VIA Email: https://cara.fs2c.usda.gov/Public/CommentInput?project=63933

May 14, 2024

Cynthia Sandero
Acting Forest Supervisor
C/O Meg Tregon
Methow Valley Ranger District
24 W. Chewich Rd
Winthrop, WA 98862

Dear Meg:

On behalf of the American Forest Resource Council (AFRC) and its members, thank you for the opportunity to provide Draft EA comments on the Midnight Restoration Project.

AFRC is a regional trade association whose purpose is to advocate for sustained yield timber harvests on public timberlands throughout the West to enhance forest health and resistance to fire, insects, and disease. We do this by promoting active management to attain productive public forests, protect adjoining private forests, and assure community stability. We work to improve federal and state laws, regulations, policies, and decisions regarding access to and management of public forest lands and protection of all forest lands. Many of our members have their operations in communities within and adjacent to the Okanogan-Wenatchee National Forest and management on these lands ultimately dictates not only the viability of their businesses, but also the economic health of the communities themselves.

As we mentioned in our May 13, 2023, scoping letter AFRC staff and members have been closely tracking the development of the Midnight Restoration Project which was initially part of the 77,000-acre Twisp Restoration Project introduced in November 2019. The Twisp Project underwent extensive survey, analysis, public engagement, and modification prior to July 2021, when the Cedar Creek fire burned into portions of the project area. AFRC has participated in several field trips to the area and has sent in letters of support for the 24,000-acre scaled back Twisp Project which moved forward treating only matrix unburned lands following the Cedar Creek fire. The District determined that the subwatersheds affected by the Cedar Creek fire and related suppression actions needed to be reassessed to evaluate treatment needs and actions and

dropped 53,009 acres from the original Twisp project which is now the Midnight Restoration Area.

AFRC compliments the work that Resiliency Forestry did in their landscape evaluation which found that the project area is currently departed from conditions that would be resilient to disturbance and climate change. Landscape-level assessments show that current departures in forest structure, spatial patterns, and fuel loads favor larger, more severe disturbances relative to historical baselines and hinder adaptation to climate change.

From this evaluation a Purpose and Needs for the Midnight Project was developed which AFRC supports and includes:

- Move current vegetation structure, spatial patterns, and composition toward desired reference conditions.
- Protect and maintain wildlife habitat and complex forest in strategic places.
- Provide an affordable, safe, and efficient transportation system and reduce sedimentation from roads on National Forest System lands.
- Reduce fire risk to communities, reduce hazards along ingress/egress routes and improve firefighting effectiveness within and adjacent to Wildland/Urban Interface.

While AFRC supports the Purpose and Need for the Midnight Restoration Project, we offer the following information and comments that we hope will be incorporated into your plan to make it better.

1. The District did not include any provision for the importance of supporting the timber products industry and existing infrastructure in the Purpose and Need, which AFRC requested to be added in our scoping letter. This may be due to the fact that the Midnight Restoration Project is couched as a Restoration Project, and there is not a focus on producing timber volume. Regardless, we believe that the provision of timber products and support of the local industry remains relevant objectives to the Project despite not being the primary driver. AFRC is pleased to see the Methow Valley Ranger District proposing vegetation management on their Matrix, Riparian Reserve, and Late Successional Reserve (LSR) lands that will likely provide useful timber products to our membership. Our members depend on a predictable and economical supply of timber products off Forest Service land to run their businesses and to provide useful wood products to the American public which should have been recognized as a Purpose and Need.

   This supply is important for present day needs but also important for needs in the future. This future need for timber products hinges on the types of treatments implemented by the Forest Service today. Of particular importance is how those treatments affect the long-term sustainability of the timber resources on Forest Service managed land. AFRC has voiced our concerns many times regarding the long-term sustainability of the timber supply on Forest Service land and how the current management paradigm is affecting this supply. Lands designated as Matrix are the only lands where our members can depend on

a sustainable supply of timber products, as timber outputs on lands designated as reserves are merely a "byproduct."
It is important to AFRC that the value of the Forest Products industry is recognized by the Forest Service as a valued objective on Matrix land, and not simply a byproduct as it is on LSR land. AFRC believes that the Forest Service should take pride in the fact that they provide a crucial renewable resource to the public that they serve.

The District did an excellent job of their economic analysis which finds the Project could yield up to 69 mmbf and produce $12.2 in timber receipts. The Forest should emphasize that a strong and viable forest products industry to purchase from the Okanogan-Wenatchee National Forest is critical to the implementation of the proposed activities. Furthermore, while there is no milling infrastructure located in the immediate area, current interest in the Twisp and Mission timber sales on the District highlights how important timber volume is from the Methow Valley District.

Technical reports from 2010 and 2012 completed for the Forest Service determined, among other things, that:

- The forest products sector helps sustain the social, economic, and ecological benefits of forestry in the United States.
- Product revenues sustain economic benefits that include jobs and income.
- Ecological and social benefits can be supported by timber revenue to landowners that help keep land in forests and by forest treatments that can help maintain ecological functions.
- Wood products fulfill fundamental needs per capita and have remained competitive with alternate means of meeting those needs.
- US lumber production and demand is expected to increase through 2040.

Furthermore, as we will discuss later in this letter, the importance of our members' ability to harvest and remove these timber products from the timber sales generated by this project is paramount. Supporting local industry and providing useful raw materials to maintain a robust manufacturing sector should be a principal objective to any project proposed on Forest Service land, particularly those lands designated as Matrix. Studies have shown that for every 1 mmbf of timber harvested, about 12 direct and indirect jobs will be created. As the Forest Service surely knows, the "restoration" treatments that are desired on these public lands cannot be implemented without a heathy forest products industry in place, both to complete the necessary work and to provide payments for the wood products generated to permit the service work to be completed.

2. AFRC strongly supports the District's forest health treatments in stands designated as LSR over 80 years of age. However, we do not understand why a Forest Plan Amendment is needed to do this work. It is our understanding that harvest can be done in LSR stands over 80 years of age when the purpose is wildfire risk reduction in certain provinces. The 80 year limit does not apply to the East of the Cascades Province, particularly for wildfire risk reduction work. Instead, the 80 year limit only applies to the West of the Cascades Provinces. As pointed out, large patches of dense forests have

developed across the landscape and many of these stands are over 80 years of age but still of a small dbh size. To accomplish the goal of promoting larger fire-resistant trees and healthy forests for the future, these smaller trees over 80 years of age need to be thinned out.

Further pointing out the need for treating stands in LSR areas over 80 years is the fact that high-quality nesting and roosting habitat for the northern spotted owl is sparse within the project area, occurring almost exclusively in forests that are highly departed from sustainable conditions. To support the northern spotted owl, there is a need to retain the existing complex forest structure in these small but unsustainable areas. The only way to protect these areas from fire is by reducing fuels and creating resilient structure in the surrounding forest. Since almost all current high-quality habitat exists in locations that are not environmentally suitable for dense forest over the long term, there is also a need to maintain and create dense, complex forests as replacement habitat in locations that will continue to support it as the climate changes.

Another one of our concerns regarding the District asking for a Forest Plan Amendment to harvest trees over 80 years is that it might take an extended period of time to get approval from the Regional Office or from the LSR Working Group which we have seen occur on other projects on the Okanogan-Wenatchee. This landscape is ripe for wildfire, and delays in implementation due to bureaucratic process could have dire consequences.

3. AFRC supports the District requesting other Forest Plan Amendments to improve attainment of desired conditions. These include:

   - Amendments to permit treatments or gather firewood in stands designated as old growth. Specifically amending Standard and Guideline (S&G) 5-1 would allow non-scheduled timber harvest on up to 395 acres of Forest Plan Old Growth (FPOG), while amending S&G 19-8 would allow natural fuels treatments on 740 acres of FPOG.
   - Another forest-wide S&G would be amended to allow snowplowing up to 12.1 miles of a designated snowmobile route int the Twisp River drainage. This would help provide economic viability of timber sale operations on up to approximately 3,245 acres, which are accessed by these roads.
   - An amendment may be needed if a purchaser requests an operating plan for thinning in Riparian Reserve units that will not protect soils to the same level as winter-harvest, as long as that plan is acceptable to USFS staff. Where these roads access thinning areas outside of Riparian Reserves, this amendment may not be needed if the purchaser decides to operate outside of the winter season.
   - Another Amendment would allow for reductions in winter thermal cover and snow-intercept thermal cover through treatments as described for Resource Indicator “Mule deer winter range” in the Wildlife report. In MA 14, snow-intercept thermal cover is already below the 15% standard and would be reduced further on 807 acres by treatments implemented in this project, while winter thermal cover would be reduced by 2,449 acres below the 25% standard. In MA 26, snow-intercept thermal cover is already below the 15% stand and would be reduced further by 10 acres, while winter

thermal cover would be reduced by 865 acres below the 25% standard. These amendments would likely have a beneficial effect on integrated resource management for wildlife species, habitat, and habitat-connectivity.

4. AFRC believes the Forest did a very good job outlining the management proposal which includes treatments in the pre-identified specific locations in Riparian Reserves, LSRs, IRAs, FPOG's and wherever fuel breaks are proposed. On about 25% of the project area outside of these locations, the Proposed Action used a condition-based management approach. District staff identified areas considered for condition-based management by using existing vegetation and fuels data and developing criteria for the conditions that would benefit from treatment and meet the Project's Needs.

   The Proposed Vegetation and Fuels Treatments are in the chart below.

Treatment Type	Treatment Name	Maximum Amount	Need Addressed
Understory Vegetation Thinning (Outside of Overstory Vegetation Treatment Areas)	Stand Improvement Thin	Condition-based: 5,253 acres Site-specific: 10,687 acres	
	Fuelbreak Maintenance (Matrix)	Site-specific: 361 acres	
	Fuelbreak Maintenance (LSR)	Site-specific: 74 acres	
	Total Understory Vegetation Treatments	**16,375 acres**	
Overstory Vegetation Treatments	Matrix Thin	Condition-based: 6,167 acres Site-specific: 147 acres	Needs #1, 2, and 4
	LSR Thin	Site-specific: 4,509 acres	
	Riparian Reserve Thin	Site-specific: 325 acres	
	Owl Habitat Enhancement Thin	Site-specific: 64 acres	
	Fuelbreak New (Matrix)	Site-specific: 306 acres	
	Fuelbreak New (LSR)	Site-specific: 494 acres	
	Total Overstory Vegetation Treatments	**12,012 acres**	
Fuel Reduction (Locations overlap areas proposed for thinning. Except for landing pile burning, all acres proposed for prescribed fire could be treated with initial and maintenance treatments)	Burning Hand Piles Followed by Underburning	Site-specific: 15,479 acres	Needs #1, 2, and 4
		Condition-based: 10,389 acres	
	Landing Pile Burning	Site-specific: 293 landings	
		Condition-based: 308 landings	
	Underburning Only	Site-specific: 1,478 acres	
		Condition-based: 1,041 acres	
	Total Prescribed Fire	**28,387 acres**	
	Hand Fireline	110.5 miles	
	Machine Fireline	18.7 miles	
	Total Fireline	**129.2 miles**	
	LSR Fuelwood Gathering	Site-specific: 385 acres	Need #4
Transportation Management	Hazard/Danger Tree Removal	Condition-based: Up to 251 miles of open roads	Need #3
	Temporary Road Construction Associated with Log Hauling	Site-specific: 10.4 miles	Needs #1, 2, and 4

   The understory vegetation condition based work will all be non-commercial and will be composed mostly of precommercial thinning, including a lot of work in the Sawtooth Invertoried Roadless Area. The overstory vegetation condition based work will all be done in the matrix lands, and much of this will use DxP. All other land designations will have site-specific treatments. AFRC beieves the outline of treatments and this chart provide the clarity needed for good unit layout and treatments.

There are 1,235 acres of fuel breaks, either new or for maintenance, along ingress/egress routes to improve firefighting effectiveness within and adjacent to Wildland/Urban Interface. As pointed out in the assessment, there are a large number of danger trees and unhealthy trees along most of the major routes within the area. AFRC strongly recommends performing shaded fuel breaks along these major roads to not only remove the danger trees but provide anchor points for containment fire lines should a large fire start. AFRC suggests treating 300 ft. on each side of the major ingress and egress roads into the project area for public safety. AFRC also would support shaded fuel breaks along major ridge lines as a precautionary move for slowing or stopping future wildfires.

5. There are 325 acres being planned for thinning in the Riparian Reserves. These treatments would help protect aquatic systems, maintain, and restore the species composition and structural diversity of plant communities in riparian areas, and maintain and restore habitat to support well-distributed populations of riparian-dependent species, consistent with the Aquatic Conservation Strategy (ACS) objectives in the NWFP.

   With this in mind, AFRC would like to point out that it has been well documented that thinning in riparian areas accelerates the stand's trajectory to produce large conifer trees and has minimal effect on stream temperature with adequate buffers. Removal of suppressed trees has an insignificant short-term effect on down wood, and ultimately a positive effect on long-term creation of large down woody debris and large in stream wood, which is what provides the real benefit to wildlife and stream health. We encourage the Forest Service to focus their riparian reserve treatments on a variety of native habitats. The ACS describes the need for treatments that meet the need of multiple habitat types, and we encourage the Methow Valley District to look for ways to incorporate treatments that meet those needs. Utilization of gap cuts to promote early seral habitat in the reserves, treatments to diversify all areas of the reserve, and prescriptions that account for the full range of objectives that the ACS mandates should be considered.

   The tradeoffs that the Forest Service will likely be considering through the ensuing environmental analysis will be between achieving these forest health benefits and potentially having adverse impacts to streams. These impacts to streams typically include stream temperature, wood recruitment, and sedimentation associated with active management. We would like the Forest Service to review the literature cited below and incorporate its findings into your environmental analysis that will shape the level of management permitted to occur in riparian reserves.

   Stream temperature

   Janisch, Jack E, Wondzell, Steven M., Ehinger, William J. 2012. Headwater stream temperature: Interpreting response after logging, with and without riparian buffers, Washington, USA. *Forest Ecology and Management*, 270, 302-313.

   Key points of the Janisch paper include:

- The amount of canopy cover retained in the riparian buffer was not a strong explanatory variable to stream temperature.
- Very small headwater streams may be fundamentally different than many larger streams because factors other than shade from the overstory tree canopy can have sufficient influence on stream temperature.

Anderson P.D., Larson D.J., Chan, S.S. 2007 Riparian Buffer and Density Management Influences on Microclimate of Young Headwater Forests of Western Oregon. *Forest Science,* 53(2):254-269.

Key points of the Anderson paper include:

- With no-harvest buffers of 15 meters (49 feet), maximum air temperature above stream centers was less than one-degree Celsius greater than for unthinned stands.

Riparian reserve gaps

Warren, Dana R., Keeton, William S., Bechtold, Heather A., Rosi-Marshall, Emma J. 2013. Comparing streambed light availability and canopy cover in streams with old-growth versus early-mature riparian forests in western Oregon. *Aquatic Sciences* 75:547-558.

Key points of the Warren paper include:

- Canopy gaps were particularly important in creating variable light within and between reaches.
- Reaches with complex old growth riparian forests had frequent canopy gaps which led to greater stream light availability compared to adjacent reaches with simpler second-growth riparian forests.

Wood Recruitment

Burton, Julia I., Olson, Deanna H., and Puettmann, Klaus J. 2016. Effects of riparian buffer width on wood loading in headwater streams after repeated forest thinning. *Forest Ecology and Management*. 372 (2016) 247-257.

Key points of the Burton paper include:

- Wood volume in early stages of decay was higher in stream reaches with a narrow 6-meter buffer than in stream reaches with larger 15- and 70-meter buffers and in unthinned reference units.
- 82% of sourced wood in early stages of decay originated from within 15 meters of streams.

Sedimentation

Rashin, E., C. Clishe, A. Loch and J. Bell. 2006. Effectiveness of timber harvest practices for controlling sediment related water quality impacts. *Journal of the American Water Resources Association*. Paper No. 01162

Key points of the Rashin paper include:

- Vegetated buffers that are greater than 33 feet in width have been shown to be effective at trapping and storing sediment.

Dry Forests

Messier, Michael S., Shatford, Jeff P.A., and Hibbs, David E. 2011. Fire Exclusion effects on riparian forest dynamics in southwestern Oregon. *Forest Ecology and Management*. 264 (2012) 60-71.

Key points of the Messier paper include:

- Fire exclusion has altered the structure, composition, and successional trajectory of riparian forests in fire-prone landscapes.
- Fire exclusion has been associated with an increase in tree density and recruitment of shade-tolerate species that may replace large diameter, more decay-resistant Douglas-fir trees.
- A hands-off management regime for these riparian forests will have ecologically undesirable consequences.

Collectively, we believe that this literature suggests that there exists a declining rate of returns for "protective" measures such as no-cut buffers beyond 30-40 feet. Resource values such as thermal regulation and coarse wood recruitment begin to diminish in scale as no-cut buffers become much larger. We believe that the benefits in forest health achieved through density management will greatly outweigh the potential minor tradeoffs in stream temperature and wood recruitment, based on this scientific literature. We urge the Forest Service to establish no-cut buffers along streams no larger than 40 feet and maximize forest health outcomes beyond this buffer.

6. AFRC would like to compliment the District on the Draft Climate Change, Greenhouse Gases, and Carbon Sequestration Report. The District addressed the Council on Environmental Quality's (CEQ) published Guidance on Consideration of Greenhouse Gas Emissions and Climate Change, which provides recommendations for addressing climate change in Environmental Assessments (EAs) and Environmental Impact Statements. This guidance recommends that agencies consider the effects of projects on GHG emissions, the effects of climate change on the project area and Proposed Action, and climate adaptation measures included in the project.

   There are a few portions of the Report that we think are erroneous.
   - First, on page 4, the Report reads that "When trees are burned, harvested, or otherwise die, they release their carbon back into the atmosphere." **When a tree is harvested or felled, its carbon is not released back into the atmosphere.** This is a common error that we encounter and we would appreciate if the Forest Service could help dispel this myth.
   - Second, page 5 discusses the impacts to carbon from thinning treatments. This page repeatedly notes "carbon stock reduction" from those thinnings. Certainly, the harvest and removal of trees from the forest reduces forest carbon stocks.

However, it would be useful if the Forest Service could clarify that typically that removal transfers that carbon from the forest pool to other pools, namely wood products.

- Finally, page 7 discusses *Increasing Carbon Sequestration Capacity of Remaining and New Trees.* This section includes the following statement: "individual large trees store more carbon than smaller trees, and thinning and prescribed fire that results in less dense stands, but which retain large trees may provide greater carbon storage in the long run." While we do not disagree with this statement, we are unclear why it is included in a section focusing on carbon sequestration. While large trees certainly store more carbon, it has been shown (see Gray et al. below) that younger trees often sequester carbon at higher rates per acre. Furthermore, a recently published report by the Environmental Protection Agency concluded that old forests are less effective than younger forests at sequestering carbon. It states that "Due to an **aging forest land base**, increases in the frequency and severity of disturbances in forests in some regions, among other drivers of change, forest carbon density is increasing at a slower rate resulting in an overall decline in the sink strength of forest land remaining forest land in the USA."[1]

  A 2020 report by the U.S. Forest Service made similar conclusions. It states that "Forest growth rates are projected to slow as **forests age**, disturbance increases, and forests are converted to other land uses. Under RPA scenarios where demand for wood products and the conversion of forests to other land uses are both high, the forest ecosystem is projected to become a net carbon source."[2]
  Finally, another U.S. Forest Service report from 2019 concluded the same. It states that "For U.S. forests, net primary productivity typically increases rapidly at a young age, reaches a maximum at middle age at about the time the canopy closes, and then gradually declines and stabilizes with older ages. Consequently, middle-aged forests have a greater capacity for C uptake than young and old forests. The C stock changes across the national forests in the Pacific Northwest Region show that together the forests generally underwent a switch from a C sink to a C source in the mid-1980s. Disturbance and **aging effects** have been mostly responsible for declining C stocks."[3]

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[1] *EPA (2024) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022. U.S. Environmental Protection Agency, EPA 430-R-24-004.* https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2022

[2] *U.S. Department of Agriculture, Forest Service. 2023. Future of America's Forest and Rangelands: Forest Service 2020 Resources Planning Act Assessment. Gen. Tech. Rep. WO-102. Washington, DC. 348 p.* https://doi.org/10.2737/WO-GTR-102

[3] *Birdsey, Richard A.; et al. 2019. Assessment of the influence of disturbance, management activities, and environmental factors on carbon stocks of U.S. national forests. Gen. Tech. Rep. RMRS-GTR-402. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.* Assessment of the influence of disturbance, management activities, and environmental factors on carbon stocks of U.S. national forests | US Forest Service Research and Development (usda.gov)

The Forest concluded that to calculate an accurate estimate of GHG emissions from project activities, records of fuel usage would need to be maintained. The largest emissions from these project activities are expected to come from the use of heavy-duty vehicles, excavators, dozers, and helicopters. However, these emissions are expected to be minor in relation to the overall project long term carbon reductions.
The relatively small quantity of carbon released to the atmosphere and the short-term nature of the effect of the Proposed Action on the forest ecosystem are justified, given the overall change in condition increases the resistance to wildfire, drought, insects and disease, or a combination of disturbance types that can reduce carbon storage and alter ecosystem functions.

AFRC agrees with the District's assessment on climate change that points out areas most suitable for each forest type are shifting due to drought and disturbance associated with the changing climate. By 2055, over a third of dry forest in the project area is expected to experience levels of drought stress that are currently seen only in habitats that are too dry to support forest. Similarly, three-quarters of the moist and transitional forest is expected to experience levels of drought that are currently characteristic of dry forest. When environmental conditions change, a forest can experience low vigor, low resistance to disturbance, and increased mortality. There is a need to anticipate these forest type shifts and re-align vegetation with its environment to improve climate change resilience.

We again ask the Forest to supplement their carbon analysis in their Draft Decision by considering the points below from a technical report by the Climate Change Vulnerability Assessment and Adaptation Project (SWOAP) in Southwest Oregon.

- Wood harvested from the forest, especially timber used for durable structures, can be reservoirs of long-term carbon storage (Bergman et al. 2014).
- Forests and their products embody a closed-loop system in which emissions associated with harvests and product use are eventually recovered as forests regrow.
- Although products may be retired in solid waste disposal sites, they decompose quite slowly, causing carbon to continue to be stored for many decades.
- Products derived from the harvest of timber from national forests reduce carbon emissions by substituting for more energy-intensive materials including concrete, steel, and plastics.

Please see the graph below from the IPCC (2007) that captures the ability of forests to "stack" carbon sequestration and storage through continual harvests.

Please consider adopting the graph below into the Midnight Restoration project analysis.

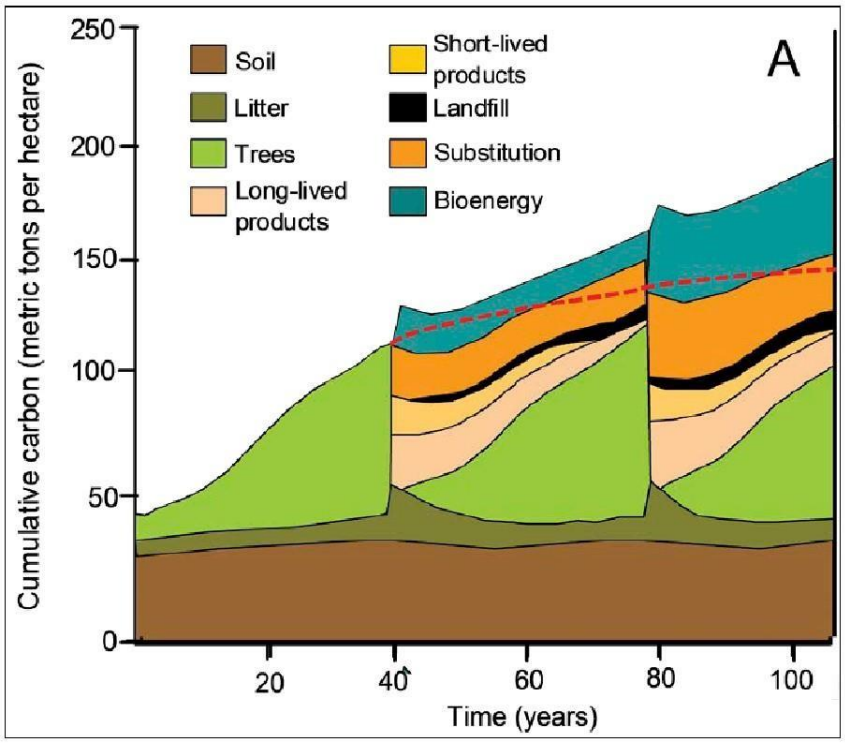

Figure 8.7—Carbon balance from a hypothetical forest management project in which the forest is harvested roughly every 40 years from land that started with low forest carbon stocks. This figure accounts for forest regrowth and carbon stored in wood products in use and landfills as well as the prevented release of fossil fuel carbon (also counted as stored carbon) via product substitution and biomass energy. It illustrates how forests can continue to accrue carbon over time with forest management. Figure is from McKinley et al. (2011) and adapted from IPCC (2007).

We believe that this graph encapsulates the forest management paradigm that would be most effective at maximizing carbon sequestration on a per-acre basis by "stacking" storage in wood products and regrowth of newly planted trees.

We would like to encourage the District to consider several documents related to carbon sequestration related to forest management.

McCauley, Lisa A., Robles, Marcos D., Wooley, Travis, Marshall, Robert M., Kretchun, Alec, Gori, David F. 2019. Large-scale forest restoration stabilizes carbon under climate change in Southwest United States. *Ecological Applications*, 0(0), 2019, e01979.

Key points of the McCauley paper include:

- Modeling scenarios showed early decreases in ecosystem carbon due to initial thinning/prescribed fire treatments, but total ecosystem carbon increased by 9–18% when compared to no harvest by the end of the simulation.
- This modeled scenario of increased carbon storage equated to the removal of carbon emissions from 55,000 to 110,000 passenger vehicles per year until the end of the century.
- Results demonstrated that large-scale forest restoration can increase the potential for carbon storage and stability and those benefits could increase as the pace of restoration accelerates.

We believe that this study supports the notion that timber harvest and fuels reduction practices collectively increase the overall carbon sequestration capability of any given

acre of forest land and, in the long term, generate net benefits toward climate change mitigation.

Gray, A. N., T. R. Whittier, and M. E. Harmon. 2016. Carbon stocks and accumulation rates in Pacific Northwest forests: role of stand age, plant community, and productivity. Ecosphere 7(1):e01224. 10.1002/ecs2.1224

Key points of the Gray paper include:

- Although large trees accumulated C at a faster rate than small trees on an individual basis, their contribution to C accumulation rates was smaller on an area basis, and their importance relative to small trees declined in older stands compared to younger stands.
- Old-growth and large trees are important C stocks, but they play a minor role in additional C accumulation.

We believe that this study supports the notion that, if the role of forests in the fight against climate change is to reduce global greenhouse gasses through maximizing the sequestration of carbon from atmospheric CO2, then increasing the acreage of young, fast growing small trees is the most prudent management approach.

While you don't include the Gray and McCauley work in your literature, AFRC is pleased to see that some of the other authors and their work listed below are included in your Report.

Gustavsson, L., Madlener, R., Hoen, H.-F., Jungmeier, G., Karjalainen, T., KlÖhn, S., … Spelter, H. (2006). The Role of Wood Material for Greenhouse Gas Mitigation. Mitigation and Adaptation Strategies for Global Change, 11(5–6), 1097–1127.

Lippke, B., Oneil, E., Harrison, R., Skog, K., Gustavsson, L., Sathre, R. 2011 Life cycle impacts of forest management and wood utilization on carbon mitigation: knowns and unknowns, Carbon Management, 2:3, 303-333.

McKinley, D.C., Ryan, M.G., Birdsey, R.A., Giardina, C.P., Harmon, M.E., Heath, L.S., Houghton, R.A., Jackson, R.B., Morrison, J.F., Murray, B.C., Pataki, D.E., Skog, K.E. 2011. A synthesis of current knowledge on forests and carbon storage in the United States. Ecological Applications. 21(6): 1902-1924.

Skog, K.E., McKinley, D.C., Birdsey, R.A., Hines, S.J., Woodall, C.W., Reinhardt, E.D., Vose, J.M. 2014. Chapter 7: Managing Carbon. In: Climate Change and United States Forests, Advances in Global Change Research 57 2014; pp. 151-182.

AFRC believes that in the absence of commercial thinning, the forest where this proposed action would take place would thin naturally from mortality-inducing natural disturbances and other processes resulting in dead trees that would decay over time, emitting carbon to the atmosphere. Conversely, the wood and fiber removed from the forest in this proposed action would be transferred to the wood products sector for a variety of uses, each of which has different effects on carbon (Skog et al. 2014). Carbon can be stored in wood products for a variable length of time, depending on the commodity produced. It can also be burned to produce heat or electrical energy or

converted to liquid transportation fuels and chemicals that would otherwise come from fossil fuels. In addition, a substitution effect occurs when wood products are used in place of other products that emit more GHGs in manufacturing, such as concrete and steel (Gustavasson et al. 2006, Lippke et al. 2011, and McKinley et al. 2011). In fact, removing carbon from forests for human use can result in a lower net contribution of GHGs to the atmosphere than if the forest were not managed (McKinley et al. 2011, Bergman et al. 2014, and Skog et al. 2014). The IPCC recognizes wood and fiber as a renewable resource that can provide lasting climate-related mitigation benefits that can increase over time with active management (IPCC 2000). Furthermore, by reducing stand density, the proposed action may also reduce the risk of more severe disturbances, such as insect and disease outbreak and severe wildfires, which may result in lower forest carbon stocks and greater GHG emissions.

7. The District is planning a lot of road work for the Project. However, 4.3 miles of new road construction has been dropped. The chart below outlines the work to be done.

Road Type	Existing Miles	Post-Project Miles				
		Open NFS Roads	*Open NFS Roads – Admin Access Only*	*Closed NFS Roads*	*Decommission*	*Decommission to Trail or Stock Driveway*
Current Open NFS Roads (ML2, 3, 4)	102.3	82.7	3.9	2.1	9.5	2.6 (trail) 1.3 (stock)
Current Closed NFS Roads (ML1)	35.4	1	1.1	15.9	17.1	0.3 (trail)
Unauthorized Roads*	34.3	1.4	3.7	-	28.7	0.4 (trail)
New Permanent Road Construction	-	0.1	-	-	-	-
Total Miles	**172**	**85.2**	**8.7**	**18**	**55.4**	**3.4 (trail) 1.3 (stock)**

While we understand the need to manage your road system and protect resources at risk, we ask that you consider that a significant factor contributing to increased fire activity in the region is the decreasing road access to our federal lands. This is especially true when considering the decommission of roads, and there are 55.4 miles planned for decommissioning. This factor is often overshadowed by both climate change and fuels accumulation when the topic of wildfire is discussed in public forums. However, we believe that a deteriorating road infrastructure has also significantly contributed to recent spikes in wildfires. This deterioration has been a result of both reduced funding for road maintenance and the federal agency's subsequent direction to reduce their overall road networks to align with this reduced funding. The outcome is a forested landscape that is increasingly inaccessible to fire suppression agencies due to road decommissioning and/or road abandonment. This inaccessibility complicates and delays the ability of firefighters to attack nascent fires quickly and directly. On the other hand, an intact and well-maintained road system would facilitate a scenario where firefighters can rapidly access fires and initiate direct attack in a more safe and effective manner.

If the Forest proposes to decommission, abandon, or obliterate road segments from the Midnight Restoration Project area we would like to see the analysis consider potential

adverse impacts to fire suppression efforts due to the reduced access caused by the reduction in the road network. We believe that this road network reduction would decrease access to wildland areas and hamper opportunities for firefighters to quickly respond and suppress fires. On the other hand, additional and improved roads will enable fire fighters quicker and safer access to suppress any fires that are ignited.

We would like the Forest to carefully consider the following three factors when deciding to decommission any road in the project area:

- Determination of any potential resource risk related to a road segment.
- Determination of the access value provided by a road segment.
- Determination of whether the resource risk outweighs the access value (for timber management and other resource needs).

We believe that only those road segments where resource risk outweighs access value should be considered for decommissioning. We would also like to point out that decommissioning 55.4 miles of road is going to be very expensive. While the Project is expected to generate over $12 million, a good portion of those funds may have to go to road decommissioning if some of the suggestions mentioned above are not implemented.

8. We would like the District to recognize that one of the primary issues affecting the ability of our members to feasibly deliver logs to their mills is firm operating restrictions. As stated above, we understand that the Forest Service must take necessary precautions to protect their resources; however, we believe that in many cases there are conditions that exist on the ground that are not in step with many of the restrictions described in Forest Service contracts (i.e. dry conditions during wet season, wet conditions during dry season). We would like the Forest Service to shift their methods for protecting resources from that of firm prescriptive restrictions to one that focuses on descriptive end-results; in other words, describe what you would like the end result to be rather than prescribing how to get there. There are a variety of operators that work in the Okanogan-Wenatchee market area with a variety of skills and equipment. Developing this EA contract that firmly describes how any given unit shall be logged may inherently limit the abilities of certain operators. For example, restricting certain types of ground-based equipment rather than describing what condition the soils should be at the end of the contract period unnecessarily limits the ability of certain operators to complete a sale in an appropriate manner with the proper and cautious use of their equipment.

   To address this issue, we would like to see flexibility in the EA and contract to allow a variety of equipment to the sale areas. We feel that there are several ways to properly harvest any piece of ground, and certain restrictive language can limit some potential operators. Though some of the proposal area is planned for cable harvest, there are opportunities to use certain ground equipment such as fellerbunchers and processors in the units to make cable yarding more efficient. Allowing the use of processors and fellerbunchers throughout these units can greatly increase its economic viability, and in some cases decrease disturbance by decreasing the amount of cable corridors, reduce damage to the residual stand and provide a more even distribution of woody debris

following harvest. Please prepare your NEPA analysis documents in a manner that will facilitate flexibility in the use of various types of equipment. AFRC believes that with some of the lighter touch logging methods as mentioned above, the impacts could even be less than those analyzed.

We appreciate seeing the recognition of tethered-assist equipment in the project proposal. Tethered-assist logging is becoming a more economical, safe, and available method of yarding on steep slopes throughout the region. The weight displacement provided by tethering allows tracked equipment to operate on steep ground with limited soil displacement or compaction. Standard psi levels for that tracked equipment are transferred to the tethering uphill.

Green, P. Q., Chung, W., Leshchinsky, B., Belart, F., Sessions, J., Fitzgerald, S. A., Wimer, J. A., Cushing, T., Garland, J. J. (2019). Insight into the productivity, cost and soil impacts of cable-assisted harvesterforwarder thinning in western Oregon. *For. Sci.* 66(1):82–96

Key Point of the Green paper include:

- The use of cable assistance can reduce track coverage and reduce shear displacement, and thus likely lessen potential soil impact caused by forestry machines.

Garland, J., F. Belart, R. Crawford, W. Chung, T. Cushing, S. Fitzgerald, P. Green, *et al.* 2019. Safety in steep slope logging operations. *J. Agromedicine* 24(2):138–145.

Key Point of the Garland paper include:

- Use of new tethered-assist technology reduces exposure to hazards and reduces workers exposed to the most dangerous work in logging—felling and working on cable operations on steep slopes.

Finally, AFRC would like the Forest to examine the days that operations and haul are shut down due to hunting seasons and other outdoor recreation. The logging community has limited operating time at best, and further reductions such as these only makes surviving in the logging business that much more difficult.

We appreciate the consideration for year-round harvest operations. However, we are a bit confused with the following design feature: *Overstory thinning in most Riparian Reserves may only occur in the winter months to protect soil resources unless the purchaser can provide a plan of operations that provides for the same level of soil protection as winter operations. If Forest Service staff approve such operating plans, harvest in designated Riparian Reserves may occur outside of winter months.*

Riparian areas are typically components of larger harvest units that include uplands. To reduce impacts to the ground and maintain economic viability, operators typically harvest entire units during a single entry. For example, it would be illogical to harvest ¾ of a unit in January, move out of the unit, and then come back in July to harvest the remaining

¼. Therefore, the Forest Service should be aware that seasonal restrictions on riparian portions of those units essentially equate to seasonal restrictions on the entire unit.

Thank you for the opportunity to provide Draft EA comments on the Midnight Restoration Project. We look forward to having some of our suggestions put into the Final EA and Draft Decision, and having this Project implemented quickly.

Sincerely,

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