December 1, 2021

TO: Sweet Home District of the Willamette National Forest
FROM: Milo Mecham
Subject: Quartzville-Middle Santiam timber sale— public comment

Please accept the following comments concerning the Quartzville-Middle Santiam project Draft EA.

I am a lover of the outdoors, and have been visiting the Santiam drainage area for years. As an ardent birder, one of my happiest moments was the observation of a female harlequin duck on Quartzville Creek two decades ago. I am now on the Board of the Friends of Douglas-Fir National Monument, working with other like-minded individuals to give the QMS region the national recognition it deserves for what it is and could be: a reminder of the glory of old growth forests and a lesson in how we can preserve the opportunity to move large areas toward what we once had but lost before we really knew it's value.

I have had the opportunity to work with Forest Service staff, other members of the Friends, and with like-minded individuals in the Great Old Broads for Wilderness and Oregon Wild to examine carefully the QMS project through review of all documents and some specific site visits to units identified for treatment in the QMS project and in the draft EA for the project.

Despite the flaws to be discussed at length in these comments, indeed because of the discussion that follows, it is important to start by acknowledging the open discussions and access to information that concerned citizens have had from Forest Service staff at the Sweet Home Ranger District. Further acknowledgement is deserved of the degree to which the District staff entered this project with a great deal of progress in understanding the appropriateness of certain treatment processes. Gone are the days of proposed clear cuts. While I disagree with the degree of thinning proposed, I also acknowledge that it is a much better approach concerning how to proceed with the Forest Service's mandate to continue to provide some timber harvest. I also acknowledge that, in my opinion, some degree of thinning of plantations in much of the QMS area would be helpful in working toward what I think should be the goal of making forest what it once was.

While acknowledging the progress made, the bottom line is still that the QMS draft EA is so badly flawed that it must be withdrawn, not revised, and the QMS project must be similarly withdrawn and revamped as what should be a series of smaller, more manageable projects. While at times in this discussion I may talk about alternative actions if the project is not canceled, that discussion must be taken in the context of how to proceed when the project is redesigned, or what must be done if the project is not withdrawn.

In developing the QMS draft EA, the Sweet Home Ranger District appears to have relied on an archaic and outdated interpretation of policies such as the Northwest Forest Plan and laws including the Clean Air Act, the Clean Water Act and the Endangered Species Act to reverse engineer facts and analysis to reach a predetermined goal. That is, instead of developing a neutral analysis of the environmental and economic effects of a realistic project, the District seems to have set an arbitrary and excessive harvest target, then constructed an environmental analysis that ignores reality to construct a flawed rationale for the target. Along the way towards this failure, the District has constructed artificial strawman alternatives, which it attempts to dismiss by way of a series of mistaken calculations, unsupported

assertions and interpretations of laws and policies that have no place in a region hard hit by climate change.

The Friends of Douglas-Fir National Monument and the Great Old Broads have submitted comments which demonstrate the errors of selection and inclusion of many of the units of the massive project. All of those comments, suggestions and criticisms are fully incorporated herein. The purpose of this discussion is to express some additional criticisms of the draft QMS EA, expand on the consequences of the many errors in the draft EA, and assert what seems to be the inevitable consequences of the flawed analysis of the EA.

Briefly put, the District must:

- Withdraw the draft EA and cancel the QMS project as insupportably large;
- Develop a plan for going forward with a series of smaller and more manageable projects that concentrate on thinning existing plantation stands in the 30 – 60 year age range;
- Acknowledge that environmentally and economically, there should be no future plans for any treatment plans, even thinning, on any "fire regenerated" stand of more than 100 years in age;
- To keep costs down, disavow any new road construction, and limit road reconstruction to a minimum, within the parameters that, if a stand is not accessible by an existing road requiring little reconstruction, the stand should not be harvested;
- Redraw unit boundaries so that no harvesting, skidding, or other means of timber extraction would cross any perennial or seasonal stream bed;
- Not prepare a unit for inclusion in any future project until a complete survey has been done to identify and eliminate areas with stands older than 100 years old, any steep slopes or streams present in the unit; and
- Minimize burning after logging, instead spreading the slash around so that natural deterioration occurs.

The District's goal of thinning plantation generated stands is a positive one, within the parameters set forth above and explained in more detail below.

As mentioned, the original premises used to justify the project is unsound for economic reasons. This was discussed in the Friends' submission, and is discussed below as well. One other introductory matter that needs discussed is the apparently insincere methodology used to select the alternatives to be considered.

The identification of four "key Issues" is presumably valid. Some of them were raised by the Friends of Douglas-Fir National Monument. What can be questioned is why the issues were assigned the numerical order that they were and then, why they were grouped in arbitrary fashion into two alternatives. It is especially troubling because the groupings that made up alternative four were not at all related, and one of the issues concerning objections to early seral creation (Key Issue 4) had already been refuted in the preliminary discussion (identifying a low percentage of early seral sites and distinguishing private logging areas as unsuitable for early seral consideration). Placing that issue with the unrelated but more valid concern for logging in older stands created an alternative that would, of necessity, have a lower harvest yield, and when combined with the numerical manipulation of the data and calculation errors of the assessment of the alternatives (in Table 48) come out lower in the valuation of alternatives. Protecting older stands does not necessarily preclude the creation of early

seral conditions in some of the plantation thinned areas, and such an alternative probably would have scored even better than did the arbitrary Alternative 4 in a corrected Table 48.

The Economics analysis of the Sweet Home District QMS Draft EA (Chapter 3; pages 187 – 189) analyses two economic factors: (1) the positive economic effects of the proposed harvests on jobs in Lane County, and the net present value and the cost benefit ratio of the four analyzed alternatives, and (2) the recreational or tourist based economic impact for Linn County.

Negative tourism effects counter any benefit to Linn County

The EA analysis concludes that while there will be some negative impact on tourism for Linn County during the periods of active harvest, this will be minimal and, it is suggested, the logging will actually have some positive long term benefit, as the thinning hastens the development of late successional-like forests in the LSR segment of the project area. The EA concludes there will be no economic consequences to the tourism sector of the Linn County economy.

No specific studies are cited to support these conclusions. The EA does acknowledge that there is no economic benefit (other than direct revenue sharing payments to the county for roads and schools) to Linn County, whereas there is some acknowledged threat to Linn County's $138 million annual tourism revenue. There is reason to question the general conclusion of no harm to tourism, however. Creating narrow buffers along some of the region's most popular trails is unlikely to satisfy those who come to the forest to experience the majesty of the forest. There are no apparent protections afforded some of the most important viewsheds in the Cascades, even though some of them are identified. The views from Iron Mountain and Cone Peak, or from the Pyramids, are one of the things that attracts visitors to the QMS area. Saying "it will grow back" is no consolation to someone who has hiked to the top of one of these peaks in the Old Cascades specifically to glimpse the beauty of the forested hills all around and discovers obviously logged areas.

Direct observation of a thinned forest – in my case along the Chimney Peak Trail down to Shedd Camp – supports my conclusion that a thinning that leaves approximately forty percent of the canopy is distinctly noticeable for some time and does not in any way resemble a naturally occurring forest. Excusing it as being better than a single species plantation does not necessarily attract visitors. The QMS EA would have been more honest to discuss the possibility that the acknowledged short term harm caused by logging activity might have a long term negative effect by driving tourists to other locations, which tourists are unlikely to return.

The EA does acknowledge that tourism is a much more important industry for Linn County than is the timber industry, even when Forest Service employment is included as a part of the timber economy. The potential loss to this industry caused by the project is likely to offset, if not exceed, the small gain to Linn County from direct roads and schools payments. The EA analysis should have discussed this and evenhandedly evaluated the risks. This is one place where an EIS, with its more in depth analysis of positive and negative factors would have been a better approach. This is assuming that the EIS would have actually dealt with the question rather than simply dismissing the possibility with conclusory remarks.

The question of tourism impacts is one of many areas where the EA analysis of cumulative impacts is shortsighted and therefore inadequate. The forests immediately north of the QMS area, in the Detroit Ranger District, have experienced serious fire damage and are closed for the foreseeable future. Areas

like Jefferson Park, which was one of the major outdoor recreational attractions of Linn County, are unlikely to be available or as attractive for quite some time. This creates an opportunity for areas in the QMS area to become an alternate attractant that could help maintain the tourism industry in Linn County. This makes it even more important that these areas not be themselves closed in large and extensive amounts and, even when reopened, to offer a less attractive element to support the tourism industry of Linn County.

One specific concern arising out of the EA's unsupported conclusions that there will be no impact on tourism is subject to even closer question. The oldest units in the project, including units 166, 172, 240, 241, 242 and 243, are subject to the most intensive logging in the favored alternative (alternative 2). One unit, 240, will only have a remaining canopy cover of 14 percent, because of nearly total shelterwood treatment, and the average canopy cover for these oldest stands after treatment is 29 percent, again because these areas are subject to shelterwood treatments and very aggressive thinning. The EA plans for loss of trees after the project is completed in the shelterwood treatment areas, so the practical effect of this proposed extensive treatment of these units, which are the closest to achieving the late successional forests that the study acknowledges are the main tourist attraction of the Forest, is that these units will probably actually never achieve late succession status. Further, because the EA contemplates additional, later treatment of all of the units in the Matrix area, it would seem to be more accurate to develop a contrary conclusion regarding long term tourism effects; that is, that the proposed treatment of these units will almost certainly cause a diminution of the attractiveness of the Forest within the Project area, and thus will have a negative effect on tourism in Linn County.

Flawed Economic Analysis and benefit cost conclusions

The economic analysis looking at the net present value and the cost benefit ratios of the several alternatives, as reported in Table 48 (Chapter 3, page 188) appears to be the only basis for the selection of Alternative 2 as the preferred option. The table reports that the net present value of Alternative 2 is approximately $ 93,000 greater than the net present value of Alternative 3, and $ 4,128,000 greater than Alternative 4. In the same way, the benefit cost ratio of Alternative 2 is reported as slightly higher than Alternative 3, and higher than the ratio of Alternative 4. Since all of the alternatives have a similar positive effect in producing timber for the local and regional economy, and the other negative and positive effects of the several Alternatives are found to balance out, the calculations reported in Table 48 appear to be the strongest, if not the only, practical evidence that makes Alternative 2 the preferred option. (This analysis assumes the legitimacy of the Alternatives for the purpose of discussing other errors, although, as discussed above, there are valid and impactful reasons to reject the construction of the Alternatives prior to their analysis.)

There are, however, errors in Table 48. Errors, which if corrected, reduce or eliminate the viability of Alternative 2 as the preferred option.

The first error can be found in the body of Table 48 as printed. The benefit cost ratios for Alternatives 2 and 4 are calculated by dividing the discounted revenues by the discounted costs for each Alternative. This process was not followed for Alternative 3. It is not clear what calculations were made, but using a calculation the same as is used for Alternatives 2 and 4, Alternative 3 is found to have a slightly higher benefit/cost ratio than Alternative 2 (1.28 to 1.27). The text of Table 48 is reproduced below, with the original benefit/cost ratios reported and the recalculated ratio for Alternative 3.

Table 48 from EA				
	alt 1	alt 2	alt 3	alt 4
net volume	0	~103	~100	~80
discounted cost	0	$ 40,815,359	$ 39,399,646	$ 33,373,340
discounted revenues	0	$ 51,814,760	$ 50,305,592	$ 40,244,474
net present value	NA	$ 10,999,401	$ 10,905,946	$ 6,871,134
npv per acre	NA	$ 1,410	$ 1,334	$ 929
benefit/cost ratio	NA	1.27	1.26	1.21
recalculated benefit/cost ratio		1.27	1.28	1.21

Based on this more consistent treatment of the data in Table 48, it appears that Alternative 2 has a slightly higher net present value ($93,455 or 0.8% higher) but Alternative 3 has a higher benefit cost ratio. In this version of Table 48, either Alternative 2 or Alternative 3 could be considered the preferred alternative.

In reality, however, Table 48 contains other, more impactful errors, that, when corrected, significantly alter all the results of the benefit/cost ratio and the net present value calculations. The errors that give rise to this problem are reflected in the assumed net volume of timber produced. The alleged volumes set forth in Table 48 are not to be found at any other location in the EA. The text of the EA itself says that the proposed treatments are expected to produce between 60 to 80 million board feet. If these projected volume numbers are used in the calculations in a revised Table 48, the net present value of all alternatives turns out to be negative (indicated by inclusion in parentheses), and the benefit/cost ratio falls well below the permitted threshold of 1.00.

Table 48 with text's projected harvest		Alt 2	Alt 3	Alt 4
revenue per million board feet		$ 503,056	$ 503,056	$ 503,056
net M board feet from text		80000	80000	60000
discounted cost		$ 49,407,637	$ 48,670,660	$ 42,395,541
projected revenue based on App B volume		$ 40,244,480	$ 40,244,480	$ 30,183,360
net present value		$ (9,163,157)	$ (8,426,180)	$ (12,212,181)
npv per acre		$ (1,177)	$ (1,082)	$ (1,662)
benefit/cost ratio		0.81	0.83	0.71

In this version of Table 48, the round numbers of the text's projected net volume are used, with Alternatives 2 and 3 getting the higher estimated volume of 80 million board feet, and Alternative 4 getting the lower number of 60 million board feet, because the projected volume of Alternative 4 is lower than the other alternatives. The estimated value of $503,056 per million board feet is a number derived from the original Table 48, obtained by dividing the projected volumes set forth in the table by the projected revenues. The same number results from the same calculation for each of the harvest alternatives, which validates the use of this number. The estimated costs of the alternatives are the same as set forth in the original Table 48.

Again, if this version of the key indicators for proceeding with the project are calculated, the project cannot go forward.

There are other projected volume numbers in Appendix B that can be used to develop a more favorable analysis of the project, but only by also reversing the relative value calculations for each of the alternatives, so that Alternative 4 appears to be the preferred option, based on benefit/cost calculations and net present value per acre calculations. That is, if the projected volume numbers of board feet projected to be harvested for each of the alternatives from Appendix B, combining the LSR and the Matrix areas, are used for each alternative and the discounted costs are treated as the same as in the original Table 48, the results are as follows.

Table 48 recalculated using App. B volumes	Alt 2	Alt 3	Alt 4
calculated revenue per million board feet	$ 503,056	$ 503,056	$ 503,056
M board feet from Ap B	98215	96750	84276
discounted cost	$ 40,815,359	$ 39,399,646	$ 33,373,340
projected revenue	$ 49,407,637	$ 48,670,660	$ 42,395,541
net present value	$ 8,592,278	$ 9,271,014	$ 9,022,201
npv per acre	$ 1,103	$ 1,191	$ 1,228
benefit/cost ratio	1.21	1.24	1.27

In this corrected version of Table 48 Alternative 4 has a noticeably higher benefit/cost ratio than either of the other two alternatives. Alternative 3 has a marginally higher net present value than Alternative 4, but a lower NPV per acre.

Several conclusions can be drawn from this review of the economic impacts of the proposed project. One conclusion must be that the economic analysis of the draft EA is flawed and so the overall conclusions of the draft EA supporting Alternative 2 as the preferred alternative are incorrect, and the project cannot go forward. Even if the EA is revised by positing a credible reason for the errors, and by substituting the presumably correct numbers from Appendix B, so that it generates accurate calculations of the economic impact of the project, the evidence is that the analysis does not support Alternative 2 as the preferred option. The alternative conclusion to be drawn under these circumstances would be that, if any of the project volume numbers found throughout the draft EA can be used to support going forward with the project, the numbers support Alternative 4 as the preferred option for the project.

<u>The need for timber is not as assumed in the QMS draft EA</u>

There are other economic factors in the 2021 economy of the region that call into question some of the assumptions that justify the project. Depending on how these real-life factors are treated, they suggest that the project should be delayed, or significantly revised. These factors also support Alternative 4 as the option that will provide the most sustainable and stable regional impact by providing the types of timber that the regional timber economy of 2022 actually can use.

The first point to acknowledge is that the regional timber economy has adapted to a stable supply of relatively young timber. As logging on the National Forests has diminished, the timber economy of the region has adapted by a reduction in the number of mills and a specialization by these mills of the types of trees now being harvested off private land. Perhaps the most significant cause of the decline in

timber jobs is the automation of the mills, focused on the size of logs being brought to the mills--logs from 40 – 60 year old trees.

Most mills cannot handle large logs from trees over 100 years old. To introduce some of these logs onto the regional timber demand will not contribute to a stable and sustainable regional timber economy because the supply of these logs is extremely limited and will be increasingly rare as time goes along. Further, although these large logs can produce large dimension lumber, the rise of engineered wood products has supplanted the demand for large dimensional lumber. Large logs simply do not fill a significant regional need and should be left in the forest.

A second factor acknowledged in the EA, but not examined in terms of its impact on the economic viability of the project, is the recent occurrence of major wildfires within the region, indeed in the Sweet Home Ranger District and the Districts immediately adjacent to the Sweet Home District. These fires have already produced a massive influx of logs into the region. One cannot pass a coal deck in the region without noticing the consequences of these fires, and the region's highways are seeing more and more trucks hauling burnt logs to the mills.

This sudden surplus of logs calls into question the assumed value of the board feet projected to be produced by the QMS project. In other words, the net present value of the project is probably exaggerated, even when properly calculated, because there are already so many logs in, or coming to, the mills. Also reducing the assumed value is the fact discussed above; that the majority of modern mills are not set up and cannot be adapted for large logs. Any EA of a Forest Service project must recognize this, or an EIS be done to more thoroughly analyze these trends, to deal with this reality and to properly analyze the actual need for logs in the region.

Especially when taking into account the changed demand for large logs, the assumed values of Alternative 4 must be understood as being slightly more reliable, because there is no assumed value of the large logs from the older "fire regenerated" stands.

In sum, the draft EA discussion of the economic advantages of the QMS project is flawed, meaning that the draft EA must be withdrawn or substantially revised. The identified problems are:

- The numbers used in the calculation of net present value and benefit/cost ratios in the draft QMS EA are not supported by any other portion of the EA, and there are mathematical errors in the calculations made during the use of these apparently fabricated numbers.
- The draft QMS EA does not analyze the impact of the recent wildfires and subsequent increase in salvage logging, where even perfunctory analysis would suggest that this is not an appropriate time to move forward with a project the size and scope of the QMS project.
- The draft QMS EA gives as its primary purpose the sustaining of the regional timber economy by proposing harvests that are not consistent with the current state of the regional timber economy, especially a regional economy already overloaded with fire-generated product from the National Forests and adjacent private land.
- The draft QMS EA uses an assumed value for the timber produced which does not consider the impact of recent wildfires on the supply of logs, and thus may overestimate the value and the benefit of the project.

The draft QMS EA also makes assumptions about the value of thinning, especially some of the proposed heavy thinning that reduces the canopy cover significantly, and the poorly named shelterwood with

reserves. The shelterwood treatment is probably better characterized as "small scale modified clear cutting." Whatever they are called, these harvest techniques are justified on three grounds:

- They will reduce the danger of wildfires while also mimicking some of the results of natural fires,
- They will encourage or support the presence of some mammal and bird species,
- They will produce logs to support a sustainable and stable regional timber industry.

None of these rationales justify the heavy logging of the shelterwood treatment. The presence of the mammals and birds that are used to justify the shelterwood process ignores the fact that these species are not indigenous to late successional forests in the Cascades, at least not in the numbers assumed to be ideal in the EA analysis. Creating temporary conditions to encourage the number of elk and deer may enhance some recreational activities in the Forest – although this is not included in the economic analysis – but it is contrary to the other recreational and timber management responsibilities of the District. It is also not necessary to artificially produce fire damaged forests, since the massive wildfires of 2020 in immediate adjacent areas has produced these areas naturally.

The QMS EA argues that having a variety of age classes is important for ecosystem health, and that creating a range of age classes artificially is especially important in contemporary times of climate uncertainty. This unsupported argument overlooks certain realities. First, as will be discussed in detail later, logging is a carbon negative, that is it introduces more carbon dioxide, and thus worsens climate uncertainty. Second, it should be clear that the major threat to ecosystem health is human interference with the ecosystem. Attempting to artificially create what is now the current human centered image of a healthy ecosystem is unlikely to work out better than have the past human attempts to manipulate the ecosystem through clear cutting or strenuous fire suppression. The older "fire regenerated" stands are doing what healthy ecosystems do, moving forward toward what the ecology of the Cascades has previously defined as a healthy. No claims that humans can do better is credible.

Shelterwood logging may produce the largest number of logs per acre, but it is not sustainable, nor is it consistent with the analysis that suggests that it is necessary to thin fire regenerated areas. If shelterwood treatments mimic fire regeneration, then these areas will soon suffer the same issues that are used, improperly, to justify the logging of older stands within the project.

<u>Errors with regard to analysis of fires</u>

The analysis of fires in the QMS draft EA is full of misconceptions and faulty analysis. There were a few good comments; noting, for instance, that Indian burning was a minor influence on forest and it was confined to the Willamette Valley. Also an admission that some areas had fire rotations of 500 years or more--which is how you get old growth forests – was notable.

The idea of fire rotation is, however, one place to start with critical analysis of the draft EA, and of the conclusions that come from the erroneous assumptions and descriptions of the character and occurrences of fires in the Cascades.

One major error in the QMS draft EA discussion of fires is to focus on a miscalculation of the ecological impact of fires by ignoring the variability of the size of fires. In reality, it doesn't matter if you have a lot of small fires; they don't have a major ecological effect. One 10,000 acre fire is far more significant than 10,000 one acre fires, especially since the small fires will be stretched out over multiple years.

Most fire history fire scar studies count fires, not the geographical extent of fire, i.e. when you read (as in the QMS draft EA) that some places burned every twenty years, it is not ecologically important if all you burn is a few acres each time. In other words, if only a few acres burn, it does not make that much difference in the forest ecology.

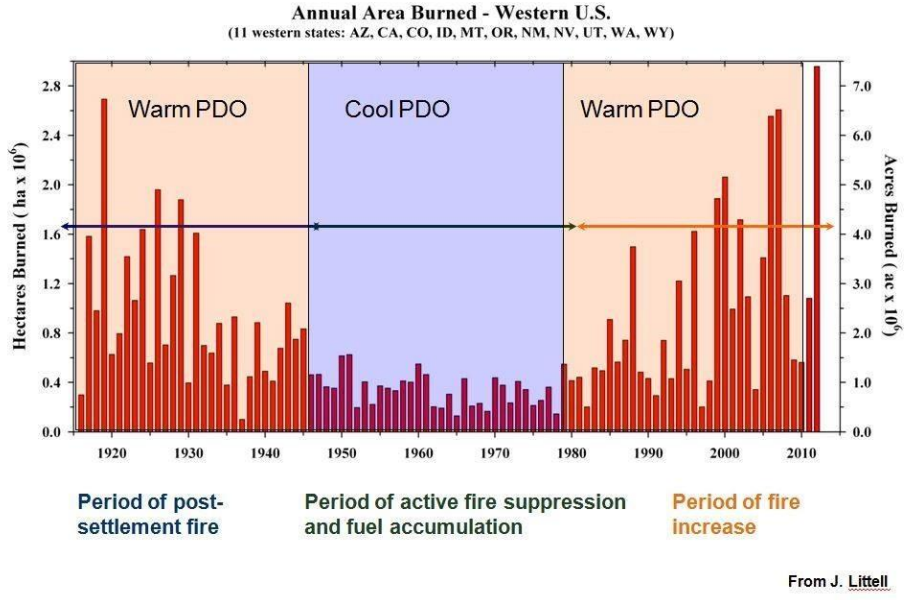
So one of the problems that often occurs is that all fires are treated as "equal". A one acre fire counts the same as a 10,000-acre fire in the "composite" fire scar history. Of course, the more fires you count, the shorter the interval between fires, so you get very short fire intervals like 20 years. Whereas, the real fire history of an area with occasional small fires, measured in terms of ecological impact, is that the ecologically impactful fires may not come along any more often than another area that is reported to have a 500 year fire interval.

It is also incorrect to place most of the blame for recent decades of major fires on a history of suppression, or the collection of biomass. The majority of all acres burned occurs only during extreme fire weather. During these conditions, you get extensive fires, such as occurred in the Labor Day fires of 2020. These fires occur during extreme drought coupled with low humidity, high temps. and in particular, high winds.

The idea of successful fire suppression having a major effect on the cycle of wildfires is greatly exaggerated. The time of "successful" fire suppression began in the 1940s with airplanes, but this was time of cool, moist climate. Cool moist conditions mean you don't get any ignitions and when you do, they don't spread. The weather is a much more successful fire suppressor, or large fire catalyst, than any other cause.

This can be seen by charting the weather cycle and the cycle of large fires in the west.

Area burned in 11 Western states, 1916-2012



From J. Littell

Beginning in the 1980s global warming began to change the nearly four decades of cooler climate, and concomitant time of smaller fires, so now we are getting larger fires again. But it's not due to fire suppression and too much fuel, it's due to climatic conditions being favorable to fires.

A similar application of scientific thinking clarifies the relative unimportance of biomass as a cause of fires. If fuels drove fires, the Coast Range would have the most fires because there is more biomass there than anyplace else except perhaps the western slope of the Cascades. And the Coast hardly ever burns. Why? Because it is cool and moist.

The other problem with the Forest Service "thinking" about fire is the idea about fire rotation and fuel accumulation. If the area is characterized by a large fire every couple of hundred years, the natural situation is that fuels will accumulate. This is not "abnormal" or outside of historic conditions. It's more like a light switch. It's either on or off. It's not half way on, i.e. if you have a two hundred-year fire rotation, you don't burn half the landscape in 100 years.

Another problem with the QMS draft EA conclusions regarding the need for the proposed treatment is the idea that doing prescribe burning and thinning will reduce large fires. Again large fires only occur when the weather conditions are favorable for fire spread, and the fires spread by wind blowing embers. This means that fire flows around, and over "fuel reductions". We saw this on the Labor Day fires on the western slope of the Cascades, where there are massive clear cuts with no fuel that did not stop the fires because the embers just blew over the clear cuts.

There is a disconnect in the thinking. Thinning is not going to slow fires under extreme conditions and there is evidence that it can increase fire spread by opening the forest stand to greater wind penetration and drying, which are two elements essential for a large fire.

Keep in mind that some of the largest recent fires burned through areas of extensive "fuel reductions." For instance, an estimated 75% of the Bootleg Fire had experienced some level of previous logging and thinning, but that didn't stop that fire. Same for the Dixie Fire of this summer. Of course, the Labor Day Fires of 2020 burned through extensive clear cuts, etc., and were only halted when the weather changed. That is the typical situation. Weather changes, and fires are "controlled." In reality, what controlled the fires was a change in the weather.

Furthermore, there are plenty of studies that demonstrate the likelihood that a fire will actually encounter a thinned stand is small. And thinning by reducing competition for nutrients, etc. can stimulate the growth of new trees and shrubs. These smaller fuels are what burns in forest fire, not the bigger trees. So thinning can actually exacerbate fire spread.

If you are thinning and removing trees that are larger than 4-5 inches in diameter, you are not reducing fuels because these larger trees really do not burn in a forest fire, which is why you get snags. Yes you have branches and needles burning, but not the boles--which is what the Forest Service removes. This illuminates another myth about thinning and “shelterwood with reserves;” these treatments do not in any realistic way simulate the effect of fires.

There may be valid ecological reasons to thin, even to create some openings in the forest, but the explanation cannot be to mimic the effects of fire, or to reduce the risks of fire. In the same way, the rationale that roads are necessary in the forest to help with fire suppression is demonstrably incorrect.

In the Labor Day fires for example, fire suppression in areas with road access was not noticeably or differentially more successful than what occurred in wilderness areas.

An error by omission regarding Carbon dioxide and climate change

The draft QMS EA contains no discussion about carbon. There are a number of studies showing that logging, thinning and wood products production releases far more greenhouse gas emissions than any wildfire. So in logging/thinning to reduce wildfires, the Forest Service is actually increasing the gases that contribute to warming, and hence larger fires. Burning slash is not necessary if enough canopy is left so that the slash does not dry out and it is not collected into piles that tend to dry the slash more and may create anaerobic conditions, leading to the production of methane.

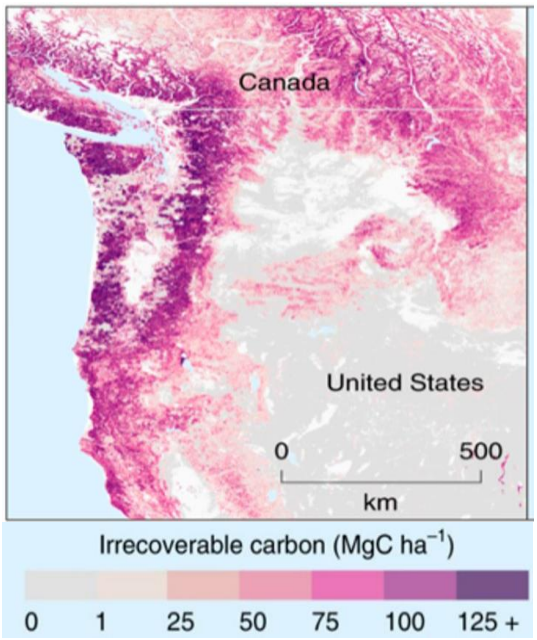
Fire is not only a natural part of the forest, even the largest fires do not release as much carbon as industrial logging. Even after a fire, most of the carbon remains on the site as a snag, roots in the ground, charcoal in the soil, etc. Protecting these forests as "carbon reserves" is the single best use of them with regard to climate change, rather than attempting to rationalize logging as equally productive for carbon storage.

The lack of any analysis including the lessons and the cumulative impact of the Labor Day fires keeps appearing as a significant omission that, among several other reasons, invalidates the draft QMS EA. An additional example of the failure of analysis in the draft QMS EA in this area is any acknowledgement of the connection between the Labor Day fires and global climate change. The fires were unquestionably made larger and worse because of climate change. The QMS EA must examine the relationship between logging and climate change, and how the project and alternatives would impact the amount of carbon dioxide in the atmosphere. Failure to do this is a violation of the Clean Air Act and the Clean Water Act, because the protections extended by these acts are compromised by increased carbon dioxide in the air and the resultant increase in massive wildfires.

There are a number of studies showing that logging, road building, thinning and wood products production releases far more greenhouse gas emissions than any wildfire. So in logging/thinning to reduce wildfires, the Forest Service is actually increasing the gases that contribute to warming, and hence larger fires.

The QMS project area, as a part of the Cascade ecosystem in the larger Pacific Northwest, specifically including the western slope of the Cascades, is an important area of stored carbon. Any loss to the amount of carbon stored in the Cascades now will not be recovered by 2050. In other words, the loss of this carbon now will contribute to a rapid and short term irreversible increase in carbon in the atmosphere and therefore an irreversible increase in global warming. Logging these forests will be directly contrary to the Biden administration’s stated goal of keeping global warming to less than 1.5 degrees Celsius.

The map reproduced below shows the high level of carbon stored in the Pacific Northwest.



Map and analysis source: M.L. Noon *et al.* Mapping the irrecoverable carbon in Earth's ecosystems. *Nature Sustainability.* Published online November 18, 2021. doi: 10.1038/s41893-021-00803-6.

Commercial logging is an intense atmospheric carbon dioxide producer. While it is true that some of the carbon stored in the cut trees is retained in the wood produced from the timber, the mechanical operations of road building, cutting, skidding and gathering the logs, especially by means of helicopters, transporting the logs to the mills, and then milling the logs produces more carbon than is stored in the produced lumber. Then much of the understory and slash is burned, further contributing to the carbon negative effect of logging.

This is why logging the QMS project will seriously contribute to the deterioration of the climate. While it is true that the forest will eventually recapture some of the carbon generated by logging, it will be hundreds of years until this happens and in the meantime, the climate will have worsened, probably creating conditions adverse to the regeneration of the logged forest.

Additional issues

The QMS EA also does not seek to fully implement the requirements of the Endangered Species Act. The purpose of the ESA is not to just preserve the existing number of a listed species. It is instead, wherever possible, to create conditions such that the endangered species is able to increase in number, or at least to not contribute in any way to a reduction in the potential for species recovery.

The older, "fire regenerated" stands (including units 166, 172, 240, 241, 242, 243) are naturally evolving toward northern spotted owl habitat, and are already classifiable as owl disbursement habitat. Any treatment of these units will reduce the habitat that is or soon will be suitable habitat. Since it is within the same forest area of identified owl nesting sites, destroying the potential habitat by thinning or shelterwood treatment would be contrary to the applicable intent of the ESA. The EA's conclusion that it is unlikely that there will be a negative impact, or that the chances of a negative impact are very small, are insufficient protection.

The EA acknowledges that there is an under representation of trees in the large and giant diameter class in the project area, yet it proposes, in the now discredited preferred alternative, to engage in the heaviest logging in the units that are most likely to contain these large diameter trees. Aside from every other reason to leave the older stands alone, the EA's stated purpose of creating a diversity of age classes, when combined with the EA acknowledgement that the older, larger stands are the most underrepresented in the project area, demonstrates that the older units must be left untreated. This is also an additional demonstration of the failure to adhere to the intent of the ESA, since these large trees are the preferred habitat of the northern spotted owl and its prey species, including the red tree vole.

In a similar way, the endangered fish species that do or could use the Middle Santiam or Quartzville Creek and their tributaries depend on shaded, cool streams free of sediment. The QMS EA dismisses the acknowledged damage to these streams. It allows logging within riparian zones, it allows road building in riparian zones, both threats to the species. In effect it allows for increases in temperature and increases in turbidity by suggesting that there will only be a *de minimus* impact. The EA acknowledged that there are already cumulative impacts that are actively contributing to a deterioration of critical conditions important to these species, although it did not include the potential of damage from wildfires that are becoming increasingly common in the area. The EA acknowledged that these other impacts are beyond the direct control of the Forest Service. This means that these external negative effects may increase at any time and to an unknown degree. The acknowledged harmful effects from the QMS project are preventable, and thus must be avoided in order to fulfil the Forest Service's responsibility to not adversely affect threatened and endangered species.

Recently Suzanne Simard has published a work, *Finding the Mother Tree* (Knopf, 2021) summarizing a great deal of scientific work that demonstrates the importance of several species of fungus in developing and maintaining forest health. The draft QMS EA acknowledges the presence of such critical fungi in the forest and the importance of maintaining these fungi. What the EA does not consider is the evidence that any logging adversely affects the fungus, and that exposing the fungus to excess light, such as is caused by excessive removal of the forest canopy may damage the fungus, which in turn might adversely affect the stated project goal of encouraging biodiversity. This is another area where the Forest Service needs to engage in the greater depth of analysis of an EIS.

<u>Conclusions</u>

The numerous instances where field checking revealed mistakes in the characterization and selection of units and roads to be included in the project. There are simply too many units to include in a single project. The size of the project inevitably leads to errors, some of them avoidable if the District had taken a more conservative approach. One of the errors that could have been avoided, that, if corrected might eliminate many other errors was the decision to do an EA rather than an EIS. The errors and omissions in the submitted draft EA, stemming from ignoring contemporary conditions in the QMS area and the surrounding region and from making mathematical errors in the analysis of alternatives, means that the EA is unsustainable and cannot be saved through a revision, no matter how extensive. The project needs to be withdrawn. New projects, each smaller in size and more focused on what the region needs and what the QMS area can tolerate while also meeting the Service's other goals and responsibilities, need to be developed. These new projects can benefit from the lessons learned from the comments submitted with regard to the draft QMS EA. And, because they would be better researched and more manageable, might be reviewable through an EA rather than needing an EIS.