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VIA: https://cara.fs2c.usda.gov/Public//CommentInput?Project=61749

RE: 2020 Fire Affected Road System Risk Reduction EA—Scoping Comments

Please accept the following scoping comments from Cascadia Wildlands, Oregon Wild, and Willamette Riverkeeper concerning the 2020 Fire Affected Road System Risk Reduction Proposal, https://www.fs.usda.gov/project/?project=61749. Cascadia Wildlands is part of a movement to protect and restore wild ecosystems of the Cascadia Bioregion, including vast old-growth forests, rivers full of wild salmon, wolves howling in the backcountry, and vibrant communities sustained by the unique landscapes. Oregon Wild represents 20,000 members and supporters who share our mission to protect and restore Oregon's wildlands, wildlife, and water as an enduring legacy. Willamette Riverkeeper has approximately 2,500 members who live, work, visit, recreate, and enjoy the Willamette River Basin, including in the waters of the Holiday Farm Fire, Beachie Creek Fire, and Lions Head Fire areas.

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I. Introduction

We understand the importance of the US Forest Service (FS) efficiently removing fire-impacted trees that pose genuine hazards. Restoring public access to forest in the project area in a safe, ecologically-sensible manner is of the utmost importance. However, the trees that the FS deems as dangerous are also significant carbon stores and highly valued habitat features that play critical roles in hydrology, soil development, nutrient cycling, sediment routing, and more. Fire is an important ecological process that shapes our forests and the benefits we obtain from it. We acknowledge that this is a complex project with many difficult decisions regarding where and whether to remove danger trees or whether to retain the ecological values associated with natural disturbance and natural recovery. How will the FS consider adverse effects, weigh and balance trade-offs, and harmonize competing objectives associated with this project?

We promote a conservative approach to roadside tree selection for numerous reasons. Logging will degrade the natural beauty and ecological functions of mature and old growth trees that burned in the 2020 fires and the future development of a diverse forest understory will be irreversibly damaged by logging. In addition, the scenic quality of the burned forest stands will be severely degraded. It will be less aesthetically pleasing to drive on or view the effected roads. The ground will be scarred by heavy equipment tracks. Weeds such as thistle, blackberry, and Scot's broom will likely grow where native plants thrive today. Native understory plants and trees that currently grow along roadsides, such as Pacific yew, will be negatively impacted by these actions. These species create a diversity of habitat and forage and provide scenic beauty and natural interest to roadsides. Removing roadside trees and replanting conifers results in dense/uniform fuel conditions that pose a far greater fire hazard compared to the heterogeneous/diverse/complex forest conditions that develop naturally after fire—even along roadsides. Habitat will be degraded, and wildlife that live in and use roadside corridors containing diverse vegetation and large, old trees (including snags) will move away or may perish.

We share these concerns at the outset because we have seen recent instances of misguided roadside logging go terribly wrong, such as the BLM's post-fire roadside logging in the Archie Creek Area (pictured below). Proposed action areas included in the proposal must receive a full and fair NEPA analysis with ample public input so that the FS can execute a project that protects public safety *and* important ecological values.

Images: Aftermath of BLM's Hill Creek salvage logging in Archie Creek Fire Area (photo credit: Janice Reid).

II. Project Description

Willamette National Forest's (WNF) proposal involves the following:

- Removal of fire-killed and injured trees along up to 300 miles of roads affected by the 2020 fires on the WNF. This number of roads proposed for treatment may be reduced based on public input and internal scoping and review processes. Roads would be reopened for public and employee access to recreation areas, communication sites, and private land inholdings and for future fire and forest management activities.
- Identification of roads for treatment using two main factors: the level of access need along the route and the concentration of fire-killed and injured trees that may fall on the segment of road. The FS is seeking public input on access needs and completing a road-by-road review of these routes to further evaluate access needs.
- Trees that the FS determines were killed or injured by the 2020 fires and are likely to fall and strike the road will be cut, while trees that the Service determines are likely to survive the effects of the fire or do not threaten the roads would be left standing. In most places, trees within one-tree height of the road would be felled, depending on the height of the individual tree. Along the uphill side of the road where the slope is greater than 40%, fire-killed and injured trees within 1.5 tree heights of the road would be felled, while trees that lean away from and are not likely to strike the road when they fall would be left standing.
- Felled trees would be used for a variety of purposes. Some would stay on-site to reduce the risk of sedimentation run off and provide wildlife habitat, some may be used for restoration projects as fish and wildlife habitat logs, while others would be sold to the local mills to become wood products, be offered through permits for firewood to the local community or be given to Tribes for cultural use. The proposal states that no trees will be removed solely for timber production purposes.
- In many places, danger trees would be felled and left in place on site, in alignment with standards of the Willamette National Forest Land and Resource Management Plan (as amended). This would occur where appropriate to provide erosion control, support soil productivity and vegetation recovery, and provide course woody debris for wildlife. Generally, danger trees within Riparian Reserves and known culture resource sites would be felled and left in place on site.

A. Site-Specific Concerns

The proposal indicates that FS intends to reduce the number of roads proposed for treatment upon conducting a site-specific, road-by-road evaluation. However, the scoping proposal lacks sufficient information for the public to understand what is actually being proposed on a site-specific level and the FS has thus far failed to communicate a process by which site will be selected and analyzed. The ongoing post-fire closure of large portions of the forest has impeded the public's ability to examine many of the roads proposed for danger tree logging, making it difficult or impossible to provide site-specific feedback on the proposal. It is crucial that the FS provide road-specific treatment plans and ensure access to specific roads as needed so that the public may provide informed feedback on the proposed actions. Ultimately, we seek additional details as to what process the FS will use to evaluate each road—especially those that were burned at a low- or mixed-severity, are remote, are infrequently accessed, on steep slopes, etc. As forests are recovering naturally, it is crucial that the FS have a clear plan to mitigate genuine public safety risks and fully weigh ecological damage posed by treating roads.

We have the following initial concerns about certain proposed action areas:

- In the Holiday Farm Fire Area:
    - FR 1501-198 is a very remote logging road north of 126. This road is miles and miles from the main road and surrounded by very low severity burn. It ends on a steep slope above the Blue River Reservoir, and the only large trees are at the very end of the road. Main road FR 1501 experienced higher-severity burn than FR 1501-198, and the route to FR 1501-198 is hazardous itself with multiple sink holes along the way.
    - Near Highway 19, the remaining standing trees along FR 1900-408 and 1900-409 (a logging spur landing in the middle of a long-since cut unit (pre-burn)) are green. Why is the FS proposing FR 1900-408 for treatment?
    - Portions of FR 2618-307 (south of 126) were severely burned while others are nearly entirely green. Much of the burned area is very steep around creeks and it would negatively impact riparian areas to log there. How will the FS manage mixed-burn areas such as this?
- Roads in the Lionshead Fire Area such as the Mansfield Creek network along FR 4688, neighboring spur roads 4600-030 and 4600-033, and Slide Creek Road 4695-110 are dead-end roads rarely traveled by visitors and accessible only by high clearance vehicles. The large majority of FR 4688, 4600-030 and 4600-033 experienced low-severity burn. What are the reasons for proposing these areas for treatment?
- We are also concerned about the roads adjacent to the Opal Creek Wilderness. The FS should address the inventory status of the 3.2-mile road FR 2209 between the Opal Creek Ancient Forest Center's inholding of Jawbone Flats and the public parking gate. How will the FS take impacts to the river, archaeological artifacts and resources, and educational opportunities near this road into consideration?

Roads to consider decommissioning to enhance rare values associated with roadless/unroaded areas	
Beachie Creek Fire	
Road Name	**Notes**
2209 (Elkhorn Road)	Above the cabins and infrastructure. Accesses trailhead.

2207-125	
2207-126	
2209-201	
2205	Upper segment
2225-455	
2225-503	
Lionshead Fire	
Road Name	**Notes**
4697	Trailhead access*
4697-451	
4696	Upper section
4695-130	
4695	Upper section
4695-110	
4688-240	Trailhead access*
4685-320	
4685-310	Upper third
2231-730	Upper third
2243	Upper third. Trailhead access*
Holiday Farm Fire	
Road Name	**Notes**
2611	

*Some of these roads access trailheads which could be moved lower down to extend them or dropped from consideration.

Please note that this list is a suggested starting point for consideration. There may be additional roads that make sense to decommission, and some of the listed roads might not be closeable due to the need to access important infrastructure.

B. Project Scope and Prioritization Process

We strongly support genuine efforts to protect public safety and restore access to public forests and acknowledge the complexity of accomplishing these objectives. There are numerous other important objectives against which the felling of hazard trees must be balanced, such as wildlife habitat, carbon storage, water quality/stream shade, minimizing fire ignition risk associated with open roads, reducing fire hazard associated with plantations, minimizing habitat fragmentation, reducing road density, limiting cumulative effects, minimizing the future snag gap caused by stand replacing fire, limiting carbon emissions associated with logging and wood products processing, reducing soil degradation associated with heavy equipment and biomass removal, avoiding weeds, and retaining habitat diversity associated with snag-rich, complex early seral vegetation. Ultimately, commitments to public safety protection must not merely veil logging projects that maximizes commercial gain and stifle forest recovery.

We appreciate WNF's preparation of an EA for this large-scale project process to weigh the trade-offs between environmental consequences and public safety impacts. Including up to 300 miles of roads in this proposal could equate to a vast acreage of potential logging—perhaps as many as several thousand acres depending on the buffer widths and road miles analyzed. In general, we recommend undertaking a conservative hazard-tree removal process that removes true hazard trees and reopens necessary roads while minimizing the volume of wood removed from the forest. Accordingly, the FS should scale back the scope of the project proposal to prioritize a transportation system that is manageable and maintainable, as opposed to including all potential treatment roads in the initial proposal which only risks delaying access and necessary treatment even further.

The scoping notice regrettably fails to provide a clear picture of its road-specific treatment plans, a core piece of the roadside risk reduction puzzle. We request that the FS provide more detailed information about its site-specific evaluation plans. The FS should NEPA-clear the highest priority roads first and then move on in a more strategic manner. The FS would likely best achieve the project purpose and need by first focusing treatments in stands that have been impacted by high-severity stand-replacing fire events. The identification of legitimate roadside hazards in such stands is simpler and less controversial than in mixed- and low-severity forested areas. Additional opportunities for input should be available as the FS further refines the project's scope.

The FS should include in its analysis such details as: how much traffic the affected roads get, the maximum road density allowed in the LRMP, the minimum road system identified in roads analysis for the affected area, how far the treatments would be from roads, the character of affected stands (e.g., plantation or mature), whether heavy equipment would be allowed to operate off road, how much extra road work would be required to facilitate log hauling, proximity to streams, presence of steep slopes and special habitats, and many other critical factors.

C. FS Must Take a Hard Look at Guidance Documents

For the hazard tree proposal, the FS would rely on agency guidance documents to establish its hazard tree selection criteria. Specifically, the FS would make its selections based on Region 6 Danger Tree Policy Guidelines, which were developed using *Field Guide for Danger-Tree Identification and Response along Forest Roads and Work Sites in Oregon and Washington* (Filip et al. 2016) and *Post-fire Assessment of Tree Status and Marking Guidelines for Conifer in Oregon and Washington* (Hood et al. 2020). Along with the road segments identified for treatment, the danger tree criteria are central to the proposal. They determine which trees will be cut. The environmental impacts of the proposal therefore turn on the hazard tree selection criteria—the more trees that are selected to be cut, the greater the environmental impacts will be.

However, the Region 6 Danger Tree Policy Guidelines, Filip, and Hood have not undergone NEPA analysis. Members of the public, Tribes, other agencies, and other interested parties never had the opportunity to review and provide feedback on the proposal's danger tree criteria. Whether or not the criteria accurately predict that trees actually pose a hazard risk has never been vetted in accordance with NEPA's procedural safeguards.

Similarly, the WNF has pre-selected the roads for treatment based on the *Willamette Road Investment Strategy*, which has never been subjected to NEPA analysis. The FS must take a hard look at the consequences of using these guidelines under NEPA.

D. Environmental Effects and Trade-offs May Be Significant

This project requires careful weighing of competing values. The 2020 fires changed conditions, which may have altered some ecologically valuable habitats, but the fires also created the possibility of new habits. Logging and replanting after fires is neither needed nor beneficial. Logging is a tax on the ecosystem recovery. This is a logging project, covering up to 300 miles, that will harm the forest and the recovery process. The significant adverse effects of salvage logging must be clearly described in the assessment and then minimized and mitigated as much as possible in order to meet forest plan objectives.

- This FS must consider the project's effects on soil, water, wildlife, carbon, and fire hazards. The project may pose economic conflicts of interest between conservation and commercial tree removal or lead to potential noncompliance with Service policies and forest plan requirements.
- The FS must consider the ways in which the project would harm threatened spotted owls by increasing forest fragmentation (including in reserves and critical habitat), increasing the extent of habitat inhospitable to spotted owls, converting complex forests into simplified forests, increasing fire hazard by increasing dense plantation fuel structure, reducing spotted owl roosting and foraging opportunities, reducing spotted owl prey populations, increasing spotted owl disturbance by logging activity, increasing adverse competitive interactions with barred owls, making it harder for spotted owls to persist and move safely across the landscape. The FS must carefully weigh and balance the need for safety and spotted owl conservation.
- The FS must consider impacts to threatened salmon ESUs, which could be significantly harmed by removing snags that help shade streams, increasing sediment production from heavy use of unpaved roads and off-road soil disturbance by heavy equipment (including steep slopes), increasing activity within riparian reserves and at road/stream crossings, by converting complex forests into simplified forests, by reducing the availability of dead wood to streams and riparian reserves, by depleting summer stream flow by increasing the extent of dense conifer plantations. The FS must carefully weigh and balance the need for safety and salmonid conservation.

- The FS must take a hard look at adverse impacts to the outstandingly remarkable values associated with existing and proposed Wild and Scenic River corridors.

The new paradigm for post-fire management is well articulated in this excerpt from respected scientists in one of the world's leading science journals:

> … [N]atural disturbances are key ecosystem processes rather than ecological disasters that require human repair. Recent ecological paradigms emphasize the dynamic, nonequilibrial nature of ecological systems in which disturbance is a normal feature and how natural disturbance regimes and the maintenance of biodiversity and productivity are interrelated … Salvage harvesting activities undermine many of the ecosystem benefits of major disturbances. … [R]emoval of large quantities of biological legacies can have negative impacts on many taxa. For example, salvage harvesting removes critical habitat for species, such as cavity-nesting mammals, [and] woodpeckers, … Large-scale salvage harvesting is often begun soon after a wildfire, when resource managers make decisions rapidly, with long lasting ecological consequences….

Lindenmayer, Franklin et al (2004). Federal forest managers should follow the best available science and avoid reliance on outdated provisions of existing resource management plans.

On November 9, 2020, in the wake of the 2020 wildfires, a large group of conservation groups sent a letter to the Willamette NF (and other forests) highlighting the value of natural recovery processes after wildfires, the potential for significant environmental effects from post-fire management, and the need for careful management of fire-affected forests. This project must be carefully designed in light of these considerations:

> Owners of private lands currently have no incentive to manage for the values associated with ecologically complex forests, young or old. This leaves federal lands with the vital role of restoring mature & old-growth forest ecosystems as envisioned by the Northwest Forest Plan, the Spotted Owl Recovery Plan, and even BLM's Revised RMPs. Science tells us that the best path to restoring complex *old* forest is by conserving complex *young* forest, not through salvage and replanting. Importantly, the role of complex post-disturbance forest types is not well recognized in current management plans. It is crucial that your agencies act accordingly to close the gap between outdated management practices and current science.
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> Advancing the goal of conserving ecologically complex forest requires a cautious approach to post-fire management. In recent decades, voluminous and compelling science has emerged showing that natural forest recovery after fire is more likely to maintain and develop long-lasting complex forest attributes, while salvage logging and traditional replanting schemes are certain to simplify forests and retard or prevent development of desired complex forests. See key science resources listed below, especially Swanson et al (2010), and Donato et al (2012).
>
> After a fire, the powerful dynamics of PNW forest ecosystems rapidly emerge. This ecosystem is dominated by large wood legacies carried over from the previous stand, plus a profusion of diverse plants that produce nuts, berries, nectar, pollen, and palatable

foliage. These rich plant communities provide food and habitat for a diversity of foraging wildlife, and those wildlife support diverse predators - helping to support a robust forest food chain. The importance of the complex early seral stage has been vastly under-appreciated until recently, and your respective agencies' approaches to post-fire management need to reflect the best (and most recent) available science.

As your agencies know well, fire as a disturbance provides the ideal conditions for this complex early seral ecosystem to emerge and flourish at least until conifer regeneration develops and dominates the site. In a forest experiencing natural recovery, the heterogeneous early seral ecosystem stage can persist for decades. However, this biodiverse condition can be brought to a screeching halt with salvage logging and conifer replanting that removes complex legacy structures, damages regenerating vegetation diversity, and accelerates conifer dominance. In fact, forests with structurally complex beginnings due to fire can develop desired old growth forest characteristics twice as fast as forests simplified by salvage logging and replanting.

The new science regarding post-fire forest management is fairly well represented in the 2011 Revised Recovery Plan for the Northern Spotted Owl which recognizes the natural role of fire in developing and maintaining complex habitat supporting spotted owls and diverse prey species. Relevant parts of the recovery plan state:

- "There is evidence of spotted owls occupying territories that have been burned by fires of all severities. The limited data on spotted owl use of burned areas seems to indicate that different fire severities may provide for different functions." (p III-31).
- "… [S]upport is lacking for the contention that reduction of fuels from post-fire harvest reduces the intensity of subsequent fires (McIver and Starr 2000), and planting of trees after post-fire harvest can have the opposite effect." (p III-47).
- "Detrimental ecological effects of post-fire timber harvest include: increased erosion and sedimentation, especially due to construction of new roads; damage to soils and nutrient-cycling processes due to compaction and displacement of soils; reduction in soil-nutrient levels; removal of snags and, in many cases, live trees (both of which are habitat for spotted owls and their prey); decreased regeneration of trees; shortening in duration of early-successional ecosystems; increased spread of weeds from vehicles; damage to recolonizing vegetation; reduction in hiding cover and downed woody material used by spotted owl prey; altered composition of plant species; increased short-term fire risk when harvest generated slash is not treated and medium-term fire risk due to creation of conifer plantations; reduction in shading; increase in soil and stream temperatures; and alterations of patterns of landscape heterogeneity …" (p III-48).
- "Consistent with restoration goals, post-fire management … should promote the development of habitat elements that support spotted owls and their prey, especially those which require the most time to develop or recover (e.g., large trees, snags, downed wood). Such management should include retention of large trees and defective trees, rehabilitation of roads and firelines, and planting of native species (Beschta et al. 2004, Hutto 2006, Peterson et al. 2009). We anticipate many cases where the best approach to retain these features involves few or no management activities. Forests affected by medium- and low-severity fires are still often used by

spotted owls and should be managed accordingly. Many researchers supported the need to maintain habitat for spotted owl prey. For example, Lemkuhl et al. (2006) confirmed the importance of maintaining snags, downed wood, canopy cover, and mistletoe to support populations of spotted owl prey species. Gomez et al. (2005) noted the importance of fungal sporocarps which were positively associated with large, downed wood retained on site post-harvest. Carey et al. (1991) and Carey (1995) noted the importance of at least 10 to 15 percent cover of downed wood to benefit prey." (p III-49).

We would like to highlight the recovery plan's recommendation to conserve large trees and snags because they are "habitat elements that support spotted owls and their prey, especially those which require the most time to develop or recover..." Given the dire condition of spotted owl populations, and the fact that spotted owl habitat is limiting, these post-fire recommendations should be followed on all federal lands. At a minimum they must be followed in all areas with a conservation emphasis, e.g., LSRs, critical habitat, riparian reserves, Administratively Withdrawn Areas, roadless areas, ACECs, etc.

A high percentage of the wildfires in Oregon this year were in drinking water source areas exhibiting steep mountainous terrain with significant potential for erosion. Watersheds affected by wildfire are already at increased risk of erosion and water quality degradation. Salvage logging (and associated road building) will reduce the sediment holding and soil building services of dead wood and makes a bad situation worse with regard to water quality, including drinking water, and other watershed values. See key science resources listed below, especially Emelko et al (2011).

Climate change is not only a primary driver of the increasing wildfires that threaten our communities and our forests, but climate change also adds significant uncertainty to our ability to conserve and restore old growth forests. After fire, agencies should manage to retain as much old forest structure and function as possible, this includes all large trees and snags. Converting burned forests to plantations lacking significant dead wood structure promotes a homogenous forest type that is already vastly over-represented in western Oregon, and one that poses a significant fire hazard for communities and remaining mature & old-growth forests. Complex early seral forests are also a hedge against climate uncertainty. Species diverse forests are expected to be better able to tolerate and adapt to climate extremes and disturbance, and better able to store carbon more securely. See key science resources listed below, especially IPCC AR5 2014, and Osuri et al (2020).

Given this science and evidence, our post-fire recommendations for public lands include:

- Focus on stabilizing watersheds, by mitigating damage caused by fire suppression, limiting erosion using native fibers and native plants, treating weeds, disconnecting roads from streams, and closing and storing unneeded roads.
- Focus danger tree felling on imminent hazards located within 150 feet of high use areas, such as developed sites, parking lots, and paved roads. Do not remove felled danger trees from reserves, including the full extent of riparian reserves. If danger

trees are removed, use them for restoration of streams and old clearcuts that lack large wood.

• Avoid salvage logging. Salvage logging has potentially significant impacts on water quality, fish & wildlife habitat, and forest successional trajectories and salvage should not be approved using Categorical Exclusions from the National Environmental Policy Act. If salvage logging is deemed necessary, focus on partial removal of small trees from plantation stands less than 80 years old.

• Retain all large wood to mitigate the shortage of snag habitat and for long-term ecological benefits and carbon storage. Fires create an apparent abundance of snags, but that is misleading because snags are ephemeral; the abundance of snags is short-lived and hides the fact that after those snags fall down, there will be a long-term shortage of snags that lasts until large trees regrow. Salvage logging will exacerbate the expected shortage of snags.

• Avoid road construction, including temporary roads, as they have long-term impacts on watersheds, soil, and vegetation, can introduce invasive weeds, and fragment habitat. Watersheds are already damaged by hundreds of miles of hastily constructed firelines. New roads will make a bad situation worse.

• Don't cut any live, green trees, because all surviving trees are helping to rebuild the below-ground ecosystem and serve a valuable role as legacy structure and a recruitment pool for future large trees and snags. All trees presumed to be dying should be treated as live until they are dead, because we do not want to lose the ecological benefits of those trees that may unexpectedly survive.

• Avoid replanting because it will create hazardous fuel conditions and truncate development of a desired complex early seral forest. If replanting is deemed necessary, replant diverse species in patches, at low density, far from existing seed sources.

• Encourage fire-affected local communities to rebuild in a responsible way that is more resilient to wildfire, which is an unavoidable part of our climate future.

Clearing large areas along an extensive road system can have significant negative cumulative impacts such as: soil degradation from heavy equipment operating off roads and biomass removal, water quality degradation from heavy equipment affecting ditches that convey water to streams; cumulative loss of habitat features that are already rare such as snags, down wood, and diverse early seral vegetation; accelerated carbon emissions; increased fire hazard associated with logging slash and plantation fuel structure, increase fire ignition risks associated with roads; habitat fragmentation and loss of habitat connectivity caused by increasing the width of non-habitat associated with roads; etc. Each of these potentially significant effects deserve careful consideration in the Environmental Assessment or in an Environmental Impact Statement.

The cumulative impacts of hazard tree removal must be carefully considered. There is a dense road network across the federal/non-federal landscape and if all the hazard trees are removed a certain distance from all those roads, then the area of the forest that can support large snags will be greatly diminished. The cumulative impacts analysis must also account for the lost potential for high quality large snag habitat caused by past regeneration harvest and salvage logging. The NEPA analysis should disclose how the forest can meet DecAID 50-80% tolerance objectives given the cumulative loss of large snag habitat.

Commercial sale of hazard trees should be limited, because there are economic conflicts of interest that could lead to ecologically important large trees being removed for the wrong reasons. And the total value of large trees for ecosystem services such as carbon storage, and habitat vastly exceeds the value of wood products.[1]

E. Consultation with FWS and NMFS Required

This project is likely to adversely affect threatened spotted owls and ESA-listed salmonids and likely to adversely modify critical habitat. The Forest Service must therefore initiate ESA consultation with USFWS and NMFS.

III. Consider Alternatives to Mitigate Effects and Resolve Trade-offs

The FS should develop and fully analyze multiple alternatives to consider different ways to resolve trade-offs and mitigate adverse effects of this project. In developing alternatives, the FS should consider the following:

- Strategically closing roads either temporarily or permanently to allow snag habitat (and other ecosystem services provided by dead wood) to persist. Strategic road closures should focus on areas within reserves and adjacent to large unroaded habitat blocks and should be informed by the minimum road system identified in roads analysis, the road density goals in the LRMP.
- Where roads and culverts have become inaccessible, the FS should consider using explosives to daylight culverts and let snags persist and allow roads to close naturally.
- Limiting danger tree removal to within 100 feet of roads.
- Limiting treatments to high use roads, such as paved roads and 2-digit roads, and roads that lead to key recreation sites. The agency should focus on roads that are heavily used by the public and workers. There is a trade-off between safety and habitat, and the agency should conserve defective trees and snag habitat in areas that receive little public use.
- High cutting snags to reduce the hazard and retain some (short) snag habitat. LSR standards & guidelines for road maintenance require the following: "Leaving material on site should be considered if available coarse woody debris is inadequate. Topping trees should be considered as an alternative to felling."
- Retaining danger trees as down wood where possible. The agency should fell trees where absolutely necessary, but wherever possible leave the trees on-site to provide down wood habitat. When tree removal is necessary, use the wood to restore stream habitat or to add down wood to previously clearcut plantations where down wood habitat is severely lacking.
- Retaining all danger trees as down wood in all reserves, roadless areas, and land allocations devoted to wildlife.

[1] Bradbury, R.B., Butchart, S.H.M., Fisher, B. et al. The economic consequences of conserving or restoring sites for nature. Nat Sustain (2021). https://doi.org/10.1038/s41893-021-00692-9. https://rdcu.be/cgpdK

- Explicitly increasing risk-tolerance in order to mitigate the adverse effects of danger tree removal and to retain more trees in sensitive areas, such as unroaded areas, riparian areas, and mature & old-growth stands and conservation areas.
- Limiting removal to imminent danger of falling in order to retain snag habitat longer.
- Retaining all green trees so they can help kick-start the recovery of the below-ground ecosystem.
- Prohibiting use of heavy equipment off-road to protect soil and water quality and vegetation diversity.
- Retaining dead wood to help support populations of spotted owl prey.
- Developing alternatives to meet all ACS objectives and watershed analysis recommendations, and LSR assessment recommendations, and roads analysis recommendations.

There are multiple options for managing safety: (a) manage the physical feature presenting the hazard, or (b) manage public use so that the public is less likely to be subject to the physical hazard. We strongly support retention of large snags while educating the public and managing public use to keep the public out of harm's way as much as possible. Truly hazardous trees (i.e., imminent risk of falling in very high use areas) may need to be felled (often leaving a high stump for wildlife), but the boles of such trees should generally be left to provide for wildlife and soil needs.

A. The Purpose and Need Should Address the Unmet Need for Carbon Storage

The analysis should carefully consider climate change mitigation and adaptation in the context of the proposal. Climate mitigation can be achieved by avoiding carbon emissions, which is achieved by retaining all green trees, avoid fragmenting large wood (maintain the surface to volume ratio of large wood). Climate adaption can be achieved by maintaining vegetation diversity post-fire, by not replanting conifers so as to avoid creating high hazard fuel conditions, by not opening roads (to minimize ignition risk), by letting roads close naturally to improve watershed function, etc.

The agency should minimize selling timber, and thus removing valuable wood and carbon from the forest, from this project in light of the fact that the public *needs* carbon storage to reduce global climate change much more than they *need* wood products (or road access to every remote corner of the forest). The NEPA analysis must also account for community stability provided by forest management that adequately accounts for water quality, water quantity, quality of life, and carbon storage for a stable climate.[2]

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[2] "Land protection, both public and private, provides substantial ecological benefits by avoiding conversion of natural systems to intensive, developed uses. These benefits include carbon sequestration, watershed functioning, soil conservation, and the preservation of diverse habitat types (e.g., Daily 1997, Brauman et al. 2007, Kumar 2012, Watson et al. 2014). Land protection also solves a key market failure: private markets tend to underprovide socially beneficial land uses such as natural forests, agricultural lands, or managed timberlands. The reason for this failure is that many of the benefits of these lands go to the public in general, not individual

Further, the agency must recognize that wood products are already underpriced and oversupplied due to "externalities" (costs that are not included in the price of wood, so those costs are shifted from wood product producers and consumers to the general public who suffer the consequences of climate change without compensation from those who profit from logging related externalities). Ecosystem carbon storage on the other hand is under-supplied because there is not a functioning market for carbon storage and climate services. The agency is in a position to address these market imperfections by focusing on unmet demand for carbon storage instead of offering wood products that are already oversupplied.

B. Minimize Impacts on Riparian Reserves and Aquatic Resources

Riparian reserves were established to protect and restore water quality, aquatic organisms, and riparian areas. Unfortunately, many roads are located in riparian reserves which means that the Service must carefully weigh and balance competing goals such as safety and aquatic/riparian conservation.

Aquatic Conservation Strategy (ACS) standards and guidelines RF-3 requires the Forest Service to:

> "Determine the influence of each road on the Aquatic Conservation Strategy objectives through watershed analysis. Meet Aquatic Conservation Strategy objectives by: … closing and stabilizing, or obliterating and stabilizing roads based on the ongoing and potential effects to Aquatic Conservation Strategy objectives and considering short-term and long-term transportation needs."

This requires a careful analysis of each road segment, evaluating whether it conflicts with ACS objectives and if it would be appropriate to close such roads (if necessary, by letting the danger trees remain and eventually fall on the road). If culverts pose an unacceptable risk, they can be opened with explosives. It is objectively unnecessary to fell danger trees just to allow access by heavy equipment.

Several ACS objectives require special attention:

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landowners. When private values and market transactions determine land uses, less land will be devoted to socially beneficial uses than if citizens could collectively determine use on the basis of social values (e.g., Angelsen 2010, Tietenberg and Lewis 2016)." Katharine R.E. Sims, Jonathan R. Thompson, Spencer R. Meyer, Christoph Nolte, Joshua S. Plisinski. 2019. Assessing the local economic impacts of land protection. Conservation Biology. 26 March 2019 https://doi.org/10.1111/cobi.13318, https://harvardforest.fas.harvard.edu/sites/default/files/Sims_et_al-2019-Conservation_Biology.pdf.

- "Maintain and restore spatial and temporal connectivity within and between watersheds." Roads in riparian reserves are an impediment to connectivity within watersheds. Roads in riparian reserves are prime candidates for closure to meet ACS objectives.
- "Maintain and restore the sediment regime under which aquatic ecosystems evolved." This project will definitely increase sediment production above natural levels.
- "Maintain and restore water quality…" Increases sediment delivery and increased water temperatures to streams will violate this objective.
- "Maintain and restore in-stream flows…" Removing danger trees and establishing thirsty young plantations will deplete summer streamflow in violation of this ACS objective.
- "Maintain and restore the species composition and structural diversity of plant communities… supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability." Salvage logging and replanting in riparian reserves will violate this objective.
- "Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species." Harm to spotted owls and listed fish violate this objective.

Logging (including salvage logging) is generally not allowed in riparian reserves. TM-1 says, "Salvage trees only when watershed analysis determines that present and future coarse woody debris needs are met and other Aquatic Conservation Strategy objectives are not adversely affected." Due to the fact that stand replacing fire brings recruitment of large wood to a virtual standstill until the stands regrow large trees, it is impossible to make a finding that future large wood supplies are met. Salvaging large danger trees will exacerbate the expected future shortage of large wood. In Congressional testimony in July 2004, Jerry Franklin said:

> "It is sometimes argued that following a stand-replacement fire in an old-growth forest that snags and logs are present in 'excess' of the needs of the site, in terms of ecosystem recovery. In fact, the large pulse of dead wood created by the disturbance is the only significant input of woody debris that the site is going to get for the next 50 to 150 years—the ecosystem has to 'live' off of this woody debris until the forest matures to the point where it has again produced the large trees that can become the source for new snags and logs (Maser et al. 1988)."[3]

Road/stream crossings are an area if particular concern. This is where a lot of sediment tends to be delivered to streams. All road/stream crossings are also riparian reserves so they need to be managed primarily to meet riparian objectives.

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[3] Dr. Jerry F. Franklin, Professor of Ecosystem Studies, College of Forest Resources, University of Washington. July 15, 2004. TESTIMONY FOR THE RECORD ON OVERSIGHT HEARING ON "RESTORING FORESTS AFTER CATASTROPHIC EVENTS" BY HOUSE COMMITTEE ON RESOURCES, SUBCOMMITTEE ON FOREST AND FOREST HEALTH. https://www.govinfo.gov/content/pkg/CHRG-108hhrg94996/html/CHRG-108hhrg94996.htm.

Roads that run parallel to streams within the riparian reserves are another major concern because such roads tend to intercept the flow of water, spawning substrate, and wood that should be delivered to streams. The ACS has detailed standards for existing roads in riparian reserves:

> RF-2. For each existing or planned road, meet Aquatic Conservation Strategy objectives by:
> a. minimizing road and landing locations in Riparian Reserves.
> b. completing watershed analyses (including appropriate geotechnical analyses) prior to construction of new roads or landings in Riparian Reserves.
> c. preparing road design criteria, elements, and standards that govern construction and reconstruction.
> d. preparing operation and maintenance criteria that govern road operation, maintenance, and management.
> e. minimizing disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow.
> f. restricting sidecasting as necessary to prevent the introduction of sediment to streams.
> g. avoiding wetlands entirely when constructing new roads.

The FS should not use riparian reserves for log landings, should prepare operation and maintenance criteria for each road, should avoid disruption of hydrologic and material flow paths, and should follow the appropriate recommendations in the applicable watershed analyses.

The project has the potential to significantly harm aquatic and riparian values by removing snags that help shade streams, increasing sediment production from heavy use of unpaved roads and off-road soil disturbance by heavy equipment (including steep slopes), increasing activity within riparian reserves and at road/stream crossings, by converting complex forests into simplified forests, by reducing the availability of dead wood to streams and riparian reserves, by depleting summer stream flow by increasing the extent of dense conifer plantations. The FS analysis must carefully weigh and balance the need for safety and aquatic/riparian conservation.

The fire-impacted areas covered by this proposal contain complex areas of creeks, streams, and rivers with numerous roads weaving throughout. The Willamette Basin is 303(d) listed for temperature. The McKenzie, North Santiam, and Santiam Rivers are subject to total maximum daily loads (TMDLs) for temperature and dissolved oxygen. The FS must fully consider the project impacts on different watersheds and their different water quality protection standards in its site-specific analysis.

The project area contains habitat for three ESA-listed fish species: Upper Willamette Spring Chinook, Bull Trout, and Upper Willamette Winter Steelhead. There may also be mollusks in the project area. The FS must fully consider impacts to these and other aquatic species.

The North Santiam, Calapooia, and McKenzie municipal watersheds serve as the sources of drinking water for hundreds of thousands of people in Eugene, Salem, and communities throughout these river systems. The FS must carefully weigh the costs associated with roadside logging and drinking water quality, quantity, and treatment impacts.

C. Retain Wood to Support Spotted Owl Prey

We urge the FS to consider alternatives that retain all green trees (to help feed the below ground ecosystem) and retain dead wood rather than removing it. This approach is especially appropriate in all reserves and other land allocations devoted to wildlife, as well as in critical habitat for the spotted owl. Science shows a strong association between abundant dead wood and spotted owl prey.

- "Small logs provide escape cover or shelter for small species. … Tallmon and Mills (1994) have shown that red-backed voles, a primary prey species for the spotted owl, are highly associated with large down material in more advanced decay stages. Truffles, a dietary staple of the northern flying squirrel, have also been loosely associated with down material."[4]
- "Several small mammals, such as the northern flying squirrel form the prey base for the Endangered Species Act (ESA) listed spotted owl and are among the species associated with abundant large dead standing and down wood. This presumably, is why spotted owls prefer to forage in stands with abundant standing and fallen dead wood (Table 2, North et al. 1999). The fruiting bodies of hypogeous fungi are a food source of northern flying squirrels and are also associated with down logs, suggesting that there are complex, indirect paths through which dead wood supports spotted owls (Amaranthus et al. 1994, Carey 2000)."[5]
- North et al. (1999) noted in a study of foraging habitat selection by northern spotted owls, "In our study area, stands with high use by owls typically included many 'legacies' (large trees and snags) that survived a fire or windstorm that destroyed much of the previous stand. They found that "stands with 142 m^3/ha of intact snags and a high diversity of tree heights had medium or high foraging use by spotted owls. In these old-growth stands, biological legacies (e.g., large trees and snags) produced by past disturbance provide important forest structures associated with spotted owl foraging."[6]

D. Survey and Manage Species

The FS should conduct surveys for survey and manage species (including red tree voles, fungi, mollusk, lichen, bryophytes, etc.) that may be located within the activity areas and may be

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[4] Gregg, M. 2013. Wildlife Report for Management Indicator Species, Species of Concern from the Northwest Forest Plan, and Landbirds - Pole Creek Fire Timber Salvage. http://a123.g.akamai.net/7/123/11558/abc123/forestservic.download.akamai.com/11558/www/nepa/94141_FSPLT3_1451590.pdf

[5] Thomas Spies, Michael Pollock, Gordon Reeves, and Tim Beechie 2013. Effects of Riparian Thinning on Wood Recruitment: A Scientific Synthesis - Science Review Team Wood Recruitment Subgroup. Jan 28, 2013, p 36. http://www.mediate.com/DSConsulting/docs/FINAL%20wood%20recruitment%20document.pdf

[6] North, Franklin, Carey, Forsman, Hamer. 1999. Forest Stand Structure of the Northern Spotted Owl's Foraging Habitat. For. Sci. 45(4):520-527.

adversely affected by all the activities contemplated by this project. The fires did not render the habitat for these species unsuitable. They all evolved in an ecosystem where fire was a formative influence.

E. USFS Roads Policy and Meeting Road Density Targets

The environmental analysis must address important USFS roads policies, including the road density targets in the Willamette LRMP and the requirements of the National Forest Roads Policy:

> **7702 - OBJECTIVES**
> …
> 2. To manage a forest transportation system within the environmental capabilities of the land.
> 3. To manage forest transportation system facilities to provide user safety, convenience, and efficiency of operations in an environmentally responsible manner and to achieve road related ecosystem restoration within the limits of current and likely funding levels.
> …
> **7703 - POLICY.** Determine and provide for the minimum forest transportation system that best serves current and anticipated management objectives and public uses of National Forest System (NFS) lands, as identified in the appropriate land and resource management plans (FSM 1920). In managing the forest transportation system for access, Responsible Officials must coordinate with other public and private transportation system agencies to integrate transportation information and to balance transportation facility investments and maintenance costs against the need to maintain land health and water quality.
> …
> **7703.1 - Road Management**. In accordance with 36 CFR § 212.5(b)(1), when managing NFS roads, responsible officials are to:
> 1. Address both the access benefits and ecological costs of road-associated effects.
> 2. Give priority to reconstructing and maintaining needed roads and decommissioning unneeded roads, or, where appropriate, converting them to less costly and more environmentally beneficial other uses.
> 3. Use a roads analysis process (FSM 7712.1) to ensure that road management decisions are based on identification and consideration of social and ecological effects. See FSM 7712.13 for guidance on the scope and scale of roads analysis required.
> …
> Give priority to upgrading the most heavily used roads to provide safe and efficient travel and to reduce adverse environmental impacts. If necessary for environmental protection and due to lack of funding, travel on classified roads may need to be restricted or closed.
> …
> Use an open and public roads analysis process (FSM 7712.1) to help identify roads that should be decommissioned, to identify restoration needs, and to establish decommissioning priorities. It may be necessary to regulate use on some unneeded roads until decommissioning or other approved uses, such as conversion to trails, can be achieved.

USFS Road Management Policy.
https://www.fs.usda.gov/nfs/11558/www/nepa/115185_FSPLT3_5597368.pdf.

These policies highlight several important points:

- The need to manage the roads system in an environmentally sensitive way that recognizes the important long-term biophysical value of snags and abundant dead wood;
- The need to identify and manage toward the minimum road system;
- The need for the FS to use an open, public roads analysis process to balance competing interests; and
- The need to focus maintenance treatments on highest use roads and to emphasize decommissioning of roads that are not used very often or have significant environmental trade-offs.

The FS has discretion (and a duty) to balance interests. This project cannot be designed or described as a one-dimensional safety project. It involves a complex process of balancing interests that are sometimes aligned and sometimes in conflict. In preparing the EA, the FS should carefully weigh trade-offs and harmonize goals of the proposal, such as fire hazard (caused by tree removal and replanting dense uniform stands), habitat fragmentation caused by long linear plantations (and more roads than necessary) threaded through the forest, bringing road density within optimal levels for fish/hydrology/climate change, cumulative effects, cumulative snag loss related to road density, fire ignition risk related to keeping unnecessary roads open, carbon emissions related to salvage logging and plantation fire hazard, soil impacts related to heavy equipment and biomass removal, weeds related to soil disturbance and retarded recovery of native vegetation, loss complex early seral related to removal of legacy structures and replanting that displaces diverse early seral non-conifer vegetation, habitat diversity related to adding more acres of plantations to a landscape that already has too many. In addition, as fire management policy should be shifting away from suppression, the FS should take into consideration that many roads will not be needed for fire access.

As recognized in the Roads Policy, the agency should consider alternative means of managing hazards from falling trees, such as (1) minimizing human activities near hazard trees (closing roads)—this may not work where a hazard tree is adjacent to a high traffic road, but some little used roads can be closed; (2) topping trees so they are too short to reach the road when they fall; and (3) placing signs to warn people of the hazards so that people can evaluate the risks for themselves. Often the hazard is not from the tree falling directly on people, but from cars colliding with trees that have previously fallen. This hazard can be mitigated with signage and speed limits, while allowing valuable wildlife trees to persist.

The USFS Roads Policy is an official recognition that the FS lacks funding to maintain its entire road system, and the Willamette NF certainly has far more than its share of roads already. The FS should be looking for opportunities to let roads close naturally where and when possible. Nature, via the 2020 fires, has changed the circumstances surrounding the road system on the Willamette NF. The fire has effectively closed a lot of roads, and the FS must make an affirmative decision whether to reopen those roads or let them remain (naturally) closed. The Willamette NF LRMP has road density targets that are exceeded in many cases. This is an opportunity to decommission roads and bring the forest into compliance with its roads density targets.

The agencies' 2008 field guide for danger tree identification indicates that little-used logging roads are a low priority for danger tree removal because of intermittent and infrequent hazard exposure.

> "There are many miles of roads that may have danger trees adjacent to them. It is not possible to correct the danger tree problem immediately, so it is necessary to prioritize the danger tree treatment workload. The treatment priority should be highest where people are most likely to be impacted by danger trees. Consideration of exposure level and traffic frequency provides a way to prioritize the workload.
> …
> Another aspect of exposure along roads is traffic frequency. Roads that have a higher traffic frequency expose more people to a danger tree than roads with a lower traffic frequency.
> The longer people are exposed to a tree, the more opportunity there is for the failed tree to impact them. If exposure duration and traffic frequency are reduced, the opportunity for the tree to impact people is also reduced. The qualified person should consider traffic frequency and exposure duration when determining whether a tree poses a danger to people."[7]

F. Protect and Grow Large Block of Habitat, e.g. Unroaded Areas

We urge the FS to consider alternatives that let some roads close naturally where and when possible. The FS should adopt a purpose and need to protect and grow large blocks of natural habitat that better match the conditions that wildlife evolved under, such as unroaded areas larger than 1,000 acres.

World Wildlife Fund and the Conservation Biology Institute summarized the important attributes of small roadless areas (1,000-5,000 acres):

> "Small roadless areas share many of attributes in common with larger ones, including:
> - Essential habitat for species key to the recovery of forests following disturbance such as herbaceous plants, lichens, and mycorrhizal fungi
> - Habitat refugia for threatened species and those with restricted distributions (endemics)
> - Aquatic strongholds for salmonids
> - Undisturbed habitats for mollusks and amphibians

[7] Toupin, Filip, Erkert & Barger. 2008. Field Guide for Danger Tree Identification and Response. USDA FS, USDI BLM, Oregon OSHA. http://www.blm.gov/or/districts/medford/plans/files/fieldguidedangertree.pdf.

- Remaining pockets of old-growth forests
- Overwintering habitat for resident birds and ungulates
- Dispersal 'stepping stones' for wildlife movement across fragmented landscapes"[8]

In a 1997 letter to President Clinton, 136 scientists said:

> "There is a growing consensus among academic and agency scientists that existing roadless areas–irrespective of size–contribute substantially to maintaining biodiversity and ecological integrity on the national forests. The Eastside Forests Scientific Societies Panel, including representatives from the American Fisheries Society, American Ornithologists' Union, Ecological Society of America, Society for Conservation Biology, and The Wildlife Society, recommended a prohibition on the construction of new roads and logging within existing (1) roadless regions larger than 1,000 acres, and (2) roadless regions smaller than 1,000 acres that are biologically significant…. Other scientists have also recommended protection of all roadless areas greater than 1,000 acres, at least until landscapes degraded by past management have recovered…. As you have acknowledged, a national policy prohibiting road building and other forms of development in roadless areas represents a major step towards balancing sustainable forest management with conserving environmental values on federal lands. In our view, a scientifically based policy for roadless areas on public lands should, at a minimum, protect from development all roadless areas larger than 1,000 acres and those smaller areas that have special ecological significance because of their contributions to regional landscapes."[9]

Carbon storage must be added to the list of special values found within unroaded areas. European policy leaders consider roadless areas effective for carbon storage and climate mitigation:

> "[T]he European Parliament has agreed to raise the issue of roadbuilding in intact forests at the UN Climate Change Conference to be held next month in Warsaw (Poland); it calls on parties to use the existence of roads in forest areas as an early negative performance indicator of REDD+ projects, and to prioritise the allocation of REDD+ funds towards road free forests."[10]

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[8] DellaSala, Dominick and James Strittholt. 2002. Scientific Basis For Roadless Area Conservation. World Wildlife Fund. Ashland, OR; Conservation Biology Institute. (June 2002 - Updated October 2003) https://d2k78bk4kdhbpr.cloudfront.net/media/reports/files/Scientific_Basis_For_Roadless_Area_Conservation.pdf.

[9] Letter to President Clinton from 136 scientists (Dec. 10, 1997). https://docs.google.com/open?id=0B4L_-RD-MJwrRzhFcm5QcFR0MHM

[10] Oct 24, 2013 Press release: EUROPEAN PARLIAMENT BACKS THE PROTECTION OF ROADFREE AREAS. http://kritonarsenis.gr/eng/actions/view/european-parliament-backs-the-protection.

This project presents an opportunity to consider and apply the information developed during previous analyses. The Willamette National Forest conducted a Pilot Roads Analysis dated October 1998 that identified unroaded areas 1,000 acres and greater. It said:

> "In recent years, the issue of unroaded lands on National Forests has become greater and more diverse than simply identifying the potential for inclusion in the National Wilderness Preservation System. In a broad sense, there is a diversity of values regarding roadless areas and these values often conflict. As the total amount of roadless area not included in the wilderness system continues to decline on the Forest, there is increased interest in the value of smaller unroaded areas.
> …
> The key question is: *Where are the significant aquatic, terrestrial wildlife or ecological values associated with unroaded areas?*
>
> Inventoried roadless areas mapped in 1984, total 210,509 acres. Of these, the area still roadless in 1998 is 112,166 acres.
> …
> Our recommendation is to continue refinement of the unroaded map at the watershed level, identifying areas of significant ecological values and where they overlap with unroaded areas."[11]

The WNF Roadless Values Process Paper, Appendix L, goes on to say:

> "The values associated with roadless can be associated with recreation, symbolism of people's value for wild places, the lifestyle of a community and a variety of ecological values. Many of these values can be met in roadless areas that do not meet the minimum size criteria (5,000 acres) of the RARE I and RARE II inventories.
> …
> The question about significant ecological values in the inventoried roadless areas and in the unroaded areas was not directly addressed in this analysis."[12]

These ecological values deserve a more in-depth analysis.

The Willamette NF has taken the first steps by: (1) acknowledging the significant loss of almost half of the large roadless/unroaded areas on the forest in the last 20 years; (2) acknowledging the value of smaller unroaded areas; and (3) identifying 1,000+ acre unroaded areas for further

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[11] WNF Pilot Roads Analysis, October 1998, http://web.archive.org/web/20050310112742/http://www.fs.fed.us/r6/willamette/manage/pilotroadanalysis/index.html; http://web.archive.org/web/20050313185628/http://www.fs.fed.us/r6/willamette/manage/pilotroadanalysis/unroaded.pdf.

[12] WNF Roadless Values Process Paper, Appendix L, http://web.archive.org/web/20050313135045/http://www.fs.fed.us/r6/willamette/manage/pilotroadanalysis/app_g-n.pdf.

analysis, but the proper consideration of roadless/unroaded values requires explicit disclosure of all the values associated with roadless/unroaded areas and an EIS analysis of the impacts of proposed actions on each of those values (e.g., water quality; healthy soils; fish and wildlife refugia; centers for dispersal, recolonization, and restoration of adjacent disturbed sites; reference sites for research; non-motorized, low-impact recreation; carbon sequestration; refugia that are relatively less at-risk from noxious weeds and other invasive non-native species).

The 0.25 mile moving window analysis used in the Willamette NF Pilot Roads Analysis had the effect of shrinking *de facto* roadless/unroaded areas that still contribute significantly to the unroaded values of large intact landscape blocks. A more accurate map of *de facto* roadless/unroaded needs to be developed so that such areas can be protected from logging and road building in order to conserve roadless/unroaded values.

G. Removal of Danger Trees Will Exacerbate the "Snag Gap"

Removing large numbers of danger trees along a dense road network will make a bad situation worse for snag habitat. The FS should minimize tree removal to mitigate this effect.

It may seem counter-intuitive, but one of the most significant and lasting effects of stand replacing disturbance such as fire, wind, or regeneration logging is to bring the process of snag recruitment to a virtual standstill for many decades. Even if snags are not removed by the disturbance, snags created by the disturbance will fall down over time and few if any snags are created. After those snags fall down, the snag population remains low because the pool of green trees available for snag recruitment is greatly reduced. This results in a "snag gap" that has serious adverse consequences for habitat and many other ecological processes. The apparent abundance of large snags after a stand replacing disturbance masks a severe shortage of large snags down the road.

In Congressional testimony in July 2004, Jerry Franklin said:

> "It is sometimes argued that following a stand-replacement fire in an old-growth forest that snags and logs are present in 'excess' of the needs of the site, in terms of ecosystem recovery. In fact, the large pulse of dead wood created by the disturbance is the only significant input of woody debris that the site is going to get for the next 50 to 150 years—the ecosystem has to 'live' off of this woody debris until the forest matures to the point where it has again produced the large trees that can become the source for new snags and logs (Maser et al. 1988)."[13]

In 2015 Jerry Franklin offered illuminating comments on the Klamath NF's Westside Fire Salvage DEIS:

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[13] Dr. Jerry F. Franklin, Professor of Ecosystem Studies, College of Forest Resources, University of Washington. July 15, 2004. TESTIMONY FOR THE RECORD ON OVERSIGHT HEARING ON "RESTORING FORESTS AFTER CATASTROPHIC EVENTS" BY HOUSE COMMITTEE ON RESOURCES, SUBCOMMITTEE ON FOREST AND FOREST HEALTH. https://www.govinfo.gov/content/pkg/CHRG-108hhrg94996/html/CHRG-108hhrg94996.htm.

> "The massive input of large dead wood is characteristic and critical to stand development processes and the ultimate provision of habitat for late-successional species following stand replacement fires (Maser et al. , 1988; Franklin et al. 2002). As noted these wood structures may persist and play functional roles for several centuries, particularly in the case of decay resistant species. Large pines may also persist as snags for several decades and additional periods as logs on the forest floor. In fact, the entire recovering forest ecosystem will depend upon this pulse of CWD until it reaches a point in its development where the new stand begins to generate snags and logs of comparable size and heartwood content-generally between 100 and 200 years (Maser et al. 1988; Franklin et al., 2002). Consequently, basing snag and CWD retention following salvage on levels of these structures found in existing mature and old forests is not appropriate; all of this initial pulse of wood is needed to reach those levels one to two centuries from now! Indeed, the use of mature forests as a standard for CWD is particularly inappropriate since this is the period when CWD levels are at their lowest level during the entire natural developmental sequence from stand-replacement fire to old growth (see diagram in paper by Spies in Maser et al. 1988). It certainly does not appear to me that the approach taken in the DEIS reflects an appreciation of the fact that this one-time input of large and decay resistant CWO is all that the recovering forest ecosystem is going to get for the next 100 to 200 years."[14]

Similarly, Johnson & Franklin's 2008 Forest Plan for the Klamath Tribes says of large fires:

> "Such fires do generate a large pulse of dying, dead and down material. After a stand-replacement fire, that pulse of large wood is all of the large wood that the recovering ecosystem is going to get for the next century or more—i.e., until trees of large size are once again a part of the stand. Some of this dead wood legacy will persist and fulfill important functional roles in the recovering forest for many decades and, in the case of the largest and most decay resistant material, even for a century or more."

The shortage of snags in the decades following stand replacing fire is acknowledged by the Forest Service on page 136 of the Wallowa-Whitman National Forest's Trail Vegetation Management Project EA (October 2012). http://www.fs.usda.gov/project/?project=34482

1. The agency must recognize the asymmetric nature of snag dynamics after all types of stand replacing disturbance. High rates of snag fall would be expected in the decades following disturbance, while low rates of snag recruitment would be expected in the decades following a disturbance. This unavoidably results in a serious deficit of snags at some point in the future.
2. In order for the NEPA analysis to fully address the snag habitat issue it must look carefully at the snag gap from both ends.
    a. The snag gap begins when too many of the current snags are gone. So the snag gap is exacerbated on the front end by salvage logging which removes too many large snags.

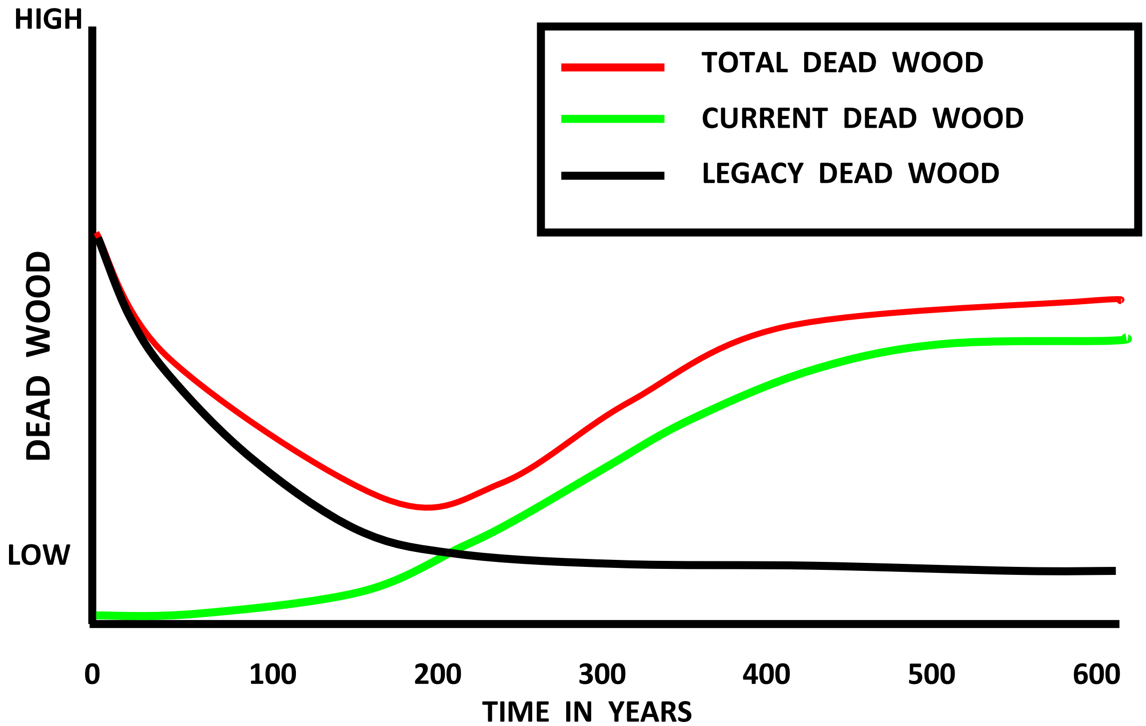
[14] Jerry Franklin. Comments on the Klamath NF, Westside Fire Salvage DEIS. 6 April 2015.

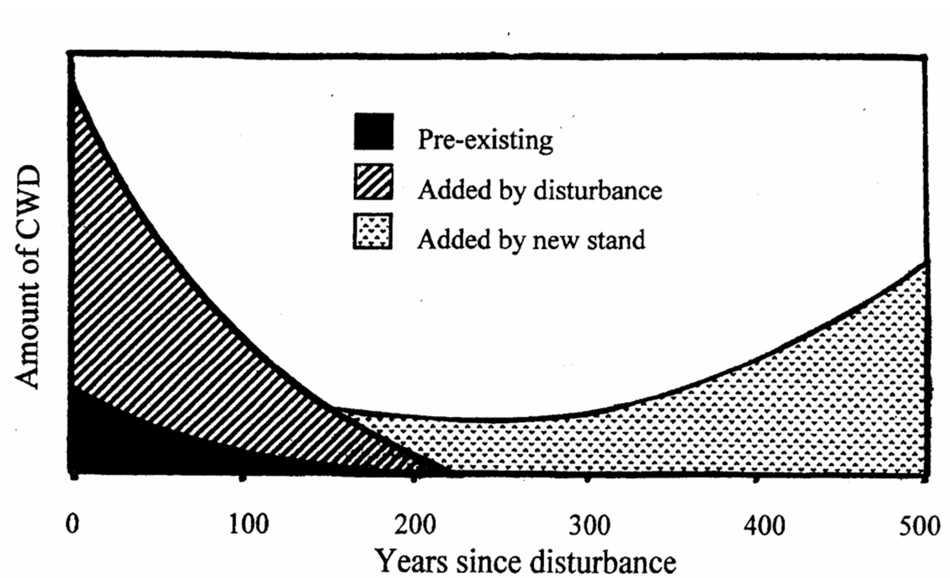
b. The snag gaps ends when the next stand grows to the point that it contains large trees and some of them die, so the snag gap is exacerbated on the back end if there is a significant delay in tree regeneration.

3. The agency tends to focus on the back end of the snag gap which is allegedly mitigated by tree replanting, but this benefit is in the distant future and remains speculative. The agencies tend to ignore the effect of logging on the front end of the snag gap (which is concrete and unavoidable).
4. Logging which retains only enough snags to meet snag requirements after harvest will not meet snag requirements in a few years after those few retained snags fall.
5. Both the RMP and the Northwest Forest Plan (p C-13) require that snags be maintained through time, so our goal must be to manage snags to minimize the time period that there is a deficit of snags.
6. The NEPA analysis must account for snag fall rates and figure out how to minimize the snag gap. Every day that the "snag gap" is lengthened by salvage logging is a violation of the RMP. Models that may be used to analyze snag dynamics can be found here: https://web.archive.org/web/20120907194130/http://www.for.gov.bc.ca/hre/deadwood/DTmod.htm.
7. There is a strong correlation between the size of the snags and the length of time it is likely to remain standing, so salvage must be designed to retain all the large snag and only remove trees from smaller size classes.
8. Consider this example: Assume that the stands currently have 30 large trees/acre and 24 of those will be removed via salvage logging while 6 trees/acre will be retained for snag habitat. Further assume that in 50 years 2 percent of the large snags will remain standing as snag habitat. Two percent of 6 trees/acre is FAR LESS than 2 percent of 30 trees/acre, so there is a virtual statistical certainty that salvage logging will exacerbate the snag gap.
9. The snag gap is really exacerbated by salvage logging in two ways — first by targeting removal of the large and most persistent component of the snag population, and second by accelerating the rate that remaining snags fall and are lost from the snag population. New science from Idaho reveals that Ponderosa pine snags persist longer in unlogged areas.[15]

The graphics below show the huge wedge of dead wood "added by disturbance" that is missing in stands subject to salvage and other forms of regen logging.

[15] See Russell, R.E., Saab, V.A., Dudley, J.G., and J.J. Rotella. 2006. Snag longevity in relation to wildfire and postfire salvage logging. Forest Ecology and Management 232 (2006) 179-187. http://www.fs.fed.us/rm/pubs_other/rmrs_2006_russell_r001.pdf ("The predicted half-life of a ponderosa pine snag was 7-8 years in salvage logged plots and 9-10 years in unlogged plots.").





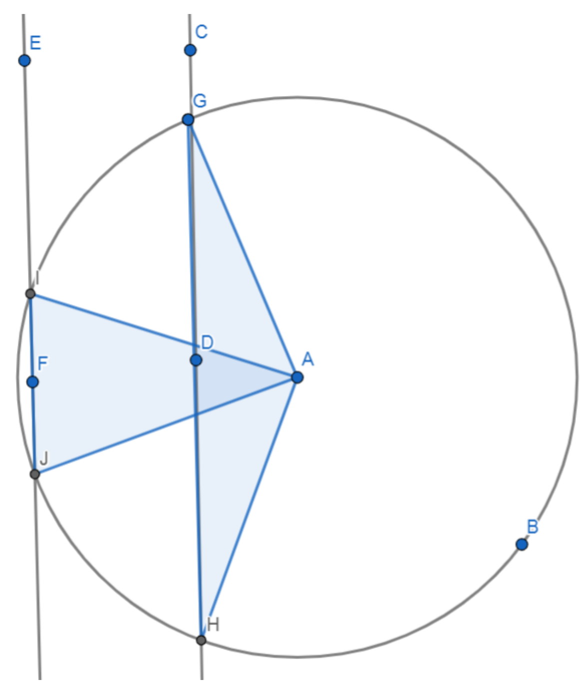
The agency often compares their proposed snag retention levels to the *average* number of snags across the landscape, without recognizing that after a significant disturbance such as fire "the rate of input [of snags] to the CWD pool is 100-1000x the rate expected for an unburned steady-state forest (Harmon et al 1986). Even afterwards, in the next 5 or 6 years, the rate of input is still 5 or 10 or even 100 times that steady-state rate."[16]

[16] http://web.archive.org/web/20050428020846/http://www.brownandbrown.tv/warner-presentation-2002-05-14b.pdf

H. The FS Can and Should be More Risk Tolerant

The agency should only fall trees that pose an imminent hazard to the public. There is little need to fell trees that lean away from the road. Trees more than 100 feet from the road have a low probability of falling on the road, even if they are taller than 100 feet. Of all the cardinal directions these trees could fall, only a small subset would reach the road. In other words, the chance of trees more than 100 feet from roads impacting the road are not very high because the tree would have to fall in precisely the right direction toward the road. There is a much higher chance it will fall in numerous directions that do not threaten the road.

For instance, consider the chart below. If a tree (point A) is close to a road (represented by line C), there is a much higher risk of it hitting the road compared to a road at the location of line E. The blue shaded areas represent either broad or narrow risk of a tree falling and hitting the road depending on its distance from the road.



In addition, snags fall in stages. Many dead treetops break off and fall close to the base of the tree, leaving a shorter snag with a more limited zone of hazard. Felling trees more than 100 feet from roads is unnecessarily risk averse, and unjustifiably sacrifices environmental values (such as snag habitat, dead wood habitat, and soil health).

The risk of a dead trees actually falling and hitting someone is extremely remote and must be put in perspective. For instance, the agency allows the public to use thousands of miles of roads where the risk of death or injury from collisions or other accidents is far higher than the risk of being hit by a falling tree. The agency also allows boating and swimming in dangerous waterbodies, winter camping, mountain climbing, off-road vehicle use, and hunting with dangerous weapons. The agency also *promotes* dangerous occupations such as logging, firefighting, and piloting aircraft used for a variety of forest management activities. Furthermore, public use of public lands is skewed toward the summer months, while the extreme weather that tends to cause trees to fall is skewed toward the winter months.

The hazards from trees falling is also mitigated by time. Most of the affected roads are not high use roads. The chance that an employee or member of the public will be under a falling tree when the tree falls is very low. To put things in perspective, there are almost 16 million seconds in a year. How many seconds are there vehicles on the road under these trees during the course of a year, and what fraction 16 million is that? If the purpose of this project is to increase public safety, please consider all the alternative ways in which safety might be enhanced.

I. Legal Liability is not a Valid Justification for Aggressive Hazard Tree Removal that Sacrifices Environmental Values

Sometimes the motivation for eliminating hazards is based on a misunderstanding of legal liabilities. The FS is not liable if someone is injured so long as the FS thoughtfully balances the competing interests of safety and environmental conservation. The NEPA analysis needs to acknowledge that the public assumes certain risk when recreating on public lands, so not every hazardous tree on every dead end spur road needs to be felled and removed. Under-represented snag habitat should be retained on along low standard roads because the PNW Region of the Forest Service already distributes an educational brochure titled "Getting Around on National Forest Roads," which says of low standard roads: "If you choose to drive these roads, plan to encounter rocks and boulders, road washouts, downed trees and brush encroaching on the roadway. For safety, … carry extra equipment such as axe, shovel, gloves …" See "Getting Around on National Forest Roads" R6-ENG-RG-01-01. https://babel.hathitrust.org/cgi/pt?id=umn.31951002920989g&view=1up&seq=2. The public already expects some inconvenience when driving remote forest roads and would willingly trade some risk of inconvenience and small chance of encountering safety hazards for viable populations of native wildlife.

Also, the Federal Tort Liability Act provides the government some degree of immunity in exercising their discretionary functions like hazard tree management. For instance, the National Park Service was found not liable for failing to remove a tree weakened by root rot that fell and killed a recreational motorist at Great Smokey Mountains National Park, even when the road involved was a high use paved road near a visitor center, and when the tree species at issue (Black Locust) was known by the Park Service to be prone to fall down. AUTERY v. UNITED STATES 992 F.2d 1523 (11th Cir. 1993). https://web.archive.org/web/20051203012108/http://classweb.gmu.edu/erodger1/prls560/content/autery.htm. The appeal court overturned the district court and held that the agency's balancing of public safety and preserving natural areas prevented judicial second guessing and gave them immunity from liability for the death of the motorist.

Based upon the evidence in this case, the appeals court held that "the decisions made by GSMNP personnel in designing and implementing its unwritten tree inspection program fall within the ambit of the discretionary function exception."

> Although the district court may have disagreed with the balance struck by the Park Service, or believed that some other policy would have been better, the discretionary function exception is designed to protect against just this type of "judicial 'second-guessing"...
>
> To decide on a method of inspecting potentially hazardous trees, and in carrying out the plan, **the Park Service likely had to determine and weigh the risk of harm from trees in various locations, the need for other safety programs, the extent to which the natural state of the forest should be preserved, and the limited financial and human resources available**. Indeed, the district court recognized this when it criticized the Park Service for elevating the overriding policy considerations of protecting the trees and the natural state of the area over the safety of humans using the park roadway.

This means that the agency is free to weigh the value of snags for wildlife and other ecosystem services and need not reflexively cut down every hazard tree. The agency's proposal in the present case is not consistent with applicable law or conservation principles.

See also ORS §§ 105.672(3), 105.682(1) and Brewer v. ODFW, 2 P.3d 418, 167 Or.App. 173. http://www.publications.ojd.state.or.us/A103245.htm.

IV. Conclusion

Each substantive issue discussed in these comments should be (i) incorporated into the purpose and need for the project, (ii) used to develop NEPA alternatives that balance tradeoffs in different ways, (iii) carefully analyzed and documented as part of the effects analysis, and (iv) considered for mitigation. Thank you again for your decision to prepare an environmental analysis for this large project and for taking our input into consideration. Feel free to reach out with any questions or to request copies of referenced documents.[17]

Sincerely,

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[17] Note: If any of these web links in this document are dead, they may be resurrected using the Wayback Machine at Archive.org: http://wayback.archive.org/web/. Referenced documents can be found at the following Dropbox link: https://www.dropbox.com/sh/ctippifimdczyk6/AACp2fJYnsIjRuyFh96ocie3a?dl=0.