May 11, 2022

Jennifer Eberlien

Regional Forester

Pacific Southwest Regional Office

Ecosystem Planning

1323 Club Drive

Vallejo, CA 94592

RE: Addendum Region 5 (R5) Post Disturbance Project Draft Environmental Analysis (EA)

Dear Regional Forester Eberlien,

Please accept this addendum to the R5 Draft EA comments that were submitted on May 4, 2022, on behalf of the Environmental Protection Information Center (EPIC) and the Klamath Forest Alliance. This addendum focuses on the Upland Sediment Analysis, which is used for calculating effects to soil, water quality and public safety (aka drinking water) and supporting the conclusions in the Draft EA. The analysis contains gross assumptions and oversimplifications, which are not adequate for determining project effects.

The Upland Sediment Analysis, was not completed and/or made available until April 27th, over halfway in to the public comment period. Please note that multiple critical supporting documents, such as the Road Sediment Analysis, are not complete or available within the public comment period.

NEPA "requires that the relevant information will be made available to the larger audience that may also play a role in both the decision making process and the implementation of that decision." *WildEarth Guardians v. Montana Snowmobile Ass'n*, 790 F.3d 920, 924 (9th Cir. 2015) (citing *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989)). "Informed public participation in reviewing environmental impacts is essential to the proper

functioning of NEPA." *League of Wilderness Defenders/Blue Mts. Biodiversity Proj. v. Connaughton*, 752 F.3d 755, 761 (9th Cir. 2014) (citations omitted), and "NEPA's public comment procedures are at the heart of the NEPA review process." *California v. Block*, 690 F.2d 753, 770 (9th Cir. 1982). An agency may not discharge its obligation to provide the public with analysis of the environmental impacts of a project simply by incorporating documents by reference. *Pacific Rivers Council v. U.S. Forest Serv.*, 689 F.3d 1012, 1031 (9th Cir. 2012) *vacated as moot*, 133 S. Ct. 2843 (2013). Even when documents are incorporated by reference, the incorporated material must be "reasonably available for inspection." 40 C.F.R. § 1501.12.

UPLAND SEDIMENT ANALYSIS

There are multiple issues with the Disturbed Water Erosion Prediction Project (WEPP Disturbed Version 2.0 or WEPP V2), used in the Upland Sediment Analysis. There are limitations and broad assumptions that skew the modelling and make it an inadequate measure of soil health, water quality and public safety.

The baseline condition assumes the current condition after fire. However, the condition of water quality and sediment inputs prior to the fire should be considered in order to distinguish the increase of sediment from wildfire separate from the proposed logging. The effects from wildfire alone likely push these rivers and streams over TMDL allowances.

<u>Methodology and Assumptions</u>

Modelling oversimplifies recovery and relies on Best Management Practices (BMPs) and Project Design Features (PDFs). It is generally assumed that if logging reduces the likelihood of wildfire, or the severity of wildfire, then the average annual sediment production due to the operations is less than the sediment from wildfire over time. As described in our previous comments, the additive effects of BMPs and PDFs can often increase problems.

Older models, such as Disturbed WEPP V2 which was developed in 2010, fail to take into account climate change, current rainfall intensities, the prolonged drought regime, as well as the even aged forest stands that have grown out of clearcut plantation forestry, the subsequent road, landing and skid trail network and altered hillslope hydrology due to past management.

Modelling soil and water quality effects for a project of this complexity and expanse, especially in the impaired North Coast Klamath Siskiyou region, deserves more than eight single locations:

2 priority areas on the Mendecino NF
1 priority area on the Klamath NF
2 priority areas on the Shasta-Trinity NF
1 priority area on the Plumas NF
1 priority area on the Sequoia NF
1 priority area on the Sierra NF

Biased and Streamlined Inputs

The inputs used — to determine effects and to assume that Equipment Exclusion Zones (EEZ) buffer widths are sufficient to protect streams — are oversimplified and skewed, which make a significant decrease in sedimentation.

Modelling runs:

- Lump the same soil type, primarily using loam.
- Increase rock percentage up to 40-60% rock.
- Assume 45-100% soil cover.
- Use average weather conditions.

Soil Data

Simply put, loam soil is a proper, healthy balance of sand, silt and clay soil. In reality, great differences in soil properties can occur within short distances and there are multiple soil types throughout our forests.

Soil data for this analysis/model should utilize variables derived from a post-fire soils textural analysis not the NRCS soil survey data. Runoff and soil erodibility data can vary drastically after a fire. Root strength is reduced post-fire increasing the erodibility of hillslopes, subject to accelerated sedimentation from the proposed treatment. Recovery cannot by attained by utilizing simplified lookup tables or web sources with data gaps.

Precipitation, Climate Extremes and Snow Melt Data

To accurately account for effects extreme rainfall and weather events must be incorporated. It is projected more than 90% of extreme fire weather events in California, Colorado, and the Pacific Northwest will be followed by at least three spatially colocated extreme rainfall events within five years, pointing to a future with substantially increased post-fire hydrologic risks across much of the western United States[1].

The proposed treatment areas are in the snow zone, which does not bode well for hydrologic models. Snow accumulation and melt rates including snow pack depths *during* logging and timber sale projects are nearly impossible to predict. These extremes should be incorporated into

[1] Touma D, Stevenson S, Swain DL, Singh D, Kalashnikov DA, Huang X. Climate change increases risk of extreme rainfall following wildfire in the western United States. Sci Adv. 2022 Apr;8(13):eabm0320. doi: 10.1126/sciadv.abm0320. Epub 2022 Apr 1. PMID: 35363525.

the model to show cumulative effects scenarios, such as 100 yr peak storms *not* the averages of return period storms.

The report states that under average weather conditions, upland erosion may be higher than the pre-fire condition but within a natural and sustainable range of soil loss. Mean annual average data is a poor way to examine the cumulative effects from post-fire logging. Precipitation rates and the intensity of solar radiation are changing, therefore it makes no sense to model average rainfall and snow melt data. Please present the modeled data for the 3 yr, 6 yr, 15 yr, and 30 yr rainfall return periods. Forest runoff and highest rates of sediment delivery will occur for those storms greater than the 2 year recurrence interval. Increased high rates of rainfall should be incorporated to better understand how individual storms could increase the rate of sedimentation.

General Modelling Issues

Models are primarily based on a very few inputs or empirical values, and are not physically based. Physically based erosion models incorporate erodibility[2],[3]. We are concerned the model does not reflect reality or the actual on the ground conditions that may occur due to logging with heavy equipment and the additive effects of BMPs. The simplistic WEPP V2 erosion model does not account for ecological conditions and extent of impacted variables that would arise from post-fire logging on roads, skid trails and landings with heavy equipment in these complex, steep and rugged watersheds.

A single disturbance in a given year is seldom a problem. As more disturbances are added during a year, and additional disturbances in the years that follow, the forest is less likely to recover to an undisturbed condition. Rain splash and sheet-wash may further increase rill sediment delivery rates under natural rainfall given the amount of exposed soil in the areas with logging equipment traffic[4] (see also Bryan, 2000). Numerous disturbances over a number of years must be considered to better determine cumulative effects.

Downstream Accelerated Erosion

The Draft EA and Upland Sediment Analysis state that sediment delivery risk falls over time, with *most* subwatersheds dropping to pre-fire conditions within 3 years on *low* soil burn severity hillslopes and typically *within 5-10 years on high* soil burn severity hillslopes. This is a significant and long-term issue for the project. Further, the analysis does not differentiate or describe what *most* means and only looks at 8 sites. This is a poor representation of widespread impacts.

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[2] Bryan, R.B., 2000. Soil erodibility and processes of water erosion on hillslope. Geomorphology 32, 385–415.
[3] Elliot, William J.; Foltz, Randy B. 2003. The challenges in developing the WEPP cumulative effects model. In: Wide, M.I.; Hallberg, I., eds. Proceedings: 2nd Forest Engineering Conference; 12-15 May, 2003, Vaxjö, Sweden. Uppsala, Sweden: Skogforsk: 55-58. Poster. https://www.fs.fed.us/rm/pubs_other/rmrs_2003_elliot_w001.pdf
[4] Wagenbrenner, J.W.; MacDonal, L.H.; Coats, R.B.; Robichaud, P.R.; Brown, R.E. 2015. Effects of post-fire salvage logging and a skid trail treatment on ground cover, soils, and sediment production in the interior western United States. Forest Ecology and Management 335 (2015) 176–193.

BEST AVAILABLE SCIENCE AND TECHNOLOGY

These highly erodible watersheds deserve accurate up-to-date attention and technology. Maintaining trees, which develop soil on the hillslope, contribute to critical habitat and water quality must be a priority. Region 5 planners should familiarize themselves with the extensive body of work and publications by Danielle Touma, et. al. and the National Science Foundation and US Department of Energy Research article titled *Climate Change Increases Risk of Extreme Rainfall following Wildfire in the Western United States*.

Agency staff should use current climatology, technology and data available to run the most informed models. We also recommend the *Erosion Risk Management Tool (ERMiT)* that was developed by Robichaud in 2007[5]. ERMiT is a web-based application that uses the Water Erosion Prediction Project (WEPP) technology to estimate erosion, in probabilistic terms, on burned and recovering forest with and without the application of mitigation treatments.

We urge USFS soil scientists, hydrologists, and geologists to familiarize themselves with the extensive body of work and publications by USFS researcher and scientist William Elliot.

To improve the model in the proposed project areas we suggest that soil impacts can be better generated using post-fire satellite imagery and ESRI ARCGIS to develop improved delineation of forest and riparian cover and cover types and generalization of rock content for post-fire cumulative effects model.

ALTERNATIVES

It is interesting to note that even with the multitude of apparent flaws and biases the determination still concludes that there would be adverse impacts to soil and water quality. Watersheds in the project area are at higher risk of increased soil erosion and sediment delivery to streams. Skid trails greatly increase the risk of upland erosion for all scenarios modeled. Despite this information the R5 Draft EA fails to look at reasonable alternatives.

The Region 5 dismissal of alternatives is based on a black and white dichotomy — either do everything exactly as proposed or do nothing at all. The "touchstone" of a lawful alternatives analysis is whether the agency's "selection and discussion of alternatives fosters informed decision making and informed public participation." *Westlands Water Dist. v. U.S. Dept. of Interior*, 376 F.3d 853, 872 (9th Cir. 2004). Federal agencies must "[r]igorously explore and objectively evaluate all reasonable alternatives to a proposed project." *Center for Biological Diversity v. Nat'l Highway Traffic Safety Admin*., 538 F.3d 1172, 1217 (9th Cir. 2008).

[5] Robichaud, P.R.; Elliot, W.J.; Pierson, F.B.; Hall, D.E.; Moffet, C.A. 2007, Predicting post fire erosion and mitigation effectiveness with a web based probabilistic erosion model. USDA, Catena, Vol. 71, Issue 2, Pages 229-241.

RECOMMENDATIONS

We urge project planners to use the best available science and technology available. Nothing compares to actual on-the-ground information, which should be used at some level in determining the effects of the 5,000+ miles and nearly 200,000 acres of ground based logging and subsequent impacts. There should be a more accurate and honest attempt with the data inputs.

To comply with the Clean Water Act, the Endangered Species Act and other relevant laws that are intended to protect our salmon, water quality and drinking water in these fire-affected impaired Wild and Scenic Rivers the agency must reduce the scope, scale and adverse effects of the R5 project. There are reasonable alternatives included in our previous comments, such as eliminating low use roads, retaining live trees, limiting roadside logging distances and maintaining the buffer widths of the Aquatic Conservation Strategy.

We can live without roads but everything depends on clean water. Please use this NEPA process to make better decisions for our forests, rivers, wildlife and the people. Thank you for your time and attention.

Sincerely,

Kimberly Baker

Executive Director

Klamath Forest Alliance

And

Public Land Advocate

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