supply (Montgomery 1996, Massong and Montgomery 2000, Gomi et al 2001, Montgomery et al 2003, Lancaster and Grant 2006, Bryant et al 2007, Montgomery 2009, Lancaster et al 2010). Removing dead and dying trees from these otherwise protected landslide-prone areas would eliminate these benefits and extend the period of time during which that landslide-prone area is unable to provide large woody debris if it should fail (May and Gresswell 2003, Reeves et al 2003). In addition to harvest effects increasing the probability of slope failure, the ecological benefits of any failures would be lessened, and the detrimental water quality and habitat effects magnified.

Summary: Elimination of wood retention on otherwise protected Sediment Source Areas (landslide-prone slopes) would likely increase failure probability, reduce habitat creation benefits of landslides and debris flows, and contribute to downstream water quality degradation with negative implications for aquatic life and drinking water provision, relative to the default landslide-prone area requirements. We did not find evidence that the proposed rule would meet Desired Future Conditions more quickly than unmanaged recovery.

Alternative Rule Approaches

There are post-disturbance riparian management options that are more likely to meet the Desired Future Condition under the Forest Practices Act and water quality goals and regulations, based on the information presented above. These options are presented in order of the greater-to-lesser likelihood of achieving water quality, aquatic habitat, and forest stand condition goals.

- Leave all riparian management areas (RMAs) and Sediment Source Areas (steep slopes; SSAs) protected as they are in the regular forest practice rules. This could be accomplished by simply repealing the current OAR 629-643-0300 rather than modifying it.
- Leave all RMAs and protected SSAs as no-harvest zones except those with densities greater than 300-500 trees per acre, using thinning, erosion reduction practices, and replanting as needed to aid recovery. Suggested density targets are 80-150 trees per acre with no-harvest zones on all streams (e.g. 35-50ft on Np, 75-90ft on F/SSBT). This could be accomplished by modifying the OAR 629-643-0300 proposal or through changes to OAR 629-643-0400.
- Use the proposed post-disturbance riparian rule structure, adjusting no-harvest widths to be lower risk (e.g. 90ft on F/SSBT, 50ft on small Np). Remove the provision for harvest on otherwise protected SSAs.

Please contact Joshua Seeds, Lead Forest Water Quality Analyst (joshua.seeds@deq.oregon.gov) or Steve Mrazik, Watershed Management Section Manager (steve.mrazik@deq.oregon.gov) with any questions. The Oregon Department of Environmental Quality is grateful for your time and consideration.

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Appendix A: Stand Growth and Stream Temperature Modeling

The initial phase of temperature modeling focused on three ODF Riparian Function and Stream Temperature (Ripstream) study sites within the coastal zone where existing forest inventory data from the Ripstream study can provide critical model inputs. Ripstream was a multi-year project conducted by the Oregon Department of Forestry (ODF) to examine the effectiveness of harvest practices at meeting stream temperature water quality regulations (Groom et al 2018). Among these sites, site #5556 (Jones Creek, Alsea subwatershed, T12S R9W) and site #5201 (Nettle Meyer, Nehalem subwatershed, T5N R6W) are medium fish streams, and site #5502 (Bridge Forty Creek, Siletz subwatershed, T7S R7W) is a small-to-medium non-fish stream.

Stand and plot information were integrated into the Forest Vegetation Simulator (FVS) model (Crookston and Dixon 2005) to simulate forest growth conditions under different management activities. A high severity burn scenario was first introduced in the model to simulate the 2020 wildfires. For each site, three post-fire management scenarios were modeled separately to represent natural regeneration, salvage logging and replanting practices, and the reduced planting density in the outer zone of fish-bearing streams in the proposed post-disturbance rule.

The FVS forest condition outputs between 2020-2031 were then used to support Heat Source (HS) modeling (Boyd and Kasper 2003), which simulated post-2020 stream temperature at an hourly time step and a 50-m distance interval. The HS results on temperature profiles along each study stream in the years 2022 and 2031 were analyzed to assess the trajectory of stream temperatures under different riparian management conditions.

Forest Vegetation Simulator (FVS)

Key inputs for FVS include plot/stand areas, tree species and sizes, tree counts, and locations, all of which are derived from Ripstream study measurements. A wildfire of high severity was scheduled in fall 2020 for each site, parameterized to reflect conditions similar to the Labor Day fires and an 80% mortality rate. A previously developed regeneration imputation procedure was applied in FVS to mimic the key natural processes from 2021 for the natural regeneration (REGEN) scenario (Busby, private comm., USFS). For the salvage logging/replanting (SL) scenario, harvest was scheduled in 2021 to remove hard merchantable snags (> 6” DBH) that died within the past 5 years, which was followed by chemical treatments and replanting of seedlings in 2022. Chemical treatment was designed to simulate the herbicide removal of red alder and other deciduous woody species with a 90% mortality rate of stems up to 10” DBH. Replanting consisted of planting of both Douglas-fir and western hemlock, each with a density of 200 seedlings per acre (total density of 400) and a survival rate of 90%. In the reduced planting density scenario (NEW scenario, as the draft rule proposed for fish-bearing riparian areas between 75-110ft), all hard merchantable snags were also harvested in 2021. However, chemical treatment was minimized in this scenario to only cause a 10% mortality rate of red alders with stems up to 10” DBH, and replanting of DF and WH occurred at a lower density of 65 seedlings per acre for each species (total density of 130) with a 90% survival rate.

After each FVS simulation, results from year 2022, 2025, and 2031 were extracted to parameterize the HS model. Key FVS outputs for HS modeling include average live tree and snag heights and counts, and average live tree and snag canopy covers.

Heat Source (HS)

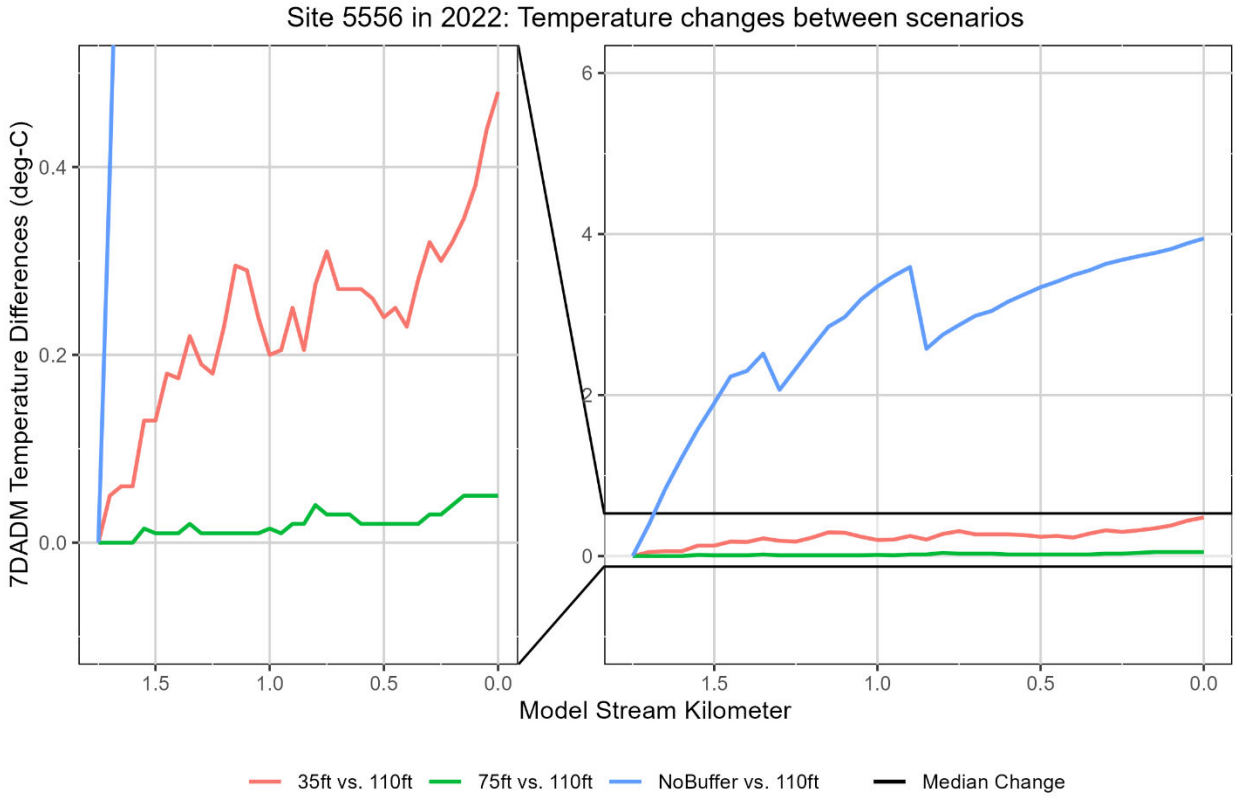
Key HS model inputs include channel geomorphology, continuous climate data, and flow and temperature data. The three study streams were delineated in ArcGIS Pro for stream flowline, channel widths, watershed and tributary boundaries, and land use covers, using Lidar and satellite imagery data. The delineated geographic data were used to obtain channel geomorphology and land use data for the initial HS modeling. Hourly weather information (precipitation, air temperature, humidity, and cloud coverage) were derived from the Corvallis AgriMet site, corrected for elevation and wind speed. Flow data were simulated using measurements from nearby USGS gauges and area-weighted linear regression models. Temperature data for the main stem and tributaries were retrieved from the Ripstream temperature sensor records. The Ripstream sensor data at each stream outlet were also used for model calibration.

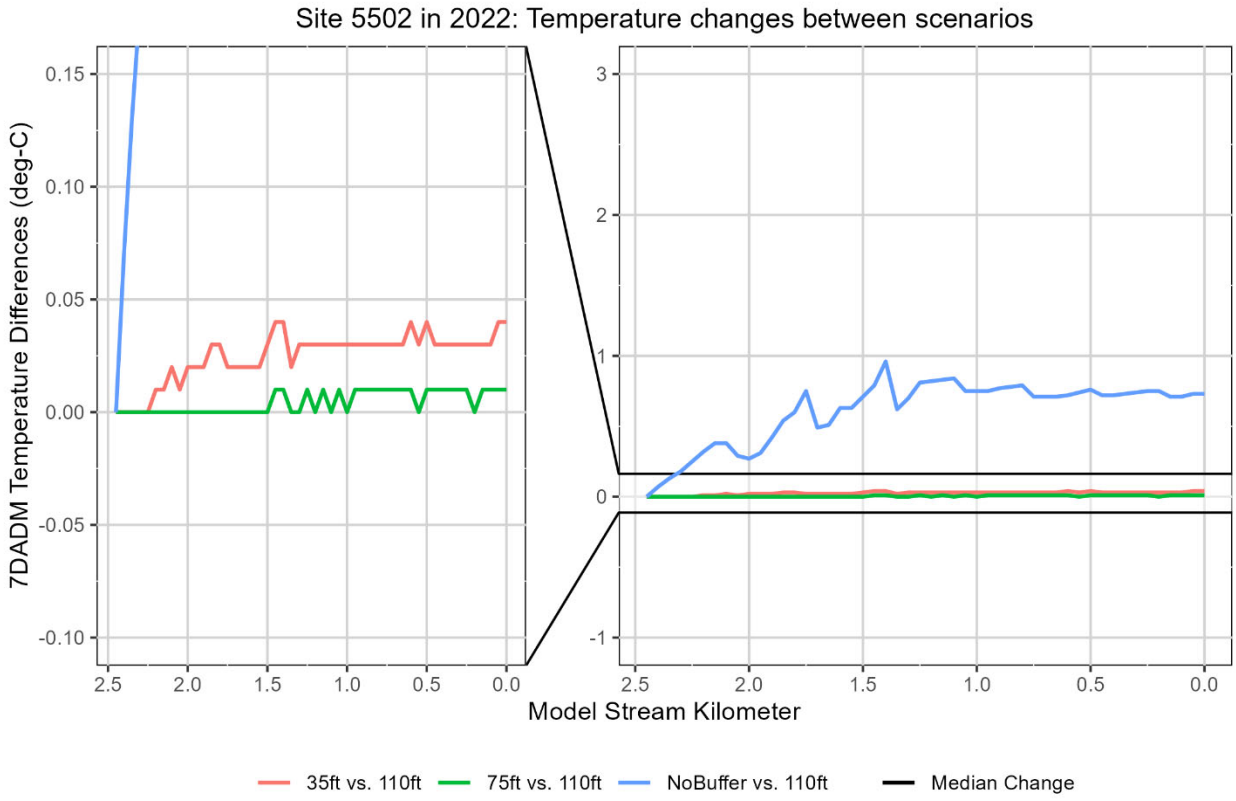
Considering the influence of post-disturbance management on land covers, updated information on percent canopy cover, overhang, and tree heights—essential land cover inputs in HS—were incorporated into the new HS models: FVS results from the REGEN scenario were used to provide land cover information for the no-harvest riparian areas, while FVS outcomes from SL and NEW scenarios were applied to the harvested areas, as appropriate. The choice of which FVS management scenario to apply to each area depended on the riparian buffer scenarios: no buffer, 35ft buffer, 75ft new rule, and 110ft buffer. A 110ft no-harvest buffer applies the REGEN scenario throughout the RMA, a 35ft no-harvest buffer applies REGEN for the inner 35ft and SL for the outer 75ft of the 110ft RMA, and the no buffer scenario applies the SL results for the entire 110ft RMA. For modeling the 75ft no-harvest buffer, we applied REGEN for the inner 75ft and NEW for the outer 35ft of the RMA to best approximate the proposed rule for Type F/SSBT streams.

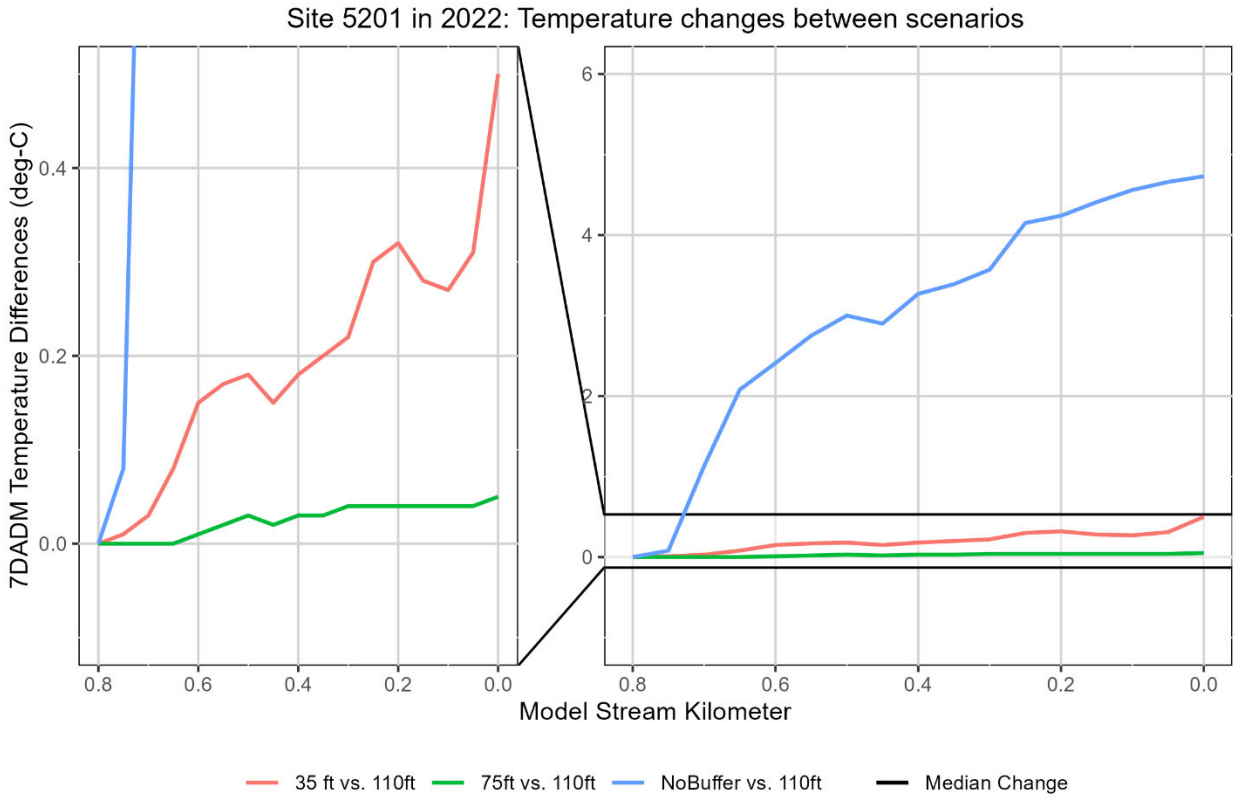
The total percent canopy cover for each land cover type was calculated as the sum of live tree and snag canopy covers under certain management practice adjusted for overlap. Snag canopy cover can range between 1/3 and 3/5 of pre-fire canopy cover (Amaranthus et al 1989, Wolf et al 2021; Wolf, private comm., University of Colorado). We assumed that the initial post-fire snag canopy cover was 1/2 of the pre-fire live canopy cover level. For the REGEN scenario, we estimated snag canopy loss over time due to decay-induced height loss and fall, applying equations based on previous work that has been adopted in the FVS framework (http://www.fs.fed.us/fmsc/ftp/fvs/docs/gtr/R6snags.pdf). For the SL and NEW scenarios, snag canopy cover was reset to 0 in 2022 to reflect salvage harvest. Plot average height was calculated as the averaged height of both live and dead trees in the REGEN scenario, where snag decay and fall were factored into height estimates over time. Snag height was reset to 0 in 2022 to compute average height for the SL and NEW scenarios.

Temperature impact from management was calculated as the difference of the 7-day average maximum (Δ7DADM) temperature along the stream waterway between two buffer scenarios. The 7DADM was calculated using the hourly HS model output and the procedure outlined in DEQ's Temperature Standard Internal Management Directive. Results are presented as the difference between the 110ft no-harvest riparian management area and each of the other three management scenarios to show the relative temperature change due to extraction of timber from otherwise protected riparian areas.

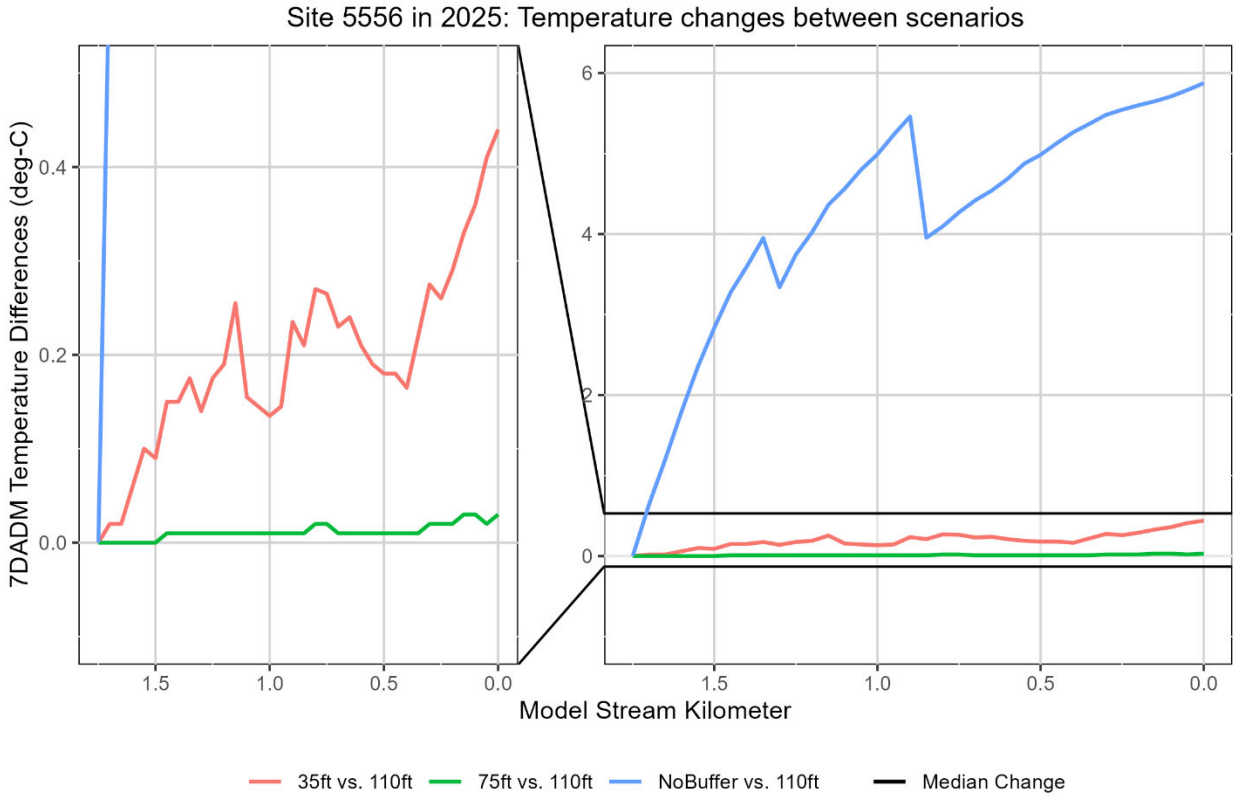
2022 Median Model Result Comparisons (1st year post-harvest)

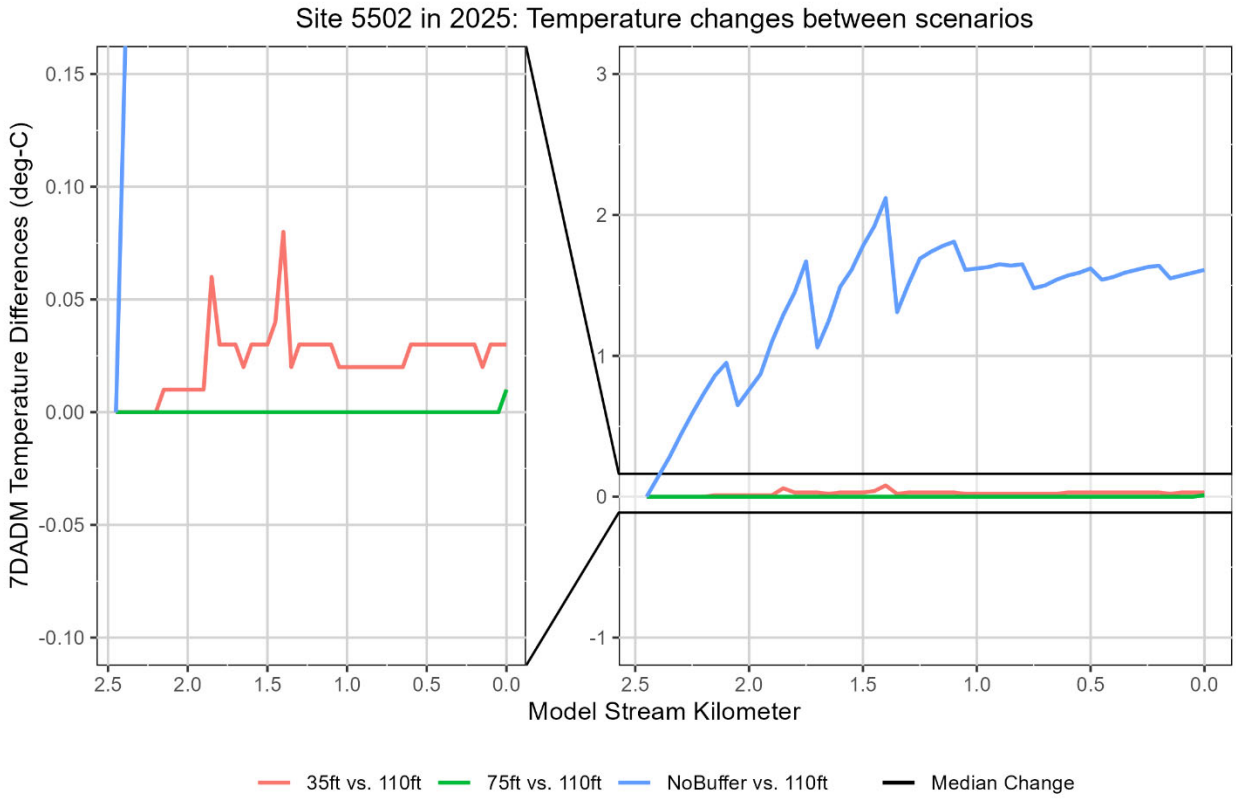


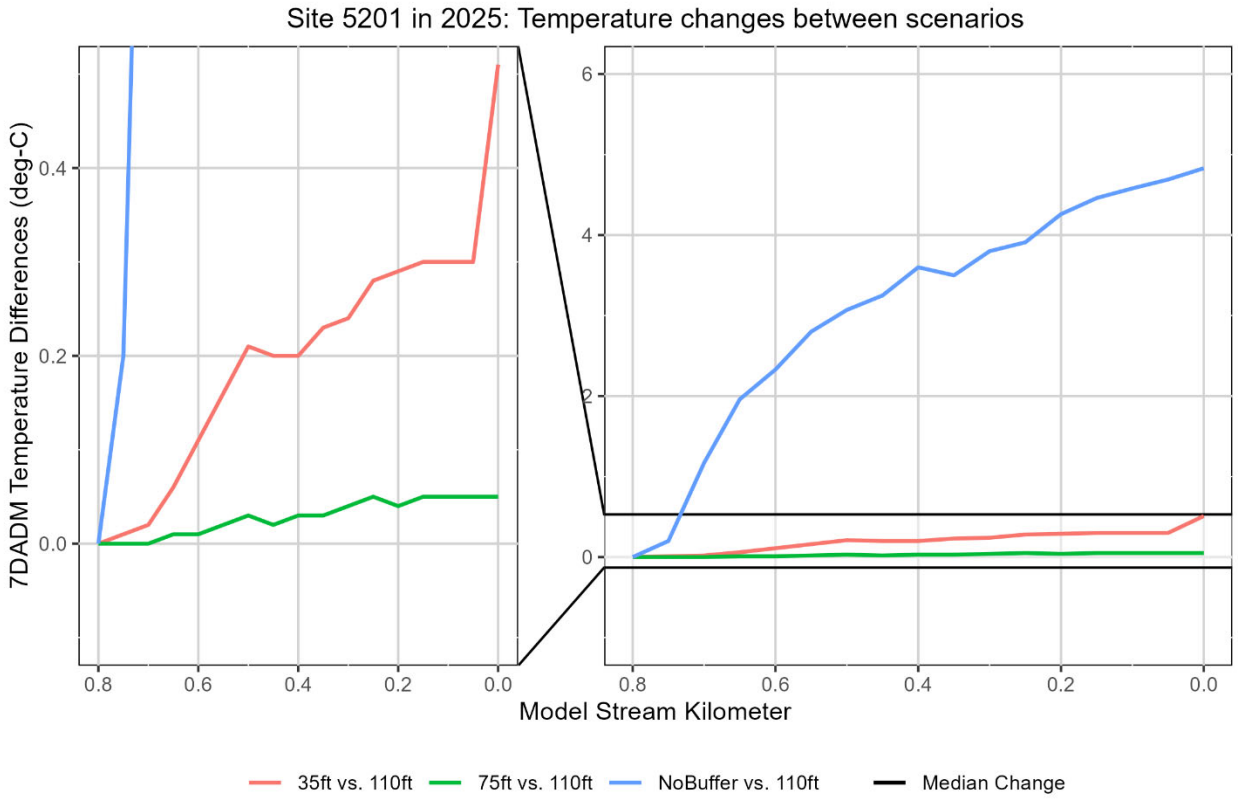



Site 5201 in 2022: Temperature changes between scenarios
7DADM Temperature Differences (deg-C)
0.4
0.2
0.0
6
4
2
0
0.8
0.6
0.4
0.2
0.0
Model Stream Kilometer
35 ft vs. 110ft
75ft vs. 110ft
NoBuffer vs. 110ft
Median Change

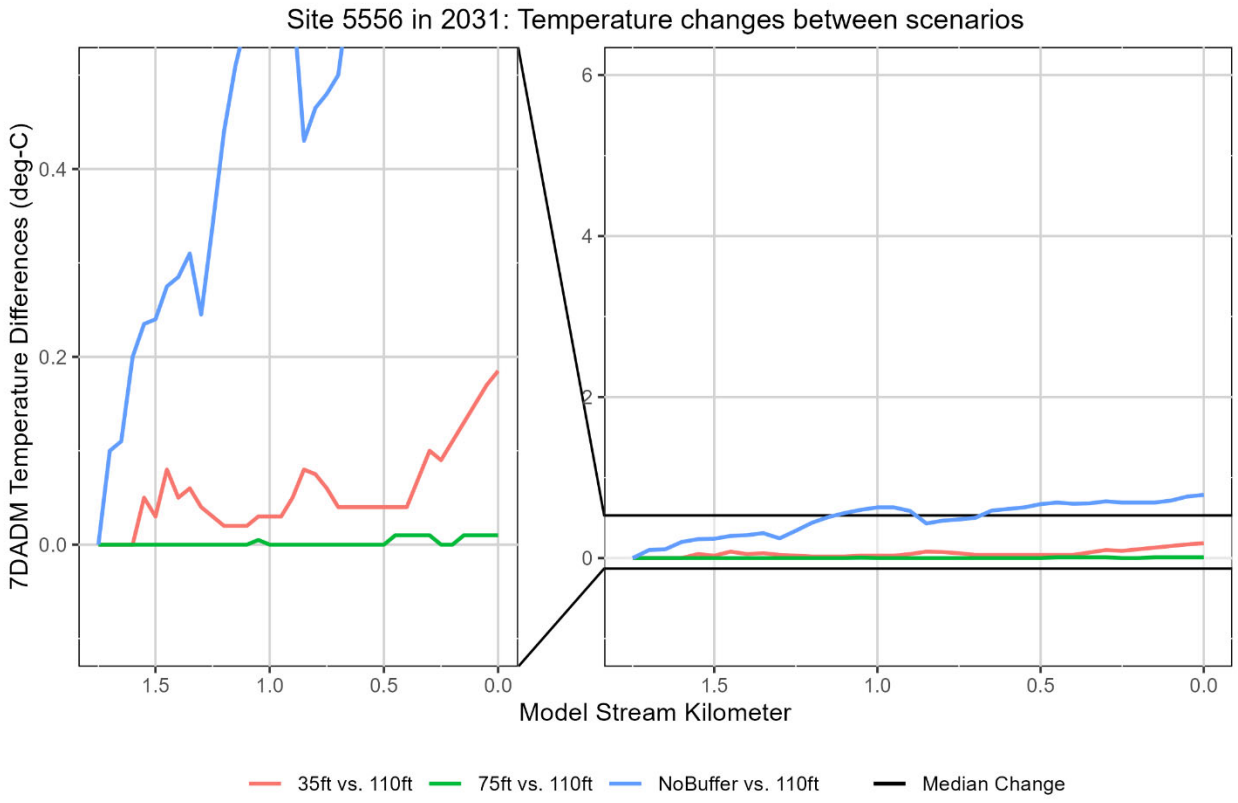
2025 Median Model Result Comparisons (4th year post-harvest)

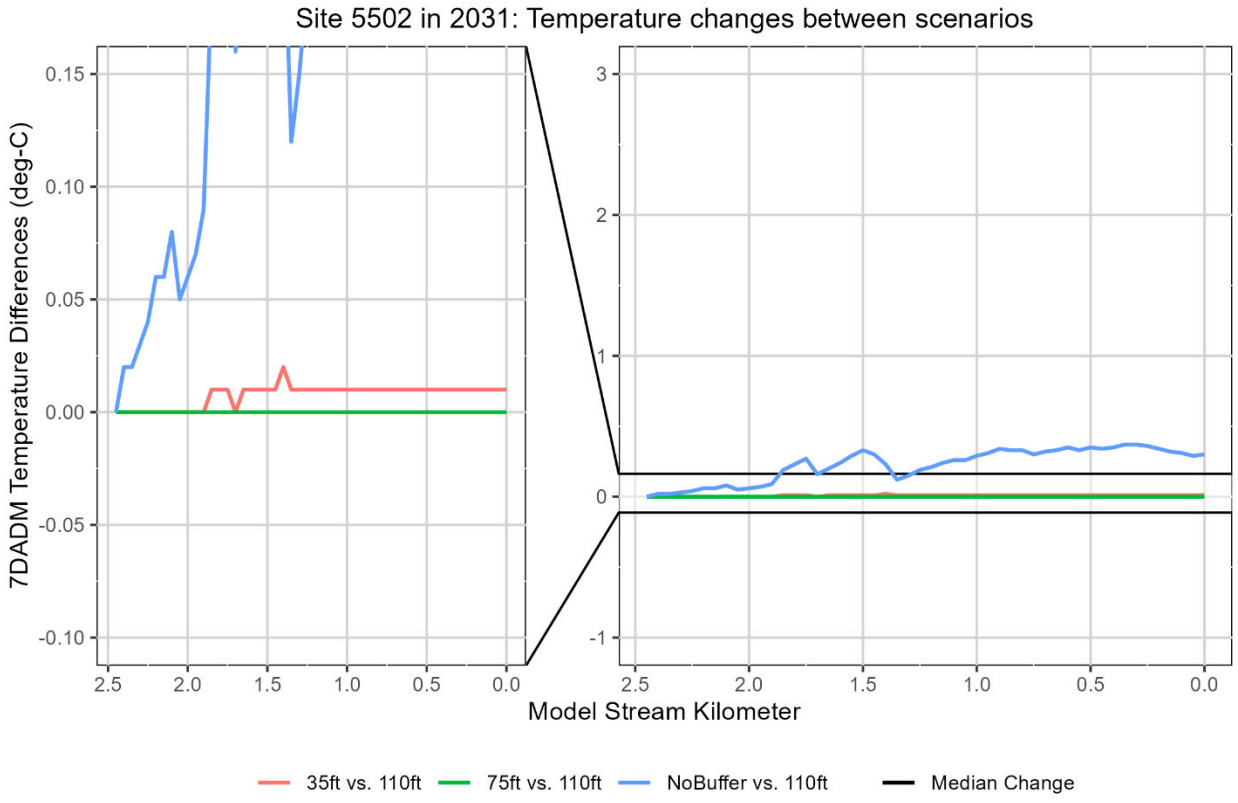


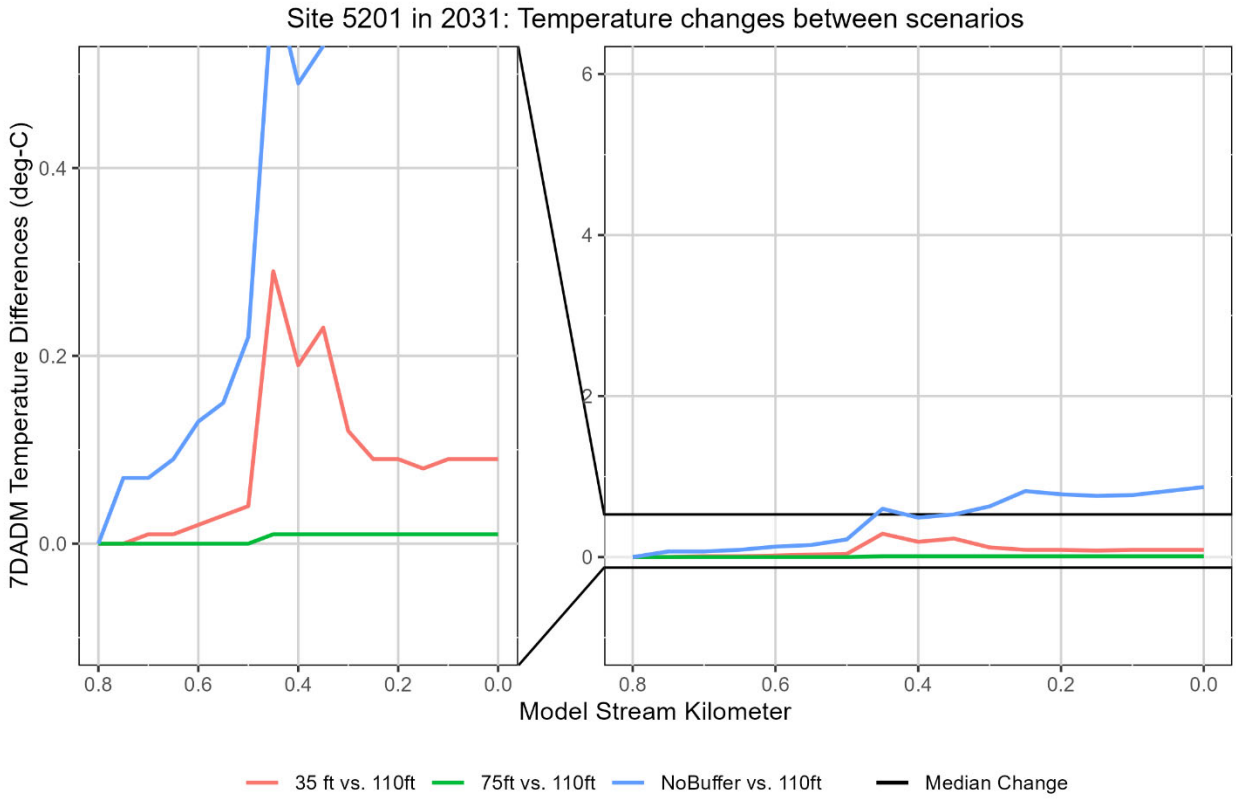



Site 5201 in 2025: Temperature changes between scenarios
7DADM Temperature Differences (deg-C)
0.4
0.2
0.0
6
4
2
0
0.8
0.6
0.4
0.2
0.0
Model Stream Kilometer
35ft vs. 110ft
75ft vs. 110ft
NoBuffer vs. 110ft
Median Change

2031 Median Model Result Comparisons (10^{th} year post-harvest)






Site 5201 in 2031: Temperature changes between scenarios
7DADM Temperature Differences (deg-C)
0.4
0.2
0.0
6
4
2
0
0.8
0.6
0.4
0.2
0.0
Model Stream Kilometer
35 ft vs. 110ft
75ft vs. 110ft
NoBuffer vs. 110ft
Median Change

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RE: OREGON DEPARTMENT OF FORESTRY RULEMAKING ON POST-DISTURBANCE HARVEST

The Oregon Department of Fish and Wildlife (Department) appreciates the opportunity to provide comments on the Oregon Department of Forestry (ODF) proposed post-disturbance harvest rules (Oregon Administrative Rule [OAR] 629-643-0300). The mission of the Department is to protect and enhance Oregon's fish and wildlife and their habitats for use and enjoyment by present and future generations. The Department has statutory authority to manage Oregon's fish and wildlife resources (Oregon Revised Statute [ORS] 496.012).

Large scale forest disturbances such as wildfire, floods, landslides, wind/ice storms, insect infestations and disease outbreaks are a natural part of the ecosystems in the western United States, including Oregon. The incidence of larger, more frequent, and more intense disturbances in the West is projected to increase as our climate changes, which will likely result in profound changes in many ecosystems. Evidence suggests that disturbances such as large wildfires which were previously considered exceptional may now be the 'new normal'.

As large-scale disturbances are heterogenous in their intensity and impact across forest landscapes, they leave behind stand- and landscape-level biological legacies, such as large living and dead trees, downed logs, and a patch-mosaic of forest structure that includes intact patches of forest and thickets of understory vegetation interspersed with new forest openings. Biological legacies influence key ecosystem processes (particularly recovery) and provide within stand structural complexity and habitat as well as increased insect prey abundance for many organisms. Post-disturbance harvest or salvage logging is often conducted to recover economic value in the dead and damaged trees, but it can also have significant negative impacts on fish and wildlife habitats and maintenance of ecosystem processes (Lindenmayer and Noss 2006, Lindenmayer et al. 2008, Peterson et al. 2009, Franklin et al. 2018, Thorn et al. 2018, Thompson et al. 2024).

Overall, the Department believes the proposed post-disturbance rules represent a compromise between a broad (and sometimes conflicting) range of interests. We support the purpose of the proposed post-disturbance harvest rule which is an alternative vegetation retention prescription for harvest units experiencing stand level mortality. This alternative prescription is also intended

to contribute to desired future conditions, provide tree retention, woody debris, bank stability and result in the reestablishment of live trees. The Department also supports the proposed increases in buffer and tree retention requirements in comparison to current rule, especially for live green trees. Notwithstanding, the Department also notes that small Type Np (perennial no fish) streams in western Oregon is the only discrete stream classification type riparian management area (RMA) that does not appear to require a no-harvest buffer of some kind in the proposed rule framework. This omission is problematic. The Department believes that the protection of Type N streams is essential given the important role they play as habitat for a variety of species, especially Type Np streams and their associated buffers (RH max) in the proposed post-disturbance harvest rules.

Headwater streams that do not support fish make up 60-80 percent of the stream network in Oregon (Shreve 1969, Reeves et al. 2006, MacDonald and Coe 2007) and drain much of the catchment area in a watershed. The preponderance of headwater streams, their sensitivity to disturbance (Benda et al. 2005, Hassan et al. 2005a, Richardson et al. 2005), their importance to amphibians (Meyer and Wallace 2001, Olson et al. 2007), and their contributions of sediment (Benda and Dunne 1987, Benda 1990, May 2002, Benda et al. 2005, MacDonald and Coe 2007), wood (Gomi et al. 2002, Hassan et al. 2005b, Reeves et al. 2006), and invertebrate prey (Bilby 1981, Palmer et al. 1996, Muotka and Laasonen 2002, Wipfli and Gregovich 2002) to downstream reaches is well-documented in the scientific literature. In addition, several state-listed sensitive species are also found in these stream reaches, including the Cascade torrent salamander, Columbia torrent salamander, southern torrent salamander, coastal tailed frog, and Rocky Mountain tailed frog. These amphibian species are primarily located above the extent of fish bearing streams because they are predated by fish.

In a preliminary assessment using the authoritative ODF Flow Line Data, the Department notes there are 163,964 miles of Type N streams and 23,692 miles of small Type Np streams in western Oregon. This suggests that there about seven times as many ephemeral small non-fish streams as perennial small non-fish streams. In addition, starting at the confluence of a non-fish-bearing stream (Type Np) and a fish-bearing stream (Type F), or salmon, steelhead or bull trout stream (Type SSBT), the Forest Practices rules require a protective tree retention area along the Type Np stream or RH max. In western Oregon, Type Np streams flowing into an SSBT stream have a greater RH max distance (up to 1,150 feet) than those flowing into a Type F stream (up to 600 feet). The total distance of small Type Np streams protected by RH max buffers is 3,703 miles in western Oregon.

The Department believes that the protective RH max buffer along the Type Np streams is indispensable to achieving desired future conditions for streamside areas. Further, RH max is a targeted and strategic approach to apply protective measures where they are likely to be the most beneficial and least burdensome to landowners and timber owners. RH max covers a small proportion of the overall Type N stream network and focuses protection on Type Np streams closest to fish-bearing streams (including SSBT). Whereas RH max encompasses 2 percent of the total length of small Type N streams, it covers 16 percent of the total length of small Type Np streams in western Oregon, respectively. The RH max is the first line of defense to

ameliorate impacts further upstream and contributes habitat structure and function to fish-bearing (including SSBT) streams directly downstream.

Much like all the other stream type classification RMAs experiencing stand level mortality, the Department believes that the retention of dead and dying trees near the stream are also necessary in RH max buffers along Type Np streams to provide fish and wildlife habitats and help maintain ecosystem processes. Since most streams have deficits of large wood (Sedell and Luchessa 1982, Sedell and Swanson 1984), wood that enters channels following fires in riparian areas is often the main source of wood for the stream (Reeves et al. 2006). Reducing the amount of wood available to be delivered to channels by disturbance such as post-fire logging will delay wood recruitment in habitats that may already be deficient in wood because of past management practices (Reeves et al. 2006). The addition of wood creates a greater shift in stream habitat in small streams than in large streams, transforming them from erosive cascades to step-step or step-pool habitats which are much better at trapping sediment (Bilby and Likens 1980, Bisson et al. 1987, Montgomery and Buffington 1997, Gomi et al. 2003, Montgomery et al. 2003, May and Gresswell 2003, Bryant et al. 2007). The delivery of sediment to downstream reaches can be moderated by higher wood loadings in headwater channels (Lancaster et al. 2001, May and Gresswell 2003, Bunn and Montgomery 2004). Retention of dead riparian vegetation can also provide significantly more shade than topography and remaining live vegetation in areas that have experienced severe disturbance (Amaranthus et al. 1989, Rex et al. 2009, Leach and Moore 2010).

Based upon these findings, the Department recommends that the proposed post-disturbance harvest rule include a no-harvest buffer in the RH max for small Type Np streams in western Oregon. *At a minimum*, the Department recommends a protection standard be applied to the small Type Np RH max that is in alignment and consistent with the same thresholds established for other stream type classification RMAs.

For example, the proposed rule framework utilizes a protection standard threshold whereby approximately 75 percent of the RMA is no-harvest. In western Oregon, the vegetation retention RMA distances are 75 feet and 50 feet for small Type Np flowing into Type SSBT, and 75 feet for small Type Np flowing into Type F, respectively. Therefore, within RH max for Type Np streams flowing into Type SSBT streams the harvest of dying or recently dead trees would occur only outside a no-harvest buffer or 56 feet slope distance from the edge of the active channel (AC) or channel migration zone (CMZ) for 500 feet upstream, then outside 37 feet from the edge of the AC or CMZ for an additional 650 feet upstream (RH max = 1,150 feet). Similarly, for Type Np streams flowing into Type F streams the harvest of dying or recently dead trees would occur only outside 56 feet slope distance from the edge of the AC or CMZ for 600 feet upstream (RH max).

In sum, it has long been recognized that disturbance is a natural ecological factor in Oregon's forested landscapes and that it has a major role in maintaining biodiversity and ecological processes in aquatic and terrestrial ecosystems. Disturbance, such as fire, plays many important ecological roles in ecosystems that cannot be duplicated by any other natural processes. The Department encourages leaving burned wood on the landscape as much as possible, particularly

in riparian areas to ensure long term benefits are realized. Standing dead wood supports a variety of terrestrial species and allowing natural succession of disturbed systems provides for future recruitment of large woody debris that will be beneficial for creating complexity in aquatic habitats. Large wood within headwater streams promotes a step-pool morphology, which encourages sediment retention, shallow groundwater storage, and hyporheic exchange that tends to reduce water temperatures. These processes all benefit the water quantity/quality and habitat conditions of downstream fish-bearing reaches.

Thank you for the opportunity to comment. The Department looks forward to continued work with ODF and other partners on the post-disturbance harvest rulemaking. If you would like more information from the Department, please contact me at 503-689-3557 or Rod.W.Krahmer@odfw.oregon.gov.

Sincerely,

Rod Krahmer

Rod Krahmer
Forest Program Coordinator
Oregon Department of Fish and Wildlife

Attachment (1): Literature Cited

Literature Cited

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June 6, 2024

Cal Mukumoto
Oregon State Forester
2600 State Street, Building C
Salem, OR 97310

In Response to Action Item: #4 – Vision for Oregon's Forests

Dear Chair Kelly, State Forester Mukumoto and members of the Board,

Introduction

Associated Oregon Loggers (AOL) is a local trade association that represents nearly 1,000 family-owned forest contracting businesses. Our member companies have been involved in the management of Oregon's forests for decades and provide the capacity necessary to get work accomplished on all forestlands in the state. These nearly 23,000 owners, operators and employees are essential to conduct activities in the woods.

Our Perspective

The "Vision for Oregon's Forests," is a comprehensive document that outlines a future we all wish to see for our state's forests. As Oregonians, we understand deeply that our forests are more than just trees; they are the lifeblood of our communities, providing clean air, water, biodiversity, economic sustenance among many other ecosystem services. However, it is crucial to acknowledge that resilient forest ecosystems cannot exist in isolation from a robust and thriving forest sector. The workforce, infrastructure, and market systems that make up forestry in Oregon are integral to creating the resilient forest ecosystems we are all striving to achieve.

AOL commends the Board for including Forest Infrastructure as a key value in the Vision. Yet, there is a notable gap in specific strategies to support this value within the document. The current document mentions these aspects in passing but does not provide detailed strategies to attain them.

While there is a strategy in "Promoting Resilient Communities," that includes forest infrastructure, it is generalized and lacks specificity. Clear, actionable plans are needed to ensure our communities benefit fully from a resilient forest ecosystem supported by a strong forest sector. The "Promoting Resilient Forests" Priority section must explicitly recognize the necessity of growing our workforce and strengthening forest infrastructure to meet the goals outlined.

Furthermore, the "Addressing the Wildfire Crisis" Priority touches on several relevant topics, but again, clarity is missing. Strategies such as improving Oregon's Complete and Coordinated System may be read by some as implying the maintenance or growth of the logging infrastructure but may not by others. These strategies should directly address the role of logging infrastructure and workforce development. Logging contractors are the first line of defense during fire seasons, and their role should be emphasized and supported through concrete policies and strategies. Conversely, the strategy emphasizing improvement of the Complete and Coordinated System could also mean that new dispatching techniques may need to be developed. There are many ways to read this strategy, and some may include workforce development and retention of logging contractors, other may not include these items at all.

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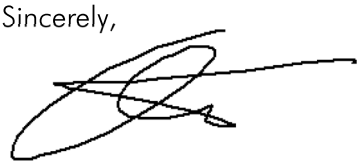
Lastly, in the "Providing Climate Leadership" Priority, while there is a commendable focus on climate-informed silviculture and climate-smart forestry, markets for long-lived harvested wood products are only briefly mentioned. There is no substantive strategy included to promote innovative biomass utilization, and renewable energy in Oregon that has the potential to offset non-commercial wildfire mitigation and resiliency treatments that also transition Oregon away from fossil fuel consumption positioning Oregon as a leader in climate-smart forestry technologies. These should be central to our climate strategies. The Oregon Department of Forestry, as the state's expert, must lead aggressively in promoting these markets to enhance both climate resilience and economic vitality.

In conclusion, achieving resilient forest ecosystems is intertwined with maintaining a healthy forest sector. We urge the Board to incorporate detailed, actionable strategies that bolster our workforce and infrastructure within this visionary document. Only through such integrated efforts can we truly secure the future of Oregon's forests and the myriad benefits they provide to all Oregonians.

Thank you for your time and consideration.

Sincerely,



Amanda Sullivan-Astor
Forest Policy Manager
aastor@oregonloggers.org

Chair Kelly, members of the Board, and State Forester Mukumoto,

My name is Dana McHenry. I am currently a law student at the University of Oregon interested in pursuing environmental law. The Vision for Oregon's Forests is full of potential, and I appreciate the board's attention to such an important topic.

After hearing the Board's perspective during the field day yesterday, I understand this plan is still a work in progress. Therefore, I offer these thoughts. This plan claims to be forward looking. However, part of being forward looking is ensuring and communicating measurable outcomes to the public. As a law student, I have become aware of the importance of agencies being held accountable to their promises. I ask that this plan reflect this need.

I have lived in Oregon for ten years. In just these ten years, I have seen how our forests have changed because of extreme wildfires, heavy logging, and climate change. Over these ten years, the impacts of climate change have creeped closer and closer to my home. Ten years is not a long time, but it has been a period of drastic change in my local forests. Similarly, my father grew up in Portland in the 60s and 70s. Just last year he moved back to the state after being gone for decades. Travelling through much of the same areas around Portland where he used to regularly hike, he can barely recognize it decades later. In direct view from his current porch, he sees the devastation of multiple clearcuts and uncharacteristic wildfires. He loves this state, and he waited decades to return. However, it has not been the return he had dreamt of.

This plan claims to have the goal of a reciprocal relationship between humans and our forests. However, how can there any such reciprocity if the goals of this plan are not communicated in an understandable way to the public? I ask that measurable targets, detailed analyses, and an interconnected relationship with other such plans such as the habitat conservation plan be included within this one. We are seeing drastic changes, and unprecedented change requires specifics. I thank you for your time.

Wildfire hazard map

Chair Kelly members of the Board

I am John O'Keeffe, I am a life long rancher in Lake County Oregon, recently I have become involved in the wildfire discussion, I represent Ranchers with property in the Wildland urban interface (WUI) on Oregon's Wildfire Programs Advisory Council, and I was chosen to represent industry on the USDA Wildland Fire Mitigation and Management Commission, this commission meet for 18 monthes and issues a report with 148 recommendations to Congress in September of 2023.

In regard to the Wildfire hazard Map, we were told, grassland, hay and pasture, Alfalfa is the prevalent fuel type in the irrigated WUI.

I have spent my entire life in this fuel type.

Since 2011 I have been President of the WVRFPA, over 30,000 acres of this fuel type

Last year 4 responses, All in this fuel type, (all in irrigated ag lands) on one response our actions were credited in saving a house

I believe in the need for the map, I believe irrigated ag needs appropriate treatment in the map, pivots out, early season dry out in……, I believed I have some knowledge and experience that could help make the map a better model.

In preparation for the map advisory meeting I went to Corvallis and spent about 3 hours with Andy Mc Voy and Chris Dunn to learn about what type of modeling was available to allow the effects of irrigated ag to be integrated into the Hazard map

Irrigated ag and the relationship to fire behavior is complex, at one end of the spectrum there is season long irrigated alfalfa from a reliable source like a good well. At the other end of the spectrum there are cereal grains where the objective is to harvest a high tonnage low moisture crop mid to late summer, that is highly flammable.

There are many factors that affect fire behavior in between, systems without storage that run out of water early summer, junior water rights that have irrigation curtailed, crop rotations, endangered species act, delivery limitations, are some of the main ones.

After reviewing the modeling tools available it was clear that there was no good way to incorporate all the nuances of irrigated agricultural into the Hazard map.

One modeling tool, basically augmented remote imagery that separated parcels by how many years out of 5 the parcel had been irrigated did seem to put all the high moisture low risk parcels in one category and start to let some of the higher hazard drop out. This appeared to be the most effective path forward.

I spent time toggling back and forth with this model in an area I was familiar with and when set on the mid-range numbers all the safe parcels were in and some of the higher hazard ones would drop out.

In the Warner Valley where I am from most of the land is irrigated every year, except for a small amount of acreage under wells or irrigated with sprinklers in late season, irrigation stops in mid-June. By late summer these irrigated parcels have dried out and are a fire hazard. What keeps us safe is not the fact that these parcels were irrigated, but rather because we hay and graze the parcels which removes the fuel, the higher fuel load on the parts that are irrigated make those parcels more prone to fire late in the season.

During the RAC meeting Phil Chang gave a very clear description of an issue with some of the small ag parcels in his area. Rich people would by a small farm to have comfortable acreage close to town, with no interest in farming. In order to be able to lease their water allocation to a third party they would irrigate the small parcel once in five years to keep their water allocation valid. The result of this would be a dense dry weed patch right in the WUI. Phil gave a clear description of the problem and the nature of the resulting fuels.

Others on the RAC made general statements that they felt one irrigation in five years was lowering the fire hazard on the parcels, there was no attempt to describe the resulting fuels or what mechanisms created the lower fire hazard. I tried very hard to envision a fuel type that would still be resistant to fire with water applied once in five years, I was unable to imagine any fuel type with that characteristic. Especially not the pasture, hay, and alfalfa type fuels we were told made up the large share of irrigated ag found in the WUI.

I suggest apply the irrigation modification to the parcels that were irrigated for 3 or more years out of five, that approach would get all the high moisture crops that were hurting the map credibility to a reduced hazard model while keeping some of the dry weed patch problem properties in the high hazard model where they clearly belong.

I want to be real clear, I do not care at all that the dwellings on irrigated ag properties are not subject to regulation, I am fine with this farmers and ranchers are used to looking out for themselves. What bothers me greatly is that the RAC instructed ODF/OSU modelers to reduce the hazard rating on dry parcels with heavy loads of fine fuels right in the WUI. We lost a town in Colorado from a fine fuel fire in high winds.

There is not a gray area here, the model that recognizes irrigation once in five years underestimates real threats in the WUI.

Rulemaking

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Thu 6/6/2024 4:16 PM

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Name	John O'Keeffe
Email	johnhok@hotmail.com
Subject	Rulemaking
Comments	Wildfire hazard map Chair Kelly members of the Board I am John O'Keeffe, I am a life long rancher in Lake County Oregon, recently I have become involved in the wildfire discussion, I represent Ranchers with property in the Wildland urban interface (WUI) on Oregon's Wildfire Programs Advisory Council, and I was chosen to represent industry on the USDA Wildland Fire Mitigation and Management Commission, this commission meet for 18 monthes and issues a report with 148 recommendations to Congress in September of 2023. In regard to the Wildfire hazard Map, we were told, grassland, hay and pasture, Alfalfa is the prevalent fuel type in the irrigated WUI. I have spent my entire life in this fuel type. Since 2011 I have been President of the WVRFPA, over 30,000 acres of this fuel type Last year 4 responses, All in this fuel type, (all in irrigated ag lands) on one response our actions were credited in saving a house I believe in the need for the map, I believe irrigated ag needs appropriate treatment in the map, season long, high moisture pivots out, early season dry out parcels in……, I believed I have some knowledge and experience that could help make the map a better model. In preparation for the map advisory meeting I went to Corvallis and spent about 3 hours with Andy Mc Voy and Chris Dunn to learn about what type of modeling was available to allow the effects of irrigated ag to be integrated into the Hazard map Irrigated ag and the relationship to fire behavior is complex, at one end of the spectrum there is season long irrigated alfalfa from a reliable source like a good well. At the other end of the spectrum there are cereal grains where the objective is to harvest a high tonnage low moisture crop mid to late summer, that is highly flammable. There are many factors that affect fire behavior in between, systems without storage that run out of water early summer, junior water rights that have irrigation curtailed, crop rotations, endangered species act, delivery limitations, are some of the main ones. After reviewing the modeling tools available it was clear that there was no good way to incorporate all the nuances of irrigated agricultural into the Hazard map. One modeling tool, basically augmented remote imagery that separated parcels by how many years out of 5 the parcel had been irrigated did seem to put all the high moisture low risk parcels in one category and start to let some of the higher hazard drop out. This appeared to be the most effective path forward. I spent time toggling back and forth with this model in an area I was familiar with and when set on the mid-range numbers all the

	safe parcels were in and some of the higher hazard ones would drop out. In the Warner Valley where I am from most of the land is irrigated every year, except for a small amount of acreage under wells or irrigated with sprinklers in late season, irrigation stops in mid-June. By late summer these irrigated parcels have dried out and are a fire hazard. What keeps us safe is not the fact that these parcels were irrigated, but rather because we hay and graze the parcels which removes the fuel, the higher fuel load on the parts that are irrigated make those parcels more prone to fire late in the season. During the RAC meeting Phil Chang gave a very clear description of an issue with some of the small ag parcels in his area. Rich people would by a small farm to have comfortable acreage close to town, with no interest in farming. In order to be able to lease their water allocation to a third party they would irrigate the small parcel once in five years to keep their water allocation valid. The result of this would be a dense dry weed patch right in the WUI. Phil gave a clear description of the problem and the nature of the resulting fuels. Others on the RAC made general statements that they felt one irrigation in five years was lowering the fire hazard on the parcels, there was no attempt to describe the resulting fuels or what mechanisms created the lower fire hazard. I tried very hard to envision a fuel type that would still be resistant to fire with water applied once in five years, I was unable to imagine any fuel type with that characteristic. Especially not the pasture, hay, and alfalfa type fuels we were told made up the large share of irrigated ag found in the WUI. I suggest apply the irrigation modification to the parcels that were irrigated for 3 or more years out of five, that approach would get all the high moisture crops that were hurting the map credibility to a reduced hazard model while keeping some of the dry weed patch problem properties in the high hazard model where they clearly belong. I want to be real clear, I do not care at all that the dwellings on irrigated ag properties are not subject to regulation, I am fine with this, farmers and ranchers are used to looking out for themselves. What bothers me greatly is that the RAC instructed ODF/OSU modelers to reduce the hazard rating on dry parcels with heavy loads of fine fuels right in the WUI. We lost a town in Colorado from a fine fuel fire in high winds. There is not a gray area here, the model that recognizes irrigation once in five years underestimates real threats in the WUI.

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Re: Wildfire Hazard Map and Procedural Rules

Dear Chair Kelly and Members of the Oregon Board of Forestry:

Our organizations collectively represent Oregon's farmers, ranchers, and irrigation districts across the state. Our membership consists of thousands of irrigators, scores of irrigation and other special districts, as well as agricultural businesses and landowners that are directly impacted by the wildfire hazard map. The organizations we represent have deep knowledge of Oregon's water laws, the effect of irrigation on the landscape and an understanding of how agricultural water users effectively manage their water and land over a period of time. As a group we have been committed to constructively engage with the Department of Forestry and other decisionmakers who may not be as well versed in irrigation and farming practices to share that knowledge so that the inputs into the new wildfire hazard and wildland urban interface map creates a product that truly represents actual on-the- ground risk consistent with Oregon laws and policies.

Specifically, our organizations would like to provide support for the proposed modifications to 629-045-1026- Wildfire Hazard Map. These changes were allowed by Senate Bill 80 (2023), which allowed for specific considerations for irrigated agriculture. We support the language indicating that Oregon State University shall, when developing the map, "…include adjustments for irrigated agricultural, in locations identified as irrigated at least one of five years…" Irrigated lands are an essential risk mitigation factor, and it is crucial that they are not classified as wildfire hazards.

Farmers, ranchers, and irrigation districts invest substantial resources and infrastructure into agricultural operations. This includes modernizing systems to meet current demands and environmental conditions. These modernizations and pressurized systems provide additional benefits, such as extending limited water supplies during drought years, which in turn further reduces wildfire risk when we need it most. Additionally, during drought years, agriculture and land managers employ additional strategies, such as crop rotation, intensive grazing, or mechanical methods to also reduce fire risk while maintaining some level of production on the lands when there are limited water deliveries.

Requiring irrigation once every five years is consistent with Oregon water law. To be clear, those who hold a water right must, under Oregon water law, be ready, willing, and able to utilize their water right to its full extent every year. It is the expectation that most of the time a water user will be irrigating their lands more than once every five years, however it is imperative that we continue to allow for flexibility in water management and do not constrain a water user to arbitrary rules that are inconsistent with water law. As indicated above our agricultural water users employ many other tools to keep their lands productive that have the added benefit of reducing wildfire risk in the event they are not irrigating.

Our organizations ask that you please move forward with adopting the changes to 629-045-1026 Wildfire Hazard Map as drafted. Please do not hesitate to reach out to our organizations if you have any questions or concerns. Thank you for your consideration.