

November 4, 2024
Reviewing Official, Eric Watrud
Attn: Tiger-Mill Project
72510 Coyote Road,
Pendleton, OR 97801

Re: Blue Mountains Biodiversity Project's Objections to the Tiger-Mill Project's Final Environmental Assessment and Draft Decision Notice/Finding of No Significant Impact, submitted via Certified U.S. Mail, No. 70210950000120136953 to Eric Watrud, Forest Supervisor, Umatilla National Forest, 72510 Coyote Road, Pendleton, OR 97801; and electronically at: <https://cara.fs2c.usda.gov/Public/CommentInput?Project=62658>

Objection Reviewing Official, Forest Supervisor:

Blue Mountains Biodiversity Project ("BMBP") submits this Objection, pursuant to 36 C.F.R. Part 218, on behalf of to the U.S. Forest Service's ("Forest Service" or the "Service") 2024 *Tiger-Mill Project Environmental Assessment, Finding of No Significant Impact, and Draft Decision Notice* ("EA" and/or "Draft DN/FONSI"). BMBP's physical address is 27803 Willams Lane, Fossil, OR 97830. Eric Watrud, Umatilla National Forest Supervisor, is the responsible Forest Service Official and the project would be implemented in the Walla Walla Ranger District of the Umatilla National Forest. BMBP has previously submitted timely written comments regarding this project during the Project's scoping phase. *See Exhibit A.*

Notice Published: The public notice regarding the Objection Period for this Project was published in the East Oregonian on September 18, 2024. Exhibit B. Therefore, under 36 C.F.R. §§ 218.7 and 218.9, this Objection is timely because BMBP submitted it electronically and by certified U.S. mail on November 4, 2024. The original 45-day objection period expired on Saturday, November 2nd. Therefore, any objection submitted by or on Monday, November 4th must be considered timely. 36 C.F.R. § 218.6(a).

BMBP has submitted these comments and objections via certified U.S. mail and electronically. The certified mail copy includes a USB drive with electronic copies of all the exhibits cited below in this Objection. Those exhibits are too large to submit along with the electronic version of this Objection. A list of those exhibits is included at the end of this Objection.

BMBP requests an objection resolution meeting to address the concerns raised in its Objection, set forth below.

Issues addressed in this Objection:

The overarching issues with the Tiger-Mill project is the continued insistence of the Forest Service that its heavy-handed management is necessary to reduce the risk of wildfire and protect water quality in the Mill Creek Municipal Watershed and surrounding forest. Pursuant to a 1918 agreement between the City of Walla Walla and the Forest Service, the Mill Creek Municipal Watershed is jointly managed to protect and conserve the watershed that provides 85-90% of the city's supply of fresh water. This agreement, codified into the Umatilla Forest Plan,

prohibits “[a]ctions that could degrade water quality.” Umatilla Forest Plan at 114. Despite this prohibition, the Tiger-Mill Project proposes forest management activities that will inevitably degrade the city’s water quality. Alarming, if the City of Walla Walla approved of the Forest Service’s decision to approve the Tiger-Mill Project, BMBP fears it has done so under the flawed environmental analysis performed by the Forest Service in the Tiger-Mill Project Final EA, and therefore, may not have been made aware of the full extent of adverse environmental impacts of the Tiger-Mill Project.

Compounding these issues is a lacking National Environmental Policy Act (“NEPA”) analysis performed with inadequate public engagement. The Tiger-Mill EA does not contain sufficient analysis of the direct, indirect, and cumulative effects of the proposed actions on the watershed, wildlife and its habitat, riparian areas, and native vegetation, among others. Compounding this lacking analysis is the Forest Service’s limited alternatives analysis, its disconnect between the alternatives that were analyzed and the Project’s purpose and need, its failure to rely upon the best available science, and its failure to disclose scientific methodology. This hedged analysis does not fulfill NEPA’s “hard look” requirement.

Further issues arise when considering the changed conditions of the Tiger-Mill project area and the Mill Creek Municipal Watershed given the recent encroachment into the project area of prescribed burning approved as part of the Tiger Creek Prescribed Fire Project. Exhibits C and D.

Including BMBP’s objections based on NEPA violations, the following objections also address violations of the National Forest Management Act (“NFMA”), the Clean Water Act (“CWA”), the Endangered Species Act (“ESA”), and the Roadless Rule. BMBP requests that the Forest Service drop this misguided proposal to perform largely unnecessary and heavy-handed management prescriptions in and around the Mill Creek Municipal Watershed. If the Forest Service insists on proceeding, it must document the significant impacts of such a decision—one that has potentially adverse impacts to the watershed that provides 85-90% of the drinking water for the city of Walla Walla, Washington—in an Environmental Impact Statement.

Most of the issues raised in this objection were raised initially in the BMBP’s comments on the Tiger Mill Project’s Scoping Notice of Proposed Action, Exhibit A, with citations to BMBP’s scoping comments included where appropriate and necessary. However, due to the lack of specificity in the Notice of Proposed Action and the failure of the Forest Service to circulate a draft EA for public comment, some of the issues addressed in this objection are either addressed in more detail than they were in BMBP’s scoping comments or are being raised for the first time “based on new information that arose after the opportunit[y] for comment.” 36 C.F.R. § 218.8(c). All of these objections can be resolved with the remedies specified below.

OBJECTIONS REGARDING VIOLATIONS OF THE NATIONAL ENVIRONMENTAL POLICY ACT

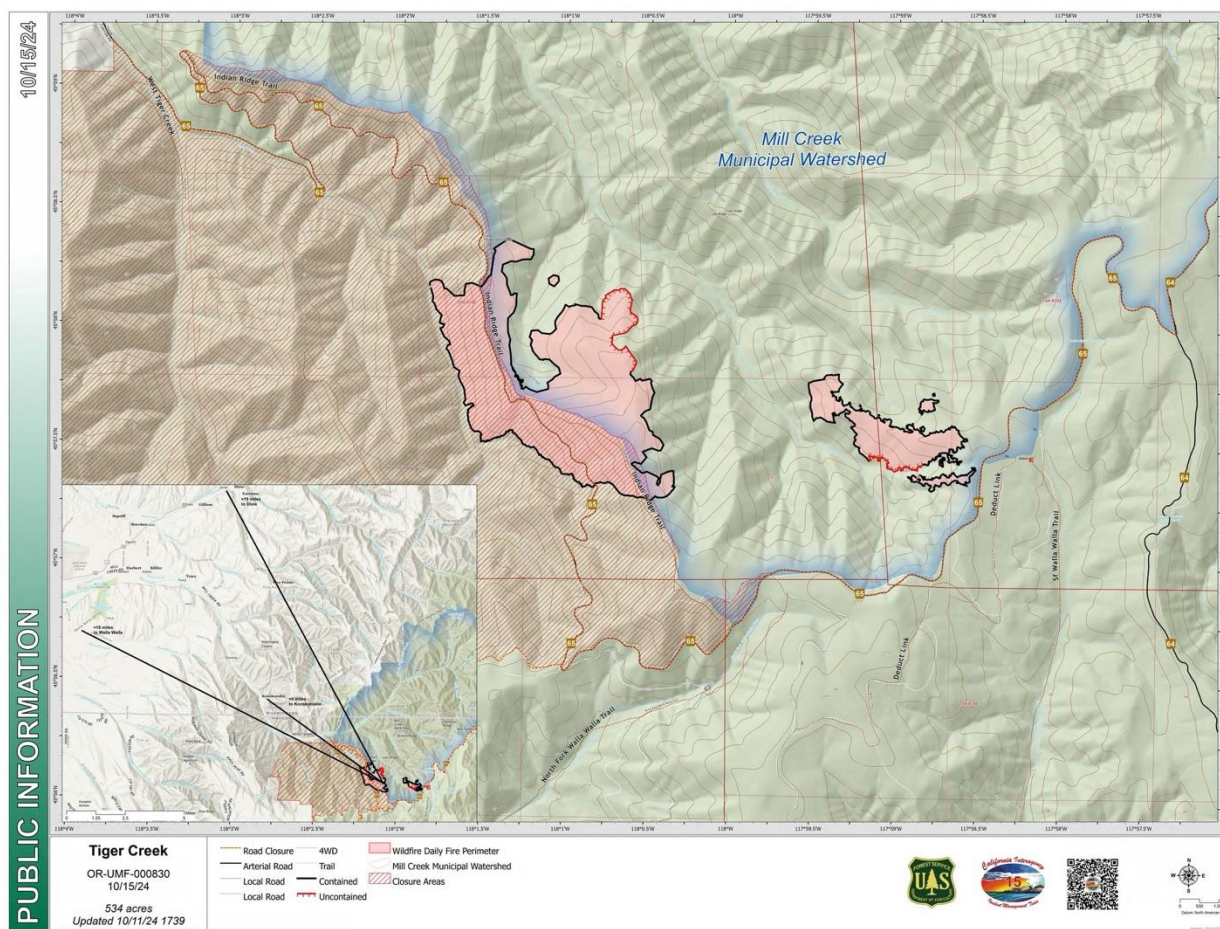
I. Request for Supplemental NEPA Analysis Following the Encroachment of the Tiger Creek Prescribed Fire Project

On September 27, 2024, the Forest Service initiated the 335-acre prescribed fire approved in the Tiger Creek Prescribed Fire Project. Exhibit C. The purpose of the Tiger Creek project was to reduce hazardous fuels surrounding the Mill Creek Municipal watershed, *id.*, but during the

course of implementing the planned burn, a shift in the weather caused the fire to encroach into the Tiger-Mill Project planning area. As of October 2, 2024, 155 acres had burned at least 155 acres outside of the planned area, presumably within the Tiger-Mill Project area and possibly even within the Mill Creek Municipal Watershed itself, although it is not specified in either press release published by the Forest Service. Exhibit D.

It appears that fire has affected portions of the Tiger Creek project area that overlap with sale units (including ground-based sale units 264, 282-285, cable-assisted units 384-388, helicopter sale unit 383, and numerous noncommercial thinning units). Is the FS planning to drop logging in these units? Re-analyzed them regarding baseline conditions and impacts? Particularly with regard to water quality and hydrology, previous burns affect soils and water movement within watersheds, and will be more sensitive to disturbance and especially vulnerable to logging and roads. Figure from the agency's Official Fire Information Facebook page for the Tiger Creek Fire:

<https://www.facebook.com/photo/?fbid=122110690154554329&set=pcb.122110690964554329>



The Forest Service must provide supplemental NEPA analysis when there are “significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.” 40 C.F.R. § 1502.9(d)(1)(ii) (2020); *Idaho Sporting Cong. v.*

Alexander, 222 F.3d 562, 566 (9th Cir. 2000) (extending the duty to undertake supplemental analysis to projects analyzed using an EA). Importantly, there need not be any guarantee that the new information be significant. Rather, new information or changed conditions need only raise substantial questions regarding significance. *Klamath-Siskiyou Wildlands Ctr. v. Boody*, 468 F.3d 549, 561-62 (9th Cir. 1998). This is particularly evident in the NEPA regulations that went into effect on July 1, 2024, which amended the language of 40 C.F.R. § 1502.9(d)(1)(ii) to clarify that “substantial new circumstances or information,” triggers supplemental NEPA analysis rather than “significant new circumstances.”

The primary purpose of the Tiger-Mill Project is to “increase opportunities to manage the spread of wildland fires [] safely and effectively,” by reducing fuels. FEA at 4-5. Further, the Tiger-Mill Project includes planned logging activities and prescribed fire within the Project area, which includes the Mill Creek Municipal Watershed. FEA at 6-10. Therefore, the effects of the Tiger Creek Project fire that got out of control and encroached into the Tiger-Mill planning area are directly relevant to the analysis, effectiveness, and future implementation of the Tiger-Mill Project. As such, the Forest Service must provide supplemental environmental analysis under NEPA, and circulate such analysis for public review and comment, prior to any final decision being made. BMBP hereby requests that the Forest Service initiate supplemental NEPA analysis on the effects of the Tiger Creek Project fire on the Tiger-Mill Project planning area.

Because this is new information that arose after the opportunity for public comment, this issue was not raised in BMBP’s scoping comments.

II. The Public Involvement Process for this Project is Severely and Unnecessarily Lacking

Just because one *can* do something does not necessarily mean one *should* do that. Such is the case with the Service’s decision to not circulate a draft EA for public comment. By going straight from scoping to a Final EA and Draft DN/FONSI, the Forest Service provided no opportunity for the public to comment on any actual analysis of the proposed actions and their environmental outcomes. Although the public was given an opportunity to comment on the Scoping Notice of Proposed Action for the Tiger-Mill Project, that 35-page document pales in comparison to the 118-page EA and the sixteen specialist reports and other supporting documentation released along with the Final EA and upon which the Final EA relies. By skipping the “optional” step of releasing a draft EA for public comment, the Forest Service has effectively stymied public input to a level that borders on an intentional quashing of public discourse.

NEPA is predicated upon the idea that interested members of the public be made aware of the environmental consequences of federal actions and be given a chance to make their voice heard on such issues. This is especially important when the federal action in question will have direct effects on the drinking water supply for a city of nearly 34,000 people. It is hard to believe that the 13 comments the Forest Service received in response to the Scoping Notice of Proposed Action adequately captured the public interest in this Project. Draft DN at 3. There are numerous issues associated with limiting public input on the environmental analysis provided for the first time in the FEA to just the 13 individuals and groups that commented on the Scoping Notice of Proposed Action.

In the context of underscoring the importance of soliciting public input for a Project affecting a municipal watershed, it is unclear how much effort the Forest Service actually put

into soliciting input from members of the community that rely on that watershed. The Scoping Notice of Proposed Action stated that the Forest Service and the City of Walla Walla collaborated to send out mailers to “189 nearby landowners.” NOPA at 19. However, in the Draft DN’s very brief “Summary of Public Involvement,” the Forest Service states that “over 100 recipients received the scoping letter and NOPA via *email*” and only “several by postal mailings.” Draft DN at 3. How 189 mailers were reduced to “several” is unclear, and in any case, the choice to limit affirmative public outreach of a Forest Service project affecting a municipal watershed serving over 30,000 people to under 200 people is baffling to say the least. This failure of the Forest Service to engage the local population calls into question the motives of the Forest Service’s development of this project, but also explains the lacking public involvement in the NEPA scoping process.

Further compounding the issue of not circulating a draft EA for comment prior to the publication of the Final EA is the length of time that elapsed between the publication of the Scoping Notice of Proposed Action in January 2023 and the publication of the Final EA and Draft DNFONSI in September 2024. Of course, it is understood and accepted by BMBP that environmental analysis takes time, but in the year and a half between the two documents, it is entirely possible that interest in the Tiger-Mill Project and the water quality of Walla Walla has increased among the public, potentially due to new residents moving in, changed conditions in the intervening years, or simply interest growing among members of the public that may have missed the initial scoping notice due to any number of factors. By not circulating a draft EA for public review and comment, the Forest Service has silenced any number of potentially interested members of the public.

Further, the lack of analysis summaries in the EA from the separate Specialist Reports is unusual and makes it more difficult for the public to realize that there may be significant negative effects buried in analysis in the separate Specialist Reports. The public may also not have sufficient time to read all the separate Specialist Reports since the timeline for reading the EA and writing comments and to prepare an objection based on the scoping comments has been compressed to only 45 days. Yet the EA would ordinarily have a 30 day period to write comments on the draft EA, and later have 45 days to prepare an objection based on our EA comments, which makes it much more possible (due to more time allowed) to read the separate Specialist Reports. Further, we should have been allowed to comment on the more detailed analysis in the EA, then consider any additional analysis or changes in the final EA, based on public comments, before preparing an objection.

Remedy: This issue can be remedied by withdrawing the Final EA and Draft DN/FONSI, and instead, meaningfully engage the local population and circulate a Draft EA for public review and comment.

BMBP raised these issues in its Scoping Comments, Exhibit A, at 1.

III. Inconsistency between proposed actions and the Purpose and Need for the Project

The Tiger-Mill Project area has very high precipitation annually and very high moisture retention, with 40 to 70 inches of precipitation, meaning that this is very moist mixed conifer forest with high overall moisture retention in the form of headwaters for springs, streams, major creeks, and rivers. Stream tributaries feed water into the major Mill Creek, the North Fork of the

Walla Walla River, and the Wolf fork and South fork of the Touchet River. Commercial logging of this very moist forest would dry it out through removal of mature tree cover shading and down wood. Heavy logging of mid-story and understory, such as planned “Improvement Cuts”, clearcutting in the form of “Seed Tree with Reserves”, and “Intermediate” logging (See Table 1, p. 8.), would increase wind speeds through the stands during wild fires and the removal of down logs that retain much water as part of “fuel” reduction. Commercial logging of the moist and wet forest would increase fire intensity, contrary to the purpose and need stated for this timber sale. Logging increases fire intensity and spread also by removing the more fire-resistant mature trees and logging large hazard trees. Commercial logging also leaves highly flammable slash and dense re-growth of small, young trees that increase fire intensity and spread.

The EA states that: “We are at a ‘...devastating intersection of extreme heat, drought, and the spread of invasive species, wildfire activity is trending toward increasingly intense, destructive fires that have profound impacts on our natural landscapes, communities, and public health.” (EA p. 4). These catastrophic conditions are due to uncontrolled global warming. To address these problems and start reversing climate change, the highest priority for the Forest Service should be to fully protect mature and old growth forests from logging loss of forest cover and large tree structure that sequesters and stores the most carbon and to allow younger forest to grow into large and old trees to increase the forest’s natural carbon sink capabilities. Logging mature and old forest is completely contrary to slowing, reducing, or reversing extreme climate changes, which include more intense and widespread wild fires, more insect epidemics, prolonged droughts, and unprecedented heat waves.

Regarding the “need” for the Tiger Mill timber sale “Project”: Reducing “Hazard Fuels” (biomass) should not be prioritized for the back country, since statistically there is a very low probability of these “fuel” breaks being effective at the time of the next fire in that location. There is no need to plan “fuel” breaks “across the landscape” as there are already numerous natural fire breaks around the sale area, between sale units, between sale units, and within sale units, with great expanses of no significant biomass or trees between the Tiger-Mill sale area and the nearest communities in the Mill Creek area and in Walla Walla.

Commercial logging planned would reduce, not enhance, the diversity of tree species and associated plant diversity and wildlife habitat diversity. About 60% of the Tiger-Mill project area is moist mixed conifer that is naturally adapted to infrequent fire. Only the dry forest types at lower elevations that are Ponderosa pine or Douglas fir co-dominant are adapted to more frequent fire. Trying to force moist mixed conifer forest to become adapted to a more frequent fire regime is ludicrous, as it is not the natural or historic condition for these high-elevation moist or cold forest types. Moist mixed conifer forest conversion to drier tree species composition would not “restore the project area to a healthier state.” (EA p. 5, 2nd bullet point)

Remedy for opening up dry forest stands: The Forest Service could use non-commercial small tree thinning (up to only 9” dbh) and prescribed burning in already logged dry forest types at lower elevations to remove excess density of small young trees and open up the stands through prescribed fire. These sale units with more small tree density have already been high-graded and/or commercially thinned, so there is no “need” for any commercial logging.

Evidence on the ground indicates that the forest is not at any “elevated risk of adverse effects” from wildfire except for some heavily logged sale units at the lowest elevations that are now dense with small trees. Commercial logging and road construction and re-opening would

degrade water quality. Non-commercial thinning and prescribed burning in lower elevation dry forest that has already been logged could be helpful nearest to the local communities and adjacent to major access roads.

There is substantial evidence across the western states that all the fire risk reduction logging and biomass removal did not significantly reduce fire severity or extent, based on a recent study of “fire risk reduction” management across multiple western states. In fact, these studies show that higher levels of protection (with less-intensive management) burn with less severity than unprotected, more intensively managed areas. Bradley, et al. (2016) (Exhibit E).

A recent study has found that fire risk reduction-oriented biomass reduction is statistically not likely to be effective when the next fire reaches the location that received the management, as the window of any effectiveness is only for 10 to 15 years. Rhodes and Baker (2008) (Exhibit F). It is very unlikely that the Forest Service would return to all these “fuel breaks” or “Defensible Fuel Profile Zones” every 10-20 years to maintain all of them, due to lack of timber industry profit from already logged areas, and lack of guaranteed funding. The Forest Service currently plans landscape scale, fast timber sale rotation of only about 30 years, which is prioritized by the Forest Service. Landscape scale, short timber sale rotations that implement very intensive logging are ecologically, economically, and culturally unsustainable.

See Chapter 12, “Fire Safe Communities” in Smokescreen, Debunking Wildfire Myths to save Our Forests and Our Climate by Chad T. Hanson, a research ecologist. As Hanson says, “...societies around the world remain reluctant to accept that wildfires are fundamentally weather and climate events. No one tries to stop a hurricane or a tornado.” (p. 187) “Despite the evidence, land management agencies like the U.S. Forest Service remain heavily focused on logging projects hundreds of yards to miles away from houses, claiming this will reduce fire intensity and protect homes. Aside from the fact that logging typically increases fire intensity, this strategy has been proven a failure by the Forest Service’s own scientists.” Hanson cites the evidence of the Grass Valley fire in the San Bernadino Mountains in 2007. “The message is clear: this is not a fire and vegetation management problem; it is a community protection problem.” (p. 191, par. 2). See details regarding the Camp Fire on pp. 192-196 of Smokescreen, which has full scientific study citations for each chapter in an appendix in the back of the book.

Actually the proposed logging, road construction and re-opening, log hauling, and biomass removal would not meet the project purpose and needs of protecting water quality and water retention for downstream fish and community uses. Project design features would not need to be used if these destructive management actions were not used. While planning for the use of project design criteria is intended to reduce negative effects, there is no guarantee that these PDCs will be able to prevent: logging-triggered landslides or mass wasting on steep slopes, sedimentation of streams, increased sediment flows due to biomass removal and ground disturbance, the effects of road construction and re-opening, loss of upslope and adjacent tree shading contributing to loss of moisture retention within stream drainages due to consequent hotter and drier conditions. Reduction of high fire severity and increased extent of fire is unlikely to result from planned logging due to the logging removal of mature, more fire-resistant trees, the increased wind speeds through more open stands, drier conditions due to loss of cooling shade, and the increase in highly flammable slash and dense re-growth of smaller, highly flammable trees. Because of extreme climate change effects, Project Design Criteria will be foreseeably less effective overall.

It is a fallacy to claim that “Future wildfire risk would decline as forest fuels are removed. Forest treatments would reduce the risk of future wildfire extent and severity from high to low.” There is no EA analysis fully supporting this conclusion. Erosion produced would not necessarily be offset by the theoretical “reduced risk of fire.” (EA p. 58, last par.)

What really would meet “the need to protect water quality for municipal water supply and aquatic life uses” would be to not log and road this high water retaining headwaters forest. The Project Design Criteria are far less likely to meet this goal after all the ground disturbance and removal of mature trees stabilizing the slopes, as well as increasing road mileage that funnels sediment—typically to downhill streams.

There is no analysis or evidence presented that would support the claim that: “The structural density and fuels conditions brought about the desired forest composition would maintain hillslope sedimentation within natural ranges...” (EA p. 51, par. under “Sediment”)

Re: roads: The Forest Service rarely restores or decommissions “temporary” roads, as evidenced by placing some of these new “temporary” roads on existing disturbed areas such as old roads that may have been previous “temporary” roads that are “stored” for future use.

BMBP raised issues related to inconsistencies between the proposed actions and the Project’s purpose and need in its Scoping Comments, Exhibit A, at 11-20.

a. Background regarding the rationale of fire suppression to justify logging

It is not at all certain that the Tiger-Mill project area has experienced over 100 years of fire exclusion, as the EA claims on p. 4. In the Baker City Municipal Watershed there are trees 400 years old despite past historic fire signs in the area. The Tiger-Mill area has not necessarily “missed many cycles of fire”, as wildfire suppression only became more effective and widespread after World War II, when military equipment was used to wage a war on fire across the National Forests. There have been well documented huge high severity fires in the past. So large scale high intensity wild fires are nothing new to the forest ecosystems. The Tiger-Mill forest area is stated as being 60% moist mixed conifer forest, mostly at high elevations with more abundant rain and more persistent, deeper snow packs. A fire return interval for that moist, high elevation forest is likely only about every 100-250 years. We witnessed lightning storms in June 2023 on the ridgetops of the Tiger Mill sale area that did not start any fires because it was so wet. It rained there during this time while Walla Walla was consistently dry and averaging at about 95 degrees at afternoon peak temperatures. By contrast, we were experiencing much cooler temperatures at the same time at high elevation that were only up to 60-70 degrees in the daytime and as cold as in the 30 to 40 degree range at night.

The 60% moist mixed conifer in the Tiger Mill project area is naturally very productive, with high moisture retaining ash soils, high levels of precipitation and long-lasting snow packs at high elevations. More productive and moisture-retaining forest can sustain higher density of trees and in some cases, faster growth of mature trees into large trees. It’s not likely that fire exclusion is the source of increased tree densities, any altered tree species composition, and “altered” forest structure. This is the case since most of the Tiger-Mill forest is historically present moist mixed conifer that evolved with and adapted to infrequent stand replacement severity fire, which allows for increasing healthy forest density with multi-layered forest canopy that includes shade tolerant species. However, logging removes overstory mature trees, which

stimulates increased dense regeneration of seedlings and saplings. Commercial logging is being planned to convert tree species composition to timber industry preferred tree species—Ponderosa pine, Western larch, and in this case, Lodgepole pine. This tree species conversion ignores the natural moist mixed conifer species composition in late successional stands. Selective removal of Grand fir, Douglas fir, and Englemann spruce to favor drier forest tree species (e.g. Ponderosa pine) and early successional or “early seral” species like Western larch forces an unnatural situation on the ground within historic moist mixed conifer and late successional old growth forest stages. Heavy logging such as the planned Seed tree clearcutting, “Improvement cuts” and “Intermediate” logging is based on outdated silvicultural science that is geared to removing the natural forest composition and substituting virtually biological sterile plantations of only one or two tree species, which are often not adapted to the site’s conditions.

b. Background on the lack of evidence that wildfire suppression is causing greater tree density, as part of the Purpose and Need to justify logging

We find that logging “compromises overall ecological health and makes fire management increasingly difficult.” (EA p. 4, par. 2 under “Purpose and Need”). While fire exclusion or suppression can have these effects—especially in dry forest types—most of the Tiger-Mill sale units have high precipitation and high water retention, which means that logging would certainly compromise ecological processes and functions and make fire management more difficult. Thus, the proposed Forest Service remedy of logging with more road re-opening and construction would be worse than the existing conditions, as fire suppression is not the cause of moist mixed conifer forest density. Logging moist mixed conifer reduces forest canopy shading that preserves cool, moist forest conditions, while biomass reduction of down wood removes significant moisture reserves in logs. Moist mixed conifer logging would also remove the more fire resistant mature trees, including Grand fir and Douglas fir that have more fire-resistant, thicker bark at the base and higher live crowns as they get larger and older.. We agree that fire exclusion is not beneficial. This sale area does not reflect significant fire suppression—at least not in the never logged forest and in the high elevation moist mixed conifer forest, where there are old burn scars and lightning scarred trees—both live and snags. Wild fire should be managed, but not suppressed, in the back country, which includes Inventoried Roadless Areas, Municipal Watersheds, and high elevation moist and cold forest types that naturally have an infrequent fire regime.

The Tiger Mill high elevation forest naturally would have stand replacement severity, although it would still create a mosaic of green forest, underburned forest, and high severity burned forest. The forest is not “trending” toward increased intense fires; extreme climate change is causing the trend toward more intense and expansive fires. Protecting mature and old growth forest from logging preserves the forest’s function as a natural carbon sink, which is the best use of the forest to reduce catastrophic climate change effects.

c. Hydrology

The hydrology summary confirms that: “Protecting water quality and hydrologic function is a key purpose and need for this project.” (EA p. 46) However, this planned timber sale is highly likely to degrade water quality significantly on a large scale, including greatly increased sediment flows and turbidity; potential water temperature increases; a deficit in large wood recruitment to streams reducing pool formation; decreased flood plain roughness from less down wood recruitment; potentially less stream channel stability due to potential landslides and

mass soil movement, and more water run-off due to channelization of flows from skid trails, “temporary” roads, re-opened closed roads, and widespread ground disturbance. These effects would also cause degradation of native riparian plants and loss of fish and other aquatic organisms, including downstream Threatened-listed Bull trout and Mid-Columbia Steelhead trout.

Commercial logging, road construction, and road re-opening are contrary to the “key purpose and need for this project” of “protecting water quality and hydrologic function.” (EA p. 46). There’s a long well-documented science history of logging, road building and road use causing significant degradation of water quality and hydrologic functions, including increased water temperature, increased sediment entering streams, increased turbidity, and decreased large wood future recruitment to create pools to provide cool, deeper water refugia for fish. Fire does not affect water quality and hydrologic functioning as much in the long-term as logging and roads, with the worst fire effects often being in combination with previous logging and existing roads. Log hauling also contributes to fine sediment entering streams and increased turbidity when logging roads are adjacent to riparian areas or at stream crossings.

Remedy for of Proposed Actions Being Inconsistent with the Stated Purpose and Need:

The Tiger Mill Project requires development of other action alternatives that would be consistent with the Stated Purpose and Need based on science-based in-depth, detailed analysis in an Environmental Impact Statement, with a 45 day EIS comment period and a later 45 day objection period, during which the public has a chance to see the Final EIS analysis and the Record of Decision.

BMBP raised issues related to the adverse impacts of logging and roads to watershed hydrology in its scoping comments, Exhibit A, at 26, 29, 31-36

IV. NEPA Alternatives

a. Inadequate Range of Alternatives

The Tiger-Mill timber sale alternatives would not sufficiently minimize or eliminate negative impacts to forest values, including forest resiliency to natural disturbances such as wildfires, insects, and droughts. Planned commercial logging would reduce tree species diversity, along with reducing associated diversity of habitats for wildlife. Existing and future tree size classes would be reduced due to logging, due to fewer mature trees available to become large and old trees. Highly flammable small tree density would increase due to logging of the midstory or overstory while mature and large tree density would be diminished. Commercial logging would eliminate most of the more fire resistant mature trees and would reduce mature and large more fire resistant trees into the future.

There was no adequate range of alternatives during the Scoping phase for which the public was invited to comment. In the EA there is only an inadequate range of alternatives that does not fully respond to many of the public’s concerns expressed during scoping. These include dropping commercial logging or all management proposed in the following forest types and conditions: “moist and cold forest vegetation types because they are not in need of restoration” (with which we agree and add that moist and cold forest cover is critical for retaining high levels of moisture for headwaters downstream fish habitat and community uses and for maximizing carbon sequestration and storage to reduce catastrophic climate change effects); no management

within the Mill Creek Municipal Watershed and IRAs; and from our stand point, that all undeveloped lands and never logged forests should be dropped from logging and roading; dropping all logging on steep slopes >35%; and no management in old forest structure. The multi-strata with large trees structural stage is not over-represented at 47% of the project area, since 60% of the project area is historic, natural moist mixed conifer. An Environmental Impact Statement is needed to ensure that a full range of alternatives suggested by the public is analyzed.

The high percentages of never logged forest, steep slopes over 35%, moist mixed conifer, and multi-strata old forest structure are all good reasons not to log this unusually mostly intact forest that supports maintaining high water quality and water abundance, as well as high quality wildlife habitat, forest stabilization of steep slopes, and high carbon sequestration and storage to reduce extreme climate change effects. These forest attributes are not legitimate reasons to justify not providing a full range of alternatives to address public concerns. (See EA p. 11 under “Alternatives Considered, but Not Analyzed in Detail.”)

All the No Action-predicted negative impacts from high severity fire listed on EA p. 50 would likely be caused by commercial logging and road construction and road re-opening as predictable outcomes except for earlier snow melt. These foreseeable negative effects from logging on steep slopes, in moist mixed conifer forest, and in never logged forest, along with associated road expansion and use include: increased immediate risk of degraded water quality from erosion and sedimentation decreased snow-water storage decreasing health of downstream water quality and habitats decreased stream volume and increased temperature in summer months lower flow volume over time and reduction in overstory shade.

While these negative outcomes to hydrologic functions, water quality, riparian habitat, and forest water retention would be immediate and long-term impacts from logging and roading, by contrast, the timing and intensity of the next fires are unknown, with large fires at stand replacement severity potentially still being relatively infrequent for the high elevation moist forest. The Forest Service seems to be using wild fire as a scape goat for the foreseeable negative impacts of planned commercial logging and increased open roads for log hauling for the Tiger Mill timber sale “Project”. Instead, the Forest Service needs to avoid the controllable impacts of the proposed timber sale and not destroy or degrade the forest’s inherent capabilities and resiliency through logging and roading. An alternative that does not propose any logging or roading should have been analyzed.

It is concerning that there is such an inadequate range of alternatives, as: “The degree of potential effects between the two actions is fundamentally the same.” (EA p. 45 under “Mass Movement”)

These similar potential negative outcomes to soil productivity, water retention of the forest, water quality, and Threatened-listed fish habitat downstream from both alternatives offered reflect an inadequate range of alternatives and fails to follow NEPA’s intent to use alternatives to greatly reduce or avoid negative ecological effects in response to public comments.

Associated Remedy: The Forest Service should either abandon the Tiger-Mill timber sale or prepare a full range of alternatives to remedy public concerns, with detailed, in-depth effects analysis within an Environmental Impact Statement with a 45 day comment period and a

separate 45 day objection period and negotiations. An EIS would likely attract more public response.

BMBP raised issues related to the requirement for a full alternatives analysis in its scoping comments, Exhibit A, at 1 and 22, and suggested proposed alternatives it would like to see analyzed in full in its scoping comments, Exhibit A, at 2.

b. Objections and Remedies specific to Alternative A, Modified Proposed Action

See EA p.6:

Re: the 2nd bullet point: While we appreciate reduction of “temporary” roads, there is really no need for them at all, since all commercial logging should be dropped and there are plenty of existing roads to accommodate any roadside non-commercial thinning.

We are opposed to the 10.6 miles of “temporary” roads under Alternative A, as constructing new “temporary” roads or re-opening them on previous “temporary” roads (that end up being de facto system roads) would increase access for: ATV use causing more wildlife disturbance, introduction and distribution of exotic invasive plants, illegal firewood cutting, and increased access for fur trapping and/or livestock damage.

Remedy: Drop all construction of “temporary” roads & drop all re-opening of existing disturbance “temporary” roads.

Re: the 4th bullet point: Most or all of these very steep slopes are unstable. How much of the steep slopes were dropped due to unstable slopes, and how was the instability determined? This EA has virtually no detailed analysis and lacks disclosure of methodology and supporting citations in general, throughout the EA text.

Remedy: Drop all steep slope logging--of slopes over 35%.

Re: the 5th bullet point: What does Fire Regime 4 indicate, and where does it occur in the Mill Creek Watershed IRA?

Re: the 6th bullet point: We oppose any prescribed fire in the Municipal Watershed as it is high elevation moist mixed conifer headwaters forest that retain high levels of moisture, including wet alder groves in openings within the Municipal Watershed sale units adjacent to road 65 and large openings around the sale units, as our drone photos show from over these sale units.

Re: the 7th bullet point: We support dropping commercial logging within the Research Natural Area, as RNAs are not designated for logging or roading, but for retaining natural forest conditions for scientific study.

Remedy: The whole Mill Creek Watershed IRA and the other IRA or big block of undeveloped lands (in the past Tiger-Web sale location) and the Research Natural Area would not be logged, roaded, and prescribed burned.

Re: the 8th bullet point: While we appreciate commercial logging in Old Forest Single Stratum (OFSS) being replaced by non-commercial thinning in dry forest, this should be extended to moist OFSS and to all old forest, including Old Forest Multi-Strata. Most of the old growth forest has open understory already, including within moist OFMS, based on our field surveying of sale units. So most old forest does not even need any non-commercial thinning. Quite often

understory density in moist old forest is mostly comprised of alders and Yew trees, which should not be cut.

Remedy: Drop all commercial logging and roading in Old Forest Single Stratum and Old Forest Multi-Strata late successional and old forest. Moist mixed conifer old forest should not be prescribed burned.

Re: the 9th bullet point: It should be clarified that “Post-commercial thinning” is non-commercial size thinning up to 9” dbh rather than being repeated commercial thinning after earlier new commercial logging.

Re: the 10th bullet point: Both action alternatives A and B have to have a 21”dbh limit for any commercial logging except for legitimate hazard trees, since Judge Aiken ordered the 2021 Region 6 amendment to allow renewed logging of large trees ≥ 21 ” dbh be vacated, retaining the 21”dbh limit.

Remedy: The ≥ 21 ” dbh large tree limit for logging must be adopted for any commercial logging in the final decision.

Re: the 9th bullet point: It should be clarified that “Post-commercial thinning” is non-commercial size thinning up to 9” dbh rather than being repeated commercial thinning after earlier new commercial logging.

Re: the 11th bullet point on EA p. 7: There is no need for non-commercial thinning in Category 4 RHCAs except in lower elevation dry forest types where logging left an influx of dense small conifers. The moist mixed conifer forest in RHCAs at higher elevations is naturally more productive and denser. The moist forest-associated RHCAs tend to already have riparian hardwoods cover, along with riparian-associated plants, such as Thimbleberry, ferns, Sticky Currant, moss, and others.

Remedy: Drop all proposed non-commercial thinning in RHCAs within the moist mixed conifer forest type.

There is also no need for a 300-foot biomass reduction corridor, whether the 300 feet are on either side of the potential control lines, or whether both sides of control lines are encompassed in the proposed 300 feet of biomass reduction. Any potential control lines should only be adjacent to major access roads such as roads 64 and 65, not spur roads. Ridgelines already tend to be barren. Any biomass reduction should be “shaded fuel breaks”, not removal of mature trees. Any such “fuel breaks” should only extend 50 feet on either side of the roads by just using non-commercial small tree thinning and possible prescribed burning in dry forest types.

Remedy: Reduce planned biomass corridors to only 50 feet on each side of only major access roads, with no commercial logging in those biomass reduction corridors, but using non-commercial thinning by hand, potential pruning of low conifer branches, and potential prescribed burning only in the lower elevation dry forest type.

Because these are “modifications made to the preliminary Proposed Action disclosed in the NOPA,” EA at 6, this objection represents BMBP’s first opportunity to provide detailed comments specifically on Alternative A, Modified Proposed Action. However, BMBP did include comments on “temporary” roads (Exhibit A at 2, 21), logging on unstable steep slopes (Exhibit A at 5-6, 24), fire regimes (Exhibit A at 15, 23), prescribed fire within the IRA (Exhibit

A at 20), logging with an RNA (Exhibit A at 22), logging in OFMS (Exhibit A at 14), the requirement to abide by the Eastside Screens 21” Rule (Exhibit A at 6), and non-commercial logging within RHCA’s (Exhibit A at 21) and along control lines (Exhibit A at 20, 23).

c. Comments, Objections, and Remedies specific to Alternative B

While alternative B is more protective of forest ecological values, we are still deeply concerned and opposed to any commercial logging in the Tiger Webb proposed sale IRA (or large block of undeveloped lands) west of rd. 65 and southwest of the Mill Creek Municipal Watershed. We are also strongly opposed to any commercial logging in all never logged forest, all moist mixed conifer forest, on all undeveloped lands, in all old growth forest, and on all steep slopes >35%. Our preference is for No Action, with no timber sale and no associated road construction and road re-opening.

Never logged and never roaded ecosystems are more resilient than logged and roaded forest. The Forest Service chronically exaggerates the amount of Blue Mountains forests that were historically very open, which were typically in low elevation dry forests dominated by Ponderosa pine.

Historically there was more dense forest than the Forest Service portrays in their public relations narrative. See for instance the Smokescreen book by Chad T. Hanson regarding 18 specific references to high forest density from John C. Fremont’s expedition through the Blue Mountains of northeastern Oregon in 1845 “before settlers made war on the native peoples of the region and later began logging and fire suppression policies.” (See Smokescreen, Debunking Wildfire Myths to Save Our Forests and Our Climate by Chad T. Hanson, pages 121-122.)

Grand fir, Douglas fir, and Englemann spruce are not over-represented in this mostly (60%) moist mixed conifer forest. There’s lots of evidence of historic old growth Grand fir, Douglas fir, and Englemann spruce—live old growth, old growth snags, and old growth logs—in the high elevation moist mixed conifer sale units, based on our extensive field surveying in commercial sale units.

Remedy: Re: Table 1: Drop all commercial thinning (1,268 acres) in Inventoried Roadless Area(s), as in Alternative B.

Remedy: Re: Table 2, Drop all commercial thinning in cold and moist forest types, in never logged forest, and on all steep slopes >35% and in old growth forest (out of 3,895 acres under Alternative A and 2,842 acres under Alternative B.) Drop all Improvement Cut, Seed Tree with Reserves, and Intermediate logging planned in both alternatives, and drop mechanical non-commercial thinning.

Remedy: Re: Table 3, Drop grapple piling (“Machine-Pile”), as it tends to sterilize the soil due to large, concentrated piles of slash. What does “End Haul Slash” mean?

Remedy: Reduce potential control line biomass reduction by only using control lines along major access roads—only where this is actually needed, and up to only 50 feet on each side of the roads, with no mature tree logging. 300 foot control line buffers are excessive, unnecessary, and destructive of forest values, including scenic quality, recreational values, and wildlife habitat.

Remedy: Re: Table 4: Drop all steep slope logging, including cable yarding, “cable assist”, and helicopter logging, which are planned under both alternatives. Drop all ground-based logging that would be in never logged forest, Inventoried Roadless Areas, in undeveloped lands, in the Municipal Watershed, in old growth forest and in moist mixed conifer forest.

Remedy: Re: Table 5: Drop all re-opening of closed roads.

Remedy: Re: Table 6: Drop all “temporary” roads—both on “existing” disturbance and new construction—all 10.64 miles.

Remedy: Re: Table 7: Drop all prescribed burning in moist mixed conifer forest at higher elevation, in suitable or active Pileated woodpecker and American marten habitat in moist or cold forest types. Drop all prescribed burning in Inventoried Roadless Areas—all 14, 689 acres. Manage any wildfires in those areas instead, letting them burn. Drop all prescribed burning in moist and cold RHCAs, as these are naturally more productive and adapted to infrequent stand replacement severity fire.

Because the Final EA is the first time the Alternative B: Action Alternative has been presented to the public as such, this objection represents BMBP’s first opportunity to provide detailed comments specifically on Alternative B, Action Alternative. However, BMBP did include comments on logging in undeveloped and never logged forest (Exhibit A at 23), “temporary” roads and re-opening roads (Exhibit A at 2, 9, 21), logging on unstable steep slopes, including the use of cable yarding and helicopter logging (Exhibit A at 5-6, 17, 24), the false narrative of multi-strata forest and Engelmann spruce being over-represented (Exhibit A at 14), commercial logging within the IRA (Exhibit A at 10), grapple piling (Exhibit A at 19), the requirement to abide by the Eastside Screens 21” Rule (Exhibit A at 6), prescribed fire in Pileated woodpecker and marten habitat (Exhibit A at 20), and non-commercial logging within RHCAs (Exhibit A at 21) and along control lines (Exhibit A at 20, 23).

V. NEPA and Failure to Disclose Scientific Controversy

a. Failure to disclose significant scientific controversy regarding impacts to riparian areas

The EA analysis is not disclosing that scientists have been questioning the RHCA buffers as not being wide enough to fully prevent long-term negative effects to riparian values. There is evidence to suggest that wider buffer widths may be necessary to protect stream temperatures, particularly in intermittent and headwater streams, and particularly when logging within 100’ of streams. Parameters that influence stream temperatures include, stream shade, overland flow, groundwater and hyporheic flows, and groundwater storage. Alteration of these parameters can increase stream temperatures, especially in small streams. Logging alters these parameters, and degrades the ability of these parameters to support cold water, and is likely to increase stream temperatures. Caissie 2006 (Exhibit G); Davies & Nelson 1994 (Exhibit H); DeWalle 2010 (Exhibit I); Kiffney et al. 2003 (Exhibit J); Groom et al. 2011 (a) (Exhibit K); Groom et al. 2011 (b) (Exhibit L); Jones et al. 2006 (Exhibit M); Sweeney & Newbold 2014 (Exhibit N); Pollock et al. 2009 (Exhibit O); Wigington et al. 2006 (Exhibit P); Poole et al., 2008 (Exhibit Q); Ebersole et al. 2015 (Exhibit R); Poole & Berman 2001 (Exhibit S); Newcombe & Jensen 1996) (Exhibit T).

The emphasis on road maintenance seems to be used to distract from other significant sources of sedimentation, such as logging on steep slopes with easily displaced soils; potential logging triggering of landslides or mass wasting; the construction of “temporary” roads; re-opening of closed roads; skid trails and any “temporary” roads on steep slopes forming sediment channels; and logging on moist soils or on top of melting snow. Further, “temporary” roads and skid trails are rarely fully decommissioned, with the potential for longer term sediment channeling.

Road “storage” is usually just closing the road for future use, not decommissioning it or restoring it to the original condition. With all these other sources of sedimentation apparently not considered in detail, the determination is that “there would be no long-term adverse cumulative effects to sedimentation from Alternative A or B.” (EA p. 54, par. 2)

Based on a lot of updated science not being disclosed or used for analysis in the EA, there is no reason to expect all this planned logging, road construction and re-opening, and biomass reduction to be “expected to burn with lower severity, which would have a beneficial effect on hillslope sedimentation” as the sedimentation increase from these management actions is predictable due to so much past evidence of sedimentation from logging on steep slopes and especially on ash soils and unstable slopes. The EA soil analysis confirms past and recent landslides in the Tiger-Mill project area, which would greatly increase debris flows and sediment loading in stream channels.

Remedy: Drop all steep slope logging and all logging on ash soils or unstable slopes. Drop any construction or re-opening of “temporary” or closed roads in RHCAs. Prohibit logging on moist soils or on melting snow.

BMBP raised the issues of roads, steep slope logging, and logging on thin soils and melting snow contributing to sedimentation in its scoping comments at Exhibit A, pages 21-23, 19, 28 respectively.

b. Failure to disclose significant scientific controversy and inaccurate use of HRV science

The HRV analysis is seriously flawed, as many scientists now agree, including Forest Service scientists. There is no “need” to move multi-canopy stands to single stratum. Some moist mixed conifer has already been artificially converted by logging to single stratum, which may now be “over-represented.”

The HRV concept has been debunked by Forest Service scientists at the Pacific Northwest Research Station, regarding the HRV concept being largely irrelevant, given unprecedented current and future extreme climate changes. Other scientists have also disagreed with the way the Forest Service uses HRV as a rationale for logging. A forest protection activist has discovered that a Forest Service poster child photo for historic open forests actually portrays an already logged Ponderosa pine stand in Montana that has visible stumps from logging if looked at carefully, which allowed the featured horse and carriage to drive through the stand. Yet the Forest Service is not disclosing this significant scientific controversy and has not updated its science accordingly, which are still based on 1980 or 1990 Forest Plans throughout the Blue Mountains region.

The Forest Service used a typically biased assumption of the Historic Range of Variability for the Tiger-Mill project area by portraying it as needing tree species conversion to dry forest species and early seral species (Western larch, which is most prevalent right after stand replacement severity fire) and by characterizing most of the forest in the project area as uncharacteristically dense to rationalize planned logging. The Forest Service use of the Historic Range of Variability has recently drawn greater scientific rebuttal, such as by Forest Service scientists from the Pacific Northwest Research Station and by other independent scientists. See scientific controversy over the Forest Service's use of HRV in the book Smokescreen by Chad T. Hanson, a research ecologist—on pages 57-58, 59-60, and 121-122. The Smokescreen book includes full scientific study citations supporting assertions in an appendix in the back of the book. The EA fails to disclose this scientific controversy.

This is an example of using Historic Range of Variability concepts inaccurately: “Managing landscape with planned treatments toward the range of variation is intended to result in a more resilient composition, structure, density, and fuel loading. A natural range of variation from the watershed processes of precipitation capture, storage and runoff, and associated hillslope, along with channel processes of erosion and deposition are also expected to represent the natural range of variability for those processes.” (EA p. 53, 2nd to last par.) Since when does the Historic Range of Variability concept encompass an HRV for watershed processes, as listed above? Where is the science determining a historic range of variability for “precipitation capture, storage and runoff, and associated hillslope, along with channel processes of erosion and deposition”?

All of these hydrologic processes would be extremely difficult or impossible to determine an HRV from a required baseline of pre-European colonization, as there is likely little or no data on these watershed process parameters for that time period. Further, if there is any guidance as to a historic reference for “a more resilient composition, structure, density, and fuel loading” it should be never logged forest, which comprises 87% of the Tiger Mill project area, along with 47% of the project having Multi-strata with large trees old growth forest, which should be within the historic range for the moist mixed conifer forest, which comprises 60% of the Tiger Mill project area. It would be hard to argue that a strong institutional bias toward management of the forest (as quoted above) is a more accurate portrayal of historic forest conditions than never logged forest and high elevation moist mixed conifer old growth forest that has never been logged.

In our experience while field surveying proposed sale units in the Tiger Mill project area for about a week in 2023 and more than a week in 2024, we found the never logged and moist mixed conifer forest to be lush, healthy, variable density, with high moisture retention, complex old growth structure, and not many dense thickets except for alder groves and yew trees in openings and more prolific conifer regeneration in RHCA's co-existing with riparian hardwoods. There was a lot of wildlife sign and sightings and good plant diversity in the never logged forest areas and more diversity in the old growth forest, which tended to have old growth characteristic open understory. There were no significant insect epidemics evident in the never logged forest although the forest had good levels of snags and logs. In general, the never logged forest and most of the moist mixed conifer forest appeared to have “a more resilient composition, structure, density,” and apparently natural “fuel loading” biomass levels, given the inherent high moisture retention and forest productivity. Thus, we don't believe that the never logged forest and the majority of the moist mixed conifer forest don't need any management to achieve the stated goal of more resilient composition, structure, and density. Down wood levels appeared to be normal

for moist mixed conifer forest. See our field survey sheets and associated photos showing these conditions. Subjectively, the Tiger Mill never logged and moist mixed conifer forest is outstandingly beautiful.

Remedy: Correct the misuse of the historic range of variability concept through considering updated science critiquing the Forest Service use of HRV, which is often based on old photographs after logging of the forest by colonists and surveys done in only low elevation open, dry Ponderosa pine forest. This correction should also be based on evidence on the ground for the Tiger-Mill project area's historic greater forest density in the high elevation, moist mixed conifer forest through the evidence of old growth fir and spruce structure (old growth live, snags, and logs). This detailed in-depth analysis to correct the accuracy of the Forest Service HRV narrative used to justify the timber sale requires the preparation of an Environmental Impact Statement.

BMBP raised the issue of scientific controversy of using HRV throughout its scoping comments, specifically at Exhibit A, pages 7-8, 14-15.

c. Inaccurate Use of the Science and not disclosing scientific methodology: hydrology and fisheries

Re: EA pg 51-57 - What “assumed background levels” and other assumptions informed the Water Erosion Prediction Project? Did the data postulate light commercial thinning versus a high severity fire? The Tiger sale logging is not just commercial thinning, as it includes much heavier logging up to clearcuts. Logging, roading, prescribed burning, and biomass reduction all increase erosion and sedimentation, so it is hard to accept the WEPP model conclusion that wildfire would produce more short and long-term sedimentation rates, since the timber sale would span up to 30 years of erosion and soil displacement from proposed management actions over a large area encompassing all or part of ten subwatersheds, over more than 30,000 acres. How could the WEPP model calculate that a wildfire would cause more sedimentation without knowing the size and intensity of the next future wildfire and when and where it would occur, compared to the immediate and definite character of the proposed timber sale?

What assumptions and evidence from field studies are used to inform the WEPP Cloud model? It seems very unlikely that pre- and post-management wildfire burn severity effects on water and sediment yields for the major drainages of the Tiger Mill sale area could be predicted, given unprecedented climate change-driven wildfires.

Because the WEPP modeling data was not included in the Tiger-Mill Scoping Notice of Proposed Action, this objection represents the first opportunity BMBP has had to comment on this new information.

Re: Table 22 and Graph 5 on EA p. 55:

How would a model possibly be accurate for wildfire soil burn severity before and after planned logging, road building, biomass reduction, and prescribed fire? How can entire watersheds be characterized as a whole for determining burn severity when there is so much variation in slope aspects, elevations, moisture regimes, forest types, past logging and roading effects, and topography, as well as soil types, tree sizes, tree species composition, etc.? How can wildfire soil burn severity be modeled when there are so many real world variables determining burn severity? These variables include the time of day or night of burning, ambient temperature,

existing dryness of forest conditions, time of year, slope aspect, topography, precipitation occurrence, drought conditions, etc.?

From all those intrinsic variables that can't be predicted in advance, how can resulting water and sediment yields be determined? This seems like pseudo-science, with no studies cited, no authors identified, and no field evidence disclosed to support these findings. Table 22 and Graph 5 may represent inaccurate use of the science, as there is no disclosure of the methodology and assumptions used, no citations for science studies supporting these findings, and no detailed analysis in the EA to explain how these figures were derived.

Given the past and recent landslides in the Tiger Mill project area and the acknowledged difficulty in determining when the next mass soil movement or landslides may occur, and with increasing unpredictability for storm severity under climate change, how can water and sediment yields be determined in advance for pre-or post-management conditions?

In 33 years of National Forest monitoring, I have never seen such speculative models predicting pre-management versus post-management soil burn severity, water yield, and sediment yield for whole watersheds.

Fire regimes and fire condition classes have been refuted as not accurate by scientists, yet the Forest Service does not disclose or consider this scientific controversy re: Table 23, EA p. 56. Baker et al. (2023) (Exhibit W).

A model is unlikely to reliably portray the effectiveness of “fuel” reduction management, including logging and biomass reduction “to reduce the short- and long-term effects of high severity wildfires” as biomass levels do not drive fire severity effects as much as weather conditions.

Further, high elevation moist forests are adapted to, and evolved with, high severity wildfire, which is a natural and ecologically beneficial disturbance, whereas logging and biomass reduction produce unnatural effects with which the forest did not evolve. Never logged forest is the most resilient, having adapted to respond to high severity fire as a rejuvenation effect, creating post-fire habitat niches.

Roads and skid trails tend to funnel sediment downhill toward and into streams as an unnatural increase in channelization which is also aggravated by reduction of biomass from pre-fire management.

Because these charts were not included in the Scoping Notice of Proposed Action, nor was there any discussion of water yield or soil burn severity, this objection represents the first opportunity BMBP has had to raise these issues.

VI. Inadequate NEPA environmental analysis

a. Inadequate Wildlife analysis

Usually there is at least more detailed analysis disclosed in an EA to support effects conclusions. The huge gaps in the EA of pertinent information indicate that this is a rushed process for a very ecologically destructive timber sale that has been flagged by the National Marine Fisheries Service since their Biological Evaluation analysis found Threatened-listed Bull trout to be at risk of federal up-listing and potential loss of viability. The rushed public process

obscures the potential significant negative impacts of the Tiger-Mill timber sale, with most detailed, in-depth analysis either hidden away in separate Specialist reports or it is non-existent.

The Regional Sensitive wildlife species are not even listed in the EA, let alone analyzed in depth to determine potential negative environmental impacts to these declining species due to proposed logging, roading, and other proposed management actions. This is inadequate analysis that was also not included in the scanty scoping letter. (EA p. 61 under “Regional Sensitive Species”)

There is no EA specific species detailed discussion as to how these Sensitive and ESA listed species could be negatively affected by proposed logging, roading, biomass reduction, and/or prescribed burning. This is grossly inadequate analysis in the EA, which should have been an EIS.

Strangely, Photo 8 of a Rocky Mountain Tailed frog isn’t accompanied by analysis clarifying if it exists in the Tiger-Mill sale area, whether it is Sensitive or Threatened-listed, and how the proposed management actions would affect the Rocky Mountain Tailed frog.

Remedy: The Forest Service needs to allow the public to see detailed, in-depth analysis in an Environmental Impact Statement with a 45 day EIS comment period and a later 45 day objection period based on the Record of Decision and the Final EIS.

Endangered Species Act violations not addressed in the lacking wildlife analysis:

We are concerned by the effects of log hauling extending to the Mill Creek bridge on the 65 road along the lower mile of the 65 road and on the 64 road approximately one mile upstream of the paved section of the road ending at the Ski Bluewood entrance, which includes fine sediment likely entering critical fish habitat in both areas. The 65 road section overlaps the RHCA boundary, but road 64 is not clarified as to its proximity or overlap with the Touchet River system. We are also greatly concerned by all the other threats to the full range of present and potential TESC species from proposed management actions that are not disclosed or analyzed in the EA. These potential significant negative impacts to TESC species include steep slope logging; logging in never logged forest and old growth forest habitat; log hauling on many other sections of roads (also not paved) within and close to RHCAs; logging depleting moisture retention in moist mixed conifer forest; about 10 miles of “temporary” road building; loss of shading on steep slopes over creeks; biomass removal; and re-opening closed roads, potentially including within RHCAs. (See EA p. 61, under “ESA Listed Species”)

The very limited “Direct and Indirect Effects” section for Alternatives A and B fails to acknowledge the potential impacts of logging, log hauling, “temporary” road building, closed road re-opening, and prescribed burning to Regional Sensitive wildlife species, Threatened-listed Bull trout, and Threatened Mid-Columbia Steelhead trout. This section only considers briefly road/stream crossings, high impact road maintenance, and water withdrawal. There is no detailed effects analysis for other potential negative effects that could cause inconsistency with the Forest Plan and PACFISH requirements for fish populations and riparian ecosystem processes, structure, and functions. Notably the Fisheries Specialist analysis and Biological Evaluation are excluded from the EA so that the public may not be aware of significant potential negative effects to fish, riparian ecosystems, and water quality. Most public commenters would expect detailed analysis in the EA and would not be prepared to find the out-sourced specialist

reports and Biological Evaluations. This effectively makes it harder for the public to consider any more detailed analysis that was kept out of the EA..

Notably the Direct and Indirect Effects section does not promise that high quality riparian and in-stream habitat would remain abundant, as would be the case with No Action—i.e. with no significant new management such as logging.

The EA claims that: “None of the potential effects of timber, fire/fuels management and road activities under either alternative would be expected to delay progress towards PACFISH Riparian Management Objectives. Just saying that: “The Tiger -Mill project is consistent with LRMP [the Forest Plan] and PACFISH requirements for fisheries resources” is not sufficient, as there is no disclosure in the EA as to how these determinations were reached, with no evidence presented in the EA to justify these conclusions. (EA p. 62, par. 2)

In general, the EA fails to disclose any detailed analysis that might indicate or substantiate significant negative impacts. Negative significant impacts are indicated and plausible based on the unusually high percentages of very steep slopes, never logged forest, and very moist forest conditions that would be logged, as well as logging in Inventoried Roadless Area(s) and the Mill Creek Municipal Watershed.

The location of most of the road maintenance being conducted on the ridgetop road system would not guarantee great reduction of sediment transport to fish-bearing and perennial streams, as the sale units usually extend to lower roads just above stream drainages, with planned logging all the way down to the lower road or the stream channel itself. (EA p. 62, 1st bullet point).

The Tiger Mill sale is under an outdated Forest Plan with no consideration of the flaws of only analyzing effects to Management Indicator species and only at the Forest scale. This is not an accurate assessment of species viability since cumulative effects to wildlife species’ viability from many similar timber sales management impacts across the Forest to these species are not considered. Using the Forest scale to determine species viability automatically minimizes the individual timber sales’ effects compared to the greater size of the Forest due to no detailed analysis combining the effects of all the management actions affecting Management Indicator species. This nullifies the NFMA intent to protect the viability of Management Indicator species.

The EA does not disclose specifically which Sensitive species are known to occur or have potentially suitable habitat and are presumed present within the Tiger-Mill project area (EA p. 71), what their specific habitat requirements are, and how proposed Tiger-Mill management actions would affect these “numerous Sensitive species” known to occur or have potential suitable habitat in the Tiger-Mill timber sale area.

The EA repeats a not entirely accurate over-used Forest Service rationale for logging: “Overall, those species that prefer dense closed forest conditions have seen increased habitat suitability within the project area over the last century because of fire suppression. Other species who favor open forest conditions, deciduous vegetation and floral resources have seen those habitat features decline in the absence of fire and other disturbance.” (EA p. 71, par. 3) Actually, the high elevation moist mixed conifer is naturally dense, mostly on ashy or loamy soil, with natural higher productivity due to higher amounts of precipitation, longer-lasting deeper snow pack, very high moisture retention and historic and current long fire intervals due to the

high moisture retention. It is debatable for the agency to assume that wildfire suppression gave rise to more dense closed forest conditions since there is plenty of evidence in the higher elevation moist mixed conifer of old growth Grand fir, Douglas fir, Englemann spruce, and Western larch---with old growth live, snags, logs, and big stumps of these species that naturally flourish in higher elevation moist mixed conifer conditions. Further, there is some existing single stratum moist mixed conifer in both never logged areas and commercial thinned stands with open understory already. “Species that prefer dense closed forest conditions” were naturally there historically and are naturally there currently. Wildlife species that require denser forest conditions and/or large trees and higher canopy are in more decline than most open forest-adapted species due to about a century of past heavy logging and more recent targeting of dense forest for logging.

Dry forest types could be non-commercially thinned and prescribed burned to open up the understory and reduce fire intensity right next to major access roads. The moist mixed conifer should be left alone for wildlife habitat, water retention, and carbon sequestration and storage. Most of the access roads already have roadside “fuel” breaks, as well as wide roads.

As the Forest Service is probably aware, the Tiger Mill area is already excellent elk habitat with good security cover and many lush meadows and openings providing forage, as well as many water sources.

Re: Table 28 on EA p. 73, the Umatilla Forest Plan is terribly outdated, including by low satisfactory cover requirements and no apparent inclusion of updated science that should have been considered in the EA. Updated science for elk habitat is usually incorporated for elk habitat effects analysis on the Malheur National Forest and on other National Forests, which includes findings that elk avoid roads, by also avoiding about 300 feet of habitat on each side of the roads. Other Blue Mountains National Forest staff also plan for preserving large core habitat blocks for elk security, setting these areas aside from logging and road re-opening or road construction to proactively support elk habitat needs when planning timber sales.

Re: Table 28, the EA does not even identify each Management Area with its name, purpose, and associated standards and guidelines, except for identifying “C4” as Winter Range. What are the other Management Areas in the table meant to protect? What are the standards, guidelines, and goals for each Management Area? Would these be met? This is an unusual lack of very basic information even for an Environmental Assessment, which usually includes the Management Areas’ purpose, goals, standards, and guidelines, with analysis describing how these would be met regarding the effects of planned management actions. The EA is deficient in detailed in-depth analysis to inform the public, supporting the need for an EIS.

There is no real need to convert some of the cover stands to be re-classified as forage areas, which means they wouldn’t just be “thinned” but be virtually clearcut. There are already Dry forest types at lower elevations which could use beneficial non-commercial thinning and prescribed burning to create more forage openings, since most of those forest areas have already been heavily logged and distorted from natural conditions. The moist mixed conifer forest already has openings from previous fires and some moist mixed conifer sale units have already been high-graded and commercially thinned.

We support No Action in general and specifically for American marten, Pileated woodpecker and Northern Three-toed woodpecker habitat. See the description of the benign

effects of no action for these three Management Indicator species in the last paragraph on EA p. 71.

The Forest Service refuses to accept that the Tiger-Mill area is not at an “elevated risk” to uncharacteristic fire or insect outbreaks. Wildfires and insect outbreaks are natural disturbances that create openings and habitat niches for native wildlife and plant species that evolved with fire, insect outbreaks, tree diseases, and other natural disturbances. The Tiger-Mill area forest is an outstandingly productive, moisture-retaining forest that is functioning mostly naturally thanks to such a higher percentage of never logged forest than elsewhere across the Umatilla National Forest outside of Wilderness Areas. Logging and more road construction and re-opening would dry out a vital headwaters source of abundant water and significantly degrade the high quality wildlife habitat.

Under “Consideration of No Action”, the EA characterizes unmanaged conditions as: “Habitat for primary cavity excavators would remain well distributed in high abundance resulting in continued viability for this group” regarding snags and down wood for Primary Cavity Excavating woodpeckers. However, then the author offers strained and disingenuous arguments against the beneficial roles of naturally occurring disturbances to favor unnatural logging and other management, ignoring the strong scientific consensus that moist mixed conifer forest should not be prioritized for fire risk reduction management. (See the 1st par. of p. 72)

We are strongly opposed to logging in moist mixed conifer habitat, never logged forest, on steep slopes, and in undeveloped lands in general, including Inventoried Roadless Areas and Municipal watersheds, as these areas are the highest quality wildlife habitat in the Tiger-Mill project area, due to more pristine complex forest habitat structure, denser forest for density-associated wildlife species, and less human disturbance.

We oppose any “fuel” breaks along secondary or spur roads or more than 50 feet of shaded fuel breaks on each side of roads, which should only be along major access roads. These major access roads are already very wide and within substantially open conditions often on each side. We are also opposed to re-opening of closed roads and to any construction or re-opening of “temporary” roads. The Tiger-Mill project area already has far more roads than is good for wildlife that need security habitat. These wildlife species negatively affected by higher road densities include Rocky Mountain elk who avoid road traffic, losing about 300 feet of otherwise suitable habitat on either side of the roads. Endangered Gray wolves need road density to be only .9 miles per square miles of road or less to have good security habitat. Many bird species avoid road traffic, including owls. We saw most elk sign (tracks, scat, and beds) well away from roads.

Remedy: Drop all “temporary” road construction and re-opening of closed roads or “existing disturbance road re-opening. More roads should be closed and decommissioned, including very sketchy roads with narrow road beds, loose rocks, and above very steep slopes. These should only be used by ATVs, Mountain bikers, hikers, and people walking, such as for berry picking.

Remedy: While Alternative B is preferable to Alternative A, that is only a starting point for negotiations. There should be absolutely no logging in Inventoried Roadless Areas or the Municipal Watershed, based on the Roadless Area Conservation Rule and the protective designation for the Mill Creek Municipal Watershed to preserve water quality and abundance. Never logged forest is critical for saving declining Management Indicator species and TESC wildlife species from extreme climate change effects and the human-caused 6th Mass Extinction.

We are also very concerned about logging on steep slopes in most of the commercial sale units, since many of these sale units have also never been logged or were only lightly selectively logged in the past and since steep slope logging is more likely to harm downstream Threatened and Sensitive fish species and amphibians. We are also strongly opposed to logging in any of the moist mixed conifer, as this forest type retains more moisture, and provides much needed wildlife habitat adapted to cooler, moister conditions as wildlife species are forced to migrate or disperse to more suitable habitat under extreme climate change. Further, moist mixed conifer should not be a priority for fire risk reduction since that forest type evolved with, and are adapted to infrequent wildfire that is often at stand replacement severity. Wildfire at stand replacement severity provides habitat niches for wildlife and plants that evolved with fire. Infrequent fire creates a mosaic ranging from green forest patches to burned snag habitat and results in high levels of biodiversity comparable to old growth forest.

We are opposed to the Forest Service creating very open forest conditions—especially in the moist mixed conifer, which encompasses most of the sale units (about 60%). We oppose heavy logging to very low basal area retention and much less canopy closure, as this eliminates complex, denser forest structure with which many moist mixed conifer-associated wildlife species evolved. These wildlife species include Rocky Mountain elk, MIS Pileated woodpecker, MIS American marten, MIS Three-toed woodpecker, and many others, including Neotropical migratory songbirds that depend on multi-layered forest canopy for habitat.

We are opposed to commercial logging in active or suitable habitat for the MIS Pileated woodpecker, Three-toed woodpecker, and American marten (aka “Pacific” marten) habitat. The EA admits that: “Commercial thinning is proposed in pileated habitat, three-toed habitat, and marten habitat (Table 29). Direct effects from commercial harvest include reductions in tree density, live canopy, snags and down wood, and variable transition from multi-to single stratum. If any of these three species are present in thinning units, they may be displaced during treatment activities....Marten are less likely to use commercially thinned stands for foraging or reproduction due to increased energy demands and risk of predation, particularly where canopy closures are reduced below 50% (Bull et al. 2005).” (EA p. 74, 1st par.)

The Tiger-Mill sale area provides excellent Pileated woodpecker and American marten habitat, as well as our only recent sightings of Three-toed woodpecker in 2023 (photographed), a positive Three-toed woodpecker sighting near our camp when we field surveyed the TigerWebb proposed timber sale (which I thought is an IRA but is planned again for logging in the Tiger-Mill sale without EA disclosure of that area being an IRA), and possible other Northern Three-toed woodpecker sightings in 2024 field surveying.

The high quality habitat for these Management Indicator species is likely due to many ecologically intact forest areas that have never been logged (87% of the project area), mostly unlogged steep slope habitat (85% of the project area with steep slopes), an abundance of moist mixed conifer habitat (60% of the project area), and cold high elevation forest with older Lodgepole pine stands with large snags and logs for Three-toed woodpecker. We saw Pileated woodpecker foraging and occasionally Pileated nest holes in the moist mixed conifer old growth forest habitat (with “multi-strata with large trees” old growth habitat encompassing 47% of the project area.) There is also an abundance of less fragmented forest and abundant elevated large logs for marten winter foraging below snow and large snags for potential marten denning, as well

as our observations of potential marten burrows for nocturnal protection from predators—usually under root wads or the base of big old growth Grand firs.

Remedy: All the active or suitable habitat for these three Management Indicator species must be dropped from logging and prescribed burning, as both reduce the number of soft snags and logs for Pileated woodpecker foraging and reduces the abundance of down and elevated logs needed by American martens.

The National Forest Management Act requires the designation of Management Indicator species to ensure the viability of Management Indicator species for retaining suitable forest conditions for other wildlife species with similar habitat needs. Of these three MIS, Pileated woodpeckers are likely starting to decline due to the Forest Service targeting of denser forest and moist mixed conifer forest for logging over decades. American marten are now ranked “Vulnerable” in Oregon and the Three-toed woodpecker is in decline due largely to clearcutting of Lodgepole pine stands and not allowing them to grow into old growth Lodgepole pine stands with abundant large snags and logs.

We are concerned by proposed prescribed burning in 6,800 acres of Pileated woodpecker habitat, 6,100 acres of suitable marten habitat, and 350 acres of Three-toed woodpecker habitat. Prescribed burning would eliminate most large soft snags and logs—especially Grand fir snags and logs that are selected by Pileated woodpeckers for foraging, greatly reduce the abundance of large and elevated logs needed by marten for winter foraging under snow, and reduce large Lodgepole pine structure—live, snags and logs—needed by Three-toed woodpeckers and for marten habitat.

The Forest Service claims that: “Indirectly, trees that remain after thinning are expected to accelerate growth and be less susceptible to mortality.” (EA p. 74, last par.) It is disingenuous for the Forest Service to claim that remaining trees after logging would have time to grow large before the next timber sale, since the current Forest Service timber sale rotation is only about 30 years before logging the same area again. Logging causes tree mortality, not just fire.

Remedy re: protecting wildlife habitat: Non-commercial thinning by hand up to 9” dbh would be sufficient to reduce any existing high density stem exclusion conditions, along with prescribed fire used only in dry, lower elevation Ponderosa pine dominant or Ponderosa pine/Douglas fir co-dominant forest. It is the previously logged sale units that exhibit higher density and stem exclusion, not the never logged forest that comprises the majority of the sale units, and not the old growth moist mixed conifer. Notably, the never logged and only lightly thinned moist mixed conifer old growth has variable density and mostly open understory.

Because the Scoping Notice of Proposed Action is not intended to be a detailed analysis document, it did not include a full analysis of the Project’s potential impacts to wildlife. Therefore, the Final EA and this Objection to the Draft DN/FONSI was the first time BMBP was able to review the full extent of the Forest Service’s wildlife analysis. However, BMBP raised the issue of needing to fully analyze the Tiger-Mill Project’s impacts to sensitive species, MIS, and ESA-listed wildlife in its Scoping Comments, Exhibit A at 1.

b. Climate Effects Inadequate Analysis

The Climate “Summary” is extremely biased toward timber sales, with the conclusion that: “Alternative A and Alternative B would reduce risks of uncharacteristic fires and retain

forest features better suited to climate change and contribute to more stable forest carbon stocks.” (EA p. 84) Not only would alternatives A and B not reduce risk of uncharacteristic fire, but they would increase fire risk through commercial logging removal of the more fire-resistant mature trees, and would not retain “forest features better suited to climate change” as the mostly moist forest does not torch or sustain fire as readily as dry forest. Logging would greatly reduce moisture retention by removing forest canopy shading which helps to maintain cool, moist micro-climate conditions. Logging also removes the most fire resistant mature trees (and for hazard trees, also large trees) and would open stands, which increase wind speeds, intensifying fires and spreading the fire more rapidly. The aftermath of logging also contributes to increased fire risk in the form of highly flammable slash left behind and often not burned or sold as biomass for up to three fire seasons or more. Logging of the mid-story or overstory results in regeneration of dense, very flammable small trees. The science that documents all this is not being disclosed or discussed in the EA analysis.

It is also well established in the science that high elevation moist mixed conifer forest burns infrequently in up to 100-250 year fire return intervals. The moist mixed conifer tree species do not have to be as fire resilient as dry forest tree species such as Ponderosa pine, probably since the fires do not occur as frequently. That said, large and/or old trees of most species develop more fire resistant bark and higher live crowns that increase their resistance to fire. In the moist mixed conifer forest Tiger-Mill sale units (60 % of the Tiger-Mill project area) we observed long lightning strike scars on Englemann spruces that survived the direct strikes because it was so wet. It is overly simplistic to think that only the most fire resistant species would survive and thrive under climate change. Planned conversion of native tree species diversity to only a few tree species and to log them later has a strong economic incentive. Not incidentally, these selected tree species are also the timber industry preferred tree species. The basis of tree species conversion is in outdated science that supports growing trees like a crop and “harvesting” them rather than retaining natural forest resiliency.

Commercial logging removes most of the mature trees (and likely some large hazard trees) that are the most fire-resistant and sequester and store the most carbon, so planned commercial logging would not “contribute to more stable carbon stocks” as claimed in the EA. Thus the climate and forest carbon analysis is inconsistent with the implied climate and forest carbon goals to “reduce risks of uncharacteristic fires and retain forest features better suited to climate change and contribute to more stable forest carbon stocks.” For instance, retaining high moisture levels in the forest by not removing shading and cooling forest canopy and not drying out the understory through ground disturbance and plant cover loss would better “retain forest features better suited to [reducing] climate change and contribute to more stable forest carbon” as a natural forest carbon sink.

The following claim in the EA regarding forest carbon is unsupported by any science-based analysis: “This project would temper the effects of climate change, most notably reducing adverse air quality conditions from large wildland fires and water quality issues from flooding and sedimentation.” (EA p. 85, last par. under “Forest Carbon”)

Actually, commercial size logging does not generally reduce fire risk—especially when it is a high moisture retaining forest that is being logged. Reduced moisture retention occurs through loss of mature tree shading, which maintains cool, moist micro-climate conditions. More open stands from logging have increased sun exposure for drying and cause increased wind

speeds through the stands that intensify and spread fire. Then after the logging, there is left behind highly flammable slash and dense regeneration of small, highly flammable seedlings and saplings, instead of more fire-resistant mature trees that were removed by logging. Regarding the inferred reduction of sedimentation from presumed lower fire risk, steep slope logging would likely cause much sediment delivery downhill, causing much excess fine sediment in streams.

Carbon should not be removed from mature and Late Old Structure (or old growth) forest, as large and old trees sequester and store carbon potentially for centuries, while most timber products only store carbon for ten years or less. The Climate and Forest Carbon analysis ignores the fact that the biggest source of Carbon Dioxide emissions that cause climate change in Oregon are from commercial logging. Thus commercial logging plays a huge role in fueling global warming effects, including more intense fires.

Reducing forest basal area by 58% as planned is not “thinning” but heavy logging removal of most of the more fire-resistant mature trees, greatly opening up the forest to more sun exposure drying and faster wind speeds through the stands that intensify and spread fire. (See EA p. 85, last par.)

Remedy: The EA analysis regarding climate change and forest carbon is very misleading and did not disclose and consider updated science that would contradict the “fear of fire” Forest Service public relations bias that dates back to Smokey the Bear. To resolve this objection to inadequate Climate change and forest carbon analysis the Forest Service needs to prepare an Environmental Impact Statement with detailed, in-depth climate change and forest carbon analysis that is based on updated science and a broader range of the science. This analysis should include a comprehensive carbon budget for the Tiger-Mill timber sale that includes proposed management Carbon dioxide emissions and carbon storage loss from post-logging management actions such as biomass reduction and prescribed fire.

c. Inadequate botany analysis

When was the last Sensitive plant survey in the Tiger-Mill project area? How thorough was it and how much of the Tiger-Mill area was covered? In what time frame and season did plant surveys occur? What are the sizes of Sensitive plant populations in the Tiger-Mill project area? What are the management threats to each Sensitive plant species? None of this information was provided in the EA botany analysis.

This is how plant species get rare enough to be up-listed or extirpated—by cumulative effects to plant populations, reducing their individuals and/or their habitat—by repeated timber sale ground disturbance, soil moisture reduction, biomass reduction, removal of shading trees giving way to hotter, drier conditions, and heavy equipment crushing the plants not known to exist. The EA states that “undiscovered sensitive plants may be missed, and would be the most vulnerable to detrimental impacts.” (EA p. 67)

The EA acknowledges that: “Proposed actions, including commercial and non-commercial thinning, and prescribed fire, could affect the viability of sensitive botanical species.” (EA p. 65, 1st par.)

The lush diverse understory plants in the never logged and moist mixed conifer forest sale units likely conceal Sensitive and unusual plants due to the high shrub layer. This lush biodiversity is also indicated by high insect diversity, including an unusual big spider and a large

colorful caterpillar, both of which I'd never seen before over 32 prior summers of field surveying.

Partial Remedy: Prescribed burning should not be implemented during the Spring reproductive season—especially to protect the reproduction of Sensitive plants, as well as to protect wildlife reproduction—especially for birds in nests and animals in burrows. Burning before the reproductive season in the Spring while there is still some snow melting has been used successfully by the Heppner Ranger District of the Umatilla National Forest. Avoiding the reproductive season also helps the ecosystem retain moisture for the summer dry season. Spring is not a typically natural time for wildfires to occur, which makes that timing result in more unnatural negative effects.

The Tiger-Mill timber sale area has high potential for suitable habitat for moisture-loving TESC plant species. The EA acknowledges that: “It is likely that historical activities, particularly grazing, and timber harvest, road construction, and fire suppression activities have destroyed populations, and altered habitats for sensitive plants.” (EA p. 68 under “Cumulative Effects”)

Partial Remedy: We didn't see any need to non-commercially thin the RHCAs except for heavily logged areas that were mostly clearcut and converted to single species plantations of young, dense trees. However, it was not clear on the ground if these plantations overlapped the RHCAs. Drop the Alternative A non-commercial thinning in RHCAs.

Partial Remedy: We also oppose any construction of “temporary” roads and all planned logging in never logged forest, old growth forest, moist mixed conifer forest, and on steep slopes >35%--all of which could threaten the viability of rare and Sensitive plants as these areas may have the most biodiversity of both plants and wildlife. These changes to proposed management would help protect undiscovered TESC plants, wildlife diversity, and water retention, as well as protecting habitat for TESC and MIS aquatic and riparian-associated species by greatly reducing excess sediment delivery to the stream systems.

The Tiger-Mill Project's Scoping Notice of Proposed Action did not provide a botany analysis. Therefore this objection represents the first opportunity BMBP has had to review this new information and raise issue with this analysis.

d. Inadequate Heritage Analysis

Where is the Heritage analysis? Effects to traditional Indigenous treaty rights, cultural sites, artifacts, and customary uses should have been analyzed in depth in the EA rather than just incorporated by reference.

The Tiger-Mill Project's Scoping Notice of Proposed Action did not provide a heritage analysis. Therefore, this objection represents the first opportunity BMBP has had to review this new information and raise issue with this analysis.

e. Inadequate Cumulative Effects Analysis

i. Improper geographic scope for cumulative effects analyses

The Tiger-Mill Final EA improperly limited the geographic scope of its cumulative effects analyses for numerous forest resources, in violation of NEPA and CEQ guidance on performing a cumulative effects analysis. *See LOWD/BMBP v. Connaughton*, 2014 WL 6977611

at 6-11. Because there was no cumulative effects analysis provided in the Tiger-Mill Scoping Notice of Proposed Action,

The effects analysis area for the silvicultural impacts of the Tiger-Mill Project is “37,792 acres and encompasses the Tiger-Mill project area at the same acreage.” EA at 15. The Forest Service attempted to justify this geographic scope as “appropriate and preferable for a Range of Variation (RV) analysis.” *Id.* While that may or may not be true, limiting the cumulative effects analysis of the prescribed logging of the Tiger-Mill Project is drastically inappropriate due to the approval of large tree logging under Scenario B of the Eastside Screens. Large trees are rare across eastern Oregon, as recognized both by independent scientists (*see* Exhibit U) and by Forest Service staff and scientists as well. *See* 2015 USFS Regional Guidance (Exhibit V). In the context of the severe dearth of large trees present across eastern Oregon and southeastern Washington forests, the decision to limit the effects analysis for silvicultural impacts (which doesn’t even address the loss of large trees) to just the Tiger-Mill project is unjustified and unacceptable

The geographic scope for the soils effects analysis is severely and arbitrarily limited to “the proposed treatment area, or area where soil disturbance occurs by ground-based mechanical actions.” EA at 39. Under this scope effects analysis—limited to just ground-based mechanical actions—it is unclear whether the detrimental effects of prescribed fire have been analyzed on soil at all. Further, due to this limitation the Forest Service avoids having to analyze the detrimental soil conditions across the Forest as a whole. It’s easy to get lost viewing the Umatilla National Forest through the lens of individual projects, thereby forgetting that the forest is an interconnected ecosystem where the cumulative effects of individual projects across the forest can combine to produce vastly detrimental impacts to soil productivity. The Forest Service’s decision to limit the geographic scope of its soils effects analysis—including its cumulative effects analysis—is inappropriate and a violation of NEPA.

The geographic scale for the fisheries effects analysis varies by species, which Regionally Sensitive Species analyzed at the project scale, Management Indicator Species at the forest scale, and ESA-listed species at the “action area scale.” EA at 59-60. Due to the interconnected nature of hydrology as well as the mobile nature of wildlife, the geographic scope of the effects of proposed actions on aquatic species—many of which exist within both the Tiger-Mill Project area and throughout the Umatilla National Forest—must necessarily capture that interconnected nature. The Forest Service has failed to do this with its selected geographic scope of analyses for fisheries. Of particular concern is the limitation of the effects to ESA-listed species to just the action area. While such a scope of analysis may assuage concerns that those effects may be minimized as compared to more expansive scale, it utterly fails to capture any adverse effects that may flow from management activities within the action area to other areas where ESA-listed species may exist. This arbitrary cumulative effects geographic scope violates NEPA.

The geographic scale for the Wildlife effects analysis differs based on species and habitat, with elk habitat being analyzed by “forest plan management area,” MIS species at the forest scale, and the effects to Old Forest distribution at the project scale, “with additional consideration for connectivity to adjacent old forest beyond the project.” EA at 70. The Old Forest distribution geographic scale is particularly problematic due to the general dearth of old forest and large tree structure across eastside forests. *See* Exhibit U. As such, it is vitally important to the continued viability of the numerous native wildlife species that rely upon old

forest structure that the cumulative effects to loss of old forest habitat be analyzed at the scale of the Umatilla National Forest as a whole. As such, the decision to limit the geographic scope of the analysis to anything less than Umatilla National Forest violates NEPA.

Remedy: Withdraw the Final EA and Draft DN/FONSI and perform a new cumulative effects analysis for the resources discussed above—that includes an analysis of the loss of large trees under both silviculture and wildlife analyses—at the appropriate geographic scope.

ii. Climate change cumulative effects analysis

It is stunning that this would be acceptable to the Forest Service that: “Primary treatments would result in initial removal of, at most 38% of the carbon stored.” (EA p. 85, last par. underlining emphasis ours.) This means that 38% of the carbon stored would be lost to commercial logging, as initial removal of carbon, with an undisclosed amount of further carbon loss from biomass reduction, roads re-opened or built, and prescribed burning. This does not represent a full carbon storage versus loss analysis, with no complete carbon budget disclosed. Then this carbon loss is scaled up to the Forest scale to minimize the loss of total carbon by representing this one timber sale’s carbon loss as 0.34% of the total carbon stored in the Umatilla National Forest based on primary “treatment” (logging) areas at 0.9% of the National Forest—but without considering all the other timber sales across the Forest to show the total carbon loss from cumulative timber sale carbon storage reduction (as well as lost carbon sequestration) from live trees that were removed by logging. This is deceptive and inadequate cumulative effects analysis for timber sales’ contribution to lost carbon sequestration and reduction of carbon storage.

This is an extremely timber industry-biased climate change analysis that does not represent the full range of best available science and fails to disclose a broader consensus of scientists that finds unlogged forest to store far more carbon than logged stands.

We are strongly opposed to tree species conversion to promote Ponderosa pine and Western larch outside of dry forest types regarding Ponderosa pine and outside of early seral post-fire conditions in moist or cold forest types regarding Western larch. . The Forest Service should not be sacrificing tree species diversity in their natural roles and the related plant and wildlife diversity associated with diverse tree species composition.

It’s fool hardy to remove high moisture-adapted tree species that retain moisture on the landscape through denser forest cover, multi-layered canopy shading, and associated higher abundance of snags and down wood. All of these moist mixed conifer attributes play a critical role in retaining headwater flows to downstream creeks and rivers, supporting Threatened-listed and Sensitive fish habitat and providing abundant high quality water supply to downstream communities.

Logging moist mixed conifer does not “promote stands with species composition better adapted to future climate conditions as well as increases in wildfire activity associated with climate change.” (See EA p. 86, last full par.) Grand fir, for instance, has the unique ability to survive after losing all of its needles (as with a spruce budworm epidemic or a drought) and can have full green crowns on the same live trees after just one wet winter. This is based on a Forest Service study and we witnessed this effect on the Heppner District of the Umatilla National Forest with the Flat Iron sale, probably in the spring of 1993 or 1994.

There is no certainty that alternatives A and B would “reduce the risk of wildfires” rather than increasing wildfire intensity and expansion. This is a high elevation, mostly moist forest with expansive “fuel” breaks all around the timber sale area, between sale units, and with openings within sale units, including wet alder groves and Yew tree thickets. There is no supporting analysis presented to justify the conclusion that logging would somehow “allow the forest and nearby communities to adapt to climate change” when commercial logging would increase the risk of intense wildfire. The closest communities are miles away from the Tiger-Mill timber sale area, with huge barren slopes with hardly any trees between the timber sale area and the communities in Mill Creek and Walla Walla, where there is higher risk of fire from much higher ambient temperatures and much drier conditions than in the Tiger-Mill sale area.

Notably, the “Effects Conclusion” for climate change does not address long-term carbon sequestration and carbon storage over potentially centuries from forest live trees allowed to become large and old, and continuing carbon storage in the form of snags and logs. The climate and forest carbon analysis also fails to put this in the larger context of international cumulative contributions to global warming and the current findings that without meeting Greenhouse gas emissions reduction targets within the next six years, and without preserving and restoring intact forest and ocean carbon sinks, we are now facing a 3.1-degree Celsius global temperature increase by the end of the century, which could render the Earth uninhabitable for humans or at least end organized human civilization. Scientists have predicted that there could be extinctions of 10-50% of all species on Earth, which would unravel the interconnected webs of ecosystems, causing the break-down of ecosystem processes and functions. The larger global perspective is necessary for agencies to take extreme climate change seriously and act to reduce emissions and maximize carbon storage. The Forest Service could play a critical role by stopping logging contributing to CO₂ emissions and reduced carbon sequestration and storage, instead allowing the forest to grow large and old trees to increase the forest’s natural carbon sink potential by not implementing more timber sales, including the Tiger Mill timber sale.

iii. Inadequate Inventoried Roadless Area cumulative effects analysis

It requires a lack of dedicated imagination to simply conclude that there are: “No cumulative effects to IRA characteristics are foreseen or anticipated by this undertaking.” (EA p. 91)

For instance, logging on steep slopes in the two IRAs would likely displace excess fine sediment into downhill streams, which would be increased by logging and also by planned logging within the RHCA buffers. There could be cumulative effects to Threatened Bull trout and/or Threatened Mid-Columbia Steelhead trout and potential Sensitive frog species, and potential salamander species or Sensitive mussel species, which could include overlapping logging, non-commercial thinning, and prescribed burning causes of negative effects. Such cumulative effects could lead to species up-listing, their extirpation locally, and to their eventual extinction in combination with other timber sale effects.

Another example could be cumulative effects to Endangered Gray wolves, including increased human access, loss of hiding cover for prey species from logging, increased poaching of deer, and dispersal due to human disturbance into more heavily roaded areas, leading to more mortality from road kill of wolves.

Inadequate cumulative effects analysis for Management Indicator species:

This is an inadequate cumulative effects analysis for Management Indicator species in the EA, as it doesn't specifically describe the combined effects of logging, roading, and burning to Management Indicator species and does not disclose the currently existing numbers of reproductive pairs of Pileated woodpeckers, Three-toed woodpeckers, and American martens to determine how many reproductive pairs would be lost, and how many reproductive pairs could be using the total acreage of suitable or actively occupied habitat for these Management Indicator species. We are used to seeing that level of MIS viability detailed analysis on other Blue Mountains National Forests. There is also no disclosure of recent viability findings for Management Indicator species for the Blue Mountains National Forests, which have been considered in recent NEPA documents for proposed timber sales in the Blue Mountains Forests. (The citation for these findings may be for a Wisdom et al. study in the 2000s.)

Partial remedy: The Forest Service needs to stop minimizing the impacts to Management Indicator species by using the Forest scale of analysis without analyzing negative effects from other timber sales and similar management actions cumulatively across the entire Forest. The cumulative effects analysis would need to be corrected in an Environmental Impact Statement to reflect the effects to Management Indicator species and the acres lost of their suitable and active habitat due to all the timber sales and other negative management effects across the entire National Forest so as to more accurately determine their current status of viability on the Forest.

The commercial "thinning" planned for Alternative A is significant as logging of 18% of the area, which is mostly in never logged forest that is irreplaceable, mostly in moist mixed conifer forest that is critical for maximizing water retention to reduce the effects of climate change-driven intensified wildfire, prolonged droughts, and unprecedented heat waves. Further, it is not just commercial "thinning" that is planned, but much more logging loss of forest cover and forest structure removal through planned Seed Tree with Reserves clearcutting, "Improvement" cuts, and "Intermediate" logging. Wildlife will desperately need more forest cover refugia to support migrating and dispersing species, provide abundant high quality water for fish and other aquatic and riparian species, and to provide abundant, high quality water and cooler forest for people to survive droughts and heat waves. (See EA p.76, 1st par.)

Large live trees and snags would inevitably be removed as hazard trees in commercial logging sale units and along roads. Most mature trees would be removed under the more intensive tree removal of seed tree clearcuts, "Improvement Cuts" and "Intermediate" logging. All of these logging methods would probably reduce canopy closure too much for the logged areas to still be suitable habitat for Pileated woodpeckers, who require at least 60% canopy closure for nesting and at least 40% canopy closure for foraging. Such low canopy closure and forest structure removal (such as snags and logs) would also be likely to render those logged areas unsuitable for marten and Three-toed woodpecker habitat. Marten avoid crossing clearcuts and other large openings due to the threat of predation.

We are opposed to reduction of down wood and snags needed by these three Management Indicator species within 300 feet of "potential control lines" totaling 1,727 acres, which would further reduce suitable foraging habitat for Pileated woodpeckers, Three-toed woodpeckers, and American marten. Since climate change-driven fires have jumped the Columbia River (the Eagle Creek Fire) and the McKenzie River, 300 foot "fuel" breaks are not likely to stop climate-change driven wildfires and may not be effective at all by the time the next fire occurs in the Tiger-Mill project area.

Remedy: Drop all commercial logging, snag removal, and prescribed burning in suitable or active habitat for Pileated woodpecker, Three-toed woodpecker, and American marten. Change all “fuel” breaks along major access roads to no commercial logging, and only non-commercial thinning up to 9” dbh, with pruning of lower conifer branches adjacent to the roads if needed, and within only 50 feet on each side of the roads, and with no prescribed fire in the moist mixed conifer forest type and never logged forest, which should help retain more Management Indicator species habitat—or just drop the “fuel” breaks altogether.

iv. Silviculture cumulative effects analysis

There is a significant problem with subsuming all past actions defined as “land disturbance projects fully implemented under completed NEPA decisions” “as a proxy for the impacts of past actions.” (EA p. 14). This device makes it easier not to single out definitive cause and effect relationships of management practices leading to negative impacts through analysis. The analysis instead lumps all the past management actions together, which can be used to conceal or avoid the management practice causation of specific negative impacts, such as management contributing to wildlife species decline, cumulative loss of Sensitive and rare plant species and management causes of cumulative degradation of the forest ecosystem processes and functions. Management actions that commonly contribute to long-term cumulative negative ecological effects include commercial logging and road construction and use from specific timber sales overlapping, adjacent to, or cumulative with, past timber sales or the next proposed timber sale. If past management actions were not buried in “existing conditions”, there would probably be more managers engaging in adaptive management to prevent making the same destructive mistakes (e.g. logging practices) over and over again, with little or no research into other ways to manage forests differently.

There was no cumulative effects analysis presented in the Tiger-Mill Project’s Scoping Notice of Proposed Action. Therefore, this represents the first opportunity BMBP has had to respond to this new information. However, BMBP did raise issues related to past logging that should be included in a cumulative effects analysis in its scoping comments, Exhibit A, at 9, 18, 33, and 35.

v. Hydrology cumulative effects analysis

What data and methodology was used to determine that there would be such a dramatic reduction of sediment tons per year from 100 tons per year in the existing condition down to only 3.5 to 9.9 tons per year just with road maintenance? What is neglected here is the failure to estimate the tons of sediment that would be produced by all the logging and road work planned. There is no quantified analysis in the EA to determine the acreage where sedimentation from sale units would be most likely to introduce excess sediment into streams and rivers from adjacent logging, roading, and/or biomass reduction. Much sediment would accumulate from upslope logging on the many very steep slopes directly above stream and river drainages. The existing condition is probably far less sedimentation than that which would result by all the planned steep slope logging, RHCA-adjacent biomass removal, and road work, and the scale of ground disturbance in general. This is a deceptive analysis by not calculating the sediment loading from all these proposed management actions.

The hydrology analysis seems to contradict itself with earlier summaries of negative impacts compared to later unsupported claims, such as “there would be no direct or indirect

effect to water yield or peak flows from these actions under this alternative” which would be hard to demonstrate for so many sources of effects to water yield and peak flows.

There is no analysis disclosed in the EA that explains and supports why such broad claims of no effects are asserted on EA p. 53 regarding effects to RHCAs such as: “No adverse changes to channel condition from silvicultural treatments are predicted because water yield and peak flow would not be affected, Morphological stream channel changes which could affect stream temperature would not occur, Stream channel morphology and streambank stability would not measurably change from the existing condition”. (EA p. 53 bullet points re: RHCAs). There could be adverse changes to channel conditions from logging even when water yield and peak flows are not affected overall. There is no guarantee that water temperature increases would not occur from the broader drainage drying out from logging and from upslope tall trees removed that shaded the stream or river at certain times of day, such as late afternoon. Stream channel morphology and streambank stability could change from landslides and debris flows.

There was no cumulative effects analysis presented in the Tiger-Mill Project’s Scoping Notice of Proposed Action. Therefore, this represents the first opportunity BMBP has had to respond to this new information. However, BMBP did raise issues related to past activities and the effects on hydrology when combined with the proposed actions that should be included in a cumulative effects analysis in its scoping comments, Exhibit A, at 31.

vi. Botany Cumulative effects analysis

The cumulative effects of Alternatives A and B analysis in the EA neglects to consider any current and proposed management potentially causing cumulative negative effects to Sensitive plant populations and species. The EA cumulative effects analysis for Sensitive plants is inadequate and vague, with no specific plant species detail. Forest Service EA analysis for Sensitive plants usually covers the habitat requirements of the plant, threats to the plant species, the current Sensitive listing of the plant that indicates how much it is declining, and the number of plants and populations surveyed for each Sensitive plant species within the project area, as well as project design criteria to help protect the Sensitive plant populations, such as by flagging them with a 100 foot buffer from management impacts. Instead, this was the conclusion of the Cumulative Effects analysis without considering the usual analysis issue details outlined above: “Although some unquantifiable amount of cumulative effects is possible, it is unlikely that they would be of a magnitude that would contribute to a trend towards federal listing or lead to significant impacts as defined by the National Environmental Policy Act.”

There was no cumulative effects analysis presented in the Tiger-Mill Project’s Scoping Notice of Proposed Action, nor was there any *analysis* of potential effects to sensitive plant species. Therefore, this represents the first opportunity BMBP has had to respond to this new information.

VII. Significant Negative Environmental Effects Require an Environmental Impact Statement

Planning thousands of acres of logging in Inventoried Roadless Areas and in a Municipal Watershed should have triggered preparation of a full Environmental Impact Statement with a 45 day comment, followed by another 45 day objection period based on the Final EIS and the Draft Record of Decision. There are numerous significant negative effects at stake, including long-

term degradation of water quality and water abundance; logging extensively in an Inventoried Roadless Area that would negate its potential to be re-designated as an IRA if that status is not still in effect; potential loss of viability of Threatened-listed Bull trout and Threatened Mid-Columbia Steelhead trout in the Tiger-Mill project area; and potential effects to other TESC wildlife species.

Remedies: Drop all commercial logging and prescribed burning in the IRAs and the Research Natural Area. The Forest Service needs to prepare an Environmental Impact Statement for the Tiger-Mill timber sale “Project” since there are foreseeable significant negative effects that would be caused by proposed management actions.

BMBP raised the issue of the need for an EIS throughout its scoping comments, specifically at Exhibit A, pages 1, 4, 8-9, and 11. The below comments and objections support the need for an EIS.

a. Public Comments and Concerns reflect the need for an EIS

“The main issues identified from public comments during the scoping period were the potential negative effects of the proposed activities on the following: Inventoried Roadless Values Undeveloped Lands Climate Wildlife and Aquatic Habitats Soil productivity Water quality and quantity Vegetation Fire Behavior Recreational Values.” With all these major concerns from the public, the Forest Service should have prepared an EIS, as there would be significant impacts to all these values listed that drew public concerns. (See EA p. 13).

b. Significant soil impacts require the preparation of an EIS

This soil impact analysis reveals that there could be significant negative effects to soils and downstream fish habitat from mass soil movement (landslides on a larger scale) that could impair soil productivity for thousands of years. Such foreseeable potential significant negative environmental effects require preparation of an Environmental Impact Statement, not just an Environmental Assessment. This soil analysis supports our position that all steep slope logging should be dropped.

The soil analysis does not seem to support the conclusion that both alternatives and “both analyses would comply with the Forest Plan while maintaining soil productivity over the short and long-term when implemented with appropriate Soils PDCs.” (EA p. 46, 1st par.) Such a conclusion hinges on the implementation of all the Project Design Criteria and on those PDCs actually being 100% effective and fully implemented, which is unlikely, especially since mass soil movements are hard to predict in location and as mass soil movements or multiple landslides would likely over-ride any positive effects of the project design criteria. The PDCs may not be useful for preventing all the potential significant negative effects to soils, such as loss of slope stability from logging on steep slopes and consequent displacement of fine ash sediment into the down slope stream system, potentially overwhelming the viability of Bull trout or Mid-Columbia Steelhead trout, both of which are Threatened species. These would be significant negative impacts that require preparation of an EIS. After all, these plausible scenarios involve negative effects that may last a thousand years (as with mass movement of soil) or thousands of years to replenish the ash top soil that is crucial to forest moisture retention and productivity.

c. Negative watershed impacts require an EIS

Notably, 57% of the timber sale is comprised of the Mill Creek Municipal Watershed, which provides the city of Walla Walla “approximately 90% of its water from the project area.” (EA p. 1, emphasis ours.) The combination of steep slope logging over the stream system and rivers would send easily displaced ash soil into the streams, degrading water quality for downstream uses and harming Sensitive and Threatened-listed fish species through excess sedimentation. Thus, the Tiger-Mill timber sale would cause significant impacts, which requires preparation of an Environmental Impact Statement (EIS) with a 45-day comment period and a separate 45-day objection period.

d. Logging within old growth stands and logging large trees within the context of the Eastside Screens and Biden’s National Old-Growth Amendment is significant, requiring the preparation of an EIS

The Eastside Screens were enacted in 1994 in order to address the historical loss of large trees and the potential adverse impacts to large tree- and old forest-dependent wildlife species in eastern Oregon and southeastern Washington due to a century of over-logging and mismanagement by the Forest Service. This rarity of large trees persists today. *See* Exhibit U and V. As such, any logging of large trees 21” or greater is significant and must be analyzed in an EIS. Thus, the Tiger-Mill timber sale would cause significant impacts, which requires preparation of an Environmental Impact Statement (EIS) with a 45-day comment period and a separate 45-day objection period.

Mature and old forests identification and analysis:

Given the proposed logging of large trees within mature and old forests in the Tiger Mill sale—has the Forest Service identified all mature and old forest stands, with fine scale analysis, within the Tiger Mill sale? Birdsey et al. 2023 (Exhibit X) identified old growth forests at a 30 meter resolution in the US. This data is available for use by scientists and agencies. Has the agency consulted with Regional and National offices regarding logging in old growth forests as per Biden’s Executive Orders and the ongoing National Old Growth Amendment processes?

e. Impacts to Endangered Species require the preparation of an EIS

“Mapped slides/debris flows after the 2020 event include 57 in the Upper Mill Creek subwatershed and 12 in the Middle Mill Creek subwatershed. All these flows/slides occurred in the rain-on-snow zone and nearly all originated in ephemeral and intermittent drainages and most extended downstream into perennial streams.” (EA p. 48, 3rd par.) This means that it is not necessary for a logging sale unit to be on steep slopes directly over a perennial fish-bearing creek for a landslide to degrade downstream water quality in fish habitat. Fish bearing creeks could be affected by excessive sedimentation from landslides and debris flows, potentially harming the viability of Threatened-listed Columbia Bull trout and Mid-Columbia Steelhead trout and Sensitive Redband trout. These events could be triggered or aggravated by steep slope logging or logging on unstable slopes. Losing local Bull trout viability or Steelhead trout could contribute to up-listing, based on this analysis and the Biological Evaluation outcome for Bull trout and Steelhead trout. These would be significant long-term negative effects to Threatened-listed fish species, which should require detailed, in-depth analysis and a full range of alternatives through preparation of an Environmental Impact Statement.

Clearly, the National Marine Fisheries Service established that there are Tiger-Mill timber sale management threats to the viability of Threatened-listed Bull trout, which is a significant negative effect that requires the preparation of an EIS with the associated 45 day new public comment period and a separate 45 day objection period.

Remedy: Withdraw the Final EA and Draft DN/FONSI and prepare an EIS with a full opportunity for public comment.

OBJECTIONS REGARDING VIOLATIONS OF THE NATIONAL FOREST MANAGEMENT ACT

Management Area-specific goals, objectives, standards, and guidelines should have been disclosed in the EA (which should have been an EIS) so that the public could see potential violations in these Management Areas, such as in C4 Wildlife Habitat, C1 Dedicated Old Growth, C5 Riparian area (Riparian Habitat Conservation Areas—RHCAs), D2 Research Natural Area, the F2 Mill Creek Municipal Watershed, the F4 Walla Walla River watershed, the A9 Special Interest Area, C3 Big Game Winter Range, and Undeveloped Lands, which should be considered in the analysis. Most of these Management Areas are either never logged due to their protective status (such as Inventoried Roadless Areas, Municipal Watersheds, and Research Natural Areas, and Riparian Habitat Conservation Areas) or at least more lightly thinned, not subjected to clearcutting or more intensive logging, such as “Seed Tree with Reserves”, “Improvement Cuts”, and “Intermediate” logging.

Remedy: Drop all the 1,175 acres of commercial logging in the Research Natural Area. It poses significant negative effects to log a Research Natural Area, where the designation intent was to keep the area in a natural state. This must be a violation of RNA standards and guidelines.

I. Violation of Forest Plan Goal 13: “Provide for diversity of plant and animal communities and species consistent with overall multiple-use objectives for the Forest. Maintain or enhance ecosystem functions to provide for the long-term integrity (stability) and productivity of biological communities.”

The Tiger-Mill timber sale area forest is already a healthy and productive forest—especially in the majority of sale units that have never been logged. Planned steep slope logging, logging of moist mixed conifer forest, and logging of never logged forest (all a majority of the sale units) would not meet Forest Plan Goal 13 by degrading and reducing diversity of plant and animal communities and species by not enhancing ecosystem functions to provide for long-term integrity and productivity of biological communities, instead increasing the decline and potential uplisting of wildlife and fish species such as Vulnerable-ranked American marten, likely present Threatened Wolverine, potential Sensitive Pacific fisher, Endangered Gray wolves, Threatened-listed Canada lynx, Threatened Bull trout, Threatened Mid-Columbia Steelhead trout, Sensitive Redband trout, and Sensitive Columbia Spotted frog.

BMBP raised concerns regarding the viability of American marten, wolverine, Pacific fisher, Gray wolf, Canada lynx, Bull trout, Steelhead trout, Redband trout, and the Columbia spotted frog in its scoping comments, Exhibit A at 19.

II. Violation of Forest Plan Goal 17: “Manage Forest resources to protect all existing beneficial uses of water and to meet or exceed all applicable state and Federal water quality standards...”

Logging this moist forest over the tributary stream system on steep slopes, in high moisture-retaining forest, and in never logged forest would violate Forest Plan Goal 17, by threatening, not protecting, “all existing beneficial uses of water and to meet or exceed all applicable state and Federal water quality standards.” Logging this forest would not “maintain or enhance water quantity, quality, and timing of stream flow to meet needs of downstream users and other resources.” Planned logging would not maintain “integrity and equilibrium of all stream systems, riparian areas, and wetlands on the Forest.” (See EA p. 2)

BMBP raised concerns regarding the effects of logging on water quality and riparian issues throughout its scoping comments, specifically: Exhibit A at 2-4, 6, 11-12, 17, 26, 29-34, and 36-37.

Remedy: An EIS needs to be prepared for in-depth, detailed effects analysis and a full range of alternatives that lead to avoidance of violating Forest Plan Management Area standards, guidelines, and goals, and to prevent violation of Forest Plan goals.

III. Forest Plan violations of the Eastside Screens Scenario B and the 21” dbh limit for logging

The Eastside Screens application of the Historic Range of Variability (HRV) concept was not intended to allow for logging “without a diameter limit” for large trees equal to or over 21” dbh. I have never seen the Forest Service claim that scenario B of the Eastside Screens allows for logging in LOS (Late Old Structure or old growth) habitat “if the LOS conditions do not fall without any diameter limit below the range of variability.” (quotes from EA p. 3). This is either a mis-reading of Scenario B or an attempt to log without diameter limits even though the Region 6 amendment of the Eastside Screens 21” dbh live tree logging limit has been vacated by Judge Aiken, re-instating the 21” dbh limit for logging large trees, which is now in effect. Only certified hazard trees can be logged at ≥ 21 ” dbh.

We are strongly opposed to any logging of large trees ≥ 21 ” dbh, since large structure now only comprises about 3-4% of the Blue Mountains National Forests. Mildrexler et al. (2020) (Exhibit U). The Forest Service is ignoring David Mildrexler’s study that confirmed this huge deficit of large (and old) trees compared to historic conditions prior to European colonization.

Logging up to 21” dbh prevents the mature cohort of trees 15-21” dbh from developing into large and old trees to make up for the deficit—especially as the Blue Mountains Forests generally have a set number of live large trees plus old growth snags and logs to qualify as Late Old Structure. If there are only 15 large trees per acre on the Umatilla National Forest (or 10 large trees on the Malheur NF), it only takes only one live large tree per acre to become a snag for the acre to no longer be considered LOS. LOS designation at least is meant to be protect LOS designated forest to increase large tree structure and old growth.

It doesn’t make sense for the Forest Service to pit logging against wildfire, as timber sales are generally not going to stop fires and usually increase fire intensity and spread—especially in moister forests. An antagonistic characterization of wild fire is not helpful, as the forests in the Blue Mountains region evolved with fire—including its sediment flows. The forest ecosystem did not evolve with logging, which removes significant carbon sequestration and storage that would otherwise continue for up to centuries through live trees allowed to grow and

sequester and store carbon for up to hundreds of years, then continue to store carbon as snags and logs. Allowing mature trees to grow into large and old growth trees is critically needed to reduce extreme climate change effects, including high intensity climate change-driven fires.

Remedy: Drop any logging of trees equal to or greater than 21” dbh in LOS structure, as well as for proposed logging in general. The EA is inconsistent with the Draft Decision in allowing for logging of live trees ≥ 21 ” dbh under this obscure and unwarranted exception to the Eastside Screens 21” dbh cutting limit for live trees, except for certified hazard trees. The Forest Service also needs to prohibit any removal of large and/or old snags and logs from Late Old Structure forest.

BMBP raised the issue of needing to abide by the standards of the Eastside Screens in its scoping comments, Exhibit A at 6-8.

IV. Violations of the Municipal Watershed goal to protect the municipal water supply and of the IRA Conservation Rule
a. Violations of the 2001 Roadless Area Conservation rule

In keeping with the 1918 cooperative agreement, the Mill Creek Watershed Inventoried Roadless Area is managed to protect Walla Walla City’s municipal water supply. Protections for the watershed were continued in the 1990 Forest Plan (USDA 1990). What the Forest Service is not divulging in the EA is that protection of the Municipal Watershed was protected by not logging or roading of the Municipal Watershed. These protections are still in effect. Logging and roading are well established in the science as degrading water quality and potentially reducing water abundance.

We are strongly opposed to the Forest Service using any exceptions to the Roadless Area Conservation Rule in contravention of the public intent, with over 300,000 comments supporting no logging or roading in Inventoried Roadless Areas. Further, IRAs are the best intact forest carbon sinks and the best intact wildlife habitat outside of the Wilderness Areas, which are typically mostly “rocks and ice” by comparison. IRAs must not be logged, also to ensure abundant high quality water and fish habitat from the headwaters.

Due to all the unique benefits and ecosystem services that IRAs (and undeveloped lands) provide, as listed on EA pages 87-88, no Inventoried Roadless Areas and all other undeveloped (never logged or roaded) lands should not be logged or roaded. These undeveloped lands and IRAs include the Mill Creek Watershed IRA, which is also the Mill Creek Municipal Watershed for Walla Walla, and the undeveloped lands or IRA that encompassed the previously planned Tiger Webb timber sale, which we field surveyed years ago and which I thought was an Inventoried Roadless Area, and still should be an IRA—in the undeveloped block of lands Southwest of the Municipal Watershed and west of road 65.

There is a lot of logging planned for that Tiger Webb sale area IRA or big block of undeveloped lands with a lot of planned helicopter logging and other logging under both action alternatives, based on the “Action Alternative” maps. We are strongly opposed to any logging and road work in that big Tiger Webb sale area that should be an Inventoried Roadless Area. We field surveyed some of the planned commercial logging sale units that were more accessible again in 2023 as part of the Tiger-Mill sale, and found that area to still qualify to be an Inventoried Roadless Area. Why wasn’t this area overlapping the old Tiger Webb proposed

timber sale analyzed as an IRA planned for logging in the Tiger-Mill EA? We have now surveyed parts of that undeveloped lands area twice and are not forgetting about it. We are also strongly opposed to any logging or roading in all undeveloped lands. Why is there no specific analysis for effects to undeveloped lands in the EA? This seems like an attempt to obscure the planned logging in a major block of undeveloped lands that qualifies for being designated as an Inventoried Roadless Area, although I think it is already identified as an Inventoried Roadless Area. The area of the previously proposed Tiger Webb timber sale should have been analyzed under the Inventoried Roadless Area analysis, or under analysis for effects to undeveloped lands. What happened to the Inventoried Roadless Area designation for the area overlapping the proposed Tiger Webb timber sale? This apparent change of status requires a well- documented explanation or re-instated IRA designation for that area. The Tiger Webb sale identified area qualifies as an Inventoried Roadless Area and should still be designated as an IRA.

All blocks of undeveloped lands should also be protected from logging and roading to provide for the values listed for Inventoried Roadless Areas. There are very few unmanaged lands left outside of Wilderness Areas and Inventoried Roadless Areas. As with Inventoried Roadless Areas and Municipal Watersheds, undeveloped lands are irreplaceable. Wildlife species will need to be able to migrate or disperse to IRAs and other undeveloped lands, including Municipal Watersheds, to find suitable habitat as their previous habitat in lower elevations or further south will become largely uninhabitable due to extreme climate change effects, including intense large wildfires; prolonged droughts; unprecedented heat waves; severe storms; and lack of water. Some wildlife species are migrating westward as well as northward.

Commercial logging in the IRA(s) would likely increase fire risk, not reduce it. Logging would likely spread the extent of any fires and increase their intensity.

Commercial logging in IRAs, the Municipal Watershed, and undeveloped lands would cause negative effects to roadless area/undeveloped lands values, such as better water and air quality, more plant diversity and wildlife diversity, better wildlife habitat quality, as well as preservation of existing and increasing forest carbon sequestration and storage in never logged areas. Commercial logging in IRAs, the Municipal Watershed, and undeveloped lands would cause degradation of the soils through ground disturbance, removal of organic matter, soil compaction, soil displacement, and loss of nutrients from trees removed by logging. Biodiversity of plants and wildlife would be greatly reduced by logging. Habitat for the following wildlife species would lose suitable habitat and security habitat, especially for far-ranging predators and large native ungulates: Endangered Gray wolf; Threatened-listed Canada lynx; Threatened Wolverine; Sensitive Pacific fisher; MIS American marten; any reintroduced Endangered Grizzly Bears; Big horn sheep; any moose expanding their territories; as well as downstream Threatened Bull trout; Threatened Mid-Columbia Steelhead trout; Sensitive Redband trout; and Sensitive aquatic mussels and amphibians.

The IRA that encompassed the previously proposed Tiger Webb sale is not addressed in Table 33, although it should still be an Inventoried Roadless Area. It is evidently planned for logging by both alternatives despite it being an IRA, as well as despite it having never logged undeveloped lands expansive enough to still qualify as an IRA. This is a serious breach of public confidence in the Forest Service, as the status of that Tiger Webb area is not disclosed or analyzed for the effects of proposed management planned for that area, which would destroy its values and qualifications to be an Inventoried Roadless Area. This large block of undeveloped

lands is outside of the Mill Creek IRA overlapping the Municipal Watershed, to the southwest of the Mill Creek Watershed IRA and south of Mill Creek. Logging that never logged Tiger Webb sale area IRA is unacceptable, even if someone changed its designation as an IRA.

The scale of logging is much larger in the IRA in the Tiger Webb sale area, but that is not disclosed or analyzed in that area for effects as either an IRA or undeveloped lands. This is a huge gap in the effects analysis for a very significant large IRA or undeveloped lands. This is very problematic, as logging that Inventoried Roadless Area that has never been logged would have significant negative impacts on a large scale that are not analyzed in the Tiger-Mill EA at all. As with the Mill Creek Municipal Watershed IRA, there is no ecologically sound reason to log the Tiger-Webb sale area IRA undeveloped lands, as there is no need for fire risk reduction as it is surrounded by barren slopes, barren ridgelines, and openings. The planned logging would break up the currently intact Inventoried Roadless Area, making it no longer a designated Inventoried Roadless Area or be a candidate for Inventoried Roadless Area status. This looks intentional if the Forest Service staff knew that the Tiger Webb sale area is an Inventoried Roadless Area. These would be significant impacts that require preparation of an Environmental Impact Statement.

We are strongly opposed to any logging or road work in the Mill Creek Municipal Watershed IRA as well. We are also opposed to any prescribed burning, non-commercial thinning, or other management in the Municipal Watershed and IRA. The EA did disclose that: “The soil displacement and increase in erosion has potential to increase sedimentation into streams and affect water quality” from Alternative A logging. Degradation of water quality through commercial logging, biomass reduction, and prescribed burning would violate the designation intent and goals for the Mill Creek Municipal Watershed that provides high quality abundant water for the city of Walla Walla. The Mill Creek Municipal Watershed IRA is de facto wilderness and should remain that way. There is no evident need for non-commercial thinning or other management for the Mill Creek Watershed IRA, based on our drone photos and views into the Municipal Watershed from outside its boundaries and its never logged status.

We are strongly opposed to logging in any RHCAs and any logging in IRAs. It is thus even more egregious that alternative A would commercially log both in the IRA(s) and within RHCAs. Logging in RHCAs is highly likely to increase water temperatures, not reduce them. Further, logging in RHCAs would foreseeably increase fine sediment in the streams, choking out fish, and reducing the future recruitment of large wood for pools, as well as drying out the drainages so that less water is retained, including from uphill tall tree shading of the channels.

“Thinning” is not known to “minimize the risk of increased water temperature” as logging in RHCAs dries out the microclimate conditions and reduce shading that retains cool, moist conditions, and reduces large wood recruitment for fish pool refugia. “Thinning” (logging) could also increase fire intensity and spread in the RHCAs, due to increased wind speeds through more open stands, loss of more fire-resistant mature trees, and increased highly flammable slash and small dense tree re-growth due to overstory or midstory removal. Is the other IRA (in the Tiger Webb proposed sale area) also being planned to log in RHCAs? This would be another source of undisclosed significant negative impacts to creeks and streams in another IRA, which is also never logged undeveloped lands with steep slopes over streams.

The EA admits for the Mill Creek Watershed IRA that: “Prescribed fire may directly expose soil through the consumption of surface fuels and the construction of hand fire lines.

Water quality could be impacted if soil displacement into waterways occurs.” (EA p. 90, 1st full par.)

Associated Remedy for the last. par. above on p. 40: Drop the prescribed burning in both IRAs due to potential soil displacement into streams, potential ignition of a larger fire, and since the IRAs have expansive “fuel” breaks between them and local communities.

There are also significant natural openings in both IRAs that serve as “fuel” breaks already—typically almost all around proposed sale units, which is clear from drone photos over the Mill Creek Municipal Watershed IRA proposed sale units near road 65, and based on our field surveying in the Tiger Webb IRA/undeveloped lands.

It is very unlikely under severe climate change that: “prescribed fire and thinning will aid managers in controlling the scale and severity of a future wildland fire event. Application of prescribed fire and thinning would reduce the risk of elevated turbidity levels.” Yet the EA highlighted the potential for prescribed fire to displace sediment into the stream systems in the IRA. Logging would have even worse negative effects to water quality.

The EA acknowledges that: “The direct effects to public drinking water are connected to the effects to soil and water from the proposed activities.” (EA p. 90, 3rd full par.) Soil and water quality impacts from proposed logging and prescribed burning in the Mill Creek Municipal Watershed IRA and in the Tiger Webb area IRA could have long-term significant negative effects.

Logging and prescribed burning in the Mill Creek Watershed IRA could cause degradation of water quality and abundance, violating the purpose of the Mill Creek Municipal Watershed designation.

It is very unlikely that habitat complexity and diversity of plant and animal species has been reduced significantly, as most of the Tiger-Mill area forest has never been logged, has very high water retention with lush plants of great diversity, and is in late successional old growth stage in most sale units, which usually would have very high biodiversity, along with very high biodiversity expected after any stand replacement fire, based on a large consensus of best available science. See our sample photos for examples of these conditions. (See EA p. 90, 2nd to last par.)

“Small trees” under the 2001 Roadless Area Conservation Rule does not mean trees up to 21” dbh, as that eliminates the “medium-sized” trees from the 10-20” dbh category, which includes the mature trees of about 15-20” dbh. We are concerned that logging of “small” trees in the Inventoried Roadless Areas is not specified as to the size limit. We are strongly opposed to any commercial size logging in the IRAs. IRAs in general should not be managed. Conservation biologists have determined that there are not enough Wilderness Areas of sufficient size to support future generations of large wildlife species such as Grizzly bears, or for far-ranging species such as Wolverine, Canada lynx, and Pacific fisher. Inventoried Roadless Areas being protected from logging and roads are critical to these species’ viability over time.

Commercial logging would not “improve or maintain one or more roadless area characteristics” but would degrade roadless characteristics, since IRAs are defined by being entirely never logged or roaded or were minimally logged or roaded at the edges of the IRAs before the 2001 Roadless Area Conservation Rule.

Remedy: Drop all Inventoried Roadless Areas and undeveloped lands from commercial logging, roading, and prescribed burning, and any other management except recreational trail maintenance for hikers or horseback riders, with no motorized vehicles allowed.

The EA's failure to disclose that the IRA outside and southwest of the Mill Creek Watershed IRA would be logged under both action alternatives should force the need to cancel this Tiger-Mill Environmental Assessment and replace it with an Environmental Impact Statement or drop the Tiger-Mill proposed timber sale in its entirety.

Remedy: Regarding that alternative B would commercially log the Mill Creek Watershed Inventoried Roadless Area and RHCA, but not using ground-based equipment, logging in any IRA or Municipal Watershed or in Riparian Habitat Conservation Areas is problematic and unacceptable. The outdated Forest Plan goal of logging every never logged acre is the epitome of destroying the Earth for short-term economic profits. Helicopter logging is dependent on logging large trees for the steep slope logging to be economical. Helicopter logging would not pay for itself without logging large trees, which is not allowed under Judge Aiken's order to vacate the Region 6 amendment decision to allow for renewed logging large (and old) trees.

BMBP raised the issue of commercial logging and roads in the Mill Creek Municipal Watershed IRA in its scoping comments. Exhibit A, at 10-11.

V. Forest Plan violations of PACFISH

It is not certain that there would be no reduction of shading upslope of the stream channel, as many of these sale units have very tall old growth and mature trees above or adjacent to the stream channel. Thus, we do not agree that there would be no direct or indirect effects to beneficial stream uses. Sediment can flow for a long way down hill and across roads, entering stream channels. Excess fine sedimentation of streams and potential increases in water temperature could occur from upslope logging—especially on steep slopes and on ashy soils, which could lead to 303 (d) stream impairment and failure to reach PACFISH Riparian Management Objectives. (See EA pp. 50-51)

The hydrology analysis acknowledges that: “Log haul on unpaved roads are more likely to increase suspended sediment in streams than those outside of RHCAs. Roads inside RHCAs and with culvert problems are the most likely sediment contributors to surface waters currently.” (EA p. 51, 3rd to last par.) The EA analysis apparently does not disclose the location of “temporary” roads and re-opening of closed roads. Are any “temporary” roads or re-opened closed roads planned within or adjacent to RHCAs? We are strongly opposed to constructing or re-opening “temporary” roads or re-opening of closed roads within or adjacent to RHCAs.

We are opposed to planned log hauling within RHCAs on seven non-contiguous miles of unpaved roads. Log hauling deposits significant airborne sediment and when crossing streams—even on bridges. Log hauling within RHCAs may defeat the purpose of RHCAs through excess sediment deposited in the stream channel. It is common to see heavy dust on plants on either side of roads from log trucks.

We are concerned that there are 56 stream crossings, including crossing of three rivers and a major creek, all of which are likely suitable or occupied Bull trout or Mid-Columbia Steelhead trout habitat.

The cumulative effects analysis for hydrology admits that: “The combined effects of past, current, and proposed actions would result in ECA percentage increases that exceed the 15% threshold identified in the National Marine Fisheries Service biological opinion for PACFISH for the Middle Mill Creek subwatershed (Graph 4). This would be a violation of PACFISH and the Forest Plan Equivalent Clearcut Area threshold.

Remedy: Drop all: steep slope logging on slopes greater than 35%; non-commercial thinning, biomass reduction, and prescribed burning in all RHCAs; log hauling within RHCAs; logging and biomass reduction in moist mixed conifer forest; stream crossings by heavy equipment or by log hauling over RHCAs; all “temporary” road construction or re-opening and all closed road re-opening within RHCAs or directly adjacent to RHCAs; and logging of tall trees that could provide shade to the RHCA above or adjacent to RHCAs.

BMBP raised its concerns regarding potential violations of PACFISH in its scoping comments, Exhibit A at 1, 24-25, and 36.

VI. Forest Plan violations regarding expected exceedance of the detrimental soil impact standard

Specific soil impact argument re: alternative A and alternative B, with EA analysis support:

Alternative A would cause far too much ground disturbance and detrimental soil impacts within the IRAs, including loss of soil productivity and loss of wildlife habitat and recreational values. Apparently Alternative B would also commercially log within the IRA with fewer acres than alternative A of “acres treated mechanically.” Whatever “mechanical treatment” is planned for the IRA (or IRAs, including the Tiger Web sale area) would still result in “a few hundreds of pounds of sediment with limited movement on the backslope” and causing “isolated areas” to have “potential for medium to high intensity effects.” (EA p. 45, under “Erosion”) This is not a very clear explanation of what would be done to the IRA(s) by implementation of Alternative B. We are strongly opposed to any commercial logging, mechanical biomass removal, or road construction or re-opening in IRAs.

The soil effects analysis discloses that: “Identifying where mass movement events may occur as a result of changing climate is not possible.” (EA p. 45 under “Mass Movement”) This should stop steep slope logging and loss of irreplaceable ash soil which could not be replaced for up to thousands of years. Replenishment of so much moisture retaining ash topsoil depends on another volcanic eruption in geologic time. The provision of such widespread ash layers across the region depends on the equivalent of the existing source: the eruption of Mt. Mazama that formed Crater Lake.

We are wary that the Tiger-Mill timber sale would inevitably exceed the Forest Plan limit of 20% of an area for detrimental soil impacts: “Areas that do not overlap past disturbance can increase soil disturbance for an activity unit above the forest plan threshold of 20%. New disturbance that overlaps with past ground-based disturbances (reuse of old skid trails, harvest corridors, or landings) do not increase the spatial area of disturbance but can increase the severity of the soil disturbance rating in that area. The overlapped disturbance resets the clock for soil processes to act on impacted areas and keeps them in a state of lesser productivity longer.” (EA pp. 45-46, under “Cumulative Effects”)

Remedy: The Forest Service needs to greatly reduce detrimental soil impacts and foreseeable widespread ground disturbance and destabilization of steep slopes from commercial logging. To scale down the wide distribution of ground disturbance and the intensity of detrimental soil impacts, the following proposed management actions must be dropped: logging and biomass removal in all undeveloped lands and never logged areas, including within the Inventoried Roadless Areas, the Municipal Watershed, all undeveloped lands and never logged sale units, the Research Natural Area; all logging and biomass removal in Late and Old Structure forest or old growth, within high elevation moist mixed conifer forest, and on steep slopes over 35% slope; all “temporary” road building and re-opening, and all re-opening of closed roads; and all non-commercial-thinning and prescribed burning in Riparian Habitat Conservation Areas and in all undeveloped lands, including the IRAs, Municipal Watershed, and all never logged forest.

Remedy: Drop all of the following sale units due to expected exceedance of Forest Plan detrimental soil standards, with the suggestion in the Soils analysis of avoiding these sale units: 285, 287, 311, 312, 313, 392, and 393. Logging these sale units over snow would be exceedingly difficult as many of the roads would not be safe for log hauling or would not be accessible. On roads next to steep down-slopes, with narrow road width, driving there would be perilous, let alone using log trucks. Other major access roads have similar problems in the southern and western ends of the sale area.

The soil analysis states that: “The loss of organic matter by tree removal or burning is expected to reflect similar removal by natural fires of landscape size of smaller.” (EA p. 43, 5th par.) Yet logging removal of trees is not actually similar in loss of organic matter from wildfire, that returns most of the carbon as partially burned snags and logs, scorched live trees, and ash, which retain organic matter and retains more carbon storage in logs, snags, and ash contribution to the soils, as well as from remaining live trees.

EA analysis support for our soil effect arguments:

The soil analysis states that “Constant reduction of organic matter by repeated harvest, fuels treatments, and wildland fire over a condensed time frame (5 to 10 years cycles) are required to show a noticeable adverse effect to nutrient cycling.” (EA p. 43, 3rd to last par.) We are concerned that the scenario in the 3rd to last paragraph on EA p. 43 would be more common due to current Forest Service short timber sale rotations and more intensive logging, followed by biomass reduction, now on a landscape scale, and more frequent and extensive wildfires.

We are concerned that: “Mechanical actions on steep slopes pose greater risk to soil erosion due to mineral soil exposure and increased energy potential of surface flow. Removal of soil material and decrease in soil profile thickness immediately decreases soil productivity in that area. Loss of the soil profile thickness has the greatest effect on soil productivity.” (EA p. 44, 2nd par.) We are not satisfied that PDCs (Project Design Criteria) would sufficiently mitigate the effects to soils and water quality from steep slope logging.

We are also concerned that: “Any part of activity areas with slopes greater than 35% are prone to mass movement in pre- and post-harvest conditions...In steeper sloped areas where overstory and soil is disturbed there is a greater potential for debris or mud flows to occur.” (EA p. 44, 3rd par.) Most of the sale units—85% of the project area—are greater than 35% slope. Seeing many trees in sale units visibly compensating for steep slope movement indicates that there are more sale units that could result in landslides or significant displacement of ash soil.

We appreciate that six sale units with “identified mass movement landform expressions” have been “identified for noncommercial thinning actions that limit geologic disturbance and maintain soil productivity”. Yet there may be more sale unit areas prone to landslides or mass wasting since “Locations of future events of mass movement are difficult to predict due to increasing climate change affecting rain and snow amounts.” (EA p. 44, par. 5)

The following analysis heightens our concerns regarding steep slope logging causing mass wasting: “Removal of the soil profile by mass movement has the same effect as smaller erosional events but are on a larger scale. Loss of the profile in an area indirectly results in a change in future vegetative potential because there is an immediate and drastic decrease in profile thickness and soil productivity. It takes thousands of years to restore the same soil productivity in an area that has been removed by mass movement. With changes in local weather patterns and timing of moisture delivery, rain on snow events are expected into the future. Recent rain on snow events resulted in isolated mass movement events on mountain backslopes of past wildland fire footprints, in past harvest areas, and areas where no harvest has occurred. Predicting where the next mass wasting event would occur is difficult.” (EA, p. 44, last par. under “Mass Movement”).

Remedy: Drop all: steep slope logging, road construction or re-opening of closed roads on steep slopes; all biomass reduction on slopes greater than 35%; all logging, roading and biomass reduction on unstable slopes; all logging, roading, and biomass reduction in moist mixed conifer; all logging on easily displaced and irreplaceable ash soils; and all soil-disturbing management in RHCAs, including non-commercial thinning, any biomass reduction, and prescribed fire.

BMBP raised the issue of detrimental soil impacts in it scoping comments, Exhibit A at 6-7, 19, 24-26, 28-30.

a. Detrimental Soil impacts specific to planned logging and past landslide conditions

“Proposed commercial thinning would occur on about 4,500 snow dominated acres and 1,500 rain-on-snow acres.” (EA p. 48, 1st par.) Yet commercial logging on steep slopes can trigger landslides and mass soil movements, which are more likely to occur in rain-on-snow events or on saturated disturbed soils.

“Floods-of-record (> 100-year return interval flows)...occurred in 1931, 1965, 1996, and 2020 because of rain-on-snow events. These types of events can result in mass movements in the form of hillslope slides and channelized debris flows. Mapped slides/debris flows, attributed to the 1996 event, include 10 in the Upper Mill Creek subwatershed and 4 in the Middle Mill Creek subwatershed.” (EA p. 48, 2nd par.) These floods at a magnitude of 100 year interval floods occurred after 34 years since the last flood of that magnitude, 31 years since the last flood, and 24 years since the last flood at that magnitude, indicating decreased time intervals between what used to be 100 year interval magnitude floods—likely due to increasing global warming.

BMBP raised the issue of detrimental soil impacts in it scoping comments, Exhibit A at 6-7, 19, 24-26, 28-30.

VII. Forest Plan violations re: preserving hydrologic functions

There is no guarantee that: “When RHCAs are buffered and treatments spread out over several years, the ECA would not exceed the 20% level at which effects to water yield, peak flows, or timing of peak flows, have been reported in various studies” with only three studies cited. A 20% ECA threshold for effects is not consistent with past Forest Service timber sale effects analysis, as there is other science setting the ECA threshold far lower. Further, management actions should not bring the ECA all the way up to the point at which significant effects would be caused to water yield, peak flows, and/or timing of peak flows. The ECA threshold for management effects to these critical watershed hydrologic functions should be set at a precautionary level in order to avoid reaching significant impacts—i.e. 15% or less, not 20%. There can be significant differences between study results regarding a 20% threshold for effects to water yield, peak flows, and timing of peak flows. Study results can differ based on topography. Relatively flat forest areas may be able to tolerate more management effects than the Tiger Mill project area, where the vast majority of the project area—85%--is greater than 35% slope, with many extremely steep slopes that we measured in sale units as averaging 32-37 degrees slope and up to 45 degrees slope. When the majority of the sale units have very steep slopes, this would intensify channelized water flow and could more strongly affect peak flows or their timing. Moist forest (60% of the Tiger-Mill project area) being logged would likely have different effects than dry forest.

What exactly are the assumptions of management implementation and forest conditions (such as steep slopes and forest types) used in the ECA modeling for the Tiger Mill timber sale? Much of the methodology used for determining ecological impact conclusions in the EA remain undisclosed and opaque.

Many weasel words are used to make the predicted outcomes seem acceptable, such as not having a “measurable” effect to hydrologic functions, and ignoring earlier analysis concluding that there would be negative effects to hydrologic functions. 16 acres of “temporary” road is dismissed as “a negligible amount” without any calculations of the total proposed management contribution to overall ECA. The effects of management may be diluted by not identifying locations where Threatened fish species habitat and how those areas could be affected by cumulative proposed management effects.

Remedy: Drop all:commercial size logging, biomass reduction, and road construction and road re-opening on: steep slopes greater than 35%, on unstable slopes and areas with previous history of landslides or mass soil movements, within moist mixed conifer forest and old growth forest, and within RHCAs and never logged forest and all undeveloped lands, including IRAs and the Municipal Watershed. Prescribed fire needs to be excluded from all moist mixed conifer, RHCAs, and all undeveloped lands, including Inventoried Roadless Areas and the Municipal Watershed. All construction and re-opening of roads in the areas listed above for being dropped from proposed management must be canceled, including “Temporary” roads and closed roads.

BMBP raised issues related to the hydrologic impacts of the Tiger-Mill Project in its scoping comments, Exhibit A at 10, 17, 29, 32, 34, and 36.

OBJECTIONS REGARDING VIOLATIONS OF THE CLEAN WATER ACT

I. The large scale of potential negative effects supports potential degradation of water yield, water quality, and hydrologic functions:

The “Potentially Affected Environment” section discloses that the Tiger-Mill project area encompasses approximately 38,000 acres of National Forest lands located in portions of ten subwatersheds, including approximately 300 miles of perennial, intermittent and ephemeral streams that could be affected by logging and roading across this huge area of interconnected headwaters stream systems. Logging and roading across this could cause degradation of water yields, water quality, and hydrologic functions.

The EA water temperature analysis supports our concerns and objections: “Harvest activities can initiate pronounced temperature changes by the removal of forest vegetation and reducing shade density along channels (Beschta et al. 1987).” And: “Prescribed burning and hazard tree falling in riparian areas also have the potential to reduce existing vegetation.” (EA p. 50, last par.s)

Background information from the EA:

The hydrology analysis notes that: “Snow can accumulate throughout the project area...and [is] variable year to year between 2,500 and 4,000 feet, the so-called ‘rain-on-snow’ zone”, which was already identified in the analysis as some of the highest potential landslide locations. “Above 4,000 feet, snow generally persists throughout the winter months. The project area occurs predominantly (63%) in the snow-dominated zone, with about 37% in the rain-on-snow zone....” (EA p. 47, last par.)

Since 63% of the Tiger Mill project area is above 4,000 feet, where snow generally persists throughout the winter months, historic moist and cold forest should be expected and is evident on the ground over about 63% of the project area. Historic moist and cold forest is naturally denser, more productive forest, with moist mixed conifer forest that retains considerable moisture. Most moist mixed conifer forest is located on ash soils that retain high moisture levels with areas of loamy soil rich in nutrients from riparian hardwood and shrub leaf litter.

See the last sentence on EA p. 50 into the first sentence on p. 51 of these disclaimer statements that conclude without any detailed analysis support in the hydrology section that: “Alternative A would not adversely affect water temperature” and “harvest, thinning and burning would not measurably remove the shade component along any stream channel” and “Because there would be no change to shade, there would be no direct or indirect adverse effect to beneficial uses [which is contradicted numerous times in the hydrology analysis] and no effect on the 303(d) impairment status of streams.” These assertions are based on an unsupported leaps to conclusions.

Despite these conclusions, upslope removal of forest cover and reduction of shade upslope of stream drainages dries out the slopes above the stream system, drying out the overall drainages and reducing moisture retention that would otherwise help protect abundant water flows and the growth of lush riparian hardwoods and other riparian plants that stabilize stream channels. This is one of the reasons why PACFISH no logging buffers extend 150 feet on each side for creeks with fish and 300 feet on each side for creeks with anadromous fish. Yet the riparian zone could still be negatively affected by adjacent logging removing shading that preserves cool, moist micro-climate conditions within the drainages.

The hydrology analysis largely supports our Clean Water Act concerns:

“Effect 1: Changes in forested stand and canopy density caused by harvest...can change the distribution of the snowpack, increasing its rate of melt, and cause it to melt earlier in the season, all of which may lead to changes in peak flows. Changes in water yield and in peak flows have the potential to destabilize channels, and increase erosion and sedimentation. Reduction of stocking density would also reduce the overall vegetative use of water, increasing water available for runoff. These parameter changes would concern aquatic habitat and biota, downstream water users, and channel morphology.”

“Effect 2: Roads affect hydrologic function (extension of the stream network) and water quality (sediment delivery to surface waters).”

“Effect 3: Water temperature can be increased by reductions in the density of shade over the water surface.”

“Effect 4: Proposed activities affect erosion rates and sediment production.” (EA p. 46)

Remedy: Drop all:commercial-size logging, biomass reduction, and road construction and road re-opening on: steep slopes greater than 35%, on unstable slopes and areas with previous history of landslides or mass soil movements, within moist mixed conifer forest and old growth forest, and within RHCAs and never logged forest and all undeveloped lands, including, but not limited to, IRAs and the Municipal Watershed. Prescribed fire needs to be excluded from all moist mixed conifer, RHCAs, and all undeveloped lands, including Inventoried Roadless Areas and the Municipal Watershed. Roads should not be constructed or re-opened in any of the above areas to be dropped, including both “Temporary” roads and closed roads.

BMBP raised the issue of abiding by the requirements of the Clean Water Act in its scoping comments, Exhibit A at 1,

OBJECTIONS REGARDING VIOLATIONS OF THE ENDANGERED SPECIES ACT

All but one of the current and modeled future trends due to a warming climate listed on EA p. 48 could increase the severity of negative effects to already declining fish species. These trends also represent cumulative effects added to the planned logging on steep and potentially unstable slopes, increasing the risk of up-listing of fish species and possibly their extirpation in the Tiger-Mill project area. (See the EA p. 48 bullet point list.)

Table 20 on EA p. 48 discloses how the Tiger Mill sale area comprises 100% of the following subwatersheds: Upper Mill Creek, Middle Mill Creek, Blue Creek, South Fork Touchet River, and Headwaters Dry Creek, plus 33% of the North Fork Walla Walla River subwatershed, along with minor percentages of three subwatersheds (at 1% to 6%) of the Upper South Fork and North Fork of the Wenaha River and the Upper South Fork Walla Walla River, as well as the 15% of the Wolf Fork. This is an astoundingly dense configuration of many tributary streams to major rivers and major creeks. This also increases the potential negative impacts to hydrology and fish species.

The ECA threshold used to be set lower at about 11% ECA and yet the Forest Service is now trying to violate a National Marine Fisheries Service biological opinion for PACFISH, specifically for Bull trout, which is a violation of the Endangered Species Act.

Over about 33 years of monitoring Forest Service timber sales NEPA documentation, I have never seen the Forest Service act in violation of the Endangered Species Act by ignoring a

National Marine Fisheries Service biological opinion or trying to finesse their analysis to allow for the Forest Service to violate the Biological Evaluation or Biological Assessment.

The Forest Service is not the authority for determining threats to the viability of Threatened and Endangered species through biological opinions.

The National Marine Fisheries Service determined that the 15% threshold of ECA would be exceeded for the Middle Mill Creek subwatershed. So how did the Forest Service determine that: “Therefore, ECA would remain below threshold values (15%-20%) and there would be no long term negative cumulative effects to effective shade or stream temperature from this project.” (EA p. 53, 3rd to last par.) Where is the requisite detailed, in-depth cumulative effects analysis for determining whether management actions would exceed ECA thresholds for concern and for significant effects? Such analysis would have to use specific information regarding how management actions would interact with the Tiger-Mill conditions, including the high percentages of steep slopes, never logged forest, and moist mixed conifer forest, as well as sources of channeling landslide sediment and debris to tributary streams, creeks, and rivers, such as roads and skid trails.

There was no discussion of ECA in the Tiger-Mill Project’s Scoping Notice of Proposed Action. However, BMBP raised issues related to ESA-listed aquatic species throughout its scoping comments, Exhibit A at 1, 6, 9-10, 31-32, 43-44.

I. ESA violations stemming from the failure to analyze impacts within IRAs and Undeveloped lands

Detailed in-depth analysis specific to the two IRAs (which are different from each other) is needed for determining direct, indirect, and cumulative effects specific to the two IRAs, not just lumping them together with the other EA sections. This seems to take the attention away from specific values of the two IRAs. For instance, the two IRAs might provide security habitat for far-ranging TESC wildlife species that tend to avoid roads, such as Endangered Gray wolves, Threatened Canada lynx, Sensitive Pacific fisher, Threatened Wolverine, and MIS American marten. Have there been any effective surveys for TESC wildlife and plant species within the two IRAs? This is in reference to the Mill Creek Watershed IRA and the IRA that was overlapped by the previous proposed Tiger Webb timber sale. Is there any evidence of TESC wildlife species in the two IRAs and within the Tiger-Mill proposed project area as a whole? TESC wildlife effects analysis is neglected in the EA, even for the Threatened Bull trout and Mid-Columbia Steelhead trout, which were barely mentioned, not given detailed, in-depth analysis. The TESC wildlife species were not even noted as to whether each potential TESC wildlife species had suitable habitat or were detected within the Tiger-Mill project area. This is critical information to be missing from the EA. Where, when, and with what methods were surveys conducted for TESC wildlife species? Were there any bait stations, trail cameras, or long-term studies used? It seems very likely that there could be the following TESC wildlife species in the Tiger Mill sale area, and especially within the IRAs and undeveloped lands: Threatened Canada lynx, Threatened Wolverine, Sensitive Pacific fisher, and Endangered Gray wolf. Where is the buried analysis for these TESC wildlife species?

BMBP raised these issues in its scoping comments, Exhibit A at 19.

II. Adverse likely effects to Designated Critical Habitat for Threatened-listed fish species and the need to prepare an EIS

Federal up-listing and extinction of species are caused by cumulative effects by many such timber sales each contributing to species' decline, local extirpation, and potential extinction. Determining "no effect" to any Federally, Threatened, Endangered, or Proposed terrestrial wildlife in the EA is a significant omission, as "no effect" can not be claimed for Threatened-listed Bull trout and Mid-Columbia Steelhead trout. (See EA p. 77, 1st par.)

While the EA admits that: "Both alternatives would have direct and indirect effects on Regional Forester Sensitive and Management Indicator species." However the EA analysis does not support the conclusion that: "Project implementation...is not likely to trend species toward federal listing or loss of species viability." (EA *ibid.*) Three-toed woodpecker and American marten are especially vulnerable to up-listing and contributing to a trend toward loss of species viability. Three-toed woodpecker is already in decline, with far fewer sightings of this species, and American marten are ranked as "Vulnerable" in Oregon.

Statement on EA p. 93 under "Fisheries": "The Biological Evaluation and Biological Assessment concluded that the Tiger-Mill project **may affect and is likely to adversely affect** federally threatened Bull trout and Steelhead and their Designated Critical Habitat found in the Tiger-Mill project area." This BE and BA finding should have triggered the preparation of an EIS as these would likely be significant adverse impacts due to both fish species being listed as Threatened and likely to be adversely affected, which could lead to up-listing and loss of viability in the Tiger-Mill project area.

Remedy: Drop all proposed management actions that could harm Threatened-listed Bull trout and/or Threatened-listed Mid-Columbia Steelhead trout or degrade the habitat for Bull trout or for Mid-Columbia Steelhead trout. These proposed management actions that need to be dropped include the following: no non-commercial thinning and prescribed burning in RHCAs; no log hauling on roads within RHCAs; no logging and prescribed burning in all undeveloped lands, including within the Municipal Watershed, the Inventoried Roadless Areas, and within never logged forest; no logging or biomass reduction in forest on steep slopes greater than 35%; no logging, biomass reduction, and/or prescribed burning in moist mixed conifer forest and in old growth forest; and no logging, non-commercial thinning, and/or prescribed burning in RHCAs and adjacent or upslope forest on steep slopes above known or suitable habitat for Bull trout and/or Mid-Columbia Steelhead trout. Further, an EIS must be prepared to address the significant potential negative impacts to Threatened Bull trout and Mid-Columbia Steelhead trout, through in-depth detailed analysis, including for cumulative effects, and to provide a full range of action alternatives that would not cause uplisting or potential loss of viability to Threatened Bull trout and Mid-Columbia Steelhead trout.

The EA analysis tends to acknowledge the potential for unquantified negative effects and then assure the reader that any effects would be insignificant, with no detailed analysis or evidence to support that claim: "PDCs reduce but do not eliminate the potential for indirect negative effects to DCH (Designated Critical Habitat for Threatened-listed fish species) due to a pulse of sediment the first winter following road maintenance and during periods of higher log haul traffic crossing the 65 Mill Creek bridge. There are likely to be adverse effects to DCH. Any effect to MIS or RSS [Regional Sensitive Species] would be insignificant and would not change or lead to federal ESA listing." (EA p. 62, last par. under "Road Maintenance", emphasis

underlining ours). Notably, there is no assertion that Threatened-listed fish (Bull trout and Mid-Columbia Steelhead trout) would not trend toward uplisting to Endangered status or to a loss of viability in the project area. Acknowledged planned management-caused likely “adverse effects” to Designated Critical Habitat for Threatened-listed fish species should have flagged potential significant impacts, which should have triggered preparation of an Environmental Impact Statement.

Steep slope logging is known from past timber sales and studies to typically result in sedimentation of downhill streams due to greatly disturbed ground, removal of slope-stabilizing trees, potential landslides or mass wasting events that could harm Sensitive and Threatened-listed fish species, Sensitive or Threatened frog and salamander species, and Sensitive plant species—especially when the slopes are very steep (measured at 32 to 45 degrees slope) and where there is easily displaced ash soil in most moist forest sale units.

Another example of acknowledged adverse effects to Threatened-listed fish species, followed with the unsupported claim that there would be no loss of population viability or a trend toward up-listing: “PDCs and NMFS guidelines reduce but do not eliminate the potential to affect feeding behavior, and possibly entrainment, of ESA listed fish species. Due to the potential for direct effects to individual juvenile fish, water pump withdrawals may—and are likely to adversely affect, ESA listed bull trout and steelhead. Any effect to MIS or RSS species would impact a small number of individuals and would not change or lead to a loss of viability or lead to a federal ESA listing.” (EA p. 63, 1st full par.)

It is not necessary for proposed management to be within RHCAs to significantly degrade habitat for Threatened-listed Bull trout and Mid-Columbia Steelhead trout and/or Sensitive aquatic and riparian-associated species. For instance, steep slope logging above streams (which is common in the sale area) could introduce fine sediment into the stream system that chokes out fish, remove uphill trees shading the RHCA and providing cool, moist RHCA conditions, and reduce potential large wood future recruitment to streams to form cool pool water refugia for fish—especially as many of the mature and large trees on these slopes are very tall.

BMBP raised issues related to adverse impacts to ESA-listed aquatic species throughout its scoping comments, Exhibit A at 1, 6, 9-10, 31-32, 43-44.

III. Effects determination to Threatened, Endangered, and Regionally Sensitive Species

Re: Sensitive Plants Law, Regulation, and Policy Consistency on p. 94: So many Sensitive plant species being found in the Tiger-Mill sale area indicates a high degree of plant biodiversity in the area.

We are very concerned that: “The Biological Evaluation concluded that the Tiger-Mill project ‘may affect and is likely to adversely affect federally threatened Bull Trout and Steelhead and their Designated Critical Habitat found in the Tiger-Mill project area.’” (EA p.63 under “Effects determination”). This information was not disclosed for comment in the scoping letter. This could result in significant impacts to already Threatened-listed Bull trout, which has already lost most of its historic habitat range. Yet there is no follow-up to this conclusion to avoid this significant loss of Bull trout habitat and viability in the project area.

There is no supporting evidence or detailed analysis that would support the conclusion that “The project may impact the following Region 6 Sensitive species, but is not likely to

contribute to a trend towards federal listing or cause a loss of viability.” (EA p. 63 under “Effects determination”). So we are concerned that Region 6 Sensitive aquatic species might further decline, and cumulatively be uplisted to Threatened status, including Redband trout, Margined Sculpin, and Pacific lamprey.

Re: Sensitive Redband trout, Margined Sculpin, and Pacific lamprey: Sensitive Redband trout, Margined Sculpin, and Pacific lamprey are already in decline due to the cumulative effects of many timber sales across the region, greatly reducing the habitat and species’ populations due to the negative effects of logging, road construction and use, and in some cases, livestock grazing, making up-listing trends likely.

Since “Determinations of effects made in the biological evaluation do not differ by alternative.” (EA p. 63) both alternatives would likely result in significant negative impacts to federally Threatened Bull trout and Mid-Columbia Steelhead trout and their Designated Critical Habitat found in the Tiger-Mill project area and to Region 6 Sensitive aquatic and riparian species who may be moved to Threatened up-listing, contributing to a trend to loss of viability.

Remedy: Given the significance of these potential negative outcomes for Threatened and Sensitive aquatic and riparian species, the full Fisheries and Aquatics Biological Evaluation should not just be incorporated by reference, and the Tiger-Mill sale requires a full EIS and a full range of alternatives that would support viability of these Threatened and Sensitive aquatic and riparian species. None of these significant outcomes were acknowledged in the scoping letter. Without an EIS including detailed, in-depth analysis and development of action alternatives that would prevent the up-listing and potential loss of viability for Threatened-listed Bull trout and Mid-Columbia Steelhead trout, and for all the potential TESC wildlife species that could be inhabiting the Tiger-Mill project area (which remain unanalyzed for effects in the EA), the whole Tiger-Mill timber sale “Project” needs to be cancelled, due to potential significant impacts to a variety of TESC wildlife species that are present in the project area, or have suitable habitat within the project area. The planned management in the IRAs, the Municipal Watershed, and large areas of never logged forest and undeveloped lands, along with the high elevation moist mixed conifer and cold forest, raises the likelihood of the following TESC wildlife species in the Tiger-Mill project area and sale units: Threatened Canada lynx; Endangered Gray wolf; Threatened wolverine; Sensitive Pacific fisher, Sensitive woodpecker species (e.g. Lewis’ woodpecker); Sensitive Columbia Spotted frog; possible Rocky Mountain Tailed frog; potential Sensitive salamander species. These TESC wildlife species are in addition to the known presence of Threatened-listed Bull trout, Threatened-listed Mid-Columbia Steelhead trout, Sensitive Redband trout; Sensitive Margined Sculpin; and Sensitive Pacific lamprey.

There is no guarantee at all in the EA that the unspecified design criteria in the Biological Evaluation and Biological Assessment would fully mitigate negative effects to Threatened and Sensitive fish species. Effects from steep slope logging and logging in never logged forest and moist mixed conifer forest on slopes above or adjacent to streams are not considered. (See EA last par. on p. 63 and first par. on p. 64)

Remedy: Drop all commercial-size logging, biomass reduction, and road construction and road re-opening on: steep slopes greater than 35%, on unstable slopes and areas with previous history of landslides or mass soil movements, within moist mixed conifer forest and old growth forest, and within RHCAs and never logged forest and all undeveloped lands, including, but not limited to, IRAs and the Municipal Watershed. Prescribed fire needs to be excluded from all moist

mixed conifer, RHCAs, and all undeveloped lands, including Inventoried Roadless Areas and the Municipal Watershed. Roads should not be constructed or re-opened in any of the above areas to be dropped, including both “Temporary” roads and closed roads.

The Biological Evaluations discussed above were not released for public review and comment until now, so this Objection represents BMBP’s first opportunity to comment and object to this new information.

AQUATICS-FOCUSED OBJECTIONS

BMBP raised aquatics-focused issues in its Scoping Comments on the Tiger-Mill Notice of Proposed Action, Exhibit A at 25-54.

I. Stream Temperature, excess fine sediments, and other stream and water quality concerns:

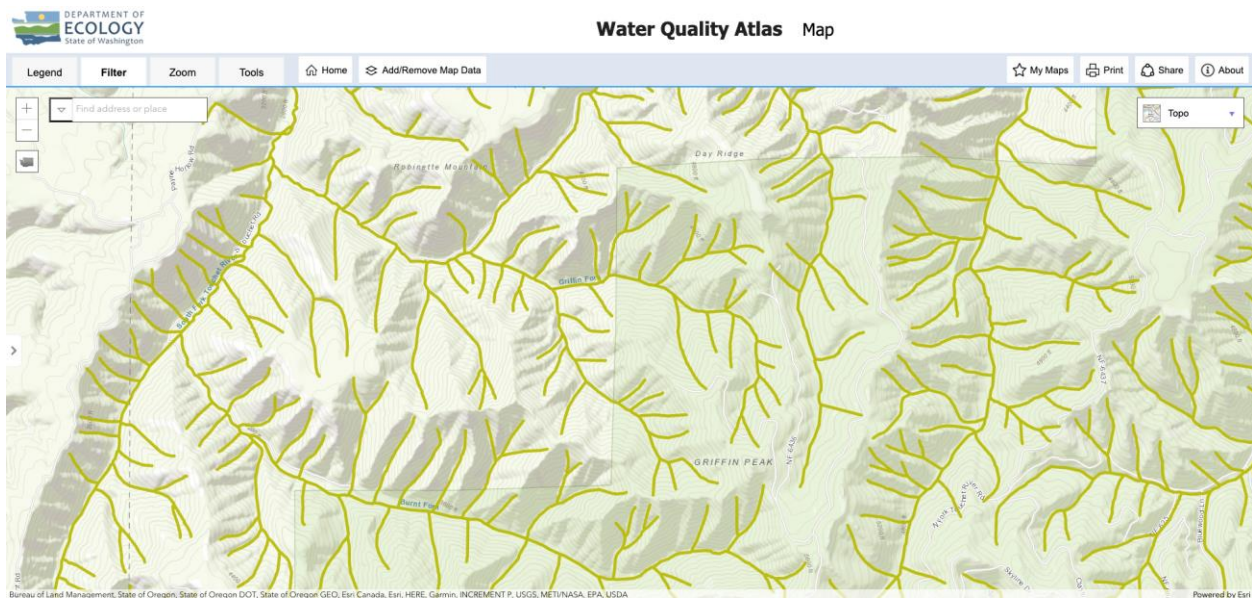
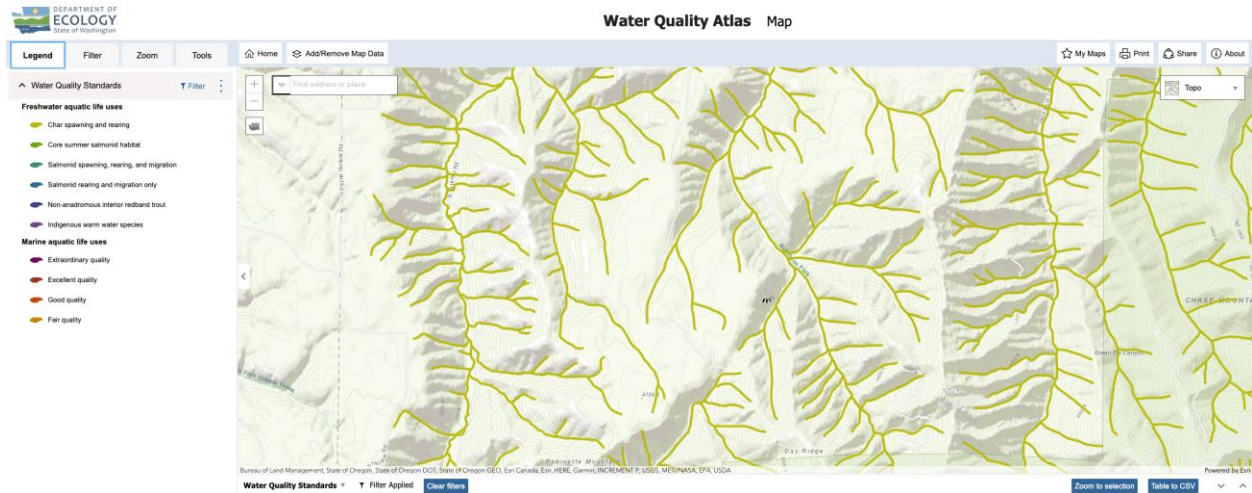
The Forest Service lacks sufficient baseline data for stream water temperatures in the Tiger Mill project area. The Fisheries BE includes continuous temperature data for only three streams—Mill Creek and two tributaries of the South Fork Touchet River (Griffin Fork and Burnt Fork).

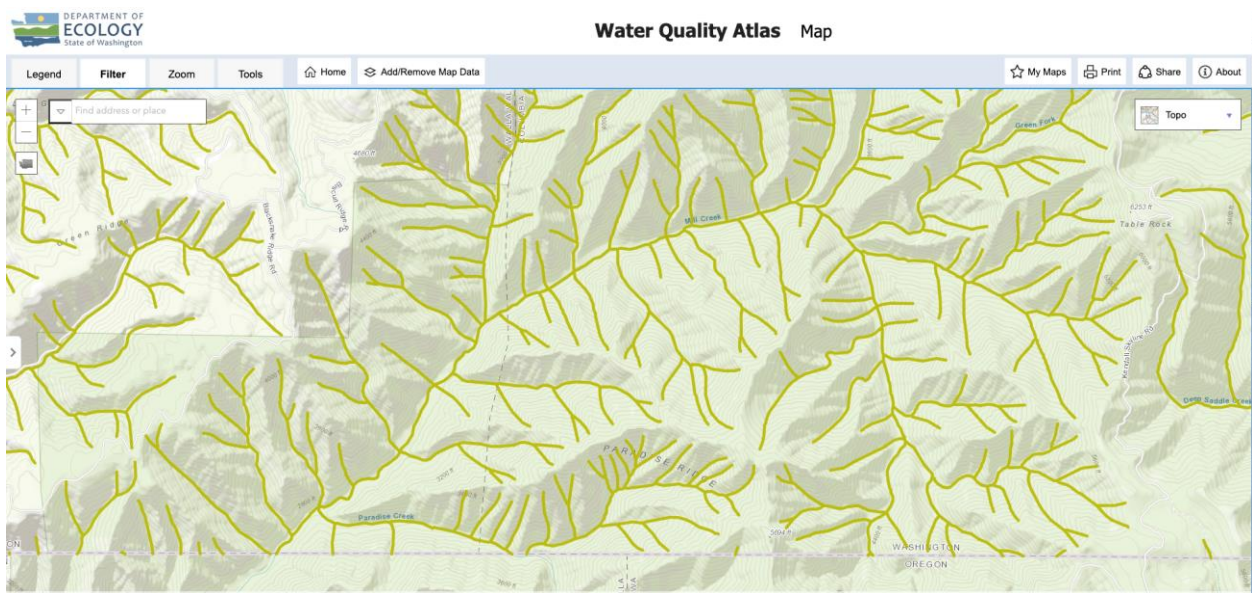
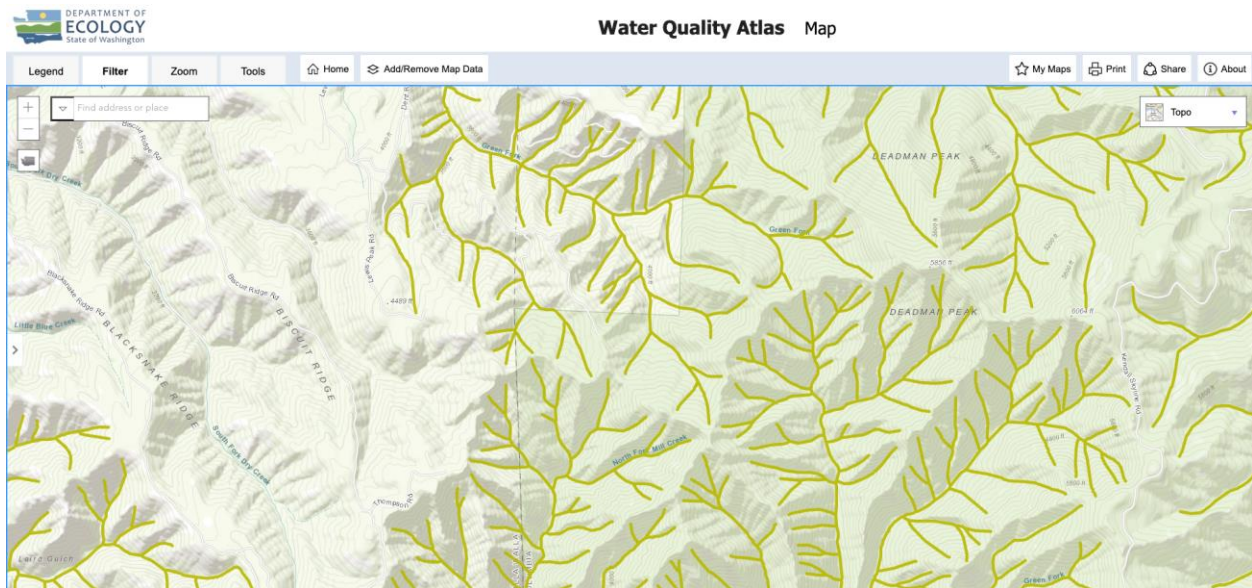
Within this very small collection of data, all 7-day max temperatures are above the 53.6 degrees Fahrenheit Char/Bull trout spawning and rearing use standard. Please see the Washington Department of Ecology and the Oregon Department of Environmental Quality map figures below, showing that these streams are designated as having a Char/Bull trout spawning and rearing aquatic use standard. That standard is 12 degrees Celsius (53.6 degrees Fahrenheit). The Washington Dept. of Ecology atlas can be found online here:

<https://apps.ecology.wa.gov/waterqualityatlas/wqa/map>. The Oregon Department of Environmental Quality beneficial uses map is included with our submission materials. The Washington homepage for water quality assessment and the 303d list is here: <https://ecology.wa.gov/water-shorelines/water-quality/water-improvement/assessment-of-state-waters-303d>. The page for water quality standards for surface waters for Washington state is here: <https://apps.leg.wa.gov/WAC/default.aspx?cite=173-201a>.

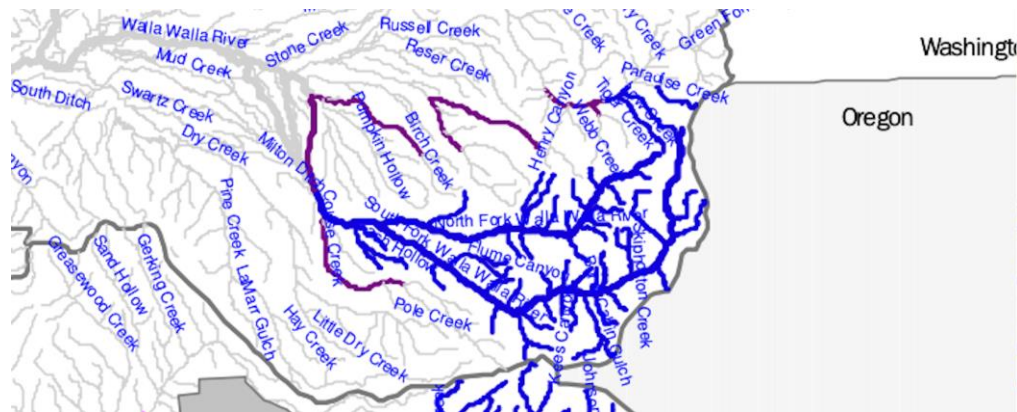
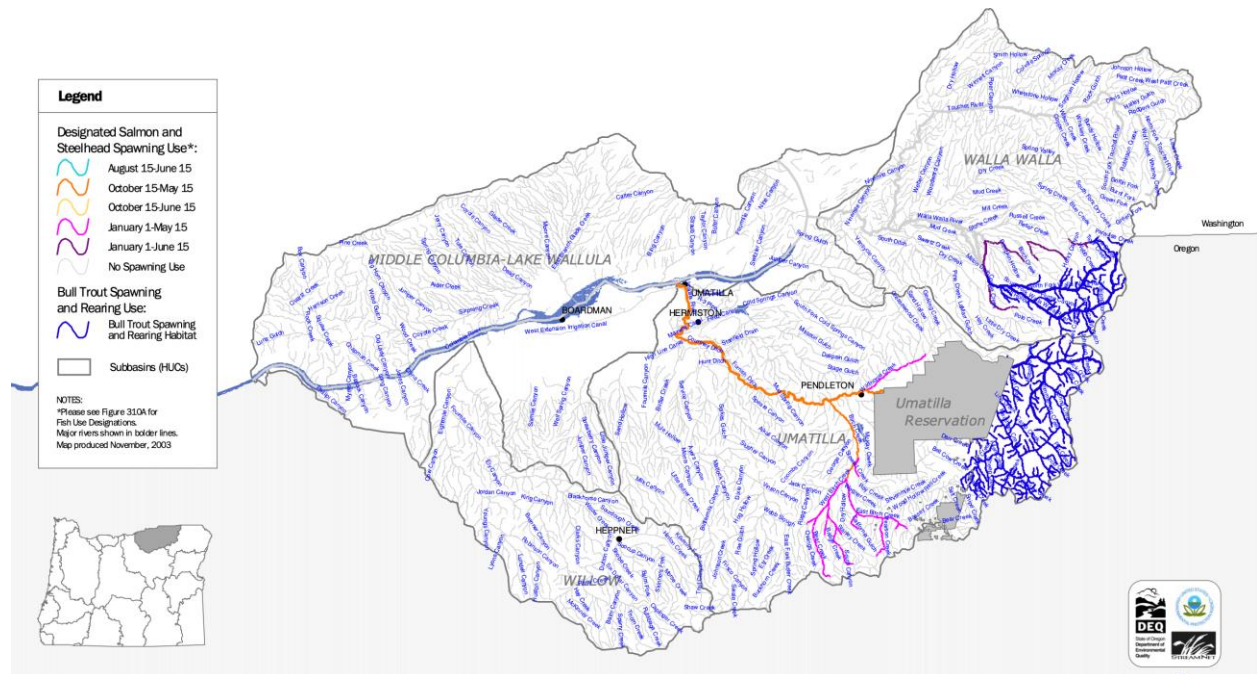
The Tiger Mill Fisheries Biological Evaluation (BE) fails to take into account these water quality impairments and the violations water quality standards, and instead incorrectly declares that streams within the project area are: “*Properly Functioning (except infrequent slight rises above bull trout spawning threshold)*”. The USFS is also failing to take into account the Washington and Oregon Clean Water Act standards, which designate most of the streams within the Tiger Mill project area as falling within Char/Bull trout beneficial use designations. The Char/Bull trout standards for the streams, as designated by the regulatory agencies, reflect the importance of protecting cold, clean waters both in upstream tributaries as well as in stream sections where Bull trout may be present. These standards are crucial to providing for and supporting needed habitat conditions in downstream reaches. The Forest Service repeatedly fails to recognize that the Char/Bull trout aquatic use standard does not only apply to streams where Bull trout are currently present—it also applies to these areas where the regulatory agencies have determined streams to be important to Bull trout and to providing cold, clean water to support them.

Washington Department of Ecology online atlas showing beneficial aquatic uses, with streams within the project area designated as having the Char/Bull trout Spawning and Rearing standard:





Oregon Dept. of Environmental Quality Designated Beneficial Use Maps, showing most streams within the project area in Oregon to be designated as having the Bull trout spawning and rearing standard:



The USFS seems to be relying on PACFISH RMOs alone for the stream temperature standard determination, rather than the state water quality standard. The more protective state water quality standard applies here.

Table 15. PACFISH RMOs

Habitat Feature	RMO's
Pool Frequency	
Wetted Width (ft)	10 20 25 50 75 100 125 150 200
Number of pools/ mile	96 56 47 26 23 18 14 12 9
Water Temperature	No measurable increase in maximum water temperature. * Maximum water temperatures < 68°F within migration, <55.4°F within Salmon/Steelhead spawning and rearing habitats and <53.6°F within Bull trout spawning and rearing habitats.
Large Woody Debris	East of the Cascades in Oregon and Washington > 20 pieces/mile, >12-inch diameter, >35 ft. length
Bank Stability	>80 percent stable
Width/Depth Ratio	<10, mean wetted width divided by mean depth

Relative Condition

The Fisheries BE appears to rely heavily on their stream temperature data from “instantaneous” grab samples. Stream temperatures should be monitored through continuous data collection, taken with HOBO probes or similar monitoring devices. The Environmental Protection Agency and the Forest Service have clearly outlined standard practices and proper protocols for stream temperature monitoring—and those protocols require continuous monitoring. The protocols do not, at any point, include instantaneous or grab samples as a legitimate method to monitor streams or to determine water quality compliance. The only times they are mentioned in standard protocols/best practices methods, it is in the context of using grab samples to assist in verifying the accuracy of the probes that are collecting continuous data. The EPA’s [Best Practices for Continuous Monitoring](#) (Exhibit VV) and the Forest Service’s [PACFISH/INFISH Biological Opinion Monitoring Program Effectiveness Monitoring Sampling Methods for Stream Channel Attributes 2019](#) (Exhibit WW) are both included with our submission of materials.

The below figure, showing Table 16, is from the Tiger Mill BE:

Table 16. Continuous recording thermograph data summary (7-day average maximum)

SubWatershed	Stream	Location	Year	Temp (°F)	Source
Upper Mill Creek	Mill Creek	Water intake	2023	55.5	USFS
South Fork Touchet	Griffin Fork	Upper-1.75 miles below FS boundary	2023	55	USFS
		Middle-0.9 miles below FS boundary	2023	58.1	USFS
	Burnt Fork	Upper- At FS boundary	2023	56.4	USFS
		Lower-0.6 miles below FS boundary	2023	59.5	USFS

Instantaneous temperatures have been collected from streams within and downstream of the project area (Table 17). These temperatures were taken during the most recent survey as indicated. They were usually taken every day they would start a survey on that particular stream between the months of June-September.

Table 17. Instantaneous water temperature data summary

Sub-Watershed	Stream	Year	Range (°F)	Source
Middle Mill Creek	Tiger Creek	2015	57-64	FS
	Henry Creek	2007	46-53	FS
	Webb Creek	2007	41-50	FS
North Fork Walla Walla	NF Walla Walla	2009	50-62	FS
Upper Mill Creek	Low Creek	2023	48-51	FS
	Mill Creek	2023	44-51	FS
	Paradise Creek	2023	46-51	FS
	NF Mill Creek	2023	46-55	FS
South Fork Touchet	Burnt Fork Creek	2008	48-53	FS

The agency knows that grab samples are not accepted protocol for monitoring stream temperatures—and for good reason. For example, most agency field work starts early in the day and so ends relatively early in the day, with time for employees to drive back to their work location, take care of paperwork and other tasks, and be out of the office by 4 or 5pm. What time of day were these grab samples take? Temperatures vary substantially throughout the day in small wadeable streams, and grab samples taken earlier in the day are likely to be much, much cooler than those taken in late afternoon. Of course instantaneous temperatures that were likely taken sometime between 8am and 1pm are mostly in compliance with water quality standards—streams are at some of their lowest temperatures during those times. If temperatures were taken at between 4 to 6pm on long hot summer days, they would likely be substantially warmer. As it is, even with these fatal flaws regarding the agency’s sampling protocol, some of these instantaneous data are still above stream temperature standards. Water quality standards, and the best practices for monitoring streams, are meant to be inclusive of temperatures in the hottest times of the day, as these are the very temperatures that pose risks to fish and aquatic life.

It is a relatively simple process to deploy and collect probes that continuously monitor stream temperature, and the probes themselves are inexpensive. Such stream temperature monitoring requires relatively few resources in the way of employee hours or capacity. There is no good reason for the Forest Service not to have abundant baseline data for streams.

Furthermore, the USFS’s continuous stream temperature data include only one year of data, and the Mill Creek data appears to come from only one location along the creek. For Griffin and Burnt Fork Creeks, temperature data appears to come from below, or in one case at, the USFS boundary. Again—stream temperature monitoring is one of the cheapest and comparatively easiest methods of ecological monitoring available. It’s not hard to do! The agency can and should have adequate baseline data for streams—especially those that support MCR steelhead and Bull trout and their designated critical habitats, and especially when the

agency wants to go forward with plans that may impact these imperiled species and the clean cold water they depend upon. Due to the paucity of data from the agency, there will be no way to determine what sort of effect logging, roading, and burning in the Tiger Mills sale may be having on stream temperatures during or after project implementation.

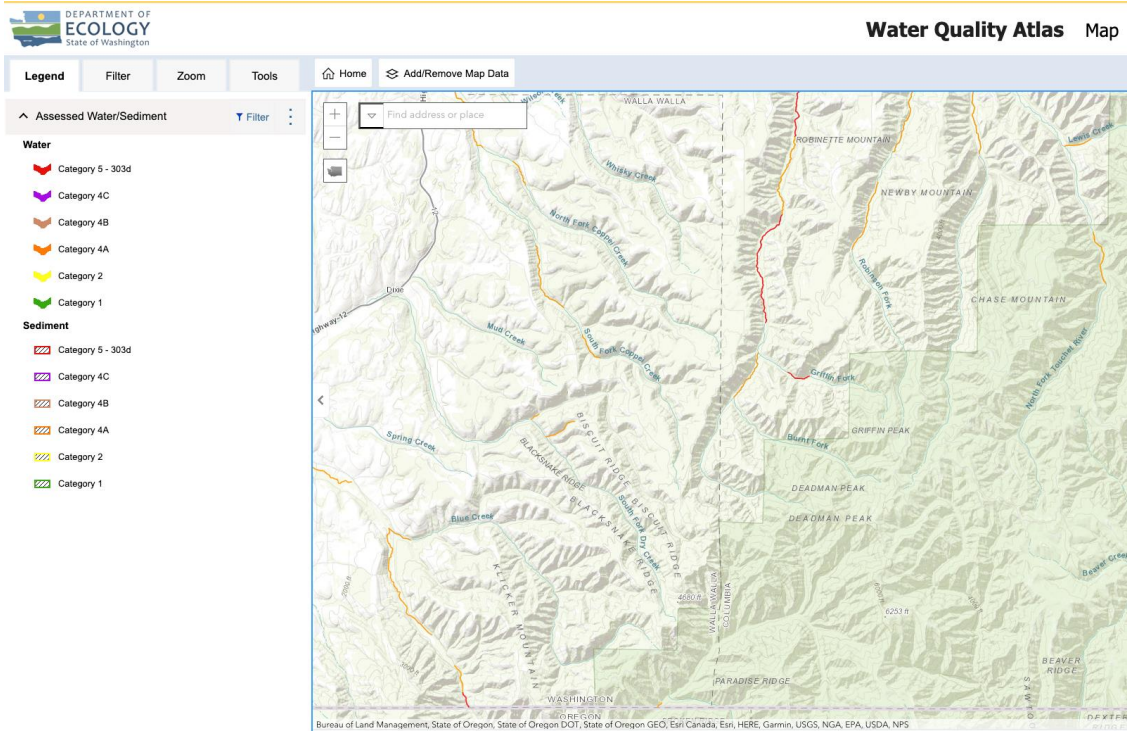
Adaptive management is impossible without adequate baseline data. Given the planned logging, roading, and burning within this sale—not to mention sales throughout the Umatilla NF and beyond—it is unconscionable for the Forest Service to not put forth the effort to determine baseline conditions, and so not have any future mechanism to ensure that forest practices in this sale will not be violating water quality standards or causing long-term harm and downward population trends for ESA-listed fish.

In my decades of experience in tracking timber sales, there is rarely any real attempt by the agency to actually take a hard look at baseline conditions prior to a timber sale, much less continue to monitor stream temperatures after implementation. In the few instances that plans have been made to have sufficient data pre and post logging, the agency has never once followed through with their own stream temperature monitoring plans. The agency is willfully ignoring direct, indirect, and widespread cumulative effects to imperiled Bull trout, Mid-Columbia steelhead, and other ESA-listed aquatic species. Their utter failure to monitor water quality, especially stream temperature and fine sediment, is a purposeful omission of key monitoring that is likely to raise red flags for water quality and fish.

The Fisheries BE goes on to state on pg. 29:

“The planning area has no 303(d) listed (water quality impaired) stream segments and streams within the project area are covered by the Walla Walla River Temperature TMDL for both Oregon and Washington. The TMDLs identify load allocations for perennial streams based on bankfull width and stream orientation and relies on the Forest Service to implement interim PACFISH buffers and other BMPs needed to protect water quality. The TMDLs use percent shade as a surrogate for water temperature and provide stream shading curves based on bankfull channel width and dominant vegetation type for forested streams. The load allocations are expected to result in water temperatures that are equivalent to the temperatures that would occur under natural conditions. The Tiger-Mill project meets these standards.”

Again, the agency ignores key data and facts, and excludes inconvenient but very pertinent on-the-ground conditions for streams and water quality. The Washington Department of Ecology online Atlas shows several water quality impaired stream segments within the project area, including some that appear to depict streams on the 303d list. Please see figures below:



Here are examples of the summary reports associated with a couple of these stream segments. Note that the summary reports are dated after the Washington TMDL, which was published in 2007 and is severely outdated. The summary reports show that Mill Creek and Griffin Creek are “category 5” streams, meaning that they are water quality impaired and needing TMDLs. Other stream segments are also shown as “category 5” in the atlas, and several others are listed as being water quality impaired.

apps.ecology.wa.gov/approvedwqa/approvedpages/viewapprovedlisting.aspx?ListingId=93231

New Tab SHANK YOU FOR T... Import to Mendeley mammoth // build... S, 787 Clean Water... World Water Day 2... Clean Water Act S... Railroads & Clearc... Oregon History Pr... Mt. Hood National... USGS Data Graph... ir.library.oreg...

Listing ID: 93231

Waterbody Name: MILL CREEK

Medium: Water

Parameter: Temperature

WQI Project: None

Designated Use: Aquatic Life - Char Spawning and Rearing

Current Category: 5

[View Category History](#)

Assessment Unit

Assessment Unit ID: 17070102000169_001_001

Size: 0.612 Kilometers

County: Walla Walla

WRIA: Walla Walla

Associated Component(s): Reach: 17070102000169 0% - 100%, Type: Rivers/Streams

Basis Table

Assessment Year

2018

Sampling Year	Excursion Count	Sample Count	Criterion/Threshold	Aggregate	Calculated Value	Supplemental Spawning Criterion	Supplemental Spawning Period	Supplemental Spawning Aggregate	Supplemental Spawning Calculated Value
2015	11	132	12.0 deg C	7-DADMax	18.53	13.0 deg C	Sep 15 - Jun 15	7-DADMax	11.99

Basis Statement

Remarks

Supplemental Spawning Criteria: 13.0 deg C from Sep 15 - Jun 15

Assessment Cycle 2018 - During 2015, the standards were exceeded at least 2 times in the year.

Data Sources

Study Id	Location Id	Source Database
G1300059	MC1_WWCCD	EIM

[Map Link](#)

[Map Link](#)

[Back To Results](#)

apps.ecology.wa.gov/approvedwqa/approvedpages/viewapprovedlisting.aspx?ListingId=93271

Democracy Now! New Tab SHANK YOU FOR T... Import to Mendeley mammoth // build... S, 787 Clean Water... World Water Day 2... Clean Water Act S... Railroads & Clearc... Oregon History Pr... Mt. Hood National... USGS Data Graph... ir.library.oreg...

Washington State Water Quality Assessment 303(d)/305(b) List

Approved WQ Assessment Draft List Contact Us WQ Atlas

[Back To Results](#)

[Water Quality Listing Policy](#)

Listing ID: 93271

Main Listing Information

Listing ID: 93271

Waterbody Name: GRIFFIN FORK

Medium: Water

Parameter: Temperature

WQI Project: None

Designated Use: Aquatic Life - Char Spawning and Rearing

Current Category: 5

[View Category History](#)

Assessment Unit

Assessment Unit ID: 17070102000404_002_002

Size: 0.936 Kilometers

County: Columbia

WRIA: Walla Walla

Associated Component(s): Reach: 17070102000404 59.8% - 100%, Type: Rivers/Streams

Basis Table

Assessment Year

2018

Sampling Year	Excursion Count	Sample Count	Criterion/Threshold	Aggregate	Calculated Value
2015	2	127	12.0 deg C	7-DADMax	12.42

Basis Statement

Remarks

Assessment Cycle 2018 - During 2015, the standards were exceeded at least 2 times in the year.

Data Sources

Study Id	Location Id	Source Database
4	CTUIR_WQX-267	Water Quality Portal
4	CTUIR_WQX-330	Water Quality Portal

[Map Link](#)

There are also additional impaired streams that appear to be on the 303d list just downstream of the project area, including the South Fork of the Upper Touchet River. The Forest

Service failed to adequately consider cumulative impacts to water quality and stream temperatures from logging, roading, and burning in the Tiger Mill project to rivers and streams within and downstream of the project area.

apps.ecology.wa.gov/approvedwqa/approvedpages/viewapprovedlisting.aspx?ListingId=93272

Washington State Water Quality Assessment (303(d)/303(c) List)

WQ Assessment Draft List Contact Us WQ Atlas

[Back To Results](#)

[Water Quality Listing Policy](#)

Listing ID: 93272

Main Listing Information

Listing ID: 93272
 Waterbody Name: TOUCHET RIVER, S.F.
 Medium: Water
 Parameter: Temperature
 WQI Project: None
 Designated Use: Aquatic Life - Char Spawning and Rearing

Current Category: 5 [View Category History](#)

Assessment Unit

Assessment Unit ID: 17070102000317_001_001
 Size: 4.77 Kilometers
 County: Columbia
 WRIA: Walla Walla
 Associated Component(s): Reach: 17070102000317 0% - 100%, Type: Rivers/Streams

Basis Table

Assessment Year: 2018

Sampling Year	Excursion Count	Sample Count	Criterion/Threshold	Aggregate	Calculated Value	Supplemental Spawning Criterion	Supplemental Spawning Period	Supplemental Spawning Aggregate	Supplemental Spawning Calculated Value
2015	19	129	12.0 deg C	7-DADMax	23.49	13.0 deg C	Feb 15 - Jun 15	7-DADMax	20.58

Basis Statement

Remarks

Supplemental Spawning Criteria: 13.0 deg C from Feb 15 - Jun 15
 Assessment Cycle 2018 - During 2015, the standards were exceeded at least 2 times in the year.

Data Sources

Study Id	Location Id	Source Database
4	CTUIR_WQX-324	Water Quality Portal

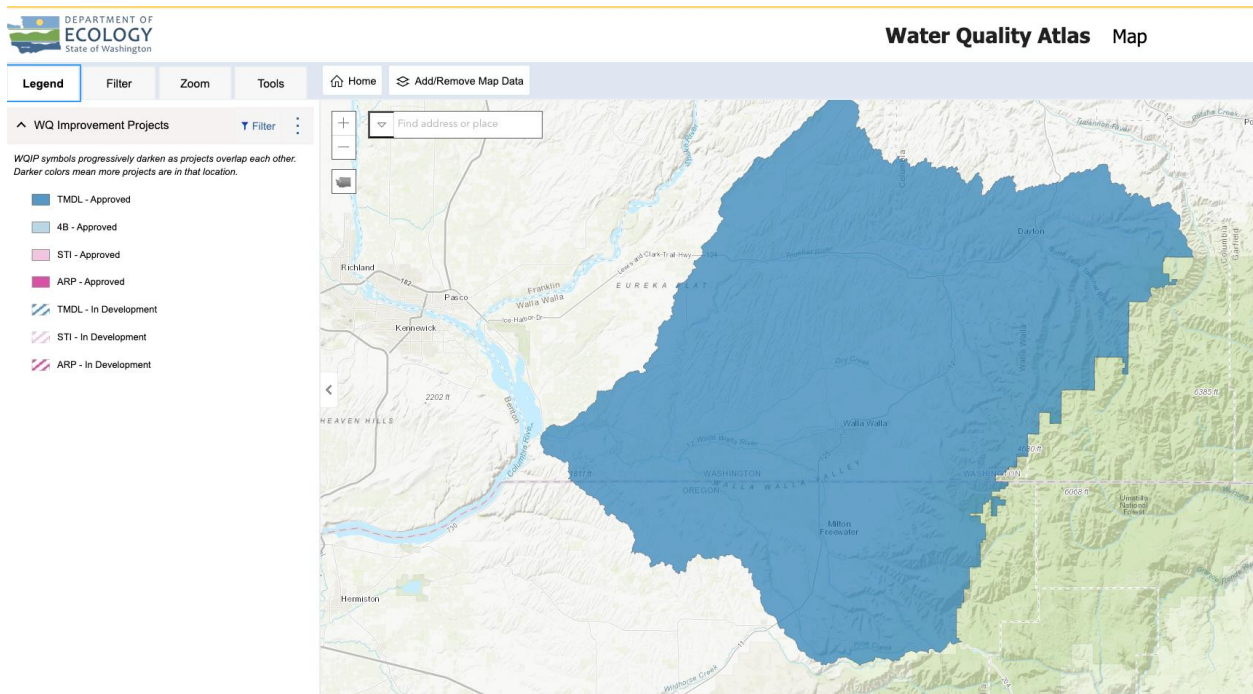
Glaringly, because the USFS only has a handful of stream temperature data, derived from the very small number of streams they have monitored—of course only a handful of streams are on the 303d list and/or are listed as impaired in the ODEQ or WA Dept. of Ecology databases. The USFS seems to think that if they do not collect stream temperature data, then that means there are no impaired streams and so no problem, apparently. If the agency has more stream temperature data in its possession, either data it has collected or that other agencies have collected, those should have been included in the NEPA documents for public review and we request that the FS disclose those data.

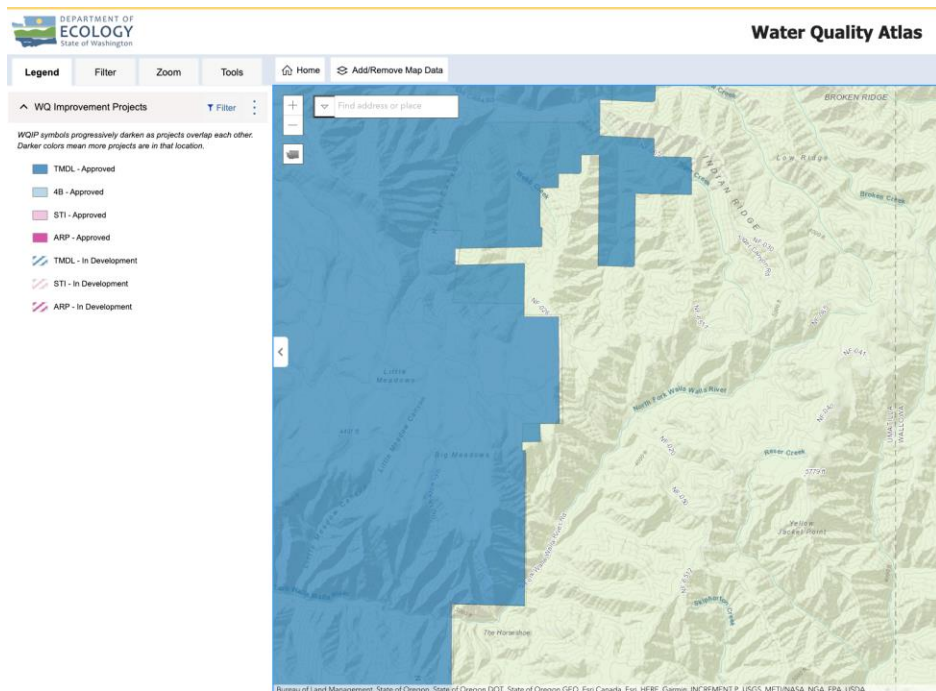
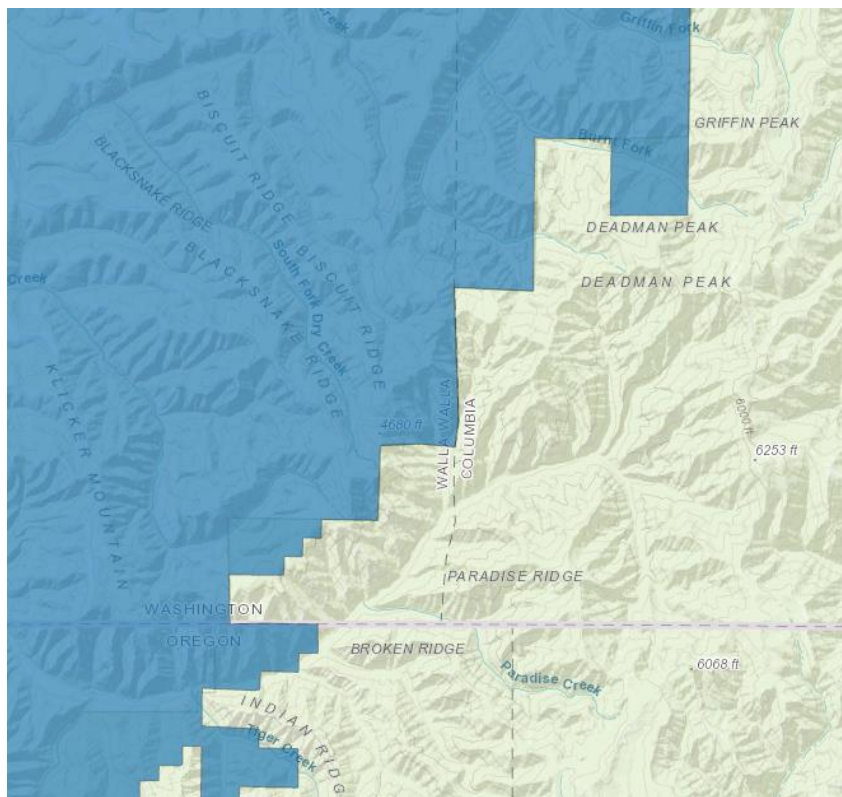
In addition, the USFS has a long and unfortunate history of failure to share the stream temperature data it has collected with regulatory agencies. For example, for the 2018 ODEQ ‘call for data’ BMBP alerted ODEQ that, based on the stream temperature data we had collected through Freedom of Information Act requests and comparing that data to ODEQ’s database, that the FS had failed to almost any data with ODEQ for over a decade. We wrote a letter to ODEQ as well as Oregon Forest Supervisors raising this issue (we’ve included this information in our submitted materials for the Tiger Mill project). Our letter resulted in the FS finally turning over data for hundreds of streams to ODEQ. Many of those streams are now designated as impaired and/or 303d listed and are awaiting TMDLs or revised TMDLs. While this was an important step in the FS having a measure of transparency with regulatory agencies and the public,

unfortunately the stream temperature data that was submitted to ODEQ was done on a voluntary basis within FS Districts, and much data has yet to be submitted. ***Has the Forest Service submitted all of the (extremely limited) stream water quality data it has from streams in the Tiger Mill project to ODEQ and Washington Dept. of Ecology? For streams in other nearby projects, and across the Umatilla NF?***

Furthermore, the FS seems to brush aside it's responsibility to ensure that actions in the Tiger Mill sale do not measurably raise temperatures, and that water stream temperatures are in compliance with standards. The agency points to the outdated Walla Walla River Temperature TMDL for Oregon and Washington and it's use of percent shade as a surrogate for water temperatures. However, the TMDL itself seems to suggest that removing trees within 75 to 140 feet from streams can affect stream shade (Walla Walla River TMDL 2007, pg. 16). For example, the TMDL states, in the summary paragraph on assessing the differing ranges of widths of buffers important to stream shade: "*Steinblums et al. (1984) concluded that that shade could be delivered to forest streams from beyond 75 feet (22 m) and potentially out to 140 feet (43 m). In some site-specific cases, forest practices between 75 and 140 feet from the channel have the potential to reduce shade delivery by up to 25 percent of maximum.*" The Tiger Mill sale is proposing removal of trees within 75 feet of streams—and so is not adhering to conclusions or majority of the research outcomes presented in the TMDL.

Importantly, it appears that the Walla Walla River temperature TMDL does not cover many or even most of the streams within the project area:





It also appears, in the information provided by the Dept. of Ecology, that only a lower elevation segment of Mill Creek-- one that is more open and has few conifers, and is outside of USFS boundaries-- provides the modeling locations and focus of stream shade as part of the TMDL discussions on the issue. It does not appear that this modeling was meant to be applied to higher elevation streams within the Tiger Mill project—many of which do not appear to be covered by the temperature TMDL.

Yet another problematic issue is that the agency is ignoring, in its use of stream shade as a surrogate for temperature, that stream temperatures and shade are not well correlated in many (perhaps the majority) of instances for which they have those data. In the few instances where the FS actually has more comprehensive stream temperature and shade data and discloses it to the public, it is clear that in many or most locations where stream shade are met, stream temperature standards are not. Please see BMBP's Aquatics Addendum in our submitted materials, for detailed examples and explanations of this issue from the Big Mosquito, Camp Lick, Magone, and Ragged Ruby timber sales on the Malheur NF. In these sales, in the majority of locations where stream shade was meeting standards, stream temperatures were in violation of stream temperature standards. While stream shade standards created the illusion of temperature compliance, in reality stream temperatures were often excessively high and at levels recognized as limiting or lethal for ESA-listed and sensitive fish.

While protecting stream shade is a very important component of protecting stream temperatures, it is not the whole story. Particularly if watersheds are suffering from ongoing forest degradation and altered hydrology from logging and roads—then simply protecting shade does not sufficiently protect stream water temperatures. Potential negative effects to special status species due to logging and roading are well documented, particularly when conducted near riparian areas and when risks from climate change are considered. For example, the USFS's 2014 Draft Forest Plan Revision for the Blue Mountains (vol. 2 pg. 48) (Exhibit FF) noted:

“Timber harvest can influence aquatic ecological condition via such activities as removal of trees in the riparian zone, removal of upslope trees, and associated understory or slash burning (Hicks et al. 1991). These activities can affect wood recruitment, stream temperatures, erosion potential, stream flow regime, and nutrient runoff, among others (Hicks et al. 1991). Effects of harvest are likely to be different at different scales. Hemstad and Newman (2006) found few effects of harvest at the site or reach scale, but found that harvest five to eight years earlier resulted in losses of habitat quality and species diversity at the scale of a stream segment (larger than a reach) or at the subwatershed level. Those losses were revealed in terms of increases in bank instability and fine sediment throughout the watershed and increased water temperatures and sediment problems throughout the channel segment. The cumulative effects of widespread harvest within a single drainage in a short period of time resulted in deterioration of the aquatic and riparian habitats, but evidence of effects lagged harvest by several years and different evidence of deterioration showed up at different spatial scales within the watershed”.

Multiple lines of evidence from primary peer-reviewed literature suggests that logging, including riparian thinning and upslope logging, has negative effects on stream temperatures. For example, Guenther et al. (2012) (Exhibit Z) found increases in bed temperatures and in stream daily maximum temperatures in relation to 50% removal of basal area in both upland and riparian areas. Increases in daily maximum temperatures varied within the harvest area from 1.6 to 3 degrees Celsius. Pollock et al. 2009 (Exhibit O) found that stream temperature was more closely associated with degree of logging within catchments than with streamside vegetation.

Small streams are particularly vulnerable to increases in temperature, even with limited selective logging. There is evidence to suggest that wider buffer widths may be necessary to protect stream temperatures, particularly in intermittent and headwater streams, and particularly when logging within 100' of streams. Parameters that influence stream temperatures include, stream shade, overland flow, groundwater and hyporheic flows, and groundwater storage. Alteration of these parameters can increase stream temperatures, especially in small streams. Logging degrades the ability of these parameters to support cold water, and so is likely to increase stream temperatures. (Exhibits G–T). Logging is also likely to increase surface runoff and overland flow, potentially delivering warmer water (and excess sediments) into streams more quickly and with a greater volume. As discussed in other sections of these comments, such inputs can also cause erosion and alter stream morphology. Such issues can, in turn, affect stream temperatures. Because the agency failed to adequately consider increases to stream temperature from logging and roading in the Tiger Mill project, it also failed to consider the possibility that such logging and roading might also increase the possibility for toxic algal blooms, which can be huge and difficult problems in many human-impacted watersheds, and would pose challenges for drinking water.

The Tiger Mill EA (pg. 63) states, without evidence that: “there will be no long term negative cumulative effects to effective shade or stream temperature from this project”. In addition, “stream channel morphology and streambank stability would not be altered”.

The Tiger Mill Fisheries BE conclusion (emphasis added) that “[t]he TMDLs use percent shade as a surrogate for water temperature and provide stream shading curves based on bankfull channel width and dominant vegetation type for forested streams. The load allocations are expected to result in water temperatures that are equivalent to the temperatures that would occur under natural conditions. **The Tiger-Mill project meets these standards.**” The USFS’s conclusion that the Tiger-Mill project meets these standards is flawed at every step of the agency’s faulty assumptions and incomplete data.

Finally, ODEQ has recognized the need to significantly update the Walla Walla River TMDL, and has plans to do so in May of 2028. You can see the schedule for updating out of date TMDLs here: <https://www.oregon.gov/deq/wq/tmdls/Pages/tmdlreplacement.aspx>.

In addition to upcoming TMDL reviews, it appears that the Walla Walla Conservation District has recently received large grants and is working on a variety of watershed projects, including ESA-listed steelhead restoration in Mill Creek (<https://www.wcccd.net/district-projects/mill-creek-program/>). Is the FS coordinating with these projects?

II. Excess fine sediments and other water quality concerns:

We have similar concerns about excess fine sediments as those we've raised for temperature, including increased fine sediment in creeks due to logging and roads. We're also extremely worried about insufficient baseline data, failure to share data with the regulatory agencies (ODEQ and WA Dept. of Ecology), and lack of ongoing and future water quality monitoring for fine sediments (such as turbidity or embeddedness). Unfortunately, we also have similar concerns regarding many Riparian Management Objectives (RMOs) such as large woody debris, pool frequency, pool depth to width, bank stability, and other parameters such as alterations to peak and base flows. Attainment of RMOs will be retarded due to the logging, roading, and burning activities proposed in the Tiger Mill project.

The Fisheries BE notes that there are *"approximately 18 miles of Columbia River Bull Trout and 14 miles of Middle Columbia River steelhead occupied streams within the project area"*. Unfortunately, a huge number of proposed sale units in the Tiger Mills sale are located on steep slopes above these creeks that support ESA-listed fish and other imperiled aquatic species. Excess sediments from logging, roading, and subsequent erosion on steep slopes above creeks will negatively impact Bull trout, MCR steelhead, and other special-status and imperiled aquatic species. We are also concerned about widespread thinning and burning within RHCA buffers, especially given the widespread and heavy logging planned throughout project watershed.

Studies have found that logging, including selective logging, may be associated with increases of instream fine sediments (Kreutzweiser et al. 2005 (Exhibit AA)), Miserendino and Masi 2010 (Exhibit BB)), changes in macroinvertebrate community structure or metrics (Flaspohler et al. 2002 (Exhibit CC), Kreutzweiser et al. 2005), alterations in nutrient cycling and leaf litter decomposition rates (Lecerf and Richardson 2010 (Exhibit DD)), and increases in stream temperatures (Guenther et al. 2012). Flaspohler et al. (2002) noted that changes to biota associated with selective logging were found decades after logging. While these studies did not take place in eastern Oregon, they strongly suggest that alterations caused by logging within riparian buffer zones may result in significant changes in water quality parameters and stream biota in many areas; these results are likely tied to dynamics that may be common to many forested streams to varying degrees. The FS itself has acknowledged that: *"[r]esearch has shown that effective vegetated filter strips need to be at least 200 to 300 feet wide to effectively capture sediment mobilizing by overland flow from outside the riparian management area"* (USFS 2018 Draft Blue Mountains Forest Plan Revision vol. 2 pg. 52).

In addition, Best Management Practices may need to be specially designed to ensure protection of Bull trout (USFWS 2010) (Exhibit EE). The USFWS 2010 Final Rule for Bull Trout also states:

"Timber harvest and road building in or close to riparian areas can immediately reduce stream shading and cover, channel stability, and large woody debris recruitment and increase sedimentation and peak stream flows (Chamberlin et al. 1991, p. 180; Ripley et al. 2005, p. 2436). These activities can, in turn, lead to increased stream temperatures, bank erosion, and decreased long-term stream productivity. The effects of road construction and associated maintenance account for a majority of sediment loads to

*streams in forested areas; in addition, stream crossings also can impede fish passage (Shepard et al. 1984, p. 1; Cederholm and Reid 1987, p. 392; Furniss et al. 1991, p. 301). Sedimentation affects streams by reducing pool depth, altering substrate composition, reducing interstitial space, and causing braiding of channels (Rieman and McIntyre 1993, p. 6), which reduce carrying capacity. Sedimentation negatively affects bull trout embryo survival and juvenile bull trout rearing densities (Shepard et al. 1984, p. 6; Pratt 1992, p. 6). An assessment of the interior Columbia Basin ecosystem revealed that increasing road densities were associated with declines in four nonanadromous salmonid species (bull trout, Yellowstone cutthroat trout (*Oncorhynchus clarkii bouvieri*), westslope cutthroat trout (*O. c. lewisi*), and redband trout (*O. mykiss* spp.)) within the Columbia River basin, likely through a variety of factors associated with roads. Bull trout were less likely to use highly roaded basins for spawning and rearing and, if present in such areas, were likely to be at lower population levels (Quigley and Arbelbide 1997, p. 1183). These activities can directly and immediately threaten the integrity of the essential physical or biological features described in PCEs 1 through 6.”*

The Fisheries BE discloses (Table 6) that within RHCA buffers on some stream segments, thinning will reduce tree stems from 500-2,500 per acre to 175-200 per acre. This is a huge loss of trees within these RHCAs, and will alter hydrology, snow accumulation, groundwater, buffer strip effectiveness for protecting streams from increased sediments and temperature, and other watershed processes. Even limited logging within RHCAs may compromise the ability of the riparian buffer to protect streams or ameliorate the negative impacts from upland logging, including increased stream temperatures and the delivery of sediment and nutrients into waterways. Logging adjacent to streams will substantially worsen these ecologically damaging dynamics.

Small-scale degradation of stream habitats and water quality can cause severe and long-lasting negative impacts for fish. Localized water quality degradation at the subwatershed or reach scale can jeopardize imperiled and ESA-listed fish—especially if the problem is repeated in multiple stream reaches across the landscape. At-risk aquatic species such as Bull trout are already suffering from fragmented and small populations across their range. Creating additional negative impacts across the landscape as a result of increased logging large trees is extremely risky at best. Small and isolated populations make for fragile populations that are subject to declines due to localized events, genetic drift, and other factors. The USFS 2014 DEIS Proposed Revised Land Management Plans for the Malheur, Umatilla, and Wallowa-Whitman National Forests, Vol. 2 pg. 52 (Exhibit FF) noted that: “...**vulnerable aquatic species could be impacted in the short term in ways from which they could not easily recover...**” even in cases where the management actions resulted in long-term benefits in later years. The negative effects on water quality parameters such as stream temperature and fine sediments from proposed logging within this sale and from ongoing logging throughout the region jeopardize Bull trout and Steelhead populations and their viability.

Ecosystems of the Pacific Northwest (PNW) evolved with and are adapted to the usually infrequent and heterogeneously distributed large pulses of fine sediment associated with natural disturbance events such as wildfire, volcanic eruptions, and landslides. PNW ecosystems, and the aquatic species that they support, did not evolve with and are not adapted to the constant,

chronic, ubiquitous, and widespread fine sediments associated with roads and other human-caused disturbances. Road-related sediment inputs, and the effects they have on sensitive aquatic species, are unprecedented in evolutionary history. (Please see Geologist Dr. David Montgomery's 2004 book *King of Fish: The Thousand-Year Run of Salmon*) Yet, the FS continues to focus on fear of fire to justify logging-- despite consistent and overwhelming evidence that logging and roads are actually the primary threats to forest ecosystems and imperiled aquatic, not fire.

As part of this agency bias, the Forest Service consistently downplays well-documented negative effects from roads, logging, and fire suppression, and instead myopically and misleadingly characterizes risks from fire as a rationale for logging. For example, in addition to the other issues we raised regarding the WEPP model, the Forest Service fails to quantify or estimate the increase in fine sediment production due to logging and roads—and instead quantifies sediment due to wildfire in pre- and post- logging scenarios. We are very concerned about the likely increase in fine sediments and degradation of water quality for fish, ecosystems, and human drinking water. The FS focused entirely on the risk of increased turbidity in drinking water due to fire. However, it failed to adequately consider the short and long-term deleterious effects from altered hydrology, base and peak flows, sediments, turbidity, stream temperatures, and stream habitats from logging and roads.

The agency has a legal responsibility to protect water quality, Riparian Management Objectives, and ESA-listed species and other native species. It not mandated to manage for HRV, nor should theories about HRV (based on flawed and tenuous science, please see BMBP's addendum materials) supersede protections for species and ecosystems. In addition, the FS's assertions that vegetation in the area has substantially increased is not supported by recent research. For example, thesis research from Pierson (2018) (Exhibit GG) that took place in the Mill Creek basin found, when analyzing changes in vegetation since 1939, that *"[i]n this study, analysis of long-term vegetation change demonstrated that although riparian and hillslope vegetation appears to have become denser in some limited areas, there has been relatively little change in vegetation cover patterns in upper Mill Creek since 1939 or 1969."* Her thesis also included the following observations *"[o]ver the period of available historical aerial photography (1939 or 1969 to present) relatively little vegetation change is apparent in the watershed (Figures 31- 36). Timber harvest has occurred in some of the private land, below the City's intake, but above the Kooskooskie gage (Figure 35, Figure 36). In some riparian zones the canopy cover of trees and shrubs has increased (Figures 37-40). Also, in some hillslopes shrub cover has expanded, and scattered trees have increased in size (Figures 37-40). Most of the changes appear to involve increases in vegetation density rather than expansion of vegetation cover."*

Furthermore, the public (including BMBP) was barred from documenting on-the-ground conditions in the drinking watershed for Mill Creek. BMBP has a long history of successfully using our field survey data to get timber sale areas dropped or beneficially modified. Such lack of transparency is a violation of the NEPA process. Photographic evidence, taken with drone photos, also suggests that the Tiger Mill area is not in need of "vegetation management". Dr. Trygve Steen is a retired professor from Portland State University. He spent decades teaching classes on forest ecology, including Old Growth Ecology. Dr. Steen shared the following

statement about the Tiger Mill sale from his time volunteering with BMBP during the 2023 field season: *“It was a pleasure participating in the Blue Mountains Biodiversity Project 2023 field season, helping with their assessment of the Tiger-Mill Sale in the Umatilla National Forest. They gathered a significant group of people to do important on-the ground surveys of that sale. I was involved in flying my drone over areas within the Mill Creek watershed where on the ground surveys are not possible because the area is off limits to ground level access. My landscape level documentation provides important input for their vitally important challenges to the inappropriate plans for logging in a pristine public watershed. My drone images documented significant natural fire breaks of open ground as well as areas of alder vegetation. Clearly, logging is not needed to protect from fire (the rationalization for logging), and on the other hand, logging represents a significant hazard for future water quality in the Mill Creek water supply.”* Please see BMBP’s addendum materials for additional photos taken by Dr. Steen.



This photo shows Mill Creek, with surrounding mature and old mixed-conifer forests, natural openings, and complex topography, in the Tiger-Mill sale. The mature and old forests in the Tiger-Mill sale, many of which have had little or no previous logging, are essential for supplying clean water and healthy stream habitats. (Photo taken by drone by Dr. Trygve Steen 2023)

The large amount of steep slope logging proposed in the Tiger Mill sale, and the associated damage to soils and increased erosion, landslides and slope failures, and increase in excess fine sediments in streams, poses a far greater risk to ecosystems than does wildfire. The risk from wildfire, especially if unroaded and unfragmented landscapes are protected, is relatively low. For example, the USFS’s 2018 Draft Forest Plan Revision vol 2. pg 60 states that:

“Redband trout and bull trout have been shown to recolonize severely burned drainages within two years, provided the drainages were physically accessible (i.e., no culvert barriers, and provided that other fish in unburned areas were close enough to discover and move back into the recently burned habitat”. Please see BMBP’s addendum materials for discussion of scientific studies and accompanying citations regarding research on these issues.

III. Logging implementation

The Tiger Mill EA also failed to analyze or disclose the number of ‘non-target’ large and old trees that will be cut down as a part of logging implementation—and the resulting soil degradation, increased erosion, and excess fine sediments that are likely to result from such widespread loss of large and old trees on steep slopes above creeks. Logging implementation practices such as cable assist or helicopter logging, yarding, skidding, and other activities often result in cutting of hundreds of large and old trees that were not included in the agency’s NEPA analyses. For example, BMBP’s recent post-logging field surveys in National Forests in Eastern Oregon suggest that the cutting of trees along or adjacent to cable corridors, including old and large trees, is extremely extensive and results in virtual clearcuts and hundreds of old trees lost in timber sales. The pictures below are of recent felling of large and mature or old Ponderosa pine trees, most of which were felled as “hazard” trees within or near cable corridors in the Big Mosquito in the Malheur NF. In just one of the smaller skyline logging sale unit in the Big Mosquito sale alone, we documented 30 old-growth Ponderosa pines (>150 years old) that were logged. Many more large and old trees were cut down in this unit that we did not have the opportunity to meticulously document. In discussions about our concerns with the Forest Service, they stated that due to OSHA safety standards, cable logging corridors must be thoroughly cleared of any trees within wide swaths along these corridors, as well as adjacent trees that may pose ‘hazards’. The FS also confirmed that these large old growth trees were taken to the mill and sold, even though they were not ‘targeted’ for logging.

What is the USFS’s estimation of the number of large and old trees not “targeted” for logging that will nevertheless be felled as part of logging implementation in the Tiger Mill sale? Predictably, the agency has also not considered or analyzed such issues in the Tiger Mill sale. Given the supposed need to cut down dozens or hundreds of “non-target” trees, including old and mature trees on steep slopes as part of logging implementation—what are the impacts effects to soils, erosion, and ultimately sediment delivery into streams? What are the effects to stream habitats and structure? What are the effects to fish and wildlife?



Similar concerns also apply to other logging methods, including ground-based and helicopter logging. For example, in ground-based logging and even noncommercial logging, large and old trees are often felled as part of “hazard” tree felling, “temporary” road, or other road or cable/yarding related work. In the Big Mosquito and Camp Lick sales in the Malheur NF, BMBP found numerous “non-target” legacy Ponderosa pines felled as a part of “temporary” road building and other logging implementation. The FS must consider the resulting effects to soils, erosion, and stream habitats and water quality due to this hidden but widespread loss of legacy trees.



Given the realities of logging implementation on the ground, including widespread loss of large and old trees and virtual clearcuts, and the lack of disclosure or analyses regarding these issues, we are particularly alarmed by steep slope logging in the Tiger Mill sale. Examples of proposed logging that includes extensive logging on steep slopes above streams that support Bull trout and MCR steelhead in the Tiger Mill sale include:

- Mill Creek: logging above Mill Creek includes cable-assist and ground-based logging, as well as thinning within RHCAs, upslope and adjacent to streams that support Bull trout and MCR steelhead.
- Webb Creek, as well as the stream directly west of Webb Creek, both have extensive cable assist and ground-based logging proposed upslope of streams that support MCR steelhead. For Webb Creek, logging proposed is particularly extensive in the in upper reaches of the watershed. Also includes some helicopter logging and thinning in RHCAs.
- Tiger Creek supports MCR steelhead, and has especially steep slopes in which the FS has proposed extensive helicopter logging above steelhead. Also includes cable-assist logging in upper reaches.
- Burnt Fork: supports MCR Steelhead and Bull trout, yet has extensive logging including helicopter logging on surrounding slopes.
- North Fork Walla Walla River: supports MCR steelhead and has a truly alarming amount of cable-assist logging planned for steep slopes above steelhead. Additionally, Bull trout occur just downstream of the project area, which the FS failed to adequately consider.
- South Fork Walla Walla River: supports MCR steelhead and Bull trout, has ground-based logging planned upslope of river.
- Robinson Fork: supports Bull trout and MCR steelhead, and has extensive cable-assist and ground-based logging on steep slopes above creek.

Unfortunately, the FS downplays or dismisses the propensity of logging and roads to negatively affect water quality, stream and watershed hydrology, and ESA-listed aquatic species- despite a plethora of scientific studies and evidence documenting these issues. Please see BMBP's addendum for more details and citations.

IV. Roads

The Tiger Mill project proposes to build 10.6 miles of “temporary” roads across seven subwatersheds. Log haul would take place on approximately seven noncontiguous miles of unpaved roads within RHCAs. (EA pg. 51). In addition, There are already 56 road-stream crossings in the Tiger-Mill project area (BE pg. 28). These are alarming numbers of road-crossings, road building, and log haul—particularly in an area crucial for supporting sensitive aquatic species and drinking water for downstream communities. These stream crossings are likely already having negative impacts on water quality. Proposed road-related activities such as building and rebuilding of “temporary” roads, road maintenance, and log haul will negatively impact stream sediments and temperatures and may impact hydrology and peak and base flows.

The agency should not be exacerbating road miles in any portion of the Forest—the Forest Service already manages over 90,000 miles of roads in Oregon and Washington. The agency admits it does not have an adequate budget to maintain these roads, and that they pose challenges for forest and stream health as well as human safety. (USFS Webpage: <https://www.fs.usda.gov/detail/r6/landmanagement/?cid=fseprd485439j>) The Forest Service clearly needs to stop building more roads, “temporary” or otherwise. While most subwatersheds within the Tiger Mill project area are less than 2 miles per square mile, several watersheds are above the 1 mile/per square mile that is considered to be safe for Bull trout (Carnefix and Frissell 2009). The Wolf Fork subwatershed has 2.4 mi/sq mile of road density, yet FS is proposing to build 1 mile of road in this subwatershed (Fisheries BE pg. 29). Also, the North Fork Walla Walla River is right at 2.0 mi/sq mile—will it be above that after 3.8 miles of “temporary” road are built in the watershed? The North Fork Walla Walla River supports important Bull trout and MCR steelhead habitat, and existing as well as additional roads are likely to harm sensitive fish. Also—do the road density numbers the FS disclosed in Table 24 include all existing roads (such as closed roads and user-created roads)? While roads within RHCAs are more likely to cause detrimental impacts to streams and water quality, other roads, especially hydrologically connected roads, can also have significant and ongoing impacts. Also, mid-slope roads can greatly increase the rate of small landslides, erosion, and sediment delivery to streams (Montgomery et al. 2000) (Exhibit HH).

Carnefix and Frissell (2009) (Exhibit II) discussed impacts from roads, and show that significant negative impacts to sensitive aquatic species are present at road densities greater than one mile per square mile: *“Multiple, convergent lines of empirical evidence summarized herein support two robust conclusions: 1) no truly “safe” threshold for road density exists, but rather negative impacts begin to accrue and be expressed with incursion of the very first road segment; and 2) highly significant impacts (e.g., threats of extirpation of sensitive species) are already apparent at road densities on the order of 0.6 km per square km (1 mile per square mile) or less. Therefore, restoration strategies prioritized to reduce road densities in areas of high aquatic resource value from low-to-moderately-low levels to zero-to-low densities (e.g., 1 mile per square mile, lower if attainable) are likely to be most efficient and effective in terms of both economic cost and ecological benefit. By strong inference from these empirical studies of systems and species sensitive to humans’ environmental impact, with limited exceptions, investments that*

only reduce high road density to moderate road density are unlikely to produce any but small incremental improvements in abundance, and will not result in robust populations of sensitive species.”

Fish stocks are stronger and better distributed in areas of little or no management and low road densities, even in fire suppressed areas, and even if severe fires occur. Numerous studies have implicated roads as a primary factor in altering watershed hydrology and/or declines in fish stocks, and show that many benefits are gained by leaving forests unroaded and to their own ecological processes (including processes involving fire, insects, and disease). (Bader 2000 (Exhibit JJ); Bradley et al. 2002 (Exhibit KK); Carnefix and Frissell 2009 (Exhibit II); DellaSala et al. 2011 (Exhibit LL); Frissell and Carnefix 2007 (Exhibit MM); Rieman and Clayton 1997 (Exhibit NN), Rieman et al. 2000 (Exhibit OO), Thurow et al. 2001 (Exhibit PP); Public Lands Initiative/Trout Unlimited 2004 (Exhibit QQ); Western Native Trout Campaign 2001 (Exhibit RR); Quigley and Arbelbide 1997) (Exhibit SS).

The USFS’s Draft EA for the Mill Creek sale in the Ochoco NF (Exhibit TT) noted that: *“Roads are a major source of erosion and stream sedimentation on forested lands. Roads can increase erosion rates and turbidity three orders of magnitude greater than the undisturbed forest condition (Megahan 1974). Sediment eroded from the road prism can be delivered to a forest stream, resulting in increased turbidity, sediment loads, and degraded habitat for fish. Research has shown that roads have the greatest effect on erosion relative to other forest management practices (Megahan and King 2004).”*

Roadless and unroaded areas are crucial for providing clean cold water for streams. Unfortunately, instead of protecting the integrity of unroaded areas, which are increasingly rare on the landscape, the FS proposes to further fragment unroaded areas by building “temporary” roads (which are, in fact, not temporary and have lasting effects on the landscape, often for many decades). For example, the FS proposes to build temporary roads that overlap with mapped blocks of unroaded areas (as identified by the FS in Tiger Mill “Undeveloped Lands” map). We are very concerned about unroaded areas that appear to be encroached upon by road building (“AltAMaps”), such as the following examples:

- Proposed road building that fragments the unroaded area (100-500 acres) in the Robinson Creek watershed, on the east side of the creek.
- Proposed road building appears to encroach into the Mill Creek IRA by two temp roads in the Griffin Creek watershed, in the very north area (section 3, off USFS RD 6436), as well as possibly in section 11.
- Proposed road building encroaches into the unroaded area (greater than 5,000 acres) in the Webb Creek headwaters (section 32, at south end of project), with branching segment crossing into unroaded area at two locations. Also, to the immediate NE, two segments of proposed road encroach into this same unroaded area.
- Above the headwaters of Webb Creek (in section 34) a long segment of proposed road encroaches deeply into this 5,000+ acre unroaded area. This road appears to be connecting to logging units that include cable assist and helicopter logging units, further exacerbating likely impacts to heavy logging, damage to soils, potential erosion, and stream sediments.

- Proposed road building above Reser Creek (section 12) encroaches on 100-500 acre unroaded block.
- Proposed road building at the south end of project between the North Fork of the Walla Walla River and Sheep Creek (section 23) appears to encroach on designated Roadless.
- Proposed road building in section 10 and 15 on eastern edge of the project (central/north portion) appears to encroach into the Mill Creek Roadless Area. The road appears to connect to sale units designated as cable assist and ground-based logging, posing concerns for soil damage, erosion, and sediment inputs to streams. These proposed road segments are also along headwater tributaries to mill creek, and are located downslope of haul route USFS Rd 64, which the agency has recognized as a potential source of sediment.

The Tiger Mill project is unfortunately proposing to reduce undeveloped Inventoried Roadless Areas by 4,257 acres, and undeveloped/unroaded lands outside of Inventoried Roadless Areas by 2,880 acres (EA Table 32). These areas should be preserved to protect their essential contributions to clean cold water for drinking and for aquatic species, as well as other values including wildlife habitat and viewing.

V. Inadequate cumulative impacts analysis

BMBP objects to the inadequate nature of the EA's cumulative effects analysis. The Forest Service failed to adequately analyze the cumulative impacts to water quality and to ESA-listed and special-status aquatic species, particularly with relation to other recent or ongoing nearby projects in the Umatilla NF. For example, what percentage of designated critical habitat for Bull trout and MCR steelhead will be affected by the combined impacts from the Tiger Mill sale and recent/ongoing projects such as the Pomeroy Danger Tree and Fire Salvage, South George Vegetation and Fuels Management, Sunrise Vegetation and Fuels Management, and Upper Pataha Project—all of which have happened within the past 10-12 years? Some of these timber sale projects encompass streams and tributaries that drain into the same downstream rivers. For example, portions of the Upper Touchet project drain into the North Fork Upper Touchet River, which drains into the Touchet River. Streams and tributaries from the Tiger Mill project drain into the South Fork Touchet River, and then into the Touchet River. Fish populations in these watersheds may be affected by issues such as population fragmentation, loss of genetic diversity and connectivity, and other issues. Additional recent and ongoing projects at the Forest scale in the Umatilla NF that may affect ESA-listed aquatic species in or downstream of their project area boundaries include: Upper Touchet Vegetation Management Project, High Buck Vegetation Management, Elbow Insects and Disease Project, Glass Restoration Project, Thomas Creek Restoration Project, Willoughby Urban Interface Protection Project, Kahler Dry Forest Restoration, and Parker's Mill CE. What are the impacts to occupied habitats, and species viability from these projects at the Forest scale? What about the cumulative impacts for Chinook salmon, Redband trout, Pacific lamprey, and Margined sculpin? Western ridged mussels?

The Forest Service failed to analyze impacts at the watershed or Forest scales, given that there was no discussion of other projects. The Forest Service also failed to explain why they did not take into account Distinct Population Segments, local population trends, or regional trends for ESA-listed and sensitive fish and aquatic species.



Recent logging in the South George “Vegetation and Fuels Management Project” timber sale on the Umatilla NF. This sale was characterized by the Forest Service as “vegetation management to improve vigor, health, and fire resilience in a forested ecosystem”.



Recent logging in the South George “Vegetation and Fuels Management Project” timber sale on the Umatilla NF. This sale was characterized by the Forest Service as “vegetation management to improve vigor, health, and fire resilience in a forested ecosystem”.

We also have concerns for the scale of analysis used for water quality. The Tiger Mill EA (pg. 47) states (emphasis added): “*Cumulative effects analysis for water quality in this project area were analyzed **at the stream reach scale**, assessing past, present and reasonably foreseeable impacts to sedimentation and temperature. Effects to water quality were analyzed for **short term (1 day to 1 week) and for long term, up to one year or longer** for changes at the landscape scale. These time scales were chosen to display short term concentrated effects, and*

longer-term seasonal effects that are sometimes seen during spring runoff and for longer term (years) effects, whether beneficial or adverse, that can be expected to materialize.”

Based on this assessment, any project impacts would be of limited geographic extent and of short to long term duration. The cumulative effects paragraph is also so vague and unquantified as to be meaningless. Past, present, and future projects in the forest or at watershed scales do not appear to be considered at all. Such inadequate analysis of cumulative impacts opens the door to the death-by-a-thousand-cuts scenarios. The whole point of the requirements that the agency to take a hard look at cumulative impacts on the environment as a result of their actions is to avoid just such myopic analyses. Looking at projects in isolation, and in narrow temporal ranges, ultimately opens the floodgates to widespread water quality degradation and the resulting degradation of key habitats and ecosystems, as well as downward population trends and loss of viability for ESA-listed and other native species.

In addition, logging and vegetation “management” has a short window of approximately 15-20 years of perceived effectiveness. As vegetation grows back, often more densely than before it was logged, it is often at risk of more severe fire than its pre-logging condition. Does the FS plan to re-enter these areas every 15-20 years to conduct repeated widespread logging? At what cost to fish, wildlife, water quality, and ecosystems? The agency failed to disclose or analyze for its future plans, and what effect to the environment those will have.

We are also very concerned about the effects of prescribed burning to water quality, fish, and riparian habitats. Please see BMBP’s addendum materials for further discussion. One example is that the Tiger Mill Fisheries BE admits that *“PDCs and NMFS guidelines reduce but do not eliminate the potential to affect feeding behavior, and possibly entrainment, of ESA listed fish species. Due to the potential for direct effects to individual juvenile fish, water pump withdrawals may affect, and are likely to adversely affect, ESA listed bull trout and steelhead.”* We are extremely worried about the potential for entrainment and affects to feeding behavior of ESA-listed fish and other aquatic species. Also, what are the cumulative impacts of water pump withdrawals in numerous other large, landscape-scale prescribed burning projects throughout the Umatilla NF? The Fisheries BE dismisses potential effects to loss of viability to MIS or RSS species, asserting that *“[a]ny effect to MIS or RSS would be small, not measurable, and would not lead to a loss of viability or lead to a federal ESA listing.”* However, the FS does provide a rationale for this declaration, nor do they attempt to quantify these issues, such as numbers of ESA-listed potentially lost to entrainment during water pumping. The FS does not disclose baseline population data for ESA-listed species such as Bull trout, which may have very low numbers numbering under 25 or 50 individuals in a given occupied stream. Since the FS does not have baseline data, and the agency also does not have estimates of how many individuals may be entrained or experience negative impacts to their behaviors, how can it possibly determine whether or not these activities will lead to a loss of viability or a ESA listing or uplisting? Further, will water pumping activities potentially overlap with spawning or other sensitive life cycle periods for sensitive or special-status aquatic species?

The Fisheries BE (Table 6) includes guidelines such as “avoid” water withdrawals from fish bearing streams “whenever possible” and during bull trout spawning season to “avoid” areas

with spawning bull trout. However, these guidelines lack teeth or enforcement mechanisms, and still allow these actions to occur. The agency failed attempted to quantify the ‘take’ of ESA-listed fish as a result of these actions. The agency should have put in a place more protective standards for fish bearing streams, spawning Bull trout, base flows, and stream habitats.

We are also very concerned about how “Potential Control Line Buffers (PCLs)” will affect water quality, riparian habitats, and fish. The project proposes 1,727 acres of these PCLs, which are 300’ in width. The Fisheries BE (pg. 8) states that they will remove “ladder fuels, surface fuels, and ember producing snags”, and that they will overlap with Category IV RHCAs in some areas. We are extremely worried about what sounds like a 300’ wide swath of heavy logging, including virtual clearcuts in some areas, through the forest, especially within RHCAs. We are very concerned about issues such as fragmentation, edge effects, loss of terrestrial and aquatic connectivity, loss of key wildlife habitat, spread of invasive weeds, lack of effectiveness and short-term nature of perceived effectiveness. In addition, the targeting of snags is counterproductive and unconscionable. Snags are at a historic deficit in many forested areas across the Umatilla NF and the region, and often do not meet standards or provide for the biological potential or needs of primary cavity excavators or the many species that depend on them. Removing snags within RHCAs is especially problematic, as a hugely disproportionate number of species rely on riparian forests during at least some part of their life cycle.

VI. Aquatic species: ESA-listed Threatened Bull trout and MCR steelhead, Redband trout, Chinook salmon, Margined sculpin, Pacific lamprey, Western ridged mussels, and other aquatic species:

The Fisheries Biological Evaluation concluded that the Tiger-Mill project “*may affect and is likely to adversely affect*” *federally threatened Bull Trout and Steelhead and their Designated Critical Habitat* found in the Tiger-Mill project area.” Unfortunately, the agency determining, without adequate rationale, that the project actions “*will not likely contribute to a trend toward Federal listing or cause a loss of viability to the population or species*”. The Forest Service did not provide baseline population data or population trends for ESA-listed Threatened Bull trout and MCR steelhead, Redband trout, Chinook salmon, Margined sculpin, Pacific lamprey, Western ridged mussels, and other aquatic species. The agency also failed to adequately consider the quality of baseline habitat conditions for these species, or quantify how much habitat would be impacted. The agency also did not quantify or adequately analyze the severity of the impacts to aquatic species, such as how many individuals may be affected by actions or how much “take” would occur from effects such as sedimentation from logging, roads, burning, and associated and activities.

We have similar concerns for other sensitive and imperiled aquatic species. The Tiger Mill EA (pg. 63) also states: “[t]he project may impact the following Region 6 Sensitive species, but is not likely to contribute to a trend towards federal listing or cause a loss of viability: •Redband Trout, Margined Sculpin, Pacific Lamprey”. The lack of baseline data and lack of adequate analyses or quantification of negative impacts to individuals, populations, and their habitat are also a serious issue for these species.

The FS did not analyze or consider Chinook salmon in the Tiger Mill environmental analysis, despite recovery efforts by the Confederated Tribes of the Umatilla to restore Chinook. As reported this year from the Elkhorn Media Group (<https://elkhornmediagroup.com/ctuir-releases-juvenile-spring-chinook-salmon-into-mill-creek/>), over 60,000 smolts were released into Mill Creek in early 2024, and over 500,000 more were planned for release in the later part of the year. As a result of these efforts, 18 Chinook salmon returned to the basin in 2024. The goal is 5,000 Chinook returning annually to the basin. Chinook salmon recovery, and the possible negative impacts to recovery efforts, should be considered in an EIS.

The USFWS Bull trout 5-year Summary Review (2008) (Exhibit UU) shows heightened risk for Bull trout populations and trends in the Tiger Mill project and adjacent Bull trout core areas. For example, Bull trout within the Tiger Mill project seem to be considered at moderate imminent threat (see figure below). The 5-year review notes that “[a] threat of moderate severity is one likely to result in major reductions in the population or long-term loss of habitat that will require in the neighborhood of 50 to 100 years to recover”. The report also shows the Touchet River to have low abundance (50-250 individuals) and have a final rank of “high risk”. The Walla Walla River is considered “at risk”.

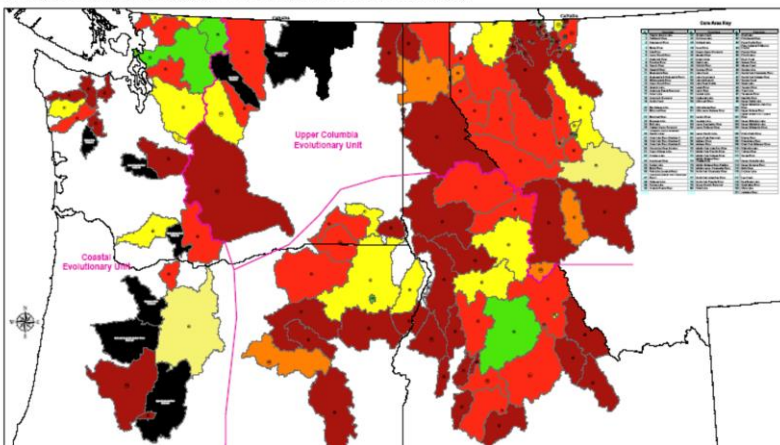
As shown in the USFWS’s 5-year review, only five out of 121 core areas for Bull trout are considered “unthreatened”, with another eight core areas considered “slightly threatened”. 106 out of 121 areas are at much greater risk, with the majority of those at risk considered to be at “substantial, imminent threat”, which is the highest risk level.

From the 5-year review:

<u>Threat category</u>	<u>Number of core areas</u>
Substantial, imminent threat	44
Moderate, imminent threat	31
Substantial, non-imminent threat	3
Moderate, non-imminent threat	7
Localized, substantial threat	2
Widespread, low-severity threat	19
Slightly threatened	8
Unthreatened	5
Unknown	2
Total number of core areas	121

From the 5-year review:

Figure 4. Map of Core Areas by Threat Category (dark red=substantial, imminent threat; light red=moderate, imminent threat; dark orange=substantial, non-imminent threat; light orange=moderate, non-imminent threat; dull yellow=localized, substantial threat; bright yellow=widespread, low-severity threat; light green=slightly threatened; dark green=unthreatened; gray=unknown; black=likely extirpated).



Low population numbers and inadequate monitoring are pressing concerns. The USFWS’s 5-year review calls out the lack of adequate data for Bull trout populations across the region: “....data were inadequate in over half of the 121 bull trout core areas to estimate the short-term population trend. In those cases there were either no monitoring data, or data were not collected in a consistent fashion; the data that existed were intermittent or sporadic and did not provide a continuous record (at least 5 years); or the data were available but highly variable and we could not assess a trend with any degree of confidence.”

From the 5-year review:

<u>Number of adults</u>	<u>Number of core areas</u>
1-50	15
50-250	39
250-1,000	27
1,000-2,500	12
2,500-10,000	3
10,000-100,000	1
<u>Unknown</u>	<u>24</u>
Total number of core areas	121

The Walla Walla River Bull Trout Ten Year Retrospective highlights the need to consider Bull trout, habitat for Bull trout, and the potential effects to both species and habitats at multiple scales. The report provides vital information about potential climate change impacts such as warming stream temperatures and habitat loss for Bull trout, specifically noting that the Touchet River population is expected to experience more habitat loss than other nearby populations. The report also notes that the Touchet River population and Mill Creek populations have less desirable habitat conditions compared to, for example, the SF Walla Walla River

population. The report notes that the Walla Walla River population may serve as a donor population to areas with less desirable habitat, such as the Touchet River population. Given that the portions of the Touchet River are consistently above water quality standards that would provide for Bull trout spawning and rearing, the report's discussion of habitat availability and quality near thermal boundaries is particularly relevant to the Tiger Mill project. The actions the FS is proposing may negatively affect stream temperatures, stream morphology, and watershed hydrology. In addition, the report suggests that increased protection efforts for adjacent Bull trout populations will be important for the overall survival of Bull trout in the larger watershed area. Have such protection efforts occurred? If so, how successful have they been? Is there a documented increasing trend in Bull trout populations as a result of possible efforts? Analyses for the overall population of Bull trout (and other listed fish), as well as their habitats, are needed to in order to assess the strength, viability, and importance of both the local and larger populations, and how risks due to management actions may impact those populations.

Highlights from the Report include (emphases added):

- *The Executive Summary Introduction: “Our modeling of future climate conditions projects a greater loss of spawning and rearing habitat in the Touchet River and Mill Creek populations when compared to the losses projected for the South Fork Walla Walla River population.”*
- *Pg 5: “Estimates of habitat loss associated with increased stream temperature varied considerably among populations, depending on the spatial arrangement of available habitat and the quality of habitat near a thermal boundary.”*
- *Pg. 8: “Our study synthesis indicates that protecting high quality spawning and rearing habitat in the SFWWR and improving migratory and foraging corridor conditions will allow bull trout to complete their life cycle, express life-history diversity, and **potentially serve as a donor population to other local populations and core areas in less desirable habitat (e.g., Touchet River and Mill Creek populations).**”*
- *Pg. 10: **Climate change is projected to increase stream temperatures and disrupt hydrologic regimes which will likely impact bull trout across their native range given their thermal sensitivity** (Isaak et al. 2010). “The bull trout population of South Fork Walla Walla River appears stable; however, there is some indication that large migratory individuals may be in decline (e.g., mark recapture trend analysis; redd counts) and there is high variability in survival for this size group. **However, given the declining trend in large adults, the long term stability of the population structure is uncertain** and may not reflect the historical population structure and evolutionary history of bull trout.”*
- *Pg. 34 “**Results from our life cycle viability model simulations indicate that at the metapopulation level, when individual local populations have different long term trends in abundance, connectivity and a continuum of suitable habitat conditions are important for maintaining smaller, declining populations (e.g., a rescue effect).** This variability clearly relates directly to the Walla Walla River Core Area, where one local population is stable and the others appear to be declining. In order for dispersal to aid in maintaining persistence, connectivity and habitat conditions in the mainstem Walla Walla River will have to be restored and protected accordingly.”*

Failing to include recent past, ongoing, and reasonably foreseeable USFS logging and burning projects in the cumulative effects analyses for Bull trout and other aquatic species is inappropriate and fails to take a 'hard look' as required by NEPA. We are also concerned about these issues for other listed, imperiled, and sensitive aquatic species such as MCR steelhead, Redband trout, Chinook salmon, Pacific lamprey, Margined sculpin, and Western ridged mussels.

We are very concerned that logging and roading activities proposed in the Tiger Mill will result in downward population trends and a loss of viability for listed aquatic species such as Bull trout and other ESA-listed, special-status, and imperiled aquatic species. The Tiger Mill project may violate the ESA. The project may also violate NFMA and Forest Plan standards by, for example, failing to protect the viability of Management Indicator Species (MIS) and native species.

Thank you for your consideration of these objections. We look forward to meeting with you to work on a resolution to our concerns.

Submitted by:


Karen L. Coulter

Karen Coulter, Director
Blue Mountains Biodiversity Project
27803 Williams Lane
Fossil, Oregon 97803
541-385-9167



Paula Hood, Co-Director
Blue Mountains Biodiversity Project
Eugene Office
1560 Chambers St.
Eugene, Oregon 97402
510-715-6238

List of Exhibits Referenced and Included on USB Drive Submitted with Physical Copy

Exhibit A: Blue Mountains Biodiversity Project, Comments on the Tiger-Mill Project's Scoping Notice of Proposed Action

Exhibit B: Tiger-Mill Project – East Oregonian Objection Legal Notice

Exhibit C: U.S. Forest Service Press Release – “Prescribed Fire Tiger Creek moves into future planned treatment area”, Oct 1, 2024

Exhibit D: U.S. Forest Service Press Release – “Tiger Creek Fire Update for Oct. 2, 2024”, Oct 2, 2024

Exhibit E: Bradley, C. M., C. T. Hanson, and D. A. DellaSala. 2016. Does increased forest protection correspond to higher fire severity in frequent-fire forests of the western United States? *Ecosphere* 7(10):e01492. 10.1002/ecs2.1492

Exhibit F: Rhodes, Jonathan & Baker, William. (2008). Fire Probability, Fuel Treatment Effectiveness and Ecological Tradeoffs in Western U.S. Public Forests. *The Open Forest Science Journal*. 1. 10.2174/1874398600801010001.

Exhibit G: Caissie, D., 2006. The thermal regime of rivers: a review. *Freshwat. Biol.* 51, 1389–1406.

Exhibit H: Davies, P. and Nelson, M. 1994. Relationships between riparian buffer widths and the effects of logging on stream habitat, invertebrate community composition and fish abundance. *Australian Journal of Marine and Freshwater Research* 45:1289–1305.

Exhibit I: DeWalle, D. 2010. Modeling stream shade: Riparian buffer height and density as important as buffer width. *Journal of the American Water Resources Association* 46:2 323-333.

Exhibit J: Kiffney, P.; Richardson, J.; and Bull, J. 2003. Responses of Periphyton and Insects to Experimental Manipulation of Riparian Buffer Width Along Forest Streams. *Journal of Applied Ecology*. 40: 1060-1076.

Exhibit K: Groom, J.; Dent, L.; Madsen, L; and Fleuret, J. 2011. Response to western Oregon (USA) stream temperatures to contemporary forest management. *Forest Ecology and Management* 262:1618-1629.

Exhibit L: Groom J.; Dent, L.; and Madsen, L. 2011. Stream temperature change detection for state and private forests in the Oregon Coast Range. *Water Resources Research* 47, W01501.

Exhibit M: Jones, K.; Poole, G.; Meyer, J.; Bumbach, W.; and Kramer, E. 2006. Quantifying Expected Ecological Response to Natural Resource Legislation: A Case Study of Riparian Buffers, Aquatic Habitat, and Trout Populations. *Ecology and Society* 11:15.

Exhibit N: Sweeney, B.; and Newbold, J. 2014. Streamside Forest Buffer Width Needed to Protect Stream Water Quality, Habitat, and Organisms: A Literature Review. *Journal of the American Water Resources Association* 50(3): 560-584.

Exhibit O: Pollock, M.; Beechie, T.; Liermann, M.; and Bigley, R. 2009. Stream temperature relationships to forest harvest in Western Washington. *Journal of the American Water Resources Association* 45(1):141-156.

Exhibit P: Wigington, P.; Ebersole, J.; Colvin, M.; Leibowitz, S.; Miller, B.; Hansen, B.; Lavigne, H.; White, D.; Baker, J.; Church, M.; Brooks, J.; Cairns, M.; and Compton, J. 2006. Coho salmon dependence on intermittent streams. *Frontiers in Ecology and the Environment* 4(10) pp. 514-519.

Exhibit Q: Poole, G.; O'Daniel, S.; Jones, K.; Woessner, W.; Bernhardt, E.; Helton, A.; Stanford, J.; Boer, B.; and Beechie, T. 2008. Hydrologic spiraling: The role of multiple interactive flow paths in stream ecosystems. *River Research and Applications* 24(7):1018-1031.

Exhibit R: Ebersole, J.; Wigington, P.; Liebowitz, S.; and Comeleo, R. 2015. Predicting the occurrence of cold-water patches at intermittent and ephemeral tributary confluences with warm rivers. *Freshwater Science* 34(1):111–124.

Exhibit S: Poole, G.; and Berman, C. 2001. An ecological perspective on in-stream temperature: Natural heat dynamics and mechanisms of human-caused thermal degradation. *Environmental Management* 27(6):787–802.

Exhibit T: Newcombe, C. and Jensen, J. 1996. Channel Suspended Sediment and Fisheries: A Synthesis for Quantitative Assessment of Risk and Impact. *North American Journal of Fisheries Management* Vol. 16, No. 4.

Exhibit U: Mildrexler, David J., Logan T. Berner, Beverly E. Law, Richard Birdsey and William R. Moomaw. “Large Trees Dominate Carbon Storage in Forests East of the Cascade Crest in the United States Pacific Northwest.” *Frontiers in Forests and Global Change* (2020).

Exhibit V: USFS Regional Forester Michael Peña’s 2015 Guidance Letter and Eastside Screens Enclosure

Exhibit W: Baker et al. 2023. Countering Omitted Evidence of Variable Historical Forests and Fire Regime in Western USA Dry Forests: The Low-Severity-Fire Model Rejected.

Exhibit X: Birdsey RA, DellaSala DA, Walker WS, Gorelik SR, Rose G and Ramírez CE (2023) Assessing carbon stocks and accumulation potential of mature forests and larger trees in U.S. federal lands. *Front. For. Glob. Change* 5:1074508. doi: 10.3389/ffgc.2022.1074508

Exhibit Y: United States Forest Service (USFS) 2018. Final Environmental Impact Statement for the Proposed Revised Land Management Plans for the Malheur, Umatilla, and Wallowa-Whitman National Forests.

Exhibit Z: Guenther, S., Gomi, T., and Moore, R. (2012). Stream and bed temperature variability in a coastal headwater catchment: influences of surface-subsurface interactions and partial-retention forest harvesting. *Hydrological Processes*, 28: 1238–1249.

Exhibit AA: Kreutzweiser, D., Capell, S., and Good, K. 2005. Macroinvertebrate community responses to selection logging in riparian and upland areas of headwater catchments in a northern hardwood forest. *Journal of the North American Benthological Society*, 24(1):208- 222.

Exhibit BB: Miserendino, L. and Masi, C. (2010). The effects of land use on environmental features and functional organization of macroinvertebrate communities in Patagonian low order streams. *Ecological Indicators*, 10(2): 311-319.

Exhibit CC: Flaspohler, D., Fisher, C., Huckins, C., Bub, B., and Van Dusen, P., (2002). Temporal patterns in aquatic and avian communities following selective logging in the Upper Great Lakes Region. *Forest Science*, 48(2): 339– 349.

Exhibit DD: Lecerf, A. and Richardson, J. (2010). Litter decomposition can detect effects of high and moderate levels of forest disturbance on stream condition. *Forest Ecology and Management*, 259 (2010) 2433– 2443.

Exhibit EE: United States Fish and Wildlife Service (USFWS) 2010. Bull Trout Final Habitat Justification: Rational for Why Habitat is Essential, and Documentation of Occupancy. Accessed online at: http://www.fws.gov/pacific/bulltrout/pdf/Justification_Docs/BTFinalJustifyfulldoc.pdf.

Exhibit FF: United States Forest Service (USFS) 2014. Draft Environmental Impact Statement for Proposed Revised Land Management Plans for the Malheur, Umatilla, and Wallowa-Whitman National Forests. Volume 2. https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3792955.pdf

Exhibit GG: Pierson, J. (2018). Flow From Flexibility: Identifying Opportunities For Streamflow Restoration in a Transboundary Municipal Watershed Through Water Budgeting. Oregon State University.

Exhibit HH: Montgomery, D.; Schmidt, K.; Greenberg, H.; Dietrich, W.; 2000. Forest Clearing and Regional Landsliding. *Geological Society of America*, v. 28 p. 311-314

Exhibit II: Carnefix and Frissell 2009. Aquatic and Other Environmental Impacts of Roads: The Case for Road Density as Indicator of Human Disturbance and Road Density Reduction as Restoration Target; a Concise Review. The Pacific Rivers Council.

Exhibit JJ: Bader, M., 2000. Based Ecosystem Protection in the Northern Rocky Mountains of the United States. Alliance for the Wild Rockies. USDA Forest Service Proceedings RMRS-P-15-VOL-2. 2000. Accessed at: http://www.fs.fed.us/rm/pubs/rmrs_p015_2/rmrs_p015_2_099_110.pdf

Exhibit KK: Bradley, C.; Rhodes, J.; Kessler, J.; Frissell, C., 2002. An Analysis of Trout and Salmon Status and Conservation Values of Potential Candidates in Idaho and Eastern Washington. Published by: The Western Native Trout Campaign; the Center for Biological Diversity, The Biodiversity Conservation Alliance, and the Pacific Rivers Council.

Exhibit LL: DellaSala, D.; Karr, J.; Olson, D.; 2011. Roadless areas and clean water. *Journal of Soil and Water Conservation*, 66(3): 78A-84A. Accessed at: <http://www.jswnonline.org/content/66/3/78A.full.pdf>

Exhibit MM: Frissell, C. and Carnefix, G.; 2007. The Geography of Freshwater Conservation: Roadless Areas and Critical Watersheds for Native Trout. Wild Trout IX symposium. Accessed at: http://www.blm.gov/or/plans/wopr/pub_comments/paper_documents/Paper_1989-2023/WOPR_PAPER_01989.120001.pdf

Exhibit NN: Rieman, B.; Clayton, J.; 1997. Wildfire and Native Fish: Issues of Forest Health and Conservation of Sensitive Species. Forest Service, Rocky Mountain Research Station.

Exhibit OO: Rieman, B.; Lee, D.; Thurow, R.; 2000. Toward an Integrated Classification of Ecosystems: Defining Opportunities for Managing Fish and Forest Health. Environmental Management Vol. 25, No. 4, pp. 425– 444. Accessed at: <http://andrewsforest.oregonstate.edu/pubs/pdf/pub3225.pdf>

Exhibit PP: Thurow, R.; Lee, D.; Rieman, B. 2001. Distribution and Status of Seven Native Salmonids in the Interior Columbia River Basin and Portions of the Klamath River and Great Basins. North American Journal of Fisheries Management, 17:4,1094-1110. United States Fish and Wildlife.

Exhibit QQ: Public Lands Initiative (Trout Unlimited), 2004. Where the Wild Lands are: Oregon; the Importance of Roadless Areas to Oregon's Fish, Wildlife, Hunting and Angling.

Exhibit RR: Western Native Trout Campaign, 2001. Imperiled Western Trout and the Importance of Roadless Areas. Published by the Center for Biological Diversity, Pacific Rivers Council, and Biodiversity Associates

Exhibit SS: Quigley, T. and Arbelbide, S. 1997; An Assessment of Ecosystem Components in the Interior Columbia Basin and Portions of the Klamath and Great Basins. PNW-GTR-405.

Exhibit TT: United States Forest Service (USFS) 2023. Mill Creek Draft Environmental Assessment, Ochoco National Forest.

Exhibit UU: United States Fish and Wildlife Service (USFWS) 2008 Bull trout (*Salvelinus confluentus*) 5-Year Review Summary and Evaluation. Accessed online at: https://ybfwr.org/wp-content/uploads/2017/10/USFWS_2008.pdf

Exhibit VV: U.S. Environmental Protection Agency (EPA). (2014) Best Practices for Continuous Monitoring of Temperature and Flow in Wadeable Streams. Global Change Research Program, National Center for Environmental Assessment, Washington, DC; EPA/600/R-13/170F. Available from the National Technical Information Service, Springfield, VA, and online at <http://www.epa.gov/ncea>.

Exhibit WW: United States Forest Service (USFS) 2019. PacFish InFish PIBO Monitoring Program.

Exhibit XX: BMBP Aquatics Addendum