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Sent via project website portal with a compact disc of referenced materials sent via USPS to Redding Office

RE: August Complex Phase 1 Preliminary Environmental Analysis

Dear Supervisor Birkey and Phase 1 ID Team,

Please accept these scoping comments for the August Complex Phase 1 project on behalf of the Environmental Protection Information Center (EPIC), Klamath Forest Alliance, Northcoast Environmental Center, Safe Alternatives for our Forest Environment (S.A.F.E.), California Wilderness Coalition, California Native Plant Society, Redwood Region Audubon Society, Klamath-Siskiyou Wildlands Center, Shannon Wilhite and wildlife biologist Tonja Chi, M.S. Our organizations represent over 55,000 members and

supporters, who care deeply about protecting the wild places and rivers of California, particularly the Wild and Scenic South Fork Trinity River, which continues a rich history of heritage values and cultural use by multiple Native Tribes.

The proposed action of the August Phase 1 project includes approximately 3,800 acres of commercial post-fire logging with a total of 4,339 acres of ground based activities around the town of Forest Glen and east of South Fork Mountain within the proposed "wild" and designated Wild and Scenic South Fork Trinity River corridor and its key watershed tributaries of Smoky, Prospect, Red Mountain and Texas Chow Creeks and the East Fork South Fork Trinity River. The stated purpose of the project is for: public safety and recreational access, which includes >1,000 acres of roadside hazards; expedited reforestation; reduced fuels; economics and research. The project proposes utilizing: 6 miles of existing "temporary" road construction, including opening 2 miles of decommissioned roads, and up to .5 miles of newly constructed "temporary" road; an untold number of existing landings; 70 newly constructed landings and multiple miles of closed roads.

The project is primarily within South Fork, Indian Valley/Rattlesnake and Wildwood Management areas, including Late Successional Reserves, Riparian Reserve, Matrix and Adaptive Management Area land allocations. A vast majority of the treatment area around Forest Glen is within Critical Habitat for the Northern Spotted Owl. The South Fork Trinity River and approximately the first mile of Silver, Smoky, Red Mt., and Prospect Creeks and first three miles of East Fork of the South Fork Trinity River are Critical Habitat for Coho salmon. The South Fork Trinity River is 303(d) listed as impaired under the Clean Water Act.

Alternative 2, Imminent Hazard Trees Only, includes 120 miles of all open roads, 245 acres of logging in Riparian Reserves, is anticipated to construct <2 total miles of "temporary" road and construction of up to 25 new landings. Outside campgrounds, hazard tree abatement and removal would occur within a smaller footprint (one tree length above the road, 50-feet below the road) allowing for natural recovery.

While we greatly appreciate the inclusion of Alternative 2, the environmental analysis is insufficient, woefully lacking in detail and data and does not meet National Environmental Policy Act (NEPA) standards. The EA fails to recognize the significant scientific and public controversy around post-fire logging. We offer the following comments in support of a reduced Alternative 2, a revised Environmental Analysis that is significantly improved or an Environmental Impact Statement.

LAND RESOURCE MANAGEMENT PLAN (LRMP) GOALS

The EA highlights multiple goals in the LRMP, however there are many more that need to be considered and recognized:

#7 Heritage Resources- Develop partnerships with Native American tribes and organizations to enhance those cultural resources that reflect their heritage.

#13 Fisheries- Emphasize the restoration of summer steelhead and spring-run Chinook salmon habitat in the South Fork Trinity River Basin.

#14 Fisheries- Provide for the protection, maintenance and improvement of wild trout and salmon habitat.

#25 Riparian Areas- maintain or improve riparian habitat.

29 Soils- Maintain or improve soil productivity and prevent any excess surface erosion, mass waisting and cumulative watershed impacts.

#32 Threatened, Endangered and Sensitive Species (Plants and Animals)-monitor and protect habitat for Federally listed threatened and endangered (T&E) and candidate species. Assist in recovery efforts for T&E species. Cooperate with the state to meet objectives for State-listed species.

#33 Threatened, Endangered and Sensitive Species (Plants and Animals)- Manage habitat for sensitive plants and animals in a manner that will prevent any species from becoming a candidate for T&E status.

#34 Timber- Implement practices designed to maintain or improve the health and vigor of timber stands, *consistent with ecosystem needs of other resources.*

39 Water- Maintain or improve water quality and quantity to meet fish habitat requirements and domestic use needs.

#40 Water- Maintain water quality to meet or exceed applicable standards and regulations.

43# Wildlife- Meet habitat or population objectives established for management indicators.

44# Wildlife- Cooperate with Federal, State and local agencies to maintain and improve wildlife habitat.

#45 Wildlife- Maintain natural wildlife species diversity by continuing to provide special habitat elements within forest ecosystems.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

Please note that NEPA mandates a particular process but not necessarily a particular result. Note, Inland Empire Public Lands Council v. USFS, 88 F.3d 754, 758 (9th Cir. 1996). This process must proceed without undue bias from the action agency and ultimate decision maker. The Council of

Environmental Quality (CEQ) regulations warn that a NEPA document may not be used to justify a decision already made. 40 CFR §1502.2(g).

The EA Fails to Take A Hard Look at the Proposed Project's Impacts

In preparing an EA, the agency must take a "hard look" at the consequences of the proposed action. *Envtl. Prot. Info. Ctr. v. United States Forest Serv.*, 451 F.3d 1005, 1009 (9th Cir. 2006). If the agency determines that an EIS is not necessary, it must provide a "convincing statement of reasons to explain why a project's impacts are insignificant." *Id.* (quoting *Nat'l Parks & Conservation Ass'n v. Babbitt*, 241 F.3d 722, 730 (9th Cir. 2001)). This statement must include information that is "sufficient to establish the reasonableness of the decision," *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1215 (9th Cir. 2008) (quoting *Found. for N. Am. Wild Sheep*, 681 F.2d at 1178 n. 29 (1982)), and be backed up by evidence with "scientific integrity," 40 C.F.R. § 1502.23 (2020). "General statements about 'possible effects' and 'some risk'" do not meet this standard. *Te-Moak Tribe of W. Shoshone of Nev. v. U.S. Dept. of the Interior*, 608 F.3d 592, 603 (9th Cir 2010) (quoting *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1380 (9th Cir.1998)).

Courts developed the "hard look" requirement based on the statutory language of NEPA and not the implementing regulations, *see Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989) ("The sweeping policy goals announced in § 101 of NEPA . . . require that agencies take a "'hard look' at environmental consequences"). The language was never included in either the 1978 CEQ regulations or the revised 2020 regulations. Therefore, the changes in the regulations do not affect what constitutes a hard look, and the Forest Service must meet the "hard look" requirement in the August Complex NEPA analysis. The EA fails to take a hard look at nearly every resource in the proposed project, which is described individually.

WILD AND SCENIC SOUTH FORK TRINITY RIVER

The South Fork Trinity River, from Forest Glen/Highway 36 downstream to its confluence with the Trinity River was designated a state Wild and Scenic River in 1972 by the California Legislature. In 1981, the U.S. Secretary of Interior, acting on a request from the California Governor, administratively added the state-protected segments of the South Fork Trinity to the National Wild and Scenic Rivers System. The purpose of the state and federal designations is to protect the South Fork's free flowing character (as one of the longest undammed rivers in California) and its extraordinary (state value) and outstandingly remarkable (federal value) anadromous fishery.

In the 1995 Shasta-Trinity National Forest Land and Resource Management Plan (LRMP), the Forest Service found suitable and recommended to Congress that the upper South Fork Trinity River from the Yolla Bolly-Middle Eel Wilderness boundary to Forest Glen/Highway 36 be added to the National Wild and Scenic Rivers System. The outstandingly remarkable values that made the upper South Fork eligible for federal designation include its anadromous fisheries and scenery.

It's important to note that the South Fork Trinity River was formerly one of northwest California's premier steelhead and salmon (anadromous fish) streams. Extensive road building and logging in the South Fork watershed in the 1960s-70s resulted in egregious water quality and fish habitat impacts, particularly after the 1964 flood. The flood not only accelerated mass wasting and landslides in the watershed, the sediment from this erosion filled deep pools in the river essential for salmon and steelhead survival and smothered spawning grounds. Numerous Forest Service documents have acknowledged this issue and have reported that natural restoration processes and proactive efforts by the Forest Service and other agencies have helped the river and its watershed and anadromous fisheries to recover.

This is the context that must be considered in regard to the potential adverse impacts of the August Wildfire and Phase I project. Post-fire logging proposed in the late 1980s within the watershed and directly adjacent to the South Fork Trinity WSR corridor resulted in a federal court ruling (later upheld by the 9th Circuit Court). The court ruling found that logging and road building within the South Fork Trinity's watershed would likely negatively affect water quality, fish habitat, and other protected river resources.[1] At the time, the South Fork's spring chinook salmon run had been virtually extirpated by poor water quality and habitat conditions in the river.[2]

Although natural and proactive restoration processes and activities have helped towards the recovery of the South Fork's salmon and steelhead fisheries, it crucial to remember that even before the August Fire, the South Fork fish populations and fish habitat had not yet fully recovered to levels common in the 1950s and early 1960s. It is vital that any project responding to the fire impacts first does no harm and secondly, helps continue the recovery of the South Fork's anadromous fishery as required by the National Wild and Scenic Rivers Act.

The basic protection measures mandated by the National Wild and Scenic Rivers System include:

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[1] The Wilderness Society v. Tyrrel, 918 F.2d 813, 819 (9th Circuit 1990) provided.

[2] An annual fish count in the South Fork found only seven spring chinook salmon in the entire river. As one pundit put it, "There are so few spring salmon remaining in the river, you can name them instead of counting them."

1. A prohibition on dams and other water resource projects that harm the free-flowing character and outstandingly remarkable values of designated rivers.
2. River corridor classification as Wild, Scenic, or Recreational based on the level of existing development at the time of designation.
3. A mandate to protect and enhance the free-flowing character and outstandingly remarkable scenery, recreation, fish, wildlife, geology, history/prehistory, cultural, and other values (typically botany, ecology, or hydrology) that make the river eligible for federal protection.
4. Coordination with state water quality agencies and the EPA to eliminate or diminish water pollution, particularly for Wild segments.
5. Development and implementation of a management plan that achieves the protections above.

In addition to the National Wild and Scenic Rivers Act, there are four guiding documents that provide standards and guidelines protecting both the designated and recommended segments of the South Fork Trinity Wild and Scenic River. These include:

1. 1982 USDI/USDA Final Revised Guidelines for Eligibility, Classification, and Management of River Areas.
2. 1992 South Fork Trinity Wild and Scenic River Management Plan and Record of Decision (ROD).
3. 1995 Shasta-Trinity National Forest Land and Resource Management Plan (LRMP) and ROD.
4. 2015 FSH 1909.2_84.3 Interim Protection Measures for Suitable Recreational Segments

As documented in the Environmental Assessment (EA), the Phase I project proposes actions in both the existing designated Wild segment of the South Fork Trinity downstream of Forest Glen/Highway 36 and the recommended (suitable) Recreational segment of the South Fork upstream of Forest Glen/Highway 36.

In the recommended Recreational segment upstream of Forest Glen/Highway 36, the preferred alternative proposes 297 acres of recreation treatment and 33 acres of site preparation for heavy fuels and reforestation in 2.49 miles of the recommended Recreational segment. Alternative 2 proposes 162 acres of treatment in this segment. In the designated Wild segment downstream of Forest Glen/Highway 36, the preferred alternative proposes 75 acres of

recreation treatment in this designated segment. Alternative 2 proposes 24 acres in this segment.[3]

The EA claims the proposed project is "consistent" with applicable LRMP direction, standards, and guidelines for Wild and Scenic Rivers (WSRs).[4] However, little detail is provided in the EA or the accompanying Wild and Scenic Rivers report as to how and why the specific activities of the project are consistent with managing and protecting both the designated and recommended segments of the South Fork Trinity Wild and Scenic River.

This section of our comment letter focuses on whether the Project will comply with all management direction, standards, and guidelines applicable to the designated and recommended segments of the South Fork, and whether the Project complies with the intent of the National Wild and Scenic Rivers Act to protect and enhance the free-flowing character of the river and its outstandingly remarkable values.

1982 USDI/USDA Final Revised Guidelines for Eligibility, Classification, and Management of River Areas Direction:

The Department of Interior and Department of Agriculture established guidelines in 1982 for the eligibility, classification, and management of National Wild and Scenic Rivers. Below is a summary of these guidelines for river segments classified as Wild and Recreational.

1982 USDI/USDA Guidelines for Wild and Recreational Segments

ACTION	*WILD SEGMENTS*	*RECREATIONAL SEGMENTS*
Shoreline Development	• Essentially primitive. • Little or no evidence of human activity.	• Some development. • Substantial evidence of human activity • Lands may have been developed for the full range of agricultural and forestry uses. • May show evidence of past and ongoing timber harvest.
Water Quality	• Meets or exceeds Federal criteria or federally approved State standards for aesthetics and propagation of fish and wildlife normally adapted to the river, and for primary contact recreation (swimming) except where exceeded by natural conditions.	• No criteria prescribed by the NWSRA, but the Clean Water Act established a national goal to make all waters of the U.S. fishable and swimmable. • Polluted rivers not precluded from Recreational classification provided a water quality improvement plan exists or is being developed in compliance with federal and state standards.

[3] EA pg. 12.
[4] EA pg. 10.

1992 South Fork Trinity Wild and Scenic River Management Plan and Record of Decision (ROD) Direction:

The 1992 South Fork Trinity Wild and Scenic River (SFTWSR) Management Plan provided extensive direction for the protection and restoration of South Fork anadromous fisheries in the designated segment downstream of Forest Glen/Highway 36. This includes maintaining, improving, and creating fish habitat; working with the California Department of Fish and Wildlife to restore fisheries; maintaining adequate streamside management zones to provide for the recruitment of large wood debris; and performing instream rehabilitation work where necessary.[5]

In regard to timber and vegetation management, the SFTWSR Plan requires that projects that involve the manipulation of timber and other vegetation protect and enhance the river's outstandingly remarkable value (anadromous fish); be analyzed for effects on biodiversity and wildlife connectivity; analyze tree removal in the event of a catastrophic occurrence (fire, flood, etc.) in a NEPA document separate from the plan; re-establish tree cover, preferably by native vegetation; and restore riparian vegetation on tributary streams at an average of 80% shade canopy along the stream corridor to maintain water temperatures.[6]

For class 3 tributary watersheds, including Rattlesnake Creek, the SFTWSR Plan provides for no harvest, scheduled or salvage, within 100 to 250 feet or more if necessary (based on slope) from perennial watercourses, springs, or other wet areas. From 250 to 500 feet of perennial watercourses, timber can be harvested using non-ground-based skidding systems.[7] The Phase 1 project proposes extensive vegetation manipulation in the Rattlesnake Creek drainage, including heavy and light site prep, roadside hazard tree removal, and recreation treatments. Rattlesnake Creek is important to the protection and enhancement of the South Fork's outstanding anadromous fish populations because it and its tributaries (Little Rattlesnake, North Rattlesnake, and Post Creeks) provide 13.5 miles of available anadromous habitat (the most available habitat of any SFT tributary other than Hayfork Creek and its tributaries).[8] Because of its accessible habitat, the National Marine Fisheries Service identified Rattlesnake Creek as possessing a high "intrinsic potential" for threatened Coho salmon recovery.[9]

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[5] SFTWSR Management Plan pg. 2-3.
[6] SFTWSR Management Plan pgs. 2-9 to 2-10.
[7] SFTWSR Management Plan pgs. 2-10 to 2-11.
[8] SFTWSR Management Plan pg. F-2.
[9] Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionary Significant Unit of Coho Salmon, NOAA National Marine Fisheries Service, 2014.

In terms of watershed protection, the SFTWSR Plan requires the determination of sensitivity of each 2nd or 3rd order watershed using soil, geologic, and streamflow characteristics. The plan also establishes an equivalent roaded acres (ERA) threshold of 18% in low sensitivity watersheds, 16% in moderately sensitive watersheds, 14% in highly sensitive watersheds, and 12% in extremely sensitive watersheds.[10] It's not at all clear that the Phase I project complies with this direction. The EA claims that there will be significant impact from sediment or temperature in the streams within the project area and estimated ERA due to project implementation will be minor. However, the analysis claims "low to moderate" affects for "5th through 7th field hydrologic units." It's difficult for the general public to determine impacts when two different regulatory documents compare apples (2nd and 3rd order watersheds with low to extreme sensitivity) to oranges (5th and 7th field hydrologic units).

In regard to visual resources, the SFTWSR Plan requires that all Wild segments be managed to meet a visual quality objective (VQO) of "preservation" in the river corridor – the only exceptions allow a "retention" VQO in Wild segments where primitive resource improvements or necessary recreation developments are needed.[11] This applies to the designated Wild segment downstream of Forest Glen/Highway 36.

Although logging in Recreational segments is allowed, tree removal is primarily for recreation development, stand maintenance, and salvage of dead, dying, and high-risk trees, *when not in conflict with protecting the values of the river* (emphasis added).[12]

The SFTWSR Management Plan also sets a standard for fires suppression tactics in Wild and Recreational segments. Suppression tactics will favor low impact suppression techniques, including favoring handlines over dozer lines, helicopter water drops as opposed to air tanker retardant drops, and the use of mechanical equipment such as chainsaws and pumps.[13] We raise this issue because we have heard that the fire damage upstream and downstream of Forest Glen may have been increased due to an intentionally ignited backburn. This should be investigated and if determined to be true, a new standard and guideline should be adopted that would ensure such future actions are accomplished in a way that minimizes damage to river values.

1995 Shasta-Trinity National Forest Land and Resource Management Plan (LRMP) and ROD Direction:

[10] SFTWSR Management Plan pgs. 2-11 to 2-12.
[11] SFTWSR Management Plan pg. W-5.
[12] SFTWSR Management Plan pg. R-5.
[13] SFTWSR Management Plan pgs. W-2, R-2.

The 1995 Shasta-Trinity National Forest LRMP/ROD also provides important management direction, standards, and guidelines for the designated Wild segment of the South Fork downstream of Forest Glen/Highway 36. Although not specifically delineated on the LRMP maps, the designated Wild segment of the South Fork is tied to specific management prescriptions, standards, and guidelines for administratively withdrawn areas, including those managed for Unroaded Non-Motorized Recreation for Wild segments, Limited Roaded Motorized Recreation for Scenic segments, and Roaded Recreation for Recreational segments.[14]

The following standards and guidelines in the LRMP provide management direction to the designated Wild segment downstream of Forest Glen/Highway 36, including the 75 acres of proposed project treatment in the first 0.39 miles of the designated Wild segment.

1. Permitted: Vegetation Treatment by mechanical/manual/chemical methods to protect forest resources from loss to wildfire, pathogens, and insects.
2. Use of mechanical equipment permitted for fuels management.
3. No new roads will be constructed for Forest Service-generated activities.
4. Treatment of natural fuels or fuels resulting from resource activities will be determined by ecosystem analysis.
5. Management activities will be compatible with Semi-Primitive Non-Motorized Recreation ROS guidelines.
6. Retain late seral stage forest stands.
7. Manage to meet adopted VQOs of retention, and partial retention as indicated by VQO map.
8. Proposals for removal of dead, dying, or high-risk trees, due to catastrophic events, are subject to additional site-specific environmental analysis at the ecosystem planning level.

It's important to note that the visual quality standard for Wild segments established in the SFTWSR Plan and in the LRMP are not congruent (VQO of Preservation or Retention in the SFTWSR Plan and a VQO of Retention or Partial Retention in the LRMP). How will these divergent standards be reconciled with implementation of the project?

The LRMP also has forest-wide direction for agency-recommended WSRs (LRMP pgs. 4-28) to "Protect the existing character within ¼ mile boundary on either side of the proposed Wild and Scenic Rivers pending the outcome of their formal classification by Congress." This applies to the Forest Service recommended segments of the upper South Fork Trinity River upstream of

[14] LRMP pgs. 4-45, 4-47, 4-65.

Forest Glen/Highway 36. The LRMP also notes that the Forest will "follow procedures outlined in the Forest Service Handbook 1909.12_80 and the 1982 USDA Guidelines on Eligibility Classification and Management."[15]

Protection Measures for Suitable Recreational Segments, FSH 1909.2_80: Direction:

For recommended (suitable) segments classified as Recreational, a range of vegetation management and timber harvest practices are allowed, *if these practices are designed to protect users, or protect, restore, or enhance the river environment, including the long-term scenic character* (emphasis added). This applies to the 2.49 miles of and approximately 75 acres of treatment in the recommended Recreational River upstream of Forest Glen and the Highway 36 bridge.

For recommended (suitable) segments classified as Wild, cutting of trees and other vegetation is not permitted except when needed in association with a primitive recreation experience, to protect users, or to protect identified outstandingly remarkable values. Examples of such exceptions include activities to maintain trails or suppress wildfires. Prescribed fire and wildfires managed to meet resource objectives may be used to restore or maintain habitat for threatened, endangered, or sensitive species or restore the natural range of variability.

This standard actually applies to the designated Wild segment downstream of Forest Glen/Highway 36. The designated segment of the South Fork Trinity was administratively protected in 1981. In addition, the 1995 LRMP Record of Decision (ROD) included a recommendation to Congress to legislatively designated "106.4 miles of the Trinity River System," including the South Fork Trinity, "for clarity of administration and consistency in protection."[16] Phase 1 activities in the designated Wild segment should meet standards for designated and recommended (suitable) Wild segments.

Two Different Wild River Corridor Boundaries

Based on the August Complex Restoration—Phase 1 map, the analysis in the EA appears to be based on a river corridor that is exactly 320 acres per mile (1/4 mile on each side of the river). The National Wild and Scenic Rivers Act provides for the establishment of a river corridor that *averages* 320 acres per mile. This allows for variable width corridors that capture viewsheds, important water sources, and other landscape features that complement river values. The SFTWSR Plan clearly shows that a variable width corridor was established, including for the Wild segment that begins downstream of Forest

[15] LRMP pg. 48.
[16] LRMP ROD pg. 8.

Glen/Highway 36.[17] The variable width corridor extends nearly a mile up Cave Creek and the unnamed creek to the west. The project proposes extensive light site prep and roadside hazard tree removal along much of lower Cave Creek within the Wild corridor established by the SFTWSR Plan. The final EA should reconcile the different corridors and clearly show what is proposed or not proposed in the corridor.

Recommended South Fork WSR Possesses an Outstandingly Remarkable Scenery Value

Both the EA and WSR Report mention that the recommended (suitable) segment of the South Fork upstream of Forest Glen/Highway possesses an outstandingly remarkable fish value.[18] But neither document mentions that the upper South Fork also possesses an outstandingly remarkable scenery value. The LRMP's WSRs Evaluation noted that the entire length of the undesignated segments of the South Fork Trinity upstream of Forest Glen/Highway 36 were inventoried as visual quality Variety Class A, Sensitivity Level 1. The river's scenic stream with pools and rapids were documented as an outstandingly remarkable scenery value.[19] The EA's analysis of potential WSR impacts must be adjusted accordingly and measures included to protect the South Fork's outstanding scenery.

The South Fork's Outstandingly Remarkable Anadromous Fish Value is More Extensive Than the Description Provided in the EA and WSRs Report

The EA's analysis of potential fish impacts seems to focus on whether the Project will adversely affect Southern Oregon/Northern California Coast Coho salmon, a threatened species listed under the federal Endangered Species Act. The EA states that threatened Coho salmon currently migrate up the South Fork to its confluence with Butter Creek. Because this point is 21 miles downstream of the Project boundary, the EA claims that the "proposed action will have no effect on individual Southern Oregon Northern California Coast (SONCC) Coho salmon" due to the fact that currently Coho salmon only migrate to a point 21 miles downstream of the Project area.[20]

While this may be technically true, it ignores the mandate of the Wild and Scenic Rivers Act to "protect and enhance" the South Fork's outstandingly remarkable anadromous fish value, which includes Coho salmon. Although protecting individual Coho salmon may be the level of protection required by the Endangered Species Act, the National Wild and Scenic Rivers Act

[17] SFTWSR Management Plan, Figure 1 Location Map, Wild Segment 1 map, pg. W-7.
[18] EA pg. 35, WSR Report pg. 1.
[19] 1995 LRMP FEIS Appendix E, Wild and Scenic Rivers Evaluation, pgs. E-6, E-16.
[20] EA pgs. 17, 19.

requires protection and enhancement not only of the overall population but *its critical habitat* as well.

Although the EA recognizes that the South Fork Trinity and many of its tributaries within and near the project area provides designated critical habitat for threatened Coho salmon, it ignores the fact that the Forest Service *is required to protect and enhance the population and its habitat* – a mandate that requires the agency to do everything in its power to expand the population and its habitat.

Similarly, the EA's focus on Coho salmon means that the analysis fails to acknowledge that the South Fork's outstanding fish value encompasses all the anadromous fish species that formerly and currently utilize the river, including spring Chinook salmon, fall Chinook salmon, summer steelhead, and winter steelhead. Many of these populations are also in decline. The California Fish and Game Commission just recently declared that listing of the Upper Klamath-Trinity spring Chinook salmon and Northern California summer steelhead as endangered species under the California Endangered Species Act was warranted. Both species are or were formerly found in the South Fork Trinity and its tributaries. The EA's assessment of impacts on anadromous fish must reflect the recent listings of these species.

Because it virtually ignores other anadromous fish populations, many of which are declining towards extinction, the EA fails to adequately assess project impacts on these populations. It chooses instead to simply claim without substantiation that the project will have no short or long-term impacts on spring Chinook salmon.[21] Instead, the EA claims that riparian reserve protection measures, BMPs, and RPMs will "effectively minimize" sediment and "will have discountable effects" on habitat.[22]

Although the project Fisheries Report acknowledges that the South Fork Trinity and many of its tributaries provide critical habitat for threatened Coho salmon and the Klamath Mountains Province steelhead, it also analyzes project impacts on Central Valley spring Chinook salmon and steelhead, even though these species are not present in the South Fork watershed. The Report fails to provide an adequate analysis of project impacts on species and their critical habitat that depend on the South Fork and its critical habitat.

The Fisheries Report states that the "August Fire has drastically altered the existing conditions of fish and their habitat within the analysis area."[23] In addition, the Fisheries Report acknowledges that cumulative impacts "cannot

[21] EA pg. 31.
[22] Ibid.
[23] Project Fisheries Report pg. 6.

be meaningfully analyzed at this time" because the August Fire Restoration Project Phase 2 is still being developed, further the cumulative effects from the WAPA project are not included (See NEPA section of these comments and our scoping comments). Regardless, the Report continues to assert that project design features, RPMs, and BMPs will minimize cumulative effects on sediment delivery.[24] These uncertainties underscore the need for a more conservative response in Project Phase 1.

Protecting and Improving Water Quality in the South Fork Trinity Wild and Scenic River

When it established the National Wild and Scenic Rivers System in 1968, Congress declared that the "established national policy of dam and other construction at appropriate sections of rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition *to protect water quality* and to fulfill other vital national conservation purposes (emphasis added)"[25] River segments classified as Wild have "waters unpolluted," which is essentially a non-degradation standard under the Clean Water Act. The 1982 guidelines indicate that water quality-impaired rivers may be included, "where restoration to high water quality is planned."[26]

A technical paper published by the Interagency Wild and Scenic Rivers Coordinating Council (the federal agencies that manage WSRs) found that, "Although one purpose of WSR designation is to protect water quality, many WSRs are not meeting their assigned water quality standards under the Clean Water Act. In some instances, water quality impairments diminish all three river values that the WSR Act aims to protect and enhance: a river's free-flowing condition, water quality, and ORVs." The Council's report demonstrates that "impaired water quality is a widespread concern throughout the National WSR System, and more work is needed to develop viable strategies to address this problem."[27]

The National Wild and Scenic Rivers Act requires the Secretary of Agriculture to "…cooperate with the Administrator, Environmental Protection Agency and with the appropriate State water pollution control agencies for the purposes of eliminating or diminishing pollution of waters of the river."[28] This explicitly means that the Forest Service is required to

[24] Project Fisheries Report pg. 15.
[25] 16 USC Ch. 28, Sec. 1271.
[26] 1982 USDI/USDA Final Revised Guidelines for Eligibility, Classification, and Management of River Areas, Federal Register Vol. 47, No. 173, Sep. 7, 1982, pg. 39455.
[27] Evaluation of State Water Quality Assessments and the National Wild and Scenic Rivers System, Interagency Wild and Scenic Rivers Coordinating Council, Oct. 2018.
[28] 16 US Chapter 28, Sec. 1283c.

implement and comply with water quality actions proposed by the state water pollution control agencies and the EPA to reduce sediment impairment in the South Fork.

The North Coast Regional Water Quality Control Board (RWQCB) listed the entire South Fork Trinity and its watershed as an impaired water body under section 303(d) of the Clean Water Act due to sedimentation, siltation, and water temperature. The Environmental Protection Agency (EPA) adopted a Total Maximum Daily Load (TMDL) for sediment in the South Fork Trinity in 1998. The TMDL includes numeric targets, including (but not limited to) anadromous fish population recovery to a naturally reproducing annual escapement of 4,000 spring chinook salmon and 3,000 fall chinook salmon, reducing stream crossings with diversion or failure potential to less than 1%, and reducing sediment to below 14%.[29]

The South Fork has also been listed as temperature impaired. As yet, no TMDL has been developed to address this problem. In fact, the Project Fisheries Report admits that there is limited temperature data available for streams in the analysis area.[30] Reviewers are left with the impression that the Forest Service is simply whistling in the dark when it tries to address this issue without solid monitoring data and no TMDL to rectify the impairment.

Astoundingly, there is no mention in the EA of the South Fork's sediment TMDL, no attempt to quantify how the proposed project will affect the TMDL's numeric targets, or any specific management actions specifically proposed to achieve the TMDL targets. Although the South Fork's sediment TMDL is briefly mentioned in the Project Hydrology Report, there is no discussion in the report as to how the TMDL's numeric targets will be met.

The Hydrology Report does note that the upper South Fork Trinity watershed has a moderate disturbance level, as do several tributaries that may be impacted by the project (Smoky Creek, Cave Creek-Miller Springs, Cave-Swift Creeks, Cable-Farley Creeks. Prospect Creek, a tributary to the East Fork South Fork Trinity River, has a moderate to high disturbance level. Two sub-watersheds of the Cable-Farley drainage are already above the threshold of concern. The disturbance level for lower Rattlesnake Creek ranges from low to high. All of these creeks could be adversely impact by the project.

The Hydrology Report's comparison of the various alternatives impacts on streams/watersheds is provided in long paragraphs listing various tributaries and watersheds in terms of their current disturbance level under the No

[29] South Fork Trinity River and Hayfork Creek Sediment Total Maximum Daily Loads, pgs. v-vii, EPA Region 9, Dec. 1998.
[30] Project Fisheries Report pg. 16.

Action alternative and the future disturbance under the Proposed Project and Alternative 2. The presentation of this information is confusing and it is difficult to ascertain the differences between each alternative. The Hydrology Report should be revised to compare Current, No Action, Proposed Action, and Alternative 2 results in tabular form so the public can better understand the potential water quality and watershed disturbance impacts between the alternatives.

With that said, it appears that the proposed project will increase disturbance in some watersheds, but not above the threshold of concern, although there is no information given for what data was used to determine this assumption (See Hydrology section). Watersheds currently above threshold will remain above threshold through 2022 and perhaps beyond. The report anticipates that by 2026, all disturbance levels for watersheds affected by the project will be the same as the No Action. What is clear is that the public can expect little progress in the enhancement of the South Fork's water quality in the foreseeable future. But how much of this lack of progress is due to wildfire damage and how much may be due to the proposed project remains unclear.

The Northwest California Wilderness, Recreation, and Working Forests Act

The EA fails to mention that the project area includes rivers, streams, and wild lands proposed for protection in congressional legislation that has passed the House of Representatives three times and is currently pending in the Senate. The bill enacts recommendations made in the 1995 LRMP to add the upper South Fork Trinity River to the National Wild and Scenic Rivers System and also to congressionally designate the South Fork segments administratively protected in the system in 1981.

The bill also proposes Wild and Scenic protection for Rattlesnake Creek and the East Fork South Fork Trinity River due to complementary fishery values these tributaries add to the South Fork (providing crucial spawning habitat, important restoration opportunities, and cold water refugia for salmon and steelhead). In addition, the bill proposes Wilderness protection for the roadless area directly adjacent to the northern boundary of the Yolla Bolly-Middle Eel Wilderness, the Chinquapin roadless area, and the South Fork roadless area. The proposed upper South Fork and East Fork South Fork Wild and Scenic Rivers flow through all three roadless areas proposed for Wilderness.

This active legislation underscores the need to protect the free-flowing character, maximum possible classifications, and outstandingly remarkable values of the proposed Wild and Scenic Rivers and the wilderness qualities of the roadless areas through which they flow. We urge the Forest Service to

ensure that the project does not at all harm the values of and foreclose on the opportunity to protect these wild waters and lands.

WSR Issues and Requested Relief

1. A revised EA or EIS should explicitly list all management direction in all relevant documents and show how the project complies.

2. Differences between management directions provided in different documents should be reconciled in favor of providing the highest level of protection for the South Fork Trinity WSR. For example, the designated Wild segment of the South Fork downstream of Forest Glen/Highway 36 should be managed to protect its Visual Quality Objective (VQO) of Primitive/Retention as provided by the SFTWSR Management Plan, as opposed to the less protective VQO of Retention/Partial Retention provided in the LRMP.

3. The agency must demonstrate compliance with the EPA's South Fork Trinity sediment TMDL, particularly with its numeric targets.

4. The EA/EIS must address and mitigate potential project impacts on all anadromous fish populations that currently utilize and formerly inhabit the South Fork, including the Klamath-Trinity spring Chinook and Northern California summer steelhead that were recently listed as endangered under state law. A full assessment of potential impacts on all anadromous fish is required by the Wild and Scenic Rivers Act mandate to *protect and enhance* the outstandingly remarkable fish value of the river.

5. The EA/EIS must adequately assess and fully mitigate potential impacts on streams and rivers proposed for protection in the Northwest California Wilderness, Recreation, and Working Forests Act, including segments of the upper South Fork Trinity, East Fork South Fork Trinity, and Rattlesnake Creek proposed for Wild and Scenic protection and the roadless areas in the watershed proposed for Wilderness protection.

6. The EA/EIS and Hydrology Report should compare watershed impacts in tabular form for each watershed and sub-watershed. The long list of watersheds in narrative form in the EA is too confusing for the common reviewer to ascertain the differences between the alternatives and their watershed impacts. This fails the "plain language" standard of NEPA.

MANAGEMENT AREAS

The EA fails to address specific direction for Shasta-Trinity Land Resource Management Plan (LRMP) Management Areas. Please see the complete Management Area section of our scoping comments. In brief these concerns are listed below:

In all of the affected management areas, LRMP desired future condition for riparian areas states that they appear as unmanaged fingers and corridors. LRMP direction also requires the agency to maintain and enhance water quality in all of the tributaries in the project area.

Management areas within the project have specific direction under the LRMP including, developing a management plan for archeological sites that are affected by grazing, vehicular traffic, erosion, camping and vandalism. Has a management plan been completed?

For Wildwood Management Area 21, maintain an active program of site protection and monitoring to preserve archaeological and scientific values at sites determined to be eligible for the National Register of Historic Places. Establish a long-term study of the prehistoric and early historic sites along the East Fork and South Fork Trinity River. Has this study been accomplished?

SOUTH FORK MOUNTAIN LATE SUCCESSIONAL RESERVE

The EA at page 11 states, "Following large-scale disturbance, treatments should *protect existing and developing late-successional habitat* and facilitate the development of reforested areas toward late successional conditions (LSRA 4-13)." The EA fails to include that the LSRA at 4-13 also states that, all standing live trees should be retained and that following a stand replacing disturbance, *management should focus on retaining snags that are likely to persist until late-successional conditions have developed and a new stand again is producing large snags (emphasis added).* It states that management should be designed to accelerate or not impede the development of late successional characteristics and that, treatments should have long-term positive effect on late-successional habitat and should not diminish habitat suitability now or in the future.

As proposed, ground based logging that mimics clearcutting removes all snags, including large mature and old-growth snags and fire injured snags. Heavy equipment and logging operations, with subsequent road and landing use, construction and reconstruction and skid trails, would impede natural recovery and have long-term negative effects to the LSR. It would cause long-term soil damage in an area that endured high severity burn conditions.

The many proposed treatments, including heavy site prep (commercial logging), in the South Fork LSR are within at least three Northern spotted owl Activity Centers that continue to provide nesting, roosting and foraging habitat directly adjacent to project units. The South Fork LSR is also supporting much-needed Post Fire Foraging (PFF) habitat that would be diminished or removed by the proposed treatments.

Further, the 1S26 ML1 closed road through the South Fork LSR appears to be at least three miles in length and would require multiple stream crossings on Farley Creek, which is already over the Threshold Of Concern (TOC) and other intensely steep tributaries. The EA does not disclose the other related action locations such as newly constructed landings. The EA does not meet the Northwest Forest Plan or LRMP Standards and Guidelines nor does it follow the recommendations of the LSRA or NSO Recovery Plan.

HYDROLOGY

We are extremely concerned with the lack of clear information and data in the Hydrology report. In fact, parts of the report were unreadable. The EA provides the unsubstantiated conclusion that overall, "there would be no significant impact for sediment or temperature in the streams within the project area for either action alternative. No 5th through 7th field hydrologic units would be over the threshold of concern for either action alternative. The estimated temporary increases in Equivalent Roaded Area (ERA) due to project implementation would be minor and remain at low to moderate disturbance levels and not require special management practices to prevent watershed condition degradation. On average, stream temperatures will likely improve more quickly for the Proposed Action compared to both the no action alternative and Alternative 2, due to reforestation and riparian revegetation. However, with RPMs and BMPs, implementation of either action alternative would not lead to significant impacts."

First, the analysis uses a 38 year old ERA model. Other erosion and temperature models in published peer reviewed papers are more current and utilize multi-variant analysis far beyond the methods outlined in the outdated ERA analysis performed herein. Methods that are decades old should be upgraded. While models can be helpful, they can be easily influenced and often incorrect. Actual ground based analysis of cumulative impacts and site-by-site treatment recommendations should be used to provide the best scientifically sound conclusions. The Hydrology report offers zero information about what data inputs were used for modeling outcomes. For instance, what are the current conditions used, what rainfall intensities, at what intervals were used and were peak flow predicted? What slope layers were used? Were 2, 5, 10 and 25 year storm intervals considered? Was the first flush a consideration? Was the increase in snow pack or rain-on-snow

events considered? How were actual treatment acres included? How are roads considered, are "temporary" roads and landings used an input? Were legacy sediment sites included? How are roads considered? What were roads and road crossings were considered?

Second, HUC 5-8 are a huge expanse, much larger than the project area. This is perhaps why the Hydrology report analyzes Hayfork Creek, which at its mouth is at least 19 mile stretch down river, that was not affected by the August Complex and contains over 20 tributaries. More appropriately modeling would be done on an HUC 10-12 level. The LRMP guidelines call for, "Aanalyzing each land disturbing project for its effect on the *appropriate* 2nd or 3rd order watershed to prevent excessive cumulative impacts on stream channel condition and water quality." It appears that the hydrology modeling used a much larger area to dilute the effects analysis.

Third, the cumulative effects analysis does not include the intensive clearcut logging, roughly 3,000 acres and vegetation clearing proposed in the WRAP project or the August Phase 2 project that includes roughly 3,000 acres of disturbance.

Lastly, stream temperature and shading data has never been collected for some of the smaller streams in the project area, and no data has been collected after the fire for any streams within the project area. It is assumed that the current temperatures of the streams in high burn severity areas do not reflect natural conditions. There appears to be no attempt by the agency to determine the actual conditions in this temperature-impaired watershed.

LRMP direction calls for identifying and treating areas with a degraded watershed condition in a cost-effective manner and according to beneficial use priorities. High priority items include domestic use, anadromous fish habitat, and sensitive species habitat. It requires the agency to give full recognition to the tendency for erosion, mass land movement, and severe watershed damage potential when implementing vegetation management and related land management activities. The EA and Hydro Report are not consistent with LRMP direction.

We are greatly concerned that the proposed project would cause sediment discharges in headwater and anadromous streams and cause an unacceptable cumulative effects and anthropogenic accelerated watershed degradation. The listed mitigations themselves may increase adverse impacts to water quality including increased bare soil areas, erosion, landslide frequency, sediment yield, the magnitude and duration of turbidity, and temperature. Even one discharge point that would increase the impacts in the Wild and Scenic South Fork Trinity River, that is degraded and impaired for sediment and temperature is unwarranted.

Cited References Not Referenced

A vast majority of the "cited references" in the Hydro Report were not used, or if they were they were not cited. Please correctly cite these references in any final reports. NEPA requies that all referenced material be readily available to the public. Therefore, we request a copy of the following cited references below:

Beschta, R.L., R.E. Bilby, G.W. Brown, L.B. Holtby, and T.D. Hofstra. 1987. Stream temperature and aquatic habitat: fisheries and forestry interactions. In: Streamshide management: forestry and fisheries interactions. E.O. Salo and T.W. Cundy (Eds.) Institute of Forest Research, University of Washington, Seattle, WA, USA. 191-232.

Broadmeadow, S., and T. R. Nisbit. 2004. The effects of riparian forest management on the freshwater environment: a literature review of best management practice. Hydrology and Earth System Sciences, 8(3), 286-305.

Brown, G.W., and J.T. Krygier. 1970. Effects of clearcutting on stream temperature. Water Resources Research. 6(4): 1133-1139.

California Environmental Protection Agency, State Water Resources Control Board. 2017. 2014 and 2016 California integrated report Clean Water Act sections 303(d) and 305(b).

Carter, K. 2008. Effects of temperature, dissolved oxygen/total dissolved gas, ammonia, and pH on salmonids: implications for California's north coast TMDLs. North Coast Regional Water Quality Control Board.

Chan, S.S., D.J. Larson, K.G. Maas-Hebner, W.H. Emmingham, S.R. Johnston, and D.A. Mikowski. 2006. Overstory and understory development in thinned and underplanted Oregon Coast Range Douglas-fir stands. Canadian Journal of Forest Research. v. 36. p. 2696-2711.

Everest, F. H., and G. H. Reeves. 2007. Riparian and aquatic habitats of the Pacific Northwest and Southeast Alaska: Ecology, Management History, and Potential Management Strategies. U.S. Department of Agriculture, Forest Service. Pacific Northwest Research Station. General Technical Report PNW-GTR-692.

Greene, G. E. 1950. Land use and trout streams. J. Soil Water Conserv., 5, 125-126.

Hawes, E., and M. Smith. 2005. Riparian buffer zones: functions and recommended widths. Yale School of Forestry and Environmental Studies.

Kreutzweiser, D.P., S.S. Capell, and S.B. Holmes. 2009. Stream temperature responses to partial-harvest logging in riparian buffers of boreal mixedwood forest watersheds. Canadian Journal of Forest Research. v. 39. p. 497-506.

Moring, J.R. 1982. Decrease in stream gravel permeability after clear-cut logging: an indication of intragravel conditions for developing salmonid eggs and alevins. Hydrobiologica, 88, 295-298.

Spies, T. A., P. A. Stine, R. Gravenmier, J.W. Long, and M.J. Reilly. 2018. Synthesis of science to inform land management within the Northwest Forest Plan area. Volume 2. U.S. Department of Agriculture. Forest Service. Pacific Northwest Research Station.

U.S. Army Corps of Engineers. 1991. Buffer strips for riparian zone management. Waltham, MA: New England Division. 56 p.

U.S. Environmental Protection Agency. 2003. EPA Region 10 Guidance for Pacific Northwest State and Tribal Water Quality Standards. Region 10, Seattle, WA. EPA 910-B-03-002. 49pp.
Yeung, A.C.Y, A. Lecerf, and J.S. Richardson. 2017. Assessing the long-term ecological effects of riparian management practices on headwater streams in a coastal temperate rainforest. Forest Ecology and Management. v. 384. p. 100-109.

Below, we provide important information and quotations from "cited" references in the Hydrology Report that do not appear to have been considered but absolutely should (emphasis added).

Pacific Watershed Associates. 1994. Action plan for restoration of the South Fork Trinity River watershed and its fisheries. Prepared for the U.S. Bureau of Reclamation and the Trinity River Task Force:
http://www.krisweb.com/biblio/sft_usbor_pwa_1994_sftplan/pwa1.htm

> The objectives of the South Fork Restoration Action Plan were to identify the principal factors limiting the recovery of anadromous salmonid stocks of the South Fork Trinity River, and to develop a listing of projects and actions needed to accelerate the recovery of stream habitat and fish populations throughout the basin. Recommendations included in this plan are based on the best technical information available for the South Fork Trinity River basin and its resources.
>
> This Action Plan reviews our current state of knowledge regarding watershed conditions, fish habitat and the status of salmonid stocks in the 1000 mi2 South Fork Trinity River basin. It outlines appropriate land treatments, channel treatments, water conservation and pollution prevention measures, land use changes, fisheries management techniques and educational programs needed to affect fisheries protection and watershed stabilization, and begin the proactive process of fisheries recovery in the most cost-effective manner possible.
>
> Populations of all salmonid species are thought to have declined substantially over the last three decades as a result of many factors, including habitat loss related to past floods. Recent counts of spring chinook, summer steelhead and coho salmon in the basin suggest remaining populations of a few hundred or less, giving rise to concerns that some stocks could be lost.
>
> It is recommended that fall chinook population monitoring be resumed. Spring chinook and summer steelhead populations should also continue to be monitored and tracked, if not by CDFG, then by the U.S. Forest Service (USFS). Winter steelhead spawning counts by CDFG will help to discover if restoration measures, or other factors, are helping increase populations. Utilization of volunteer resources from schools and the community should be considered to augment staff and lessen program costs, if necessary. It is also recommended that the USFS continue monitoring juvenile steelhead populations in streams where they already have five years of baseline information. Additional chinook salmon genetics studies are already underway, but assessment of effective population size (Ne) should be considered.
>
> Findings of the habitat typing reports suggest that freshwater habitat in the basin is one factor that is limiting salmonid production. Densities of juvenile salmon and steelhead in the South Fork Trinity River and a number of its tributaries are extremely low relative

to streams in other areas of the Pacific Northwest and elsewhere in the Klamath/Trinity basin.

Long-term sediment control is expected to be an important component of habitat restoration and fisheries recovery.

Erosion and sedimentation processes in the South Fork Trinity River watershed have long been thought to be a significant factor contributing to the historic declines of salmonid stocks in the basin. Extensive unstable areas still exist within the watershed and the combined effect of floods and land use can be expected to cause additional habitat degradation in future floods unless widespread corrective work is undertaken soon.

The South Fork is a large and diverse watershed with significant portions underlain by stable bedrock and other substantial regions of highly unstable terrain. For this reason, different sub-watersheds are naturally characterized by widely variable erosion rates, and the imprint of forestland management and agriculture has been locally severe. Eastside watersheds (tributary to Hayfork Creek) generally display low erosion rates and sediment yields compared to slopes and basins draining directly into the South Fork. These westside lands are particularly susceptible to erosion and landsliding following land disturbance.

Recent wildfires and associated salvage logging on federal lands, combined with road building and heavy timber harvesting on private lands, is setting the stage for continued high levels of stream channel sedimentation for the near future. Recommendations for 1) watershed assessments of potential erosion on both USFS and private lands, 2) implementation of watershed restoration projects, and 3) changes in land use practices, are included in chapters specifically addressing these topics. Above all, land management practices need to be sensitive to the high variability in erodibility and, especially, slope stability found in the South Fork Trinity River watershed. It should be recognized, both in practice and in regulation, that a land management practice which is acceptable in one terrain type may cause entirely unacceptable impacts and damage in another, nearby location.

Forest Land Management as a Limiting Factor in Restoration of South Fork Trinity River Fisheries

Past land use on public and private forestlands has had a profound effect on fisheries habitat and stream conditions in the South Fork Trinity River and its tributaries.

The impacts of land use and past floods have severely degraded the basin's streams. Without changes in private land forest practices and concurrent watershed restoration, future floods are likely to cause additional watershed damage and threaten depleted fisheries populations.

By 1977, the date of the last assessment of watershed conditions, 52% of the South Fork watershed had already been logged and over 3,400 miles of road had been built.

According to the USFS, federally managed watersheds in which cumulative erosion and sedimentation effects are likely to be a near-term problems include Butter Creek, Rattlesnake Creek, Plummer Creek, South Fork Mountain Tributaries, East Fork South Fork, Upper South Fork, Hidden Valley, Upper Hayfork Creek, Hyampom and Gulch watersheds. Past forest practices and wildfires have created most of these concerns.

The South Fork Trinity River has been identified as one of the highest sediment producing streams in the Klamath and Trinity River system.

Extensive unstable areas are present within the South Fork Trinity River watershed. These include landslides, unstable inner gorges and dormant features, which are highly susceptible to activation by natural events (large floods) or management-related land disturbances (road building and timber harvesting).

MacCleery (1974, p.141), in his study of 13 small tributaries in the highly erodible and unstable South Fork Mountain area, reported that "...South Fork mountain is not an ambiguous laboratory. It is highly consistent from end to end in slope, aspect, topography, geology and rainfall patterns. **The only way in which one part of the mountain differs sharply from another is the extent to which one part may have been extensively logged and another part remains forested. That the logged areas suffer heavy damage during and after storms and the unlogged areas do not, is clear**."

In the past, generally similar land use techniques and practices were broadly applied to all geologic and landform types across the basin with little respect to terrain sensitivity. As a direct consequence of the inherent differences in stability and erodibility of South Fork geologic terranes, land use effects have been found to vary dramatically from basin to basin.

Debris torrenting, streamside landsliding, and stream "gutting" are likely to again occur in many of the these basins with a similar sized storm. If a significant flood occurs in the next several decades, portions of recently burned watersheds in the upper South Fork Trinity River are also likely to experience substantial erosion and widespread mass slope failure. Degradation will continue as roots decompose and accelerated mass wasting occurs, further contributing to cumulative watershed effects (USFS, 1990i; see also Fire Effects, this chapter(4)).

Fire Effects-Future erosion- The Upper South Fork Trinity River watershed has been heavily impacted by a combination of logging during the 1950's and 1960's, by recent wild fires, and by the effects of the 1964 storm and flood (Haskins and Irizarry, 1988). Although thought to be gradually recovering, **many sub-watersheds are approaching or have already exceeded their Threshold-of-Concern for cumulative effects**. Because of these effects, **most sub-watersheds** in the upper South Fork Trinity River **remain sensitive to potential cumulative effects, especially in areas burned within the last decade** (Haskins and Irizarry, 1988; USFS, 1990i)(Plate 2).

As yet, the 1987-1988 fires have had little apparent effect on the main stem of the South Fork Trinity River (USFS, 1990i). Future accelerated erosion and sediment yield from areas burned in the 1987 and 1988 wildfires on the Hayfork and Yolla Bolla districts could still be severe (Haskins, 1992, personal communication). With a large storm, water quality and fish habitat degradation are likely to occur in the intensively burned watersheds, and these effects are expected to be transmitted to the South Fork Trinity River (USFS, 1990I).

Fluvial erosion (erosion from swales, stream channels and gullies) could still be an important source of future sediment from the burned areas. When the areas burned, not only did most of the standing vegetation (trees and brush) die, much of the downed trees and logs on the hillslopes were also consumed. This has removed valuable, stabilizing structure from low order swales and stream channels. Gullying and channel

enlargement has occurred in some of the larger tributary streams which were burned, and heavy rainfall and runoff would likely trigger widespread fluvial sediment production from other affected channels. **Accelerated fluvial erosion and sediment yield from stream channels and gullies in the burned areas could provide relatively large quantities of sediment to the South Fork Trinity River and its major tributaries, thereby further delaying and limiting recovery of the anadromous fishery.**

Perhaps the greatest threat to fisheries resources stemming from the 1987 and 1988 burns comes from **future slope stability and mass erosion problems**. During the burns, there was complete loss of riparian and inner gorge coniferous vegetation along many smaller tributaries (Haskins, 1992, personal communication). Over the 15 to 20 year period following the fires, stabilizing root systems of conifer forests on north facing slopes will decay and slopes that once displayed marginal stability have now become much more susceptible to failure. On drier south facing slopes, **hardwoods that burned have since resprouted and failures due to root decay may be less common**.

The loss of vegetation has altered the subsurface hydrology of the steep streamside slopes and increased the likelihood of slope failure. Slopes are now likely to be wetter for longer periods during the year than when a thick vegetative cover was intercepting rainfall and transpiring moisture from the soil.

Widespread failure of steep, streamside slopes could occur within recently burned areas if a large magnitude storm and flood were to occur within the next two decades (USFS, 1990i; Haskins, personal communication). Such an event could cause serious downstream sedimentation in affected tributaries and in the main stem South Fork Trinity River, and delay or limit the recovery of the anadromous fishery. The longer the recovery and revegetation period before the next flood, the less likely such a rainfall event will trigger serious slope instability and sediment delivery to the South Fork Trinity River.

In watersheds where large areas were burned by fires, there is a significant potential for long term cumulative effects (USFS, 1990i).

Forestry Impacts-Human impact on the watershed has been significant and has contributed to the degradation of salmonid habitat in the river" (CDWR, 1982). Logging and road building has likely had the greatest effect on the South Fork Trinity River, while agricultural activities and past mining have strongly influenced conditions in the Hayfork Creek watershed (Irizarry, et. al., 1985).

In fact, nearly 90% of the 40 mile long eastern slope of South Fork Mountain ridge, totalling 100 mi2 of land, is underlain by the highly unstable South Fork Mountain schist (Haskins, et. al., 1980). This terrain is one of the most landslide prone and environmentally sensitive areas in Shasta-Trinity National Forest (Haskins and others, 1980).

Finally, excessive upslope harvest levels were the third factor identified as contributing to downstream impacts in unlogged reaches of stream channel (MacCleery, 1974; Haskins, 1983). "The study appears to indicate that even if sensitive lands are left unmanaged, if activities are not dispersed on nonsensitive ground in the upper portions of watersheds, cumulative impacts can occur on the sensitive lands adjacent to stream channels in the lower watershed" ("sensitive lands," for this study, are comprised of the inner gorge and the peripheral zones described by Haskins et al., 1980).

"The USFS has developed a good methodology to deal with the difficult problem of estimating cumulative watershed effects in managed watersheds." **However, the method may be flawed in some situations.** For example, watersheds listed in "poor condition" may still have an ERA value less than the "threshold of concern." **The setting of the "threshold of concern" appears somewhat "arbitrary."** In these cases, the threshold of concern must be lowered to match watershed and channel conditions. **The fact that few watersheds exceed the threshold of concern "is more a function of the generally large sizes of the watersheds [selected] and the value chosen as the threshold. There are unquestionably numerous watersheds in the Trinity Basin-portion of the Forest that have suffered cumulative effects and are in degraded condition".**

There is another reason many watersheds did not exceed their threshold. Upstream private lands in a watershed were not included in the Forest Service calculations and analysis for a watershed's ERA. According the Veevaert, inclusion of private lands sent many basins over their Threshold of Concern.

The Upper South Fork Trinity River watershed area was heavily impacted by a combination of logging impacts during the 1950's and 1960's, by the effects of the 1964 storm and flood, and by recent fires. Although thought to be gradually recovering, many sub-watersheds are approaching or have already exceeded their Threshold-of-Concern for cumulative effects.

Most commonly, watersheds that are over the TOC are characterized by large blocks of selectively logged,understocked lands. It is Forest Service policy that for watersheds already over the TOC, every new ERA of harvest proposed should be matched by rehabilitation of an equivalent or greater area of unnecessary road. Thus, recent timber sales in Prospect Creek in the Yolla Bolla District have included prescriptions for obliteration of old, unneeded roads.

Fire salvage harvesting and yarding in the South Fork Trinity River basin has received considerable attention since the fires of 1987-1988. **BMPs for salvage operations, while restrictive, were not judged sufficient to protect downstream resources**. **The method of removing standing, dead trees can have an impact on post-fire fluvial erosion rates. Removing standing, dead trees from slopes adjacent to swales and stream channels, where they would otherwise eventually fall and create channel roughness and barriers to erosion and sediment movement, can also result in increased erosion rates.**

In evaluating the proposed USFS South Fork Trinity River fire recovery salvage project, Harr (1992)[31] found that "...the proposed South Fork Fire Recovery Salvage Project [will] produce, sediment, that, acting cumulatively with sediment from all other sources, is likely to cause irreparable damage to salmon and steelhead populations of the South Fork Trinity River..." Although the sediment produced by a single salvage operation was deemed inconsequential by itself, its cumulative effect in the degraded South Fork Trinity River system was thought to be important. However important the sediment yield from salvage operations, loss of living vegetation due to large-area burns is likely to generate the greatest problems for the protection and recovery of fishery stocks from some tributaries and the upper main stem of the South Fork Trinity River. Observations suggest that local inner gorge landsliding will be significantly accelerated, and these **slides will deliver substantial**

[31] Provided with these comments

volumes of sediment yield to the main channel of the South Fork Trinity River over the next several decades.

In designated "key watersheds," the potential effect upon the aquatic ecosystem is to receive first priority in consideration of management alternatives. Overall **goals for key watersheds**, including the South Fork Trinity River basin, are to:
a. **provide habitat essential to healthy anadromous fish populations**,
b. **aid in recovery** of at-risk anadromous fish populations, and
c. **maintain aquatic biodiversity of riparian ecosystem.**

To accomplish this, an interdisciplinary review of all forest roads (system and non-system) is proposed to be conducted in key watersheds to arrive at the desired future condition of the road network. Roads will then be prioritized for relocation or closure, based on their threat to riparian resources and various other factors. Acceptable road densities for the key watersheds will be established, striving for lower road densities. Stream crossings in riparian zones of key watersheds will be inventoried and upgraded to handle 150-year flows, all new road crossing will be designed with natural stream bottoms. Roads not a part of the transportation system will be obliterated and restored.

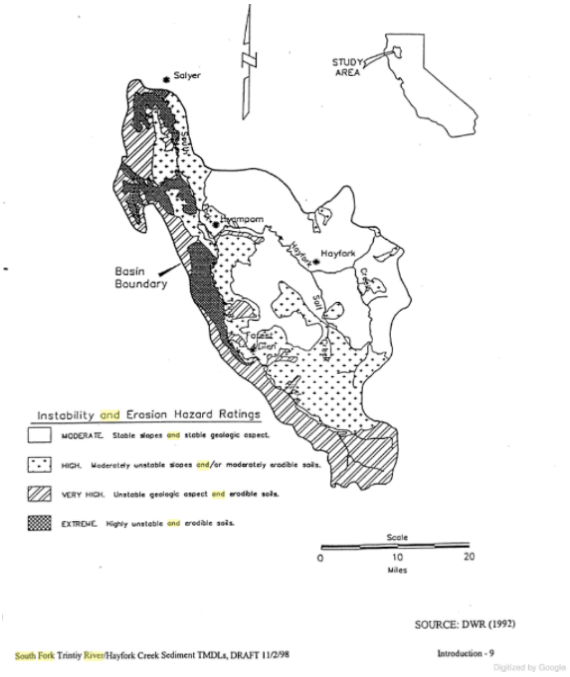
The FEMAT report recommended that watershed restoration strategies be comprehensive, addressing both 1) watershed protection in the best habitats that remain (refugia) and 2) restoration of degraded habitats in an integrated program that moves ecosystems toward recovery and resilience. Watershed protection in the refugia sub-basins should involve: 1) reduction in management levels, particularly timber harvesting, 2) reduction in road densities through the "decommissioning or obliteration" of high sediment production risk roads and non-essential roads, and 3) upgrading roads which are needed for long-term resource management needs.

U.S. Environmental Protection Agency, Region 9. 1998. South Fork Trinity River and Hayfork Creek sediment total maximum daily loads:

Excess sediment delivery to streams in the South Fork Trinity River basin has resulted in wider, shallower, and more homogeneous stream channels and fish habitat than would have occurred without management influences, as well as excess quantities affine sediments in pools for juvenile rearing and adult holding habitat and spawning gravels. This has resulted in limitations for the cold water fishery, including, sedimented or armored spawning riffles, impaired invertebrate production, and limited pool habitat.

Although the populations of spring and fall-run chinook, winter and summer steel head have all declined, the best documented and most dramatically affected is the spring-run chinook. This species depends on deep, cool pools for holding throughout the summer months, and its decline suggests it has not adequately adapted to pool filling and increased summer temperatures.

Mass wasting and chronic inputs of fine sediment from roads and other sources has resulted in excess fine sediment in spawning gravels, and filling of pools with fine sediment in some locations. This can limit the development of eggs into fry and can secondarily limit the production of macroinvertebrates that function as a food source for the fish.



KEY WATERSHED AND RIPARIAN RESERVES

"Any sort of vegetation management within Key Watersheds will only occur if it supports Key Watershed goals." LRMP 4-157

"**The Riparian Reserves within this analysis area are so important to salmonid recovery throughout the South Fork, that we recommend strict adherence to the ACS as outlined in the Northwest ROD. Future treatments in Riparian Reserves should not occur unless it can be clearly demonstrated that the activity will benefit ecosystem functions and processes, in particular, maintaining or increasing its quality for fish and wildlife**."
Page 6-21,Upper South Fork Trinity River Watershed Analysis 1999

Some of the most productive, sensitive and diverse sites on the Shasta-Trinity National Forest are within riparian areas. They provide important habitat for fish and other aquatic life forms as well as a variety of wildlife species. Riparian areas have high wildlife values because of the proximity to water and structural diversity of the vegetation. Riparian areas are critical for landscape connectivity and species movement.[32] Riparian and stream buffers that surround wetlands need protection to provide the essentials and

[32] Alexander K. Fremier, Michael Kiparsky, Stephan Gmur, Jocelyn Aycrigg, Robin Kundis Craig, Leona K. Svancara, Dale D. Goble, Barbara Cosens, Frank W. Davis, J. Michael Scott. A riparian conservation network for ecological resilience. Biological Conservation 191 (2015) 29–37.

key elements for building biodiversity and sustaining diverse and complex channel morphology and geomorphology.

The EA, aside from describing concerns in scoping comments, does not mention that the South Fork and its tributaries are within a Key watershed. There are no maps provided to show the Riparian Reserve (RR) buffers or locations. In fact, many of the Riparian Reserves have not yet been mapped. According to the Rapid Vegetation Assessment prepared by the agency for preparation of the August Phase 1 project, legacy sediment sites are not yet identified and may require treatment. The proposed project eliminates half of the Riparian Reserve buffers defined in the Aquatic Conservation Strategy (ACS). The activities proposed are not clearly needed to attain RR objectives. Protections for Riparian Reserves should be strengthened[33]. The effectiveness of using post-fire logging to restore desired riparian structure and function is unproven. The effects of post-fire riparian logging are unknown and highly contentious.[34] RR objectives would not be met in the proposed project.

The EA states that, under the no action alternative, that natural recoery would be delayed because planting would not occur. This assumtion is not based on reality- Riparian Reserves are already recovering. Natural regeneration will take place through adjacent seed sources. The only thing that would harm natural recovery is plowing through the reserves with heavy ground based equipment. The EA does not disclose how many intermittent and ephemeral stream crossings are proposed. Units contain multiple RRs as well as stream crossings. Manual treatments are proposed for as close as 25 feet to stream channels. The EA does not disclose how many acres of manual treament are proposed within the reserves. The project proposes chipping and machine piling within the reserves, and within the "equipment exclusion zones (EEZ)", yet the EA does not describe the locations or the amount of this activity. The project also propses to leave logging slash piles within EEZ's.

Information from the watershed analysis is directed to flow into NEPA documents for specific projects and must be used to help facilitate Endangered Species Act and Clean Water Act compliance. We are greatly concerned that the EA does not comply with the NWFP ACS, LRMP, ESA or Clean Water Act direction.

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[33] Frissell et al. CONSERVATION OF AQUATIC AND FISHERY RESOURCES IN THE PACIFIC NORTHWEST: Implications of New Science for the Aquatic Conservation Strategy of the Northwest Forest Plan. Technical Report 2014.

[34] Gordon H. Reeves, Peter A. Bisson, Bruce E. Rieman, Lee E. Benda. Postfire Logging in Riparian Areas. Conservation Biology, Volume 20, Issue 4, August 2006.

ROADS

Roads are the greatest contributor of sediment to our waterways. A better understanding of the existing primary and secondary roads and skid trail network construction histories is needed in these areas to perform a proper analysis of impacts, the previous condition of the forest in some areas were imperiled by 3 to 4 cycles of logging and mismanagement. Increasing sediment inputs and fragmenting habitat by disturbing thousands of acres of damaged and erodible watersheds with heavy machinery, road reconstruction, construction road and use, landing construction and the creation of thousands of skid trails must be avoided after such intense and widespread fire, especially in watersheds that have already suffer aquatic degradation from past management activities. Even the simple use of logging roads, especially during the wet season as proposed, can increase sediment loads.

Road and skid trail use and new construction impede forest ecosystem regeneration when it compacts soils, removes "biological legacies" (e.g., large dead standing and down trees) introduces or spreads invasive species, causes soil erosion when cut burned logs are dragged across hillslopes, and delivers sediment to streams from logging and skid roads. Roads can intercept and concentrate hillslope runoff and eroded sediment derived from sheet, rill, and gully erosion as well as high rates of cutbank erosion and colluvial raveling processes along bare road cuts which contribute accelerated erosion to the inboard ditch. Planting nursery trees and restocking after wildfire with conifers does not offset the negative cumulative effects associated with logging, road and landing construction and/or temporary roads.

The EA fails to provide adequate information concerning the extensive road system throughout the project area. The limited amount of information includes that there are 127 miles of existing roads proposed for use, 44 miles (with a majority 17.6 miles of ML 2 roads maintained for high clearance vehichles only) are proposed for roadside hazard logging and that logging contractors will be responsible for road maintenenace. The Rapid Vegetation Assessment is useful in that we are made aware of the 64 miles of closed roads in the project area. The public and the decision make are not provided any information on the change of condition after the fire, the current condition of the roads, the location of temporary road locations, the location of the decommissioned roads proposed for reconstruction, the number of stream crossings or legacy sediment sites or the extent or location of BAER work et.

The agency response to questions asked about legacy sediment sites in the project area are met with the proclamation of BAER work. We would like to point out that the North Zone August Complex Burned Area Emergency request for funds covered only 30 of the 140 miles (of Forest Service system

roads on the Shasta-Trinity National Forest, primarily within the project area) found within or downslope of areas with high or modern burn severity areas. These road miles are considered potentially at risk to damage from post-fire increases in flooding, debris flows, and erosion. That leaves 110 at-risk miles of road left without maintenance. This kind of information should be included in the EA/EIS and within applicable specialist reports.

Why is roadside Unit 10 included in the project? That area is very steep, the "roadside" unit is far beyond roadside boundaries and it is a closed ML1 road. Please explain this discrepancy.

The agency is required to determine the minimum road system needed that it can afford to maintain. It is required to prioritize restoration and road removal in this Key watershed. Yet here, the agency proposes to plow forward in the opposite direction violating multiple obligations, requirements and responsibilities.

SOIL

The Rattlesnake and Pickett Peak soils tend to be derived from mafic rock that produce higher clay content and more unstable soils. Burned soils are likely to produce significant amounts of the fine soil fraction (silt, clay). There were some localized subwatersheds with high burn severity. This is a concern because of the importance of the river anadromous fish habitat.

Rill formation and channel extension are dominant erosion processes of hillslopes with exposed bare mineral soil, especially in areas where decreases in soil organic matter, litter, and vegetation cover has led to highly erodible bare soil. Steel and rubber tire slippage and subsequent churning of forest soils makes sediment more available for transport. The mechanical disturbance of ground based logging, skid trails, road use and landing construction causes soil surface to loosen and become more erodible.

We question the methodology for determining impacts to soils. According to the Soil and Geology Report, "the soils analysis provided for this project only considered the specialist project bounding area for Alternative 2 as the project activity area treatment units." The proposed action is exponentially larger than Alternative 2. Using a much more limited boundary would obviously skew the outcome of treatment impacts.

The Erosion and Sediment Delivery and Soil Compaction and Displacement modeling for cumulative affects do not include the Phase 2 project in the

same watersheds. The agency states that no mechanical operations are anticipated in the Phase 2 project. We question that assumption as we have spoken to agency staff that have indicated otherwise. Regardless, it is a planned and connected action that must be considered. There is also the WRAP project currently being analyzed in the project area. We are concerned that the project will cause irreversible damage to soil productivity and watershed condition.

In short, the effects analysis concludes that, soil erosion and sediment delivery would be reduced by immense amounts of logging slash covering the forest floor. Soil compaction and displacement, on over 4,000 acres of ground based treatments, would be reduced by tilling main skid roads and landings. The effects analysis states, "Some displacement of topsoil by equipment but reduced erosion of topsoil due to planting so overall net positive." How can planting (if it ever happens or if it is even successful) automatically be expected to erase thousands of acres of intense soil impacts?

There are volumes and books of scientific literature specifically on post-fire logging and its affect to forest soil, many are localized to the South Fork Trinity River. We incorporate by reference and inclusion EPIC's North Shore EA scoping comments submitted to the Mendocino National Forest in 2018, with attachments provided. Aside from site-specific references, the North Shore comments include many of the significant scientific studies, which have direct relevance for the August Phase 1 project. In addition, we urge project planners to read and get familiar with the Upper South Fork Watershed Analysis, TMDL Plan and the scores of independent and government studies on the South Fork Trinity River.

GEOLOGY

According to the Rapid Vegetation Assessment, which the agency prepared in preparation for the August Phase 1 project, there are 733 acres of landslides in the project area. None of those locations have been disclosed in the EA. The assessment also identified two watersheds as high risk for excessive erosion delivery, the South Fork Trinity River and Upper Mad River. The maps of debris flow probability and erosion risk provided in the North Zone BAER Report are telling and included with these comments.

In the Mass Wasting portion of Soil and Geology Report, current conditions describe the closed 1S26 Rd. that is proposed for reconstruction and the 151 acre slide directly above it. Then the report states that, "No equipment is allowed in active landslide areas and inner gorges, so newly created or reactivated landslides (as future foreseeable effects) are expected to be negligible. How is that the agency can assume that new or reactivated landslides would be *so small or unimportant as to be not worth considering;*

insignificant (Oxford Language Dictionary meaning). There is no data provided to support this. Further, how is that heavy equipment plowing through landslides correlates with no equipment is allowed in active landslide areas?

Then, still under the Mass Wasting- Environmental Impacts section of the report, it describes all the activities proposed in Riparian Reserves - hazard tree removal, site preparation (proposed action only) and fuels management activities, which may include snag removal, chipping, mastication, piling and burning and hazard tree removal. Lastly, the report claims that, "While these activities may cause loss of vegetation cover and root deterioration, which can cause the indirect effect of an increased risk of landslides, these effects are anticipated to be negligible as the vegetation is predominantly fire-killed." Again, the effects are negligible with no actual information or data provided. Lastly, even though trees may be dead they are still providing soil stability.

Soil scientist and geologist should do a complete field inventory to document all current and potential road related sediment delivery sources along all roads in the project area proposed for use and hauling. Then in combination, assess project-wide geologic, soils, fire history and rainfall and other data to inform restoration efforts in the development of a prioritized action plan for erosion control and erosion prevention treatments, including site-specific options for road upgrading or decommissioning, including various storm-proofing treatments at stream crossings, road surface drainage features, fillslope failures and instabilities and other sediment delivery sites.

These highly erodible watersheds deserve accurate up-to-date attention and technology. Maintaining water quality is a priority. We urge soil scientists and geologists to familiarize themselves with the extensive body of work and publications by USFS researcher and scientist William Elliot. The research by Leslie Reid and Tom Lisle are also pertinent to this project. Agency staff should use the technology and data available to run the most informed models. As an example, please see the attached 2017 Ponderosa Way Road Erosion Assessment and Sediment Reduction Plan prepared by Pacific Watershed Associates.

NORTHERN SPOTTED OWL

Wildlife biologist Tonja Chi, M.S., completed this section of NSO comments. Her qualifications and experience are outlined in the full NSO Report, as well as a full list of cited references, attached to these comments. Primary documents reviewed for this summary were located on the USDA Shasta-Trinity National Forest website. These include the *August Complex Restoration Project Phase 1 Preliminary Environmental Assessment & Draft Finding of No Significant Impact (June 2021)* and *August Fire Restoration Project, Phase I Wildlife Biological Analysis (June 21, 2021).* The scope of this

evaluation is limited to an analysis of information presented in these two documents; documents that are prepared for the purpose of identifying and addressing potential impacts of project actions on northern spotted owl (*Strix occidentalis caurina*) and northern spotted owl critical habitat.

Review of the information and consideration of the potential environmental impacts reported in the Environmental Assessment, supporting documentation, specialist reports (including the Biological Assessment), and the Finding of No Significant Impact (FONSI), it was determined by the Shasta-Trinity Forest Supervisor that the August Complex Restoration Project (Project) and Proposed Action "would not have a significant effect on the quality of the human environment" and that "the project record demonstrated compliance with the National Environmental Policy Act, National Forest Management Act, Endangered Species Act, and all other laws, regulations and policies described in the EA" (USDA, June 2021, p. 47).

The basis of this analysis relies on fundamental information generated from *Monitoring Population Ecology of Spotted Owls in Northwestern California: Annual Results (2009 to 2016, and 2019)*(Franklin et al. 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, and 2020) that summarize long-term NSO population trends in a study site with the most comparable habitat type (mixed-conifer), located within the same geographic region, and within the same USFWS-designated recovery unit. Portions of this northwestern California study site are within 15 miles of the August Complex Restoration Project boundary. Additional information of high significance to the northern spotted owl is detailed in the meta-analysis evaluations resulting from eleven long-term population demographic monitoring sites (Dugger et al. 2016, Franklin et al. 2021).

These documents and scientific publications provide northern spotted owl information and demographic data that correspond to the Shasta-Trinity National Forest as recognized within California Klamath physiographic province recovery unit (USFWS 2011), and have direct relevance to the northern spotted owls found within the boundaries of the August Complex Restoration Phase 1 Project (August Phase 1 project).

BACKGROUND

Monitoring of population ecology of northern spotted owls in northwestern California has produced annual reports in a research study area located on portions of the Six Rivers, Klamath, and Shasta-Trinity National Forests where data have been collected since 1985. This area is representative of the California Klamath physiographic province, one of twelve provinces identified by the Interagency Scientific Committee in 1990; each a distinct recovery unit under the Revised Recovery Plan (USFWS 2011).

The northwestern California (NWC) Monitoring Population is one of eight study sites in the Effectiveness Monitoring Program established to evaluate range-wide trends and assist management guidance of NSO on Federal lands protected under the 1994 Northwest Forest Plan (NWFP). These areas were created to measure long-term population demographic trends in established populations of NSO. Annual reports include assessments of life-history, reproductive output, annual survival, longevity, rates of change in population over time, and measure impacts of environmental variation on the above parameters. Most significantly these long-term scientific evaluations have observed impacts of increasing barred owl populations within the range of NSO and documented the adverse effects, and apparent impacts on NSO populations (Duggar et. al 2016, Franklin et. al 2021).

The August Phase 1 Project is geographically situated within close proximity and among Research Study Areas (RSAs) of the NWC demographic monitoring site. All are located on Forest Service managed lands with identical climate and vegetation components. The closest RSA is located approximately 13 miles north, several are between 20 and 30 miles west, and the largest concentrated portion of the study is located approximately 50 miles north of the Project area.

The most recent monitoring report available for northwestern California is from year 2019 and includes data collected from 94 historically occupied NSO territories (Franklin et al. 2020). Findings indicate a continued declining trend of 2.7% per year in this NSO population with the lowest recorded level of activity center (AC) site occupancy (28.7%) since the initiation of the study. Numbers of nesting pairs and annual survival rates also report a continued significant decline. Although the reproductive output has remained steady for reproductive pairs, the number of pairs reproducing in the study area has declined considerably. Barred owl presence and established barred owl sites have dramatically increased and are credited with negatively affecting NSO occupancy, survival, and reproduction. Concluding remarks from the most recent report for northwestern California identify *the most imminent threat to NSO populations for the Klamath physiographic province* as *effects of multiple stressors caused by barred owl and environmental conditions*.

A more detailed analysis of long-term effects of barred owls to NSO monitored populations have been summarized in findings reported by Dugger et al. (2016). The study reported range-wide annual rates of population change and occupancy rates that are declining. Northwestern California measured an increasing rate of decline, at 3.0% per year, and a declining occupancy between 1985 and 2013 from 75% to 38%. As mentioned above, 2019 had the lowest occupancy rate reported since the initiation of the study

(28.7%). Barred owl presence was associated with increased local extinction rates of NSO for all study sites.

Several important findings were concluded:

1. extinction rates were decreased with an increase in the amount of suitable habitat
2. increased habitat disturbance was associated with a decrease in colonization rates
3. specific to the northwestern California study site, initial territory occupancy was negatively related to increasing amounts of edge habitat
4. there are additive negative effects of the amount of suitable core area habitat, barred owl presence, and the amount of edge habitat on fecundity

Franklin et al. (2021) has just published the most recent meta-analysis, spanning 26 years of northern spotted owl demographic data across 11 study sites, that continues to show increasingly dramatic declines in population trends since the last meta-analysis (Dugger et al. 2016). They report annual populations continuing to decline with values ranging from 6% to 9% annually in 6 of the study areas, and 2% to 5% annually in the other 5 study areas. Since 1995, Washington state NSO populations in 2017 have decreased by greater than 75% to 80%, Oregon state 2017 populations decreased by greater than 60% to 75%, and California 2017 populations decreased by greater than 50% to 60% in the NWC demographic study site and Green Diamond site, respectively (Franklin et al. 2021). In other words, 2017 northern spotted owl populations at demographic study sites have shrunk to 20% or 30% of the original population size recorded in 1995.

Northern spotted owls in the NWC Monitored Population are located throughout Regional Study Areas (RSAs) and the Willow Creek Study Area (WCSA). These areas are preserved–where historical logging occurred, declined, and has since ceased within the study (Franklin et al. 2020)–and are thereby comprised of contiguous undisturbed higher quality habitat. The Shasta-Trinity National Forest August Phase 1 Project NSO population is located in areas with a variety of land allocations and a higher potential for habitat alteration, resulting in smaller habitat patch sizes of reduced quantity, quality, and availability. These are important distinctions between the demographic study site and August Phase 1 Project, as they address the increased potential for stressors impacting NSO. Franklin et al. (2021) noted that at demographic study sites "little evidence was found that indicated any type of range-wide effects of logging or fire on NSO populations." Wildfire has not been absent from activity centers located within the NWC demographic study area, but reported declines in these populations are linked by Franklin et al. (2020, 2021) primarily to barred owl presence. Since

demographic study sites are insulated from landscape management practices such as those implemented on federal lands outside of Regional Study Areas (RSAs), it is very important to recognize that northern spotted owl populations outside of RSAs may be more severely impacted by additional factors, where declining populations may be caused by barred owl presence and the additional stress of habitat loss; impacts primarily resulting from landscape management practices, logging projects, or wildfire. Therefore, it is likely populations outside of demographic study sites may be experiencing even greater population declines because they are not protected and insulated from additive threats associated with habitat loss.

PROJECT DOCUMENTS–ANALYSIS FOR IMPACTS NORTHERN SPOTTED OWL

Wildlife Biological Assessment of the August Fire Restoration Project, Phase 1 (USDA June 21, 2021)

Shasta-Trinity National Forest (STNF) wildlife biologists prepared a biological assessment to analyze the potential effects of project-related activities associated with the August Phase 1 Project, on northern spotted owl and northern spotted owl critical habitat. Information included in the evaluation is required by the Endangered Species Act (ESA) to determine if the species or critical habitat will be adversely affected as a result. Accurate analysis and informed decisions are dependent on key factors that include[35]:

- On-site inspection to determine presence or absence of the species. Presence and absence are confirmed by implementing science-based survey methodology specific for the biological species of interest.
- Incorporating recognized expert views on the species and proposed actions.
- A complete literature review of factors significant to the current status of the species, including the most recent peer-reviewed research, studies, and analysis applicable to the species.
- An analysis of the effects of the action on the species and the habitat they depend upon, including consideration of cumulative effects, and the results of related studies.
- An analysis of alternate actions considered.

The Biological Assessment does not adequately evaluate and present the true potential impacts to northern spotted owl and northern spotted owl critical habitat because they fail to establish a baseline with presence or absence of the species, fail to present a reasonable understanding of spotted owl use of post-fire landscapes, do not include expert views to credibly demonstrate scientific evidence that there will be no potential impacts of project

[35] Cornell Law School website: (50 CFR § 402.12 - Biological assessments. | CFR | US Law | LII / Legal Information Institute (cornell.edu)

implementation, they do not address the current species status or integrate potential threats into their analysis, and finally there is no consideration of cumulative effects of multiple stressors to northern spotted owl.

Surveys

A baseline of the spotted owls and the habitat they are using is required under the Endangered Species Act. This Project has not established any baseline information prior to- or since the fire-caused disturbance, which can only be determined by conducting surveys. The basis to any biological assessment is knowing where the species is, what habitat they are using, and their patterns of behavior. It is essential that protocol surveys be performed to determine where spotted owls are on the landscape. Prior to implementing any project in burned or unburned habitat, a baseline must be established to evaluate and measure potential effects. Locating the species is done by performing surveys and are necessary to obtain information to adequately evaluate potential impacts. Ideally for the August Phase 1 Project, a pre-fire baseline and post-fire status of the northern spotted owl within the action area would provide the necessary information to make evaluations and determine impacts. However, with the exception of one activity center (TRI0099), there have been no surveys conducted more recently than 2015. There are no surveys that have been conducted post-fire, and there is no written confirmation of impending future intent or current survey efforts in 2021 and 2022. At the very minimum, protocol surveys must be conducted prior to implementation of the project to determine if spotted owls are present and identify what habitat is being used. Any evaluation without this information would be lacking in biological reliability.
The severe population declines documented by scientific literature, supported by long-term demographic studies throughout the NSO range (discussed above), and rapidly accelerating population declines since 2015 (Franklin et al. 2020, 2021), punctuate the necessity to establish a baseline understanding of the landscape and owls by implementing spotted owl surveys and determining presence or absence of the species in the action area.

It is of particular importance to conduct surveys in the entire action area for several reasons:

1) to establish presence or absence of the owls;
2) identify areas with habitat being used, characterize any habitat being used, and determine its relevance to the owls;
3) identify if barred owls are present through incidental detections to spotted owl surveys, and/or barred owl specific surveys;
4) determine if northern spotted owls are vulnerable to multiple stressors and whether actions implemented by the project would result in cumulative effects to the owls.

Once this information has been gathered, the informed analysis can be made.

Comprehensive Scientific Analysis

Information obtained from survey efforts are highly warranted because there lacks a fundamental understanding of the scientific relationship between spotted owls and post-fire habitat use. The best available scientific data confirms that spotted owls use unlogged, burned snag forest habitat and that it functions as foraging habitat for spotted owls (Bond et al. 2009, Bond et al. 2016, Eyes et al. 2017, Jones et al 2020). However there exists variability in opinion among scientific experts, as to the degree to which post-fire habitat is used and needed by NSO. All up-to-date literature must be considered in an analysis until existing findings are further defined, countered, and/or refuted by scientific evidence.

The stated methods used to assess effects to NSO and NSO habitat from wildfire that are described in the Biological Assessment (USDA, STNF, 2021b, pg16-17) are not sufficient. A determination of the value of burned areas to spotted owl was not made by performing surveys, or by considering information from a *comprehensive* literature review on the subject, but instead relied on conclusions made in only a few published studies that failed to include other relevant science. A host of other published studies with different findings were not considered, accounted for, or incorporated into the NSO post-fire habitat use assessment. The scientific community has not reached a consensus regarding the degree to which NSO use high-severity burn forest, and in the Biological Assessment there is no reasonable explanation or transparent reasoning describing why some research was considered, and other research was not.

Although there is recognition in the Biological Assessment of variability and uncertainty regarding spotted owl use of burned habitat in the scientific community, two very important publications addressing, discussing, and resolving these differences are not referenced (Lee 2018, Hanson et al. 2021). These are very helpful review and meta-analysis efforts that clarify key information from all published studies regarding spotted owls, wildfire, and a variety of associated findings. Each has combined all studies into one document, performed side-by-side summaries with results, and evaluated each study to help further clarify and define post-fire habitat types used, frequency of use, and value to spotted owls (Lee 2018, Hanson 2021). These publications show that many studies drawing conclusions that spotted owls do not use high severity burn areas, may be biased by pre-fire land management (logging) which would reduce the structure and size of the post-burned forest, or that authors did not adequately account for high severity fire patches that had been salvage logged (causing the owls to avoid those

areas). Enough information is presented in these two publications to recognize that when considering information in all the scientific studies conducted, *there is no clear and definitive conclusion that spotted owls do not use or rely upon post-fire high-severity burned forest*.

Appropriate Application of Scientific Literature

Fire can be a major disturbance event with potential for wide-ranging redistribution of biological resources; changing composition, structure, spatial configuration and shifting habitat values within a spotted owl territory. Due to a limited understanding of the nature and dynamics between spotted owl and post-fire landscapes, the presence and absence surveys are necessary to identify areas of use and determine habitat value to northern spotted owls. In the action area boundary, without conducting surveys, four activity centers (TRI0477, TRI0017, TRI0046, TEH0173) have been identified as "non-viable" in the Biological Assessment due to "loss of habitat." When designating these activity centers as "non-viable", references to scientific studies: Jones et al. (2016) and Rockweit et al. (2017), were given. There are no data or analysis described in these references or any other current literature that provide a number or threshold burn value at which an activity center can be arbitrarily labelled "non-viable." Making these determinations in the assessment is misleading, capricious, and not based on proven science or any peer reviewed literature. Each of these activity centers are located within or adjacent to high severity burn patches, but cannot be rendered inactive or "non-viable" without performing surveys. In fact, the referenced authors, Rockweit et al. (2017) indicate spotted owls within the Klamath region to be:"[a] species inhabiting landscapes shaped by wildfire [that] have evolved mechanisms allowing them to persist under this dynamic disturbance type." Indicating that NSO have evolved with wildfire, are resilient in this area, and could very easily still be in a post-fire landscape.

Activity Center TRI0477 – In the Biological Assessment, Table 8: The Summary of Effects to Suitable Habitat Within NSO Nest Cores and Home Ranges (p. 38), activity center nest core acres impacted by the project (within 0.5 mi radius), no acreage of nesting/roosting habitat or foraging habitat is listed. The evaluation of this activity center is concerning because there are clearly units within the 0.5-mi nest core. The 2013 detection location is found between high- and low-severity burn (in a relatively large contiguous low-severity patch). With so much contiguous low-severity burn habitat, there is high possibility that the owls are still in the vicinity. Without surveys conducted, the assumption is that this activity center is "non-viable". There is potential that the reconfiguration of habitat created by disturbance shifted the territory and could still support the owls. This area is shown in figure 1., and must be thoroughly surveyed prior to project advancement.

Activity Center TRI0017 – In the Biological Assessment, Table 8: The Summary of Effects to Suitable Habitat Within NSO Nest Cores and Home Ranges (p. 39), activity center nest core acres impacted by the project (within 0.5 mi radius) no acreage of nesting/roosting habitat and 0.5 acres of foraging habitat is listed. The evaluation of this activity center is concerning because there are clearly units within the 0.5-mi nest core (Units 104 and 107). Unit 107 is closest to the edge of a large contiguous patch of low-severity. Owl locations that may have shifted within the territory, could be impacted by operations if surveys are not conducted.

Activity Center TRI0446 – In the Biological Assessment, Table 8: The Summary of Effects to Suitable Habitat Within NSO Nest Cores and Home Ranges (p. 39), activity center nest core acres impacted by the project (within 0.5 mi radius) no acreage of nesting/roosting habitat or foraging habitat is listed. The evaluation of this activity center is concerning because there are so many units overlapping with the 0.5-mi nest core (Units 304, 307, 313, 319, 340). The 2015 nest is located well within high-severity burn. The main concern is the sizeable portion of units in the southern half of the nest core that were not included as "habitat" in the analysis. It is likely that any designated center of the core area will have shifted after the fire, but depending on the size of the shift, would still likely be affected by post-fire salvage. Contiguous treatment units concentrated over a relatively large area can be seen on the inset map of Figure 3.

This Biological Analysis does not consider high-severity burn forest as suitable habitat – nesting, roosting, or foraging- and although there have not been any documented instances of spotted owls nesting within a high-severity burn, there are many documented occurrences where spotted owls have been located within high-severity burns foraging. These areas do not need to have the cover found in unburned foraging habitat because owls forage at night when there is no need for canopy cover. Structural elements supporting foraging habitats require presence of perching posts and a food source – qualities found in high-, medium-, and low-severity burned habitat. **Until more conclusive research has been conducted and adequately supported or refuted by science, high- and moderate-severity burn areas must be evaluated cautiously and cannot be excluded as foraging habitat.**

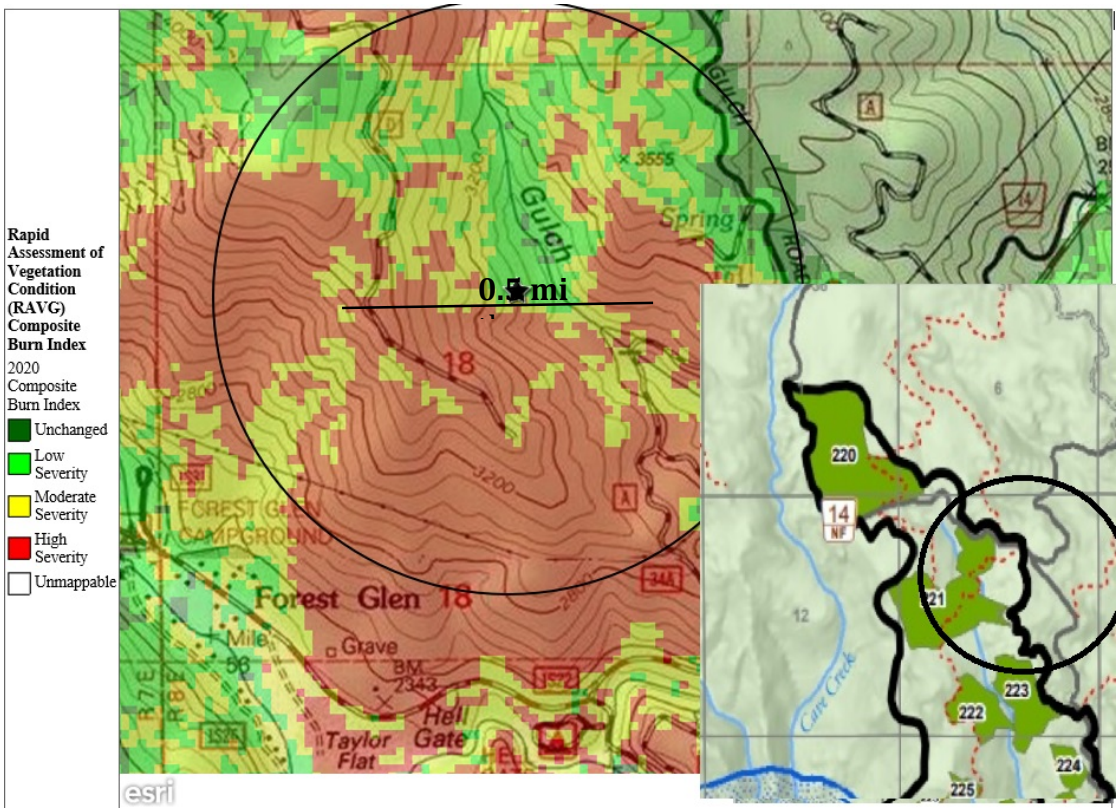

Figure 1. Activity Center TRI0477 0.5-mi radius core in proximity to RAVG data and proposed timber units.

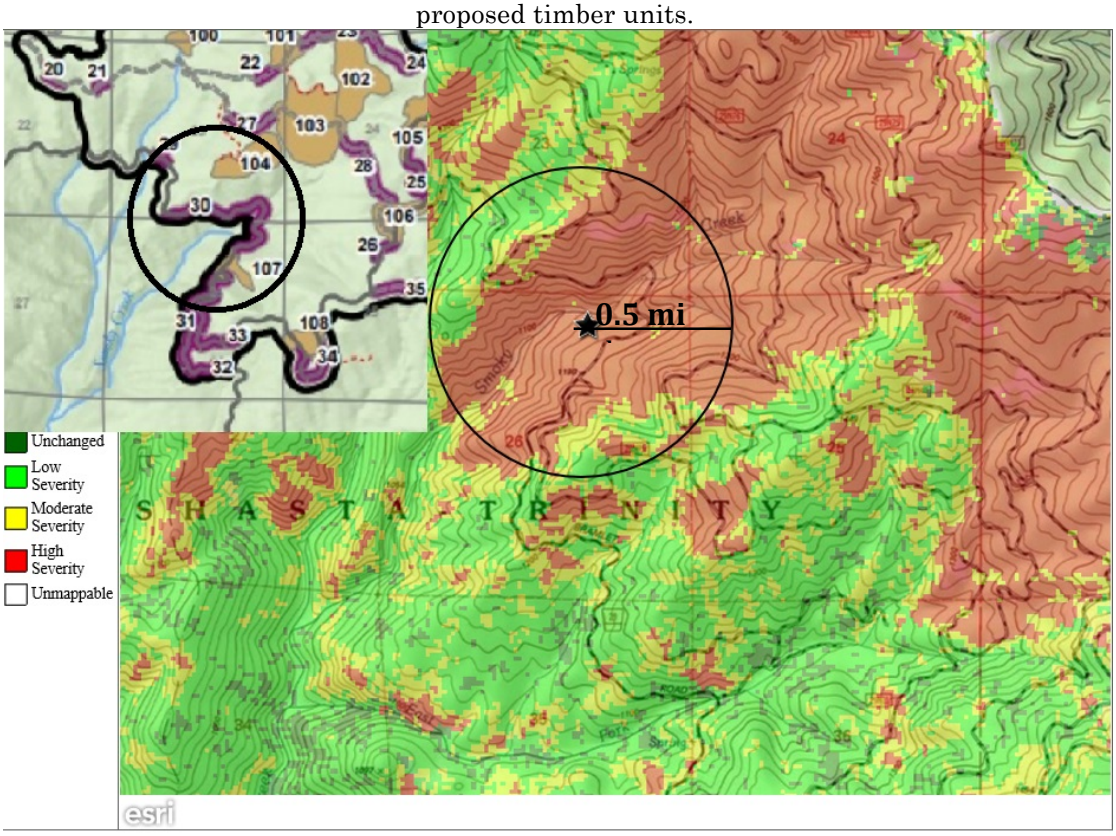

Figure 2. Activity Center TRI0017 0.5-mi radius core in proximity to RAVG data and proposed timber units.

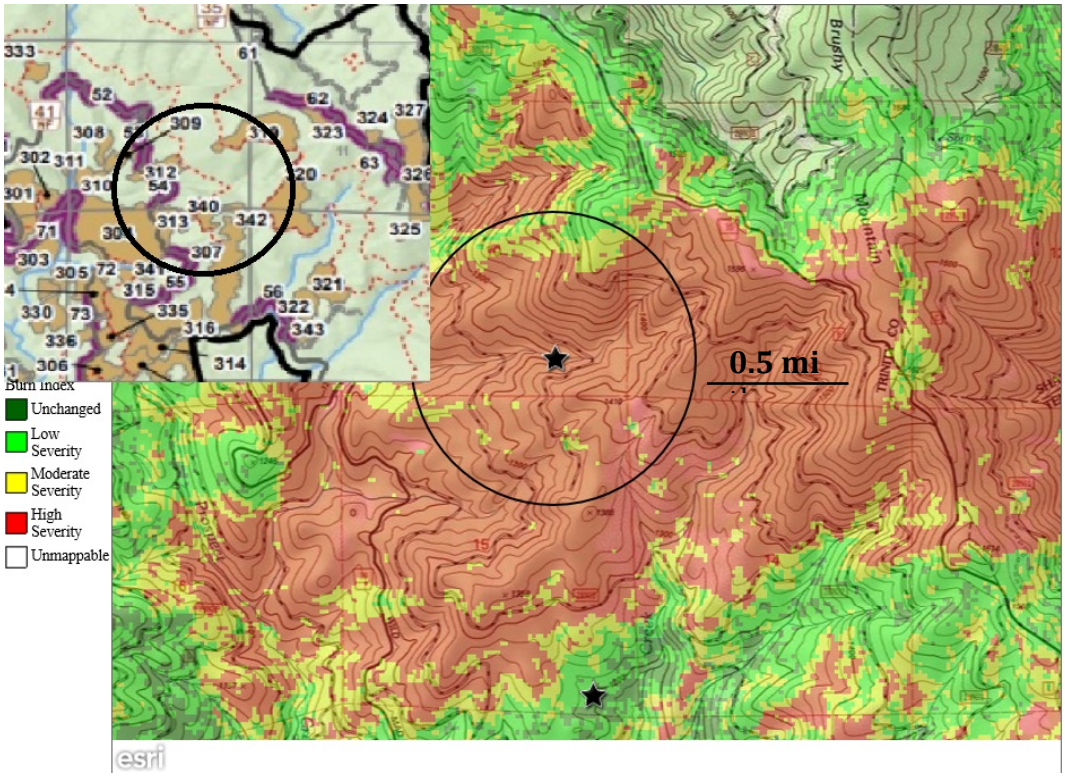

Figure 3. Activity Center TRI0446 0.5-mi radius core in proximity to RAVG data and proposed timber units.

Upon implementation of the Project, any spotted owl within the action area, would experience pressure of habitat disturbance from wildfire, additional stress associated with habitat loss by management, and potential competitive pressure from barred owls. Cumulative impacts to resident spotted owls are very likely but cannot be determined without establishing a baseline by implementation of surveys. Barred owls have been documented near two of the activity centers, TRI0287 and TRI0099. Dates are not given and details of detections are not indicated in the Biological Assessment. Since surveys have not been conducted for most of the activity centers since 2015, it is likely that barred owl specific surveys have not been conducted either. The most recent meta-analysis (Franklin et al. 2021) and monitoring population ecology report (Franklin et al. 2020) verify increasing barred owl populations, numbers, and trends in NWC since 2015. Given the continued increase in barred owl populations throughout the NSO range, and subsequent NSO population declines, the presence, absence, and extent of barred owl on the landscape within and around the action area is an important component to consider in the impact analysis and has likely increased over recent years. The presence of barred owl detected at those two activity centers, should be identified and included in the analysis as added stressors that could results in cumulative effects. If NSO are still in the vicinity, they have been confronted with habitat alteration by fire, presence of barred owl, and will suffer an additional loss of habitat by logging– all factors recognized as primary threats with potential for negative effects to spotted owls.

Additionally, the documentation of barred owls in the area further warrants the need for protocol level surveys.

The best available scientific data confirms that spotted owls use unlogged, burned snag forest habitat and that it functions as foraging habitat for spotted owls. It has also been shown that spotted owls will not use post-fire logged habitat. Therefore, extreme caution must be applied to actions that would remove habitat with potential to support the biological and physiological needs of spotted owls (intact snag forest) with a habitat having no value to spotted owls (salvage logged).

Each physiographic province within the NSO range plays a variable role of importance in the recovery of NSO and the California Klamath Province was identified by Schumaker et al. (2014) as the single most important province providing critical support to range-wide population stability. The California Klamath province provides supportive processes as one of the few source populations that contribute substantially to neighboring regions. NSO productivity in the California Klamath has been credited as the source that distributes NSO to the California coast range and California cascade provinces. Schumaker et al. (2014) emphasizes the need to prioritize habitat protection in this region and underscores that local landscape management decisions impacting the California Klamath population productivity and limiting dispersal capabilities could have range-wide consequences to NSOs. High-severity burn patches have been shown to provide some foraging opportunity to spotted owls, and therefore qualifies as NSO habitat that must be prioritized for protection – especially if it is being actively used by owls in the Project action area.

The August Phase 1 Project must be evaluated with up-to-date, biologically relevant, true, and field-based evidence, in parallel with current available scientific information; information focusing on population fitness with regards to the severe declines found in recent NSO populations, occupancy, and reproduction. Considerations must be given to information clearly documented in *Monitoring Population Ecology of Spotted Owls in Northwestern California: Annual Results (2009 to 2019)* (Franklin et al. 2020), results of demographic monitoring meta-analysis evaluations found in Dugger et al. (2016) and Franklin et al. (2021), and attention given to the importance the California Klamath physiographic province plays in the role of range-wide population stability to NSO (Schumaker et al. 2014). Moving forward with this project and disregarding the science provided in these documents could be detrimental to the continued survival of the population on the Shasta-Trinity National Forest, impair the ability for the California Klamath physiographic province to meet the criteria as a functioning recovery unit, and have adverse range-wide impacts to the NSO. ###

HABITAT AND NSO CRITICAL HABIAT

92,000 acres of Nesting and Roosting NSO (*Strix occidentalis caurina, Strix)* habitat in the CA Klamath Province burned at high intensity, as a result of the 2020 fire season. This significant and immediate loss in habitat affected 70-100 Activity Centers (ACs).

The 2020 wildfire season and the August Complex were unprecedented and the extent of affects on the Klamath Provinces are not yet understood (surveys and change in baseline habitat has not occurred cohesively across the region, including OR, where at least one current post-fire project over several thousand acres in the Klamath Province has a *likely to adversely affect* determination) – we objectively argue, any further direct harm to owls or habitat loss, despite land allocation or title, would likely adversely affect the population overall.

Modeling simulations included in the 2012 Final Critical Habitat Analysis estimate that 2,680 Northern spotted owls may be present in the Klamath-Siskiyou region, assuming each female is part of a pair. From 2013 to 2018, federal land managers in the Klamath-Siskiyou Mountains received 211 Northern spotted owl take permits, potentially removing 8% of the population in just five years. That the level of take and habitat loss associated with federal land management projects in the Klamath-Siskiyou region is significant and has not been adequately analyzed on a regional or provincial scale. Here, the 2020 wildfire season in California alone, affected nearly 5% of the ACs known to exist in the Klamath and Coastal Provinces.

It is worth mentioning that in addition to all of the "take" and habitat degradation/removal from national forest timber sales since 2012, the 2018 Ranch Fire affected dozens of AC's, many of which were automatically (done as a map exercise without surveys) considered abandoned or invalidated. This was done to accommodate roughly 4,000 acres of post-fire logging on the Mendocino National Forest.

While the Strix is on the edge of extinction, with the loss of 92,000 acres of its best habitat and the Klamath Provinces as its stronghold and source populations, the Shasta-Trinity National Forest unsubstantially claims that the further loss of an additional 415 of post-fire foraging habitat (most of that in Critical Habitat), logging in nest cores and up to at least 15 AC's, logging green living trees, logging in moderately burned areas, degrading suitable Nesting, Roosting and Foraging habitat and the overall degradation of 1,833 acres of Critical Habitat without surveys would be insignificant, minimal and discountable.

Over 5,000 acres of Critical Habitat in the project area burned at high severity. Agency biologists did not mention in the BA that the 20 Activity Centers in the project area are already likely deficient in habitat. Further, the adjacent Mad River watershed —that contained several AC's, owls and reproductive pairs — experienced widespread high severity fire affects unlike the mosaic burn on the South Fork. The remaining threads of habitat on this landscape are needed to support surviving owls.

We are extremely perplexed as to why agency biologist are not working towards the recovery of this and all the species that are in peril or nearing extinction. The critical importance of habitat remnants is dire - in this parched landscape and particularly in the Klamath Province! Here, agency biologist promote logging to the greatest extent and quibble over how much owls use burned areas, yet they use unsubstantiated claims and reasoning, which include — there is some remaining suitable habitat in the project area, we are only logging nest cores in moderate and high severity burn areas and only logging in 20% of the post-fire foraging habitat (see BA page 28). This reasoning fails the recovery of the strix and its habitat.

First, agency biologists need to acknowledge and consider entire ACs (1.5 mile) not only nest cores (0.5). Surveys need to be completed to see the shift in AC locations, thus habitat shifts. Why are entire ACs not considered?

Second, moderately burned areas, where 50-75% of the vegetation is killed, still likely provides suitable habitat, depending on the actual percent of canopy burn and the size and location of the burn. Moderately burned forest stands should not be automatically written off as unsuitable! This is highly scientifically unsound and must be reconsidered and examined by objective qualified biologists. This is significant because 2,348 acres of Critical Habitat in the project area burned at moderate severity. Green timber sales often propose removing up to 60% canopy yet agency biologists still consider it suitable habitat. Why are burned areas any different? Burned areas are providing natural complex forest structure that birds prefer. This reasoning skews the entire project.

Third, if there are no clear thresholds for PPF habitat use, why not give the highly threatened birds the benefit of the doubt and work towards recovery? The agencies, USFS and US Fish and Wildlife should follow Recovery Action 12: In lands where management is focused on development of spotted owl habitat, post-fire silvicultural activities should concentrate on conserving and restoring habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood). This includes LSR, AC's and Critical Habitat.

The project area includes a total of 6,690 acres of NSO critical habitat. The Interior California Coast Critical Habitat Unit, Subunit 1 is expected to

function primarily for demographic support, but also for connectivity between subunits and between Critical Habitat Units. While this is known, the EA and BA fail to consider how the August Complex has affected landscape connectivity in Subunit 1 (with over 5,000 acres of high severity patches) and how the proposed project would add to habitat fragmentation.

Limited Operating Periods

Changing the Limited Operating Period to July 9th —allowing loud and continuous noise and/or smoke disturbance, when young nestlings are still in their nests and have limited mobility —is not only contrary to recovery it is cruel and inhumane, especially for a species in peril.

LANDSCAPE CONNECTIVITY AND SMOKY CREEK CORRIDOR

The EA fails to assess landscape connectivity in the South Fork LSR, within Subumit 1 Critical Habitat and in the Smoky Creek watershed. LRMP standards and guidelines state that the agency must provide connecting travel corridors for wildlife species, particularly late-successional dependent species, by using Riparian Reserves and silvucultural prescriptions. The

Troublingly, the EA and Wildlife Specialist Reports in their entirety contain no discussion of habitat connectivity (though the EA contains a single reference to "floodplain connectivity" on Page 99). There is no consideration in any of the NEPA documents of habitat connectivity with regard to Forest Service Sensitive Species, T&E Critical Habitat, LSRs or to NWFP Survey and Manage Species, let alone a meaningful treatment of the important habitat connectivity and wildlife corridors within the project area that would be severely harmed by the proposed action. This is especially egregious given that the USFS Upper South Fork Watershed Analysis (1999) includes a wildlife corridor map of lands within the project area that would require substantive connectivity analysis.

SOUTHERN OREGON/NORTHERN CALIFORNIA COASTAL COHO

The Southern Oregon/Northern California Coastal ("SONCC") Coho salmon are historically present in the South Fork of the Trinity River ("SFTR") watershed and are at high risk of extinction. SONCC Coho in the SFTR basin suffer from high summer water temperatures and low dissolved oxygen arising from land use, water utilization, climate change, and channel aggradation. Past and present land use practices, such a timber harvest, within the SFTR basin creates a watershed unable to adequately support

SONCC Coho. The SONCC Coho's key limiting stresses are altered hydrologic function and impaired water quality. Logging, according to the

August Project, should not be carried out because any further impact to this SONCC population would further diminish a population already likely below dispensation level, thus recovery chances are low.

The viability of the population is based on the projected number of individuals in a given area needed to create a low-risk of extinction. For the SONCC Coho in the SFTR it is 6,400 salmon. It's dispensation, or decrease in breeding population, creating high risk of extinction begins at 242 salmon. This extinction risk increases with an increase in restricted and fragmented distribution of individuals within a population, while more spatial distribution and habitat access diverge from historical conditions.

To achieve a low risk of extinction there must be 970 SONCC Coho spawners within the SFTR. The SFTR population does not come close to this threshold. Studies in 1992 found the population to be less than 100 adults. Here, almost a decade later there is little assurance that this population has grown. The spawning population is already too small, the survival and production of eggs or offspring is suffering, accelerating a decline toward extinction.

The Draft Fisheries Effects Analysis for the August Phase 1 project (hereinafter "Fisheries Report"), does not give specific population numbers of SONCC Coho to determine take but instead provides an analysis of the habitat criteria needed for properly functioning conditions where the SONCC Coho can thrive. The Fisheries Report lists the issues for both the SONCC Coho and Steelhead Trout- sediment delivery, water quality, and riparian function. Although the ESA establishes critical habitat for this species, the Fisheries Report has failed to provide an actual population estimate, while habitat quality data could vary widely, leaving it open for the Fisheries Report to conclude an insignificant effect on the species. Further, the Forest Service's own habitat quality data reveals that the riparian habitat for the SONCC Coho is impaired and only a "no action" alternative is appropriate.

Sediment Delivery

The Fisheries Report finds that all issues of sediment delivery (suspended sediment - inter gravel dissolved oxygen/turbidity, substrate character and embeddedness, pools, off-channel habitat, change in peak/base flows, and increase in drainage network) are either Not Properly Functioning or Functioning At-Risk, while there was only one "Physical Barrier" that is "Properly Functioning."

Water Quality

The Fisheries Report finds that all water quality issues (water temperature, chemical contaminants/nutrients, and refugia) are Not Properly Functioning, and the issues of riparian function (large woody debris, and stream shade, off-channel habitat, floodplains) are Functioning At-Risk and Not Properly Functioning, respectively.

NOAA's 2014 Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon (*Oncorhynchus kisutch*) found the anthropological impact on SONCC Coho Salmon in the South ForkTrinity River is high to very high and categorizes as follows:

- Hatchery related effects = very high
- Impaired water quality = high
- Degraded riparian forest = high
- Sediment supply alteration = high
- Lack of floodplain and channel structure = high
- Altered hydrologic function = high
- Barriers = high.

The impaired water conditions and lack of floodplain and channel structure are identified as a key limiting stresses to the SONCC Coho.

Altered Sediment Supply

Much of the sediment delivery for this project would be from roads, as stated there is an estimated 13.6 tons/road mile of sediment where approximately 30% of the total sediment produced would at some point enter the water channel. Sediment delivery would also be from the logging activities themselves but the Fisheries Report did not mention this very important issue so the actual amount of sediment delivery into the waterways is unknown. This high degree of uncertainty and limited information does not meet the NEPA hard look requirement. We are very concerned that the project would further harm the SONCC Coho and other endangered or threatened aquatic species.

SONCC Coho depend upon a balance of instream structure, transport capacity, and sediment supply. The alteration in the quantity and composition of the sediment supply into streams and rivers is a stress created through a variety of human induced threats. Increases in turbidity, changes in the quantity and quality of suspended sediment, and associated decreases in water quality can be caused by a variety of activities including timber harvest, which although SONCC may be found in naturally turbid river

systems it does not necessarily mean that SONCC can tolerate increases quickly or over time of suspended sediments.

Increased sedimentation has been shown to have direct negative effects on coho salmon by interfering with their physiological and biological processes, and indirect effects through degradation of their habitat. Accelerated rates of erosion and increased sediment delivery to streams after timber harvest and road construction are common occurrences in the mountainous, forested watersheds. Impacts may result directly from increased sediment in suspension or through the deposition of fine sediment on or within the streambed. High concentrations of suspended sediment can increase turbidity, decrease water clarity, and impair foraging efficiency thereby reducing growth and feeding rates of fish.

High suspended sediment loads can also clog or abrade sensitive fish gills and other soft tissues. The most common behavioral alteration associated with increased turbidity is reduced juvenile salmonid feeding behavior. There is an inverse relationship between turbidity and feeding efficiency or prey ingestion.

Increased sediment load can dramatically alter channel morphology. Pools may be filled, channels widened, riparian vegetation buried, streambank heights raised, and floodplain and flood prone areas disconnected. These alterations in geomorphology (i.e. excess sediment buildup, changes in proportion of fines) can increase the frequency and magnitude of localized flood events. It may take decades before channels impacted by large aggradation events can fully recover.

Spawning gravels, are unique in that they provide alevin (a newly hatched salmon) a balance between protection and movement. An input of fine sediment into a redd area will fill interstitial spaces between particles, reducing intergravel flow and inhibiting alevin movement, thereby decreasing their survival rates. Sedimentation of a stream can also decrease SONCC habitat availability and cover thereby increasing predation risks. In addition, fine sediment smothers habitat used by benthic organisms, decreasing the production of algae and macro-invertebrates that are an important food source for fry, juveniles and smolts.

Hydrologic Connectivity

A significant contributor to lack of floodplain and channel structure in the SONCC Coho salmon habitat is the lack of instream large wood. Coho salmon juveniles favor pools that contain shelter provided by large wood. Research from across the Pacific Northwest has shown that streams with more large wood have more pools because large wood provides scour-forcing obstructions

that create pools. Past and current timber harvest practices have degraded riparian forests across the SONCC Coho salmon habitat, decreasing the number of large conifers in riparian zones and reducing the potential for recruitment of long-lasting large wood NOAA's 2014 analysis found that juvenile SONNC Coho in the SFTR are at high risk for stress from an altered hydrologic function.

Altered Hydrologic Function

The 2014 NOAA Final Recovery Plan for the SONCC Coho found that alterations to hydrologic function ranked as very high stress for juvenile SONCC Coho on the SFTR. Water is the most essential component of fish habitat. Changes in riverine hydrology can create environmental and physical changes, which affect coho salmon. Environmental changes include "altered timing and magnitude of high and low flows, alteration of temperature and dissolved oxygen levels, and changed cues for seasonal migration." Physical changes include "aggradation or incision of the stream channel, scouring of the stream bed, disconnection of channel and floodplains, and damage to riparian vegetation from flooding events."

Summer rearing SONCC Coho juveniles are vulnerable to low stream flows during the late summer or early fall due to lack of precipitation. These lower summer flows have the potential to reduce growth and survival of SONCC Coho juveniles through several pathways, including: stream dewatering, increased water temperature, reduced habitat volume and quality, reduced food availability, and increased vulnerability to predation.

Juvenile SONCC Coho are sensitive to high summer water temperatures in the riverine environment where increase in water temperature can be attributed to lower stream quantity levels. When there is a reduction in flow due to loss of water, the depth, volume, and pool quality changes. Hydraulic connectivity in riffles can also be affected by low flow conditions, which create pool isolation and have the effect of eliminating drift of aquatic macro-invertebrates from riffles into pools, decreasing food availability for SONCC Coho juveniles.

Timber harvest reduces the amount of precipitation intercepted by vegetation, resulting in increased peak flows during storm events. Long-term studies in Oregon experimental forests showed that clearcut or thinning treatments, which replaced mature or old (100 to 250-yr-old) forest with young (i.e., 30 to 50-yr-old) forest reduced summer stream flow by 20-80%.

In addition, the timber harvest cycle, which replaces old-growth by younger tree stands that are harvested and replanted, has a huge impact on stream volume. In the Andrews Experimental Forest in Oregon, water use by

riparian trees in a 40-year old stand was estimated to be 3.27 times greater than in a 450-year old stand, due to a combination of greater sapwood area, species composition (more alder and less Douglas fir and western hemlock), and younger trees in the 40- year old stand. And further, a century of fire suppression and Forest Service management choices altered vegetation communities, such as the conversion of vast acreages of oak woodlands within the Shasta-Trinity National Forest into dense stands of Douglas fir, which likely have higher evapotranspiration than the communities they replaced.

Finally, SONCC Coho habitat can be severely altered by floods, where land disturbances resulting from timber harvest, road construction, and fire, may contribute sediment directly to streams or exacerbate sedimentation from natural erosive processes.

Barriers

Barriers can be inhibit salmonids through the physical blocking of stream reaches (e.g., dams, sediment buildup, changes in gradient at tributary mouths, etc.) or through water temperatures that increase to such an extent that salmonids cannot pass through the area during a portion of the year (Richter and Kolmes 2003, McElhany et al. 2000). These thermal barriers can be created by the removal of riparian vegetation, the simplification of stream channels, or from climate change, while physical alterations are mostly created by anthropogenic changes in land use.

Logging practices can contribute to the creation of physical blocks or barriers of stream reaches by adding sediment to the stream ecosystem and removal of riparian vegetation which effects stream temperature, habitat availability, and places limitations on SONCC Coho movement.

Other Species Of Concern

Anadromous fishes in the SFTR besides SONCC Coho are spring and fall run Chinook salmon (*Oncorhynchus tshawytscha*), and summer and winter run steelhead trout (*Oncorhynchus mykiss*). Pacific lamprey (*Lampetra tridentata*) are an important food source for indigenous communities.

Historically, Pacific lamprey was widely distributed. However, their populations have declined. Threats to Pacific lamprey include stream degradation, poor water quality, and climate change. Currently, the USFWS is developing a Pacific Lamprey Conservation Initiative to coordinate conservation efforts among state, tribal, and federal agencies. The goal of the initiative is to address threats, restore habitat, increase knowledge, and improve distribution and abundance of Pacific lamprey populations. These species should be considered in the analysis for the proposed project.

Coho Critical Habitat and Riparian Reserves

Over 70 percent of the land in the Trinity River basin is managed by the USFS, and within that area, about 85 percent is designated as critical habitat for SONCC Coho. The proposed action treatments within this Key watershed would likely add to the destruction and harm to SONCC Coho Critical Habitat.

Riparian area structure and composition throughout the SFTR has changed due to irrigation diversions, timber harvest, farming, grazing, wildfire, and urbanization, giving it a high ranking of degraded riparian forest conditions in this portion of the watershed. Of these, timber harvest has been the primary source of human disturbance in riparian areas.

Reeves et al. *Postfire Logging in Riparian Areas,* describes how fire can rapidly change aquatic ecosystems. The immediate effects of a severe fire on a riparian area and across streams include high mortality or emigration of fishes and other organisms caused by direct heating and changes in water chemistry. Intense fire may incinerate in-channel wood. Impacts of fire also include vegetation loss, reduced infiltration capacity of soils, increased surface erosion, changes in the timing and amount of runoff, elevated stream temperatures, and changes in the morphology of stream channels. This project area, namely the upper reaches of the SFTR, is of moderate to highly unstable slope stability subjecting the streams and riparian habitat to a greater chance of sedimentation. Changes in water quality have not been disclosed in the EA.

Additionally, activities associated with tree removal (e.g., felling, skid- ding, and road building) retard the recovery of shading vegetation. Where temperatures in the SFTR are already marginally suitable for aquatic organisms, further increases due to logging could lead to local extirpations.

Amphibian populations may also be negatively affected by the removal of trees from burned riparian areas, particularly in dry forests, such as the Shasta-Trinity. Downed wood can provide habitat and reproductive sites for many riparian-associated amphibians, such as the red-legged frog. Loss of these microhabitats may further exacerbate the effects of the fire and impede the potential recovery of amphibian populations.

The more management activities depart from the disturbance regime under which a riparian area developed, the less likely the riparian zone will be able to return to pre-management conditions. The more trees retained with impacts to survivors minimized, the more resilient the riparian ecosystem will be.

Remaining downed and standing trees provide seed sources and substrate for future riparian forests, habitat for a variety of organisms (e.g., amphibians and cavity-nesting birds), and a source of large wood for streams. Wood, along with sediment, through landslides and stream bank erosion, enter streams providing structural elements that promote pool formation, sediment terraces, and a diversity of aquatic habitats. The removal of large wood from riparian areas and adjacent unstable hillslopes by logging limits the future recruitment of this material to stream channels.

Fish populations have been found to rebound from fire impacts relatively quickly, likely related to the development of favorable habitat conditions resulting, at least partially, from the recruitment of large wood to streams. Reducing the amount of wood that can be delivered to channels by post-fire logging may exacerbate the negative effects of fires and delay the improvement of fish habitats that already may be deficient in wood because of past management practices.

Removal of large wood also influences short- and long- term erosion processes. Downed wood in burned riparian zones traps fine sediment before it erodes to channels and intrudes into stream substrates and it is particularly important in areas where chronic overland erosion occurs such as the upper reaches of the SFTR. Soil disturbance and compaction caused by ground-based harvesting and yarding (movement of cut timber) may exacerbate the effects of the fire on surface erosion and riparian-associated plants and animals.

Logging in riparian areas potentially exacerbates thermal maxima by reducing shade and lowers thermal minima by increasing long-wave radiation loss at night. Although there is no research that specifically addresses the effect of post-fire logging on stream temperature in western North America, virtually all watershed studies involving logging in riparian zones have documented water temperature increases after harvest.

Roads, including temporary roads, built to facilitate logging most often result in increased erosion, affecting aquatic organisms and their habitats. Roads can impinge directly on a stream, constraining the channel and reducing floodplain connections or crossing the stream and creating an additional source of erosion and a potential barrier to movement of aquatic organisms. Barriers that restrict or eliminate dispersal and full expression of life histories may preempt recolonization of vacant habitats or restrict demographic support of populations depressed by immediate and subsequent effects of fires.

Post-fire logging subsequent to a large fire can also be catastrophic for

endangered species. This is most likely to be an issue where such species have declined, or become isolated because of past habitat loss and fragmentation. In this case all endangered and threatened species in the planned logging area have decreased in numbers if not steadily through time certainly due to the recent August Complex. No endangered or threatened species surveys have been done for this project.

A full NEPA analysis is needed to assess the viability of these species within the August Phase 1 project, which has not been done. The EA fails to take a hard look at the impacts to Coho and aquatic species in the river system.

Climate Change and SONCC Coho

Logging in riparian zones, especially post-fire logging is a factor in the decline of SONCC Coho. However the SONCC Coho and all other endangered, threatened and sensitive species face many other challenges to their survival, some of which are not avoidable, but should be taken into consideration by the EA as a cumulative factor. The impact of logging activities on SONCC Coho and other fisheries, amphibians, and mollusks are exacerbated by climate change.

The August EA only address climate change in lieu of how its "restoration" activities will expedite the release of carbon into the atmosphere, and thereby exacerbating climate change. Thus they are failing to recognize the cumulative impacts on water quality, fisheries and all endangered and threatened specifies in the riparian zone of the upper reaches of the SFTR in their analysis. The agency should include the cumulative impacts of climate change on aquatic species.

Coho salmon are particularly vulnerable to climate change due to their need for year-round cool water temperatures. SONCC Coho salmon spend an extended period rearing in freshwater and, being near the southern end of their distribution, often reside in streams already near the upper limits of their thermal tolerance. Through effects on air temperatures and stream flows, climate change is expected to increase water temperatures to the detriment of coho salmon. Climate change effects on stream temperature within the SONCC Coho salmon ESU are already apparent.

In the past 50 years, California has shown warmer winter and spring temperatures, a smaller fraction of precipitation falling as snow, a decrease in the amount of spring snow accumulation in lower and middle elevation mountain zones, as well as an advance in snowmelt of 5 to 30 days earlier in the spring. Going forward, warmer winter air temperatures will decrease the snowpack in northern California and southern Oregon by up to 75% by 2040 and nearly 100% by 2080. The overall flow of the South Fork Trinity River

was significantly lower in the period from 1977 to 2005 than the period from 1966 to 1976. This decrease in flow is due in part to climate change, which has resulted in a decrease in snowpack in the region. This means that the increase in streamflows associated with fall and winter rains is often delayed as groundwater resources recharge. The resulting reduced volumes and persistence of snow packs is causing delayed runoff from winter months when precipitation is high, while climate change is also projected to shift the timing and duration of releases from these natural reservoirs, altering instream conditions that salmon have evolved with, creating earlier and higher high flows, and earlier and lower low flows.

The potential increased rain and earlier snowmelt resulting from climate change could also detrimentally impact SONCC Coho salmon populations by altering the timing of spring freshets, potentially increasing severity and quantity of flood events, increasing water temperatures, and altering the intensity of winter storms, thereby changing habitat accessibility, run timing, and egg development. Climate change will cause thermal stress and juvenile mortality in SONCC Coho. Higher frequency and magnitude of winter flood events could affect coho salmon by increasing the risk of redd scouring, displacing eggs and alevins from the gravel before they emerge. Increased erosion of hill slopes, roads, and streambanks could cause sedimentation of streambeds, which has been implicated as a principal cause of declining salmonid populations. Juveniles and smolts can be stranded by flood events, washed downstream out of rearing habitat.

The reduced genetic diversity resulting from depressed population size may limit the ability of individuals to adapt to changing climatic conditions. In addition, as climate change reduces the carrying capacity of the habitat within the range of SONCC coho salmon, species viability may be more difficult to achieve. Even if greenhouse gas emissions that cause climate change were stabilized, warming and sea level rise would continue for centuries because greenhouse gas emissions remain in the atmosphere for decades and there are time lags in climate system feedbacks.

Climate variability affects fire occurrence, with more frequent and larger fires associated with warmer, drier regimes. Higher temperatures, reduced snowpack, and earlier spring snowmelt all contribute to the frequency, intensity, and extent of fires. Combined effects of climate change and fire places populations at even greater risk of extirpation during or shortly after a severe fire. The reduction in habitat connectivity, reduction of refugia, and lack of shading from stand-replacing fires in the riparian zone may threaten already reduced numbers of coho salmon. Subsequent increases in water temperature may result in areas becoming uninhabitable for cold-water species.

Many watersheds have experienced a change in their fire regime due to past land use, drought and climate change. The probability of large fires (more than 500 acres) might increase by more than 75 percent in areas within the Klamath and Smith River basins, with increases of 50 percent predicted throughout the inland areas of Northern California and Southern Oregon.

High severity fires threaten aquatic organisms via direct physical effects, such as mortality from rapid increases in temperature and accumulation of toxic chemicals, and indirect effects, such as habitat destruction, reduced extent and connectivity of habitat, and the temporary reduction or elimination of food resources.

High severity fire can be a threat to the SFTR fishery in the form of both large pulse and chronic sediment from both surface runoff and erosion from denuded hillsides, and associated with fire suppression activities (i.e. dozer lines, burnout operations, heavy road usage and degradation). The loss of trees and riparian vegetation also contributes to the increased warming of instream water temperatures. High severity wildfires can also provide benefits to aquatic species by introducing course woody debris to stream courses and creating beneficial habitat. Fires can also create thick inversion layers of smoke that block solar radiation to cool water temperatures.

WATER QUALITY AND SONCC COHO

Section 303(d)(1)(A) of the Clean Water Act requires that "Each State shall identify those waters within its boundaries for which the effluent limitations...are not stringent enough to implement any water quality standard applicable to such waters." The South Fork Trinity River was 303 (d) listed as impaired from sediment and temperature in 1992 (EPA 1998). The South Fork Trinity River watershed is included on California's Clean Water Act (CWA) Section 303(d) list as water quality limited due to sediment. A TMDL for Sediment has been approved for the SFTR including Hayfork Creek (EPA 1998). No TMDL for temperature has been submitted for approval at this time.

The South Fork Trinity River drains an area containing steep, unstable slopes adjacent to some of the most rapidly eroding terrain in the United States. The level of sedimentation in the South Fork Trinity River watershed was judged to exceed the existing Water Quality Standards (WQS) necessary to protect the beneficial uses of the basin, particularly the cold-water fishery. Accelerated erosion from land use practices and other causes adversely affects the ability of the stream system to support cold-water fish such as chinook salmon and steelhead trout.

South Fork Trinity River/Hayfork Creek Sediment TMDL ("TMDL"), from

1998 when this was written, state that salmonid populations have been impacted by sediment loading, elevated temperatures, and migration barriers. The TMDL states that timber harvesting has modified stream flow and natural erosion processes and altered stream channels in the SFTR basin.

The TMDL sets forth objectives and target goals in order to comply with the 303(d) of the Clean Water Act, which include fish population recovery goals, channel form and structure recovery, improved substrate size distribution, and decreased sediment delivery.

The TMDL recognizes that a diminished fish population is the strongest indication of impaired habitat conditions. In this watershed there has been a decline in all anadromous fish species. If fish population recovery targets in the TMDL are attained, it would be clear that water quality standards related to the cold water fishery have been attained. They have not.

Other indictors of a healthy stream system have not been met and are acknowledged by the Fisheries Report, where it states ALL issues (sediment delivery and water temperature) affecting the upper reaches of the SFTR function at-risk or are not properly functioning.

Water quality standards adopted for the SFTR basin are contained in the 1994 Water Quality Control Plan for the North Coast Region and have been updated in the 2011. The WQS for the SFTR are comprised of the beneficial uses of water and the water quality objectives designed to protect the most sensitive of the beneficial uses. In the SFTR, the most sensitive beneficial uses addressed in the TMDL include: cold freshwater habitat (COLD); migration of aquatic organisms (MIGR); and spawning, reproduction, and/or early development (SPAWN).

The water quality standards in the 2011 Water Quality Control Plan are as following and read as existing issues in the South Fork Trinity River Hydrologic Area which includes Forest Glenn.

1. Cold Freshwater Habitat (COLD) - Uses of water that support cold water ecosystems including, but not limited to preservation or enhancement of aquatic habitat, vegetation, fish, or wildlife, including invertebrates.
2. Migration of Aquatic Organisms (MIGR) - Uses of water that support habitat necessary for migration or other temporary activities by aquatic organisms, such as anadromous fish.
3. Spawning, Reproduction, and/or Early Development (SPAWN) - Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

Further water shall not contain substances that result in deposition of material that causes nuisance or adversely affect beneficial uses. Sediment/suspended sediment load and suspended sediment discharge rate of surface water has been altered in that adversely affects beneficial uses.

In 1963 and 1964 the spawning spring chinook population was estimated at 10,000 or more fish; complete surveys were not conducted in the 1960s following the December 1964 flood, but estimates in the period that followed that flood ranged from a few as a dozen in some years during the 1970s and 1980s. Fall-run chinook spawners were estimated at over 3 in 1963. Later counts estimated 500 or fewer fish in the late 1980s, with somewhat higher numbers documented only in the last few years (as high as 1,835 in 1996) Other species, including steelhead, also declined in number, although data are scarce. It is clear that timber harvest practices do not create a benefit to this riverine system.

The TMDL provides clear documentation of the decline of anadromous fish species, which relate directly to the cold beneficial use. Spring chinook populations have dropped to less than 10% of their original sizes. Fall-run chinook have declined in numbers to less than half of their original population. Fall chinook used to spawn in the South Fork up to 2 miles above Hyampom. Now, only a few are found above the South Fork bridge in Hyampom. Steelhead are found in tributaries of the Hyampom Valley, Hayfork Creek drainages and the East Fork. Coho salmon are infrequently observed, but have been found occasionally in the lower to mid South Fork Trinity River and tributaries.

The Aquatic Conservation Strategy (ACS), a primary component of the NWFP, was designed to protect salmon and steelhead habitat on federal lands managed by the USFS by maintaining and restoring ecosystem health at watershed and landscape scales. Riparian reserves, as essential component of the ACS, are intended to reverse habitat degradation for at-risk fish species or stocks, including coho salmon. Riparian reserves serve as core areas of high quality stream habitat, fish refugia, and centers from which degraded aquatic systems can be recolonized once they are restored. The Klamath/Trinity River Watershed is a broad landscape that needs overall protection to protect its population of SONCC Coho. The August Phase 1 project has serious implications on the well being of threatened fish species and aquatic life. The proposed project, the EA and specialists reports are not consistent with the recovery of these species or the NWFP ACS, CWA, ESA or SONCC Coho Recovery or TMDL plans.

WILDLIFE

The EA with accompanying Wildlife Specialist Report (the downloaded title is labeled Carr Delta Wildlife Report) and Management Indicator Assemblage Report have failed to properly consider how the project would impact the numerous listed, sensitive and survey and manage species, and Management Indicator Species which reside or are likely to reside in these watersheds. The proposed project would not achieve the wildlife goals or fully meet the Standards and Guidelines of the LRMP, which it is obliged to further through management activities. Management goals must be directed toward maintaining or enhancing existing viable populations of sensitive species. Habitat for sensitive plants and animals must be managed in a manner that will prevent any species from becoming a candidate for Threatened or Endangered status. The LRMP standards specifically state, "Survey and evaluate habitat for TE&S at the project level. The agency is directed to monitor and protect habitat for federally listed, threatened and endangered (T&E) and candidate species.

The Wildlife Specialist Report and Biological Assessment state that Alternative 2 would have equal or lesser impacts for every species, habitat type, and instance evaluated. Yet the EA and these reports rely on flawed ecological assumptions to argue that the use of these less-impactful alternative measures is not warranted or meriting further detailed consideration. The agency is obligated to protect wildlife species under multiple layers of statute, regulation, and agency guidelines, the EA is resolute that the project as designed is appropriate – a baffling stance, since much of the most intensively managed areas proposed by the project, with the heaviest site prep, are located in the higher elevations that are wildlife hotspots.

The agency has not provided an adequate response to comments, which are aligned with the latest scientific research and the consensus of ecologists familiar with the region. As such, the agency is not meeting its burden under NEPA to take a "hard look" at the environmental consequences of its proposed project on Survey and Manage, Sensitive and MIS species.

Sensitive Species

It is not entirely clear why multiple species were eliminated from the analysis. The rational provided is that the agency used location information from various sources and the EVEG 2012 database (Remote Sensing Data) in conjunction with 2020 RAVG BA7 spectral imagery (Rapid Assessment of Vegetation Condition after Wildfire) to assess burn severity in terms of basal area mortality in the analysis area from the 2020 August Complex Fire. It is important to note that, no surveys have been completed or considered in the

preparation of the EA or Draft Wildlife Report. This is not the "hard look" that NEPA requires. While many of the treatment areas were within high severity burn patches, the overall landscape is mixed severity and was a mosaic burn. Most of the treatment areas are directly adjacent to low and moderately burned areas.

Most of the effects for Sensitive species rely on questionable Resource Protection Measures (RPMs), yet, again, no surveys have been completed and no actual data is provided in the documents. This does not give the public or the decision maker enough evidence to know that these species would not be harmed. The lack of survey and on-the-ground information were highlighted years ago as an issue in the LSRA and Upper South Fork Watershed Assessment.

We are concerned with the Northern goshawk and its habitat around the nest site located near Unit 70 and 301. The agency is required to survey for all projects that may modify habitat in designated territories, LRMP 5-16. This is not discretionary. R5 protocols must be completed. Further, it is not clear why the agency adopts only a .25 radius around nests. All other Pacific Northwest national forests in CA establish a 0.5 radius around the nest when establishing LOPs.

We are concerned for the Pacific fisher and the lack of surveys. The Wildlife report states that, "fisher are known to occupy the analysis area. There are numerous remote camera detections and incidental sightings of fisher scattered throughout the analysis area. While there are currently no known fisher den sites within the project area, a seasonal restriction would be implemented if a fisher den site is found." How does the agency expect to run into a den area? This is entirely inadequate to protect this member of the weasel family and again fails LRMP direction.

We are concerned for bat species. Pallid bats are known to occur within the analysis area. There is an observation of pallid bat within the analysis area at the edge of the planning area near Prospect Creek. While fringed myotis are not known to occur within the project area, there are observations of pallid bats within 3/4 of a mile of treatment units. The Wildlife report states that, "These species are able to move away from disturbance when they are roosting individually, as opposed to during the maternity season or during hibernation." The agency concludes that, "Other than the short-term effects of avoidance of the project activity areas during project implementation…, the project is not expected to impact these sensitive bats." Having more accurate information would better protect these species.

We are concerned about riparian dependant species. The foothill yellow-legged frog is at risk due to various anthropogenic and environmental threats

throughout its range. There are observations of foothill yellow-legged frogs along the South Fork Trinity River near the mouths of Glen Creek and Flume Gulch, and in the Red Mountain area in Prospect Creek within the analysis area. There are no known occurrences of southern torrent salamanders in the analysis area, though suitable habitat was present prior to the August Complex fire and likely remains in areas of where riparian areas burned at low severity. There are no records of Big Bar Hesperian snails within the analysis area though an observation has been recorded near (approximately 0.7 mile) the boundary of a hazard tree abatement area in the Forest Glen area. The EA and Wildlife report rely on inadequate Resource Protection Measures and claim the project is compliant with the ACS objectives. We argue that the proposed actions are not consistent with ACS objectives.

Survey and Manage Species

In addition, there are multiple Survey and Manage Species under the Northwest Forest Plan (NWFP) in the project area. These species include but are not limited to, the Townsends big-eared bat (Clrynorthinus townsendii) and two mollusks, Monodenia churhi and Helminthoglypta hertleini. The Late Successional Reserve Assessment states that "There are no doubt additional species which have not been inventoried for and/or additional sights which have not been discovered due to a lack of surveys. As an example, Del Norte salamander has been located on both the Six Rivers and Klamath National Forests. The northern portions of the LSR fall within the 25 mile inventory zone from last identified location, yet, surveys have not been completed." This lack of knowledge is also stated in the Upper South Fork Watershed Analysis.

The EA states that pre-disturbance surveys were not conducted for Survey and Manage species, with one of the reasons being that site preparation activities in both heavy and light fuels will occur in areas that burned at high severity where often 100% of the basal area was killed and are no longer habitat (EA Page 23). The areas marked for site-preparation activities and roadside units in the proposed project contain a mosaic of burn intensity in the landscape for habitat, and as such the USFS's rationale here is insufficient.

The EA and accompanying documents of the effects of the project on Sensitive Species and NWFP Survey and Manage Species make the unsubstantiated assessment that many of the late-successional-dependent species are "not likely" to be adversely affected, or to be put on a trend toward federal listing, by the management activities proposed by the project. The EA, page 2-3, largely attributes this conclusion to the underlying assumption behind the push to log through this project – that undesirable conditions are best avoided through active management, which will most easily / efficiently /

effectively restore both hardwoods and conifers to reestablish desired late successional forest habitat condition. This assumption is deeply misguided and broadly untrue as highlighted throughout these and our scoping comments.

Management Indicator Species

The conclusion that — in the long term, the project would promote accelerated establishment of forest cover and would allow trees to become more fire resilient faster, thereby providing the structure and function of a mature forest. Treatments are designed to create future ecological conditions that are more resilient to wildfire. As such, treatments will help protect and improve the quality of all management indicator assemblage habitat in the long term — is not consistent with the best available science.

White-headed Woodpecker, Pygmy Nuthatch and Flammulated Owl

The LRMP provides direction and provisions for these birds in matrix land allocations, specifically no snags over 20" dbh should be cut. When will the agency acknowledge this? The EA and wildlife reports fail LRMP requirements in respect to considering these species and their habitat needs.

Black Bear

While not a listed species, in Wildlife Habitat Management Areas and in LSRs, disturbance to black bears must be considered, especially in the Prospect and Texas Chow Creeks, particularly the 28N26 road. The agency must use seasonal or permanent road closures to reduce disturbance during critical cub rearing periods. The Wildlife Report and EA should incorporate mitigations for this forest denizen.

Bird Species

Because large disturbances are responsible for long-lasting changes in forest structure and composition, these events are recognized as a critical element of bird community dynamics.[36] Results of Stephens et al 2015[37], illustrate the importance of mixed-severity wildfire in creating diverse vegetation structure and composition that supports distinct bird communities for at

[36] Nathaniel E. Seavy and John D. Alexander. Songbird response to wildfire in mixed-conifer forest in south-western Oregon. *International Journal of Wildland Fire* **2014**, *23*, 246–258 http://dx.doi.org/10.1071/WF12081

[37] Jaime L. Stephens, Ian J. Ausprey, Nathaniel E. Seavy, and John D. Alexander. Fire severity affects mixed broadleaf–conifer forest bird communities: Results for 9 years following fire. 2015 Cooper Ornithological Society. ISSN 0010-5422

least a decade following fire. We have a concern for multiple cavity nesters and bird species that were not considered in the EA or Wildlife Report- Western Screech-Owl, Northern Saw-whet Owl, American Kestrel, Black-backed Woodpecker (while this species very rare, it is possible to occur in recently burned forests), Pileated Woodpecker, Northern Flicker, Hairy Woodpecker, Downy Woodpecker, White-breasted Nuthatch, Red-breasted Nuthatch, Western Wood-Pewee, Western Bluebird, Mountain Bluebird, Tree Swallow, House Wren, Olive-sided Flycatcher, Cassin's Finch, Fox Sparrow and Green-tailed Towhee.

BOTANY

LRMP Standards and Guidelines for Sensitive and Endemic Plant species require the agency to: a) Map, record, and protect essential habitat for known and newly discovered sensitive and endemic plant species until conservation strategies are developed; b) Analyze the potential effects of all ground disturbing projects on sensitive and endemic plant species and their habitat and mitigate project effects to avoid a decline in species on the forest level; c) Monitor the effects of management activities on sensitive and endemic plants. If monitoring results show a decline in species viability, alter management strategy; d) Provide reports of sensitive plant populations to the California Natural Diversity Data Base (Department of Fish and Game [DFG]) annually; e) Coordinate sensitive plant inventory and protection efforts with the DFG, the US. Fish and Wildlife Service, the Nature Conservancy, the California Native Plant Society, and other concerned agencies, organizations, and adjacent landowners; f) Develop at least one conservation strategy per year; g) Review the Forests' sensitive species list periodically and recommend appropriate changes to the Regional Forester; g) Protect type localities of sensitive and endemic plants for their scientific value.

The Botanical EA concludes, without basis, that the Proposed Action is not likely to result in a trend toward Federal listing of loss of viability for Region 5 Sensitive and Forest Plan Endemic Plant, Lichen, Fungi. The Botanical EA contains no completed surveys or effects analyses of Category A, B, or E species and high-priority sites of Category C or D species nor Survey and Manage species and concedes that it isn't known at present what effects to plant populations occurred during the August Complex fire, from the suppression effort or from the fire itself. Without completed surveys of these plant species, the EA is woefully incomplete and incapable of predicting the effects of the Proposed Action on the plant species at issue.

There are two Forest Endemic Species with known populations within the project area, *Eriogonum libertini* (Dubakella Mountain buckwheat) and *Ericameria ophitidis* (serpentine goldenbush). Without completed surveys on

these species' locations and conditions, it is impossible to predict the impact of the proposed action. These endemic species are invaluable scientific and natural resources that should be surveyed extensively before any action is taken in the project area.

Surveys are the only way of confirming with an appropriate degree of certainty what plant species or vegetation communities occur in the project area. Existing databases like CNDDB, while helpful in conducting a preliminary analysis of the plants that are likely to be found in the area, are positive-occurrence databases and cannot be relied on as definitive proof of a plant's presence or absence on the site. The Botanical EA states, "Once surveys are completed and known populations identified activities will be analyzed for effects to species present." (p. 6). This type of deferred analysis is not acceptable and contradicts the foundational purpose of NEPA. Simply put, there is no replacement for field surveys, and the analysis and conclusions in the EA are inadequate until they are based on survey data.

There are also known populations of Region 5 Sensitive vascular plants, lichen, and fungi within the project area. The Botanical EA states that, these plants were adversely affected by the impacts of suppression activities which include "soil disturbance, dislodging and death of individuals, removal of canopy trees and topsoil, and both creation of suitable disturbed habitat for invasive non-native species, and transport of propagules of those into habitat and existing populations of Sensitive plants, lichens, and fungi." Although the Botanical EA lists Resource Protection Measures (RPMs) intended to prevent adverse effects to these species, the ground disturbance associated with the proposed project would likely only worsen the impacts of the previous suppression activities.

South Fork Mountain and South Fork Trinity River watersheds are extremely diverse and host multiple rare and endemic species of interest that warrant protection. The project must not move forward until adequate surveys can be completed and actual on-the-ground data is considered.

INVASIVE NON-NATIVE PLANTS

The EA drastically underestimates the increase in invasive species spread that may occur as a result of this project. The Botanical EA concludes that the 4,339 acres of ground disturbance that would be caused by this project would prevent more invasive species introduction than no action, but admits that the risk of introduction and spread are related to the amount of soil disturbance. The EA fails to provide analysis/evidence for the assumption that the proposed action would prevent more invasives than no action, and the fact that soil disturbance is correlated with spread of invasives undercuts this assumption. Additionally, the Botanical EA also concludes that the risk

of new infestations is highest where bare ground is "adjacent to the road system (i.e. conditions associated with this proposed action)."

Although the impacts of the fire (canopy loss, soil disturbance, etc.) have created a potentially suitable habitat for invasive plant species, it is indisputable that further soil disturbance that would occur as a result of the proposed project would increase the spread of invasive species across the project area, even with a marginal improvement of canopy trees. Even with the use of the RPMs described in Appendix A of the Botanical EA, the chance of spreading and establishing invasive species would greatly increase if the proposed action is carried out.

RETAIN ALL LIVING TREES

Within and around high severity patches, green living trees that survived the fire are disproportionally important to wildlife, as seed sources for future regeneration, as biological legacies, and for the development of structural complexity. They are also the most fire resilient portions remaining on the landscape.

Absolutely no living trees should be felled in the project, unless they have been structurally compromised and are a clear roadside hazard. Rating trees on their predicted probability of mortality will provide little benefit to public safety and will only remove potentially viable, living trees. To remove these trees will also only compound the loss of living forest canopy, reduce future structural complexity, impact wildlife, eliminate potential seed sources for regeneration, and homogenize high severity burn patches. Retention of living green trees, especially trees over 21" DBH, provides opportunities for highly important green trees to remain on site. No matter what level of crown scorch was sustained, these trees have the potential to provide important biological functions in both the short and long term.

There is no ecologically or biologically valid reason for the removal of living, green trees in the planning area, even if these trees will die in 1-10 years. In the short term, they will likely provide additional seed sources in areas void of green, living trees. They will also provide additional heterogeneity, microclimate, habitat, shade, and protection for regenerating forest species. In the long term, any living trees that are retained and continue growing will become highly valuable legacy trees with irreplaceable biological value.

Please retain all living trees within the planning area. They do not represent significant public safety risks and provide significant biological benefits. Please consider releasing a decision document that clearly retains all living trees in the planning area. Given the high severity, standing replacing fire

effects sustained during the fire, it is desirable to maintain any and all living trees, even in matrix lands.

We have documented numerous projects on Pacific Northwest forests that demonstrate a general inability of Forest Service marking crews to accurately predict post-fire mortality rates based on the marking guidelines and protocol from Smith and Cluck. These projects include the 2014 Westside Project, the 2016 Horse Creek Community Protection Project and the 2017 Seiad Creek Hazard tree removal project.

A review of these projects will demonstrate that many live trees marked for removal did not die as predicted and have instead responded to the new habitat conditions with growth and varying levels of canopy recovery. We believe the proximity of these areas to the planning area, the similarities in stand structure and composition and the relatively equal fire severity levels make them important examples or case studies for post-fire conifer mortality and the accuracy of mortality prediction by Forest Service marking crews.

Similar examples also exist on the Rogue River-Siskiyou National Forest and must be reviewed to establish the accuracy of marking crews in our local watersheds and on public lands. These include the 2017 Abney Fire Roadside Hazard Tree Removal Project, unlogged portions of the 2017 Chetco bar Fire, and perhaps others.

Significant applicable information can also be acquired from the abundance of recent fire footprints in the region, where many heavily scorched trees are surviving despite significant crown damage or loss. Natural, unmanaged post-fire landscapes clearly demonstrate that many trees with compromised crowns can remain viable and structurally important for decades or longer.

We urge the agency to consider this statistical study, Jacobs, 2015[38], to assess the Probability of Mortality and predictive models on post-fire Douglas fir trees in the Kootenai National Forest. Results found that, of the four different models used to predict mortality, 69% of the trees that were predicted to die survived to at least 7 years post fire. Many of the trees did not put new growth on until 5 years after the fire. Other interesting results:

> Trends in vigor and beetle activity were monitored over the course of the study. Vigor improved in trees 5 years after the fires. Even trees that initially exhibited no new growth in 2002 and 2003 showed signs of a strong recovery by 2005. Precipitation levels returned to average in 2003 and 2004 after being at extremely low levels in 2001. Beetle activity was highest in 2002 and 2003 and tapered off during subsequent years. Wood pecker activity was highest 6 years after the fires. Only 5 of the 94 dead trees had fallen as of 2007.

[38] Michael J. Jacobs. Yaak Valley Forest Council, Douglas Fir Mortality Study 2015.

The accuracy of predicted mortality of fire damaged trees is vitally important when considering the scale of fire across this landscape and the scale of post-fire logging and hazard tree operations being proposed annually in the Klamath-Siskiyou Bioregion. We also believe the accuracy and efficacy of mortality prediction is highly questionable in our region.

Unfortunately, the EA fails to review similar recent Forest Service actions for efficacy and assumes that the Smith and Cluck protocol are sufficient. Higher standards are needed to maintain and retain important living tree structures during post-fire operations. We believe this includes retaining all green, living trees. Significant crown scorch does not always translate to fire induced mortality and many trees of many species can recover canopy structure and persist long after fire damage or fire effects occur.

These standards should be informed by regionally appropriate monitoring data on the Rogue River Siskiyou-National Forest, Klamath National Forest and in surrounding watersheds. If this monitoring data does not exist, the agency should conduct independent research to quantify, qualify, and explore the probability of mortality for fire-scorched trees specifically in the region. The information to conduct this research appears readily available and/or discernable by conducting small sample plots. The information from this research would significantly inform this project and many others in the future. Without this information our treatments and our predicted probability of mortality rates are simply conjecture and have little credibility.

ECOLOGICAL CONSEQUENCES, INCREASED FUEL LOADS AND REBURN HYPOTHESIS

After years of mismanaged forest, road building and overcut stands, the August Complex fire will restart the ecological succession to the earliest stages of plant growth and interactions of biological communities, including primary seral stages of tree seedlings, woody plants, post-fire endemic wildflowers, lichens, bryophytes, fungi, and wildlife. The forest community that experienced the August Complex wildfire was not "lost," but rapidly disturbed (temporarily) in extent while a new forest has begun to develop on burned areas that support this newly reset forest ecosystem. Legacies of snags, dead and dying trees, mycorrhizal fungi and other species are present in sufficient abundance to regenerate the forest ecosystem without intervention (e.g. treatments, logging, road and landing construction et).

The agency claims that The August Phase 1 project is needed to reestablish forested conditions (reforestation) to consist with management plan objectives where tree seed sources are lacking due to high severity fires. However, roads, planting, and salvage logging will impede the severely stressed system from natural ecological recovery.

> An intense debate exists on the effects of post-fire salvage logging on plant community regeneration, but scant data are available derived from experimental studies. We analyzed the effects of salvage logging on plant community regeneration in terms of species richness, diversity, cover, and composition by experimentally managing a burnt forest on a Mediterranean mountain (Sierra Nevada, S Spain)…Post-fire salvage logging was associated with reduced species richness, Shannon diversity, and total plant cover. Moreover, salvaged sites hosted different species assemblages and 25% lower cover of seeder species (but equal cover of resprouters) compared to the other treatments. Cover of trees and shrubs was also lowest in salvage logging, which could suggest a potential slow-down of forest regeneration. Most of these results were consistent among the three plots despite plots hosting different plant communities. Concluding, our study suggests that salvage logging may reduce species richness and diversity, as well as the recruitment of woody species, which could delay the natural regeneration of the ecosystem.[39]

In the western USA, typically, the argument is that post-fire logging and subsequent conifer plantings are needed to leap-frog over successional stages to a "forest" even though those actions degrade one of the most biologically diverse seral stages – complex early seral forest—and post-fire logging does not create a diverse forest ecosystem but, rather, a biologically diminished and impoverished one. In short post-fire logging is a tax on ecological recovery.

Post-fire logging disrupts fire affected ecosystem processes and inhibits development and longevity of complex early seral forests (Lindenmayer et al. 2008[40], Donato et al. 2012[41], DellaSala et al. 2015[42], Thorn et al. 2018[43]) along with keystone biological legacies. Post-fire logging impacts are documented across a broad range of taxa and geographic regions and typically include soil compaction, aquatic and terrestrial habitat degradation (particularly rare and imperiled species), spread of invasive species, increased fine fuels, and conifer seedling mortality among others (Beschta et al. 2004[44], Karr et al.

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[39] Alexandro B. Leverkus, Juan Lorite, Francisco B. Navarro, Enrique P. Sánchez-Cañete, Jorge Castro. Post-fire salvage logging alters species composition and reduces cover,richness, and diversity in Mediterranean plant communities. Journal of Environmental Management 133 (2014) 323e331

[40] Lindenmayer, D.B., P.J. Burton, and J.F. Franklin. 2008. Salvage logging and its ecological consequences. Island Press: Washington, DC.

[41] Donato, D.C., J.L. Campbell, and J.F. Franklin. 2012. Multiple successional pathways and precocity in forest development: can some forests be born complex? J. Vegetation Science 23:576-584.

[42] DellaSala, D.A., and C.T. Hanson. 2015. The ecological importance of mixed-severity fires: nature's phoenix. Elsevier: United Kingdom.

[43] Thorn, S.,et al. 2018. Impacts of salvage logging on biodiversity: a meta-analysis. Journal of Applied Ecology 55:279-289.

[44] Beschta, R.L., J.J. Rhodes, J.B. Kauffman, R.E. Gresswell, G.W., Minshall, J.R., Karr, D.A. Perry, F.R. Hauer, and C.A. Frissell. 2004. Postfire management on forested public

2004[45], Lindenmayer et al. 2008[46], Lindenmayer and Noss 2006[47], DellaSala et al. 2015[48], Thorn et al. 2018[49]).

Context and scale matter in ecology and is especially relevant in the project area considering cumulative impacts of adjacent large-scale post-fire logging projects across the region in addition to extensive logging proposed in the South Fork Trinity watershed.

Nothing in a forest is wasted, especially after a fire, as biological legacies link pre- and post disturbance conditions, life and death in the forest, and aquatic and terrestrial ecosystems. Biological legacies such as large snags and downed logs typically have long "residence" times, persisting for decades to centuries and spanning successional stages. They include predisturbance elements (large live and dead trees, shrubs) that survive, persist, or regenerate in the burn area and are an important seed source for recolonization of plants in the new forest. They perform vital ecosystem functions such as anchoring soils (e.g., large root-wads of live and dead trees), recycling nutrients (e.g., downed logs decomposed by detritovores), storing carbon long-term (given slow rates of decomposition) and sequestering it, providing microsites for recolonizing plants and wildlife (e.g., so called "nurse-logs" that are substrate for conifer seedlings, large snags that provide shade for seedlings), and acting as refugia for numerous species (e.g., downed logs as moisture sites for salamanders, fungi, and invertebrates).When large snags along streams eventually topple into the riverbed they become hiding cover for fish, and pulses of post-fire sedimentation create spawning grounds for native fish, linking aquatic and terrestrial ecosystems. Snags are utilized by hundreds of wildlife species for foraging (as they harbor numerous insects, particularly the larval stages), nesting, hiding, roosting, perching, and denning (examples include cavity nesting birds, bats, mammals, including many rare species). Many insectivorous species that use snags, in turn, perform vital trophic functions that help keep insects in check post-fire.

Based on the extensive literature provided herein, the USFS cannot claim that post-fire logging will make LSRs or any other part of the forest more

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lands of the western United States. Conservation Biology 18:957-967.

[45] Karr, J.R., J.J. Rhodes, G.W. Minshall, F.R. Hauer, R.L. Beschta, C.A. Frissell, and D.A. Perry. 2004. The effects of postifre salvage logging on aquatic ecosystems in the American West. Bioscience 54:1029-1033.

[46] Lindenmayer, D.B., P.J. Burton, and J.F. Franklin. 2008. Salvage logging and its ecological consequences. Island Press: Washington, DC.

[47] Lindenmayer, D.B., and R.F. Noss. 2006. Salvage logging, ecosystem processes, and biodiversity conservation. Conservation Biology 20:949-958

[48] DellaSala, D.A., and C.T. Hanson. 2015. The ecological importance of mixed-severity fires: nature's phoenix. Elsevier: United Kingdom.

[49] Thorn, S.,et al. 2018. Impacts of salvage logging on biodiversity: a meta-analysis. Journal of Applied Ecology 55:279-289.

"resilient to large scale stand replacement fire" nor "provide for future habitat" when in fact it is proposing to remove the very essential components (legacies) that are necessary for forest development. These components are produced only by a natural disturbance in a mature forest already having structure and provided for the structural characteristics and related functions in those forests for decades to centuries. Simply stated, biological legacies cannot be replaced by timber harvest and tree planting given the long time lines for development.

Additionally, the response of fire-adapted species and communities to post-fire logging depends on the scale, intensity, degree of biological legacies removed (McIver and Starr 2000, Lindenmayer et al. 2006, 2008), disturbance history of the site (Reeves et al. 2006, Hutto 2008), and species-specific tolerances to logging. Impacts can be summarized as follows:

- Alteration of stand structure and function;
- Loss of soil nutrients;
- Chronic sedimentation and erosion;
- Reduction in carbon storage;
- Increased fine fuel loads and re-burn severity (Donato et al.2006[50]);
- Degradation of habitat for threatened, endangered, and sensitive species;
- Reduced habitat and prey for apex predators and forest carnivores;
- Reduced snag densities for cavity nesting birds and mammals;
- Exotic species invasions, and lowered resistance; and
- Reduced resilience of post-fire landscapes to future disturbances, among other alterations.

High intensity burns within fire complexes are governed mainly by extreme fire weather, rendering forest thinning and related treatments ineffectual (Kalies and Kent 2016[51], Bowman et al. 2017[52]). The proposed action is not likely to reduce future high severity events but would instead increase future fire risk, damage ecosystem processes and ecological integrity.

The Shasta-Trinity National Forest proposes a highly controversial and ecologically inappropriate logging project that would accumulate impacts in space and time to- NSO, established and recognized landscape connectivity, late seral and complex early seral conditions, water quality, ecological integrity and resilience.

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[50] Donato, D.C., J.B. Fontaine, J.L. Campbell, W.D. Robinson, J.B. Kauffman, and B.E. Law. 2006. Post-wildfire logging hinders regeneration and increases fire risks. Science, January 20, 2006 Vol. 311 p. 352.

[51] Kalies, E.I., and L.L. Yocom Kent. 2016. Tamm Review: Are fuel treatments effective at achieving ecological and social objectives? A systematic review. Forest Ecology and Management 375-84-95.

[52] Bowman, D.M.J.S., G.J. Williamson, J.T. Abatzoglou, C.A. Kolden, M.A. Cochrane, and A.M.S. Smith. 2017. Human exposure and sensitivity to globally extreme wildfire events. Nature Ecology & Evolution 1:1-6.

Together with the Mendocino, Six Rivers, Klamath and Rogue River Siskiyou National Forest and beyond, post-fire logging timber sales are massive and controversial and would setback ecosystem processes for decades if not longer. As it stands, it is likely that the combined effects of post-fire logging and other management disturbances would result in widespread ecological damage and result in a mortality sink for spotted owls moving the Klamath Provinces toward a landscape trap where fire regimes and biodiversity are flipped to a novel state (Paine et al. 1999[53], Lindenmayer et al. 2011[54]).

The EA notes that increasing temperatures, increased variability in precipitation, and climate change will increase the intensity of forest fires. While that may or may not be true, the solution is not post-fire logging. Indeed, post-fire logging can increase future fire intensity by removing critical large-diameter snags that are known to mitigate conditions that lead to high-intensity fires. "[C]ommercially extracting fire-killed trees via logging causes significant short- and long-term adverse effects on forest ecosystem structures, functions and processes."[55] There is growing and ever expanding evidence that logging fire-affected forests "exacerbates the short-term adverse effects of fire, causes significant long-term environmental damage and ecological degradation of burned watersheds."[56] It also results in decreased forest resilience and increased vulnerability to intense fires.[57]

The Thompson et al. study looked at the reburn on the 2002 Biscuit Fire:

> We used satellite data, government agency records, and aerial photography to examine a forest landscape in southwest Oregon that burned in 1987 and then was subject, in part, to salvage logging and conifer planting before it reburned during the 2002 Biscuit Fire. Areas that burned severely in 1987 tended to reburn at high severity in 2002, after controlling for the influence of several topographical and biophysical covariates. Areas unaffected by the initial fire tended to burn at the lowest severities in 2002. Areas that were salvage-logged and planted after the initial fire burned more severely than comparable unmanaged areas, suggesting that fuel conditions in conifer plantations can increase fire severity despite removal of large woody fuels.[58]

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[53] Paine R.T, M.J. Tegner MJ, and E.A. Johnson. 1998. Compounded perturbations yield ecological surprises. Ecosystems 1: 535–545.
[54] Lindenmayer, D.B., R.J. Hobbs, G.E. Likens, C. J. Krebs, and S.C. Banks. 2011. Newly discovered landscape traps produce regime shifts in wet forests. PNAS
[55] Timothy Ingalsbee, Ph.D. SALVAGING TIMBER; SCUTTLING FORESTS-The Ecological Effects of Post-Fire Salvage Logging. Western Fire Ecology Center American Lands Alliance
[56] McIver, J.; and L. Starr. 2000. Environmental Effects of Postfire Logging: Literature Review and Annotated Bibliography. Gen. Tech. Rep. PNW-GTR-486. USDA-Forest Service, Pacific Northwest Research Station. 72p.
[57] Nourished by Wildfire. The Ecological Benefits of the Rim Fire and the Threat of Salvage Logging. Center For Biological Diversity_2014
[58] Thompson, J.R., Spies, T.A., and Ganio, L.M. 2007. Reburn severity in managed and 338 unmanaged vegetation in a large wildfire. Proceedings of the National Academy of Sciences

Salvage logging does not necessarily prevent subsequent disturbances, and sometimes it may increase disturbance likelihood and magnitude.[59] Salvage logging has been proposed to reduce post-fire hazardous fuels and mitigate re-burn effects, but debate remains about its effectiveness when considering fuel loadings are dynamic, and re-burn occurrence is stochastic, in time. Although salvage logging reduces coarse woody fuel loadings, alone it does not mitigate re-burn hazard because it increases fine woody fuel loadings and has little direct effect on reestablishing vegetation.[60]

The EA fails to take a hard look at the proposed project's impacts on the likelihood and severity of future fires and ignores the scientific controversy surrounding the issue. Because "fire management is a crucial issue that has wide-ranging ecological impacts and affects human life," the controversy around the effects of post-fire logging on future fire severity obligates the Forest Service to conduct an EIS. *Bark v. United States Forest Serv.*, 958 F.3d 865, 871 (9th Cir. 2020) (holding Forest Service must conduct EIS where impacts of project on future fire severity are controversial).

As discussed above, the Forest Service's analysis of the risks of future wildfires ignores evidence that is contrary to its desired conclusions and makes numerous unsupported assumptions. This failure to analyze contrary evidence establishes that the Forest Service did not take a hard look at the project's impacts. *Bark v. United States Forest Serv.*, 958 F.3d 865, 871 (9th Cir. 2020) ("Failing to meaningfully consider contrary sources in the EA weighs against a finding that the agency met NEPA's "hard look" requirement as to the decision not to prepare an EIS.").

Additionally, the very existence of the controversy is enough to require an EIS in this scenario. There is "evidence from numerous experts" that "undermines the agency's conclusions." *Bark v. United States Forest Serv.*, 958 F.3d 865, 870 (9th Cir. 2020). This is enough "to demonstrate a substantial dispute" and because the potential implications of this controversy for the project's impacts are so large, it is enough on its own to require the agency prepare an EIS. *Id.*

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339 of the United States of America 104: 10743–10748. https://www.fs.usda.gov/treesearch/pubs/29686

[59] Leverkus, A.B., Buma, B., Wagenbrenner, J., Burton, P.J., Lingua, E., Marzano, R. and Thorn, S., 2021. Tamm review: Does salvage logging mitigate subsequent forest disturbances?. *Forest Ecology and Management*, *481*, p.118721.

[60] Christopher J. Dunn, John D. Bailey. Modeling the direct effects of salvage logging on long-term temporal fuel dynamics in dry-mixed conifer forests. Forest Ecology and Management 341 (2015) 93–109

BEST MANAGEMENT PRACTICES

"NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken." 40 CFR 1500.1(b). NEPA was enacted to ensure that important environmental effects "will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast." Robertson v. Methow Valley Citizens, 490 US 332, 348, 109 S.Ct. 1835. " ... NEPA requires consideration of the potential impact of an action before the action takes place." Tenakee Springs v. Clough, 915 F.2d 1308, 1313.

Resource protection measures (RPMs) and Best Management Practices (BMPs) are developed to reduce environmental effects and ensure project activities are implemented to comply with standards and guidelines. The August Complex has been utilized as a gross planning tool that fosters post fire logging under the assumptions that the BMPs and Resource Protection Measures outlined in Appendix C of the preliminary EA will protect beneficial uses and restore the forest ecosystem. Numerous studies[61] and assessments in the Region 5, including many of the watershed analysis in South Fork Trinity River, have documented post fire logging on public forests as the primary causal mechanism for loss, degradation, and inhibited recovery of aquatic and terrestrial ecosystems.

The analysis fails to disclose and analyze the likely impacts of the proposed logging, yarding, road construction and reconstruction, road maintenance, landing construction and tractor piling on the environment. The agency cannot rely on RPMs and BMPs to eliminate impacts. The USFS should be aware that the National Marine Fisheries Service (NMFS) criticizes the use of Best Management Practices (BMPs) and mitigation as poor surrogates for addressing cumulative watershed effects because BMPs are addressed to individual actions and fail to do limit the totality of individual actions within a watershed. In a 1997 Position Paper on the Oregon Forest Practices Act, NMFS points out that:

> Cumulative effects of forest practices may include changes in sediment, temperature, and hydrological regimes, resulting in direct, indirect or eventual loss of key habitat components (e.g., clean gravel interstices, large woody debris, low temperature holding pools, and protected off-channel rearing areas) necessary for spawning and rearing of anadromous salmonids. These changes often are not expressed "immediately" at the project site, but instead may occur subsequent to triggering events (fire, floods, storms) or are manifested off-site (downstream) of where the effects are initiated.

[61] Beschta, R.L., J.J. Rhodes, J.B. Kauffman, R.E. Gresswell, G.W., Minshall, J.R., Karr, D.A. Perry, F.R. Hauer, and C.A. Frissell. 2004. Postfire management on forested public lands of the western United States. Conservation Biology 18:957-967.

Please note that the prevention of potentially adverse impacts at the project site is indeed necessary, but not sufficient to avoid cumulative effects (CEQ 1971). As Reid (1993)[62] states:

The BMP approach is based on the premise that if on-site effects of a project are held to an acceptable level, then the project is acceptable, regardless of activities going on around it. Interactions between projects are beyond the scope of BMP analysis, and operational controls are applied only to individual projects.

However useful site specific BMPs are in minimizing effects of individual actions, they still do not address the cumulative effects of multiple actions occurring in the watershed which, though individually "minimized" through application of site-specific BMPs, may still be significant, in their totality, and have undesirable consequences for beneficial uses such as salmon populations and salmon habitat.

The argument that applying a BMP while conducting a specific forest practice minimizes site-specific effects and thus also minimizes cumulative effects is logically flawed. Every BMP is an action and has an effect ... thus generally, the more the BMPs are applied the greater the cumulative effect. Only by minimizing the number of actions, i.e., the number of individual applications of BMPs, would cumulative effects by minimized. This is precisely why a cumulative effects assessment is needed—to establish the watershed-specific limits and excesses of BMP applications.

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CUMULATIVE AFFECTS

The Proposed Project Should Have Been Analyzed Together With the Second Phase of August Fire Restoration Project

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[62] Reid, Leslie M. 1993. Research and cumulative watershed effects. Gen. Tech. Rep. PSW-GTR- 141. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; 118 p.

The Forest Service is obligated to review connected actions in a single EA. 40 C.F.R. § 1501.9. This requirement "prevent[s] an agency from dividing a project into multiple 'actions' each of which individually has an insignificant environmental impact, but which collectively have a substantial impact." *Great Basin Mine Watch v. Hankins*, 456 F.3d 955,969 (9th Cir. 2006) (quoting *Wetlands Action Network v. U.S. Army Corps of Eng'rs*, 222 F.3d 1105, 1118 (9th Cir.2000).

Actions are connected where they "(i) [a]utomatically trigger other actions that may require environmental impact statements; (ii) [c]annot or will not proceed unless other actions are taken simultaneously; or (iii) [a]re interdependent parts of a larger action and depend on the large action for their justification." 40 C.F.R. § 1501.9(e)(1). In the Ninth Circuit, determining whether actions are connected turns largely on whether they have "independent utility." *Great Basin Mine Watch*, 456 F.3d at 969.

The two phases of the August Complex Fire Restoration Project are a part of the same "planned multi-phased restoration effort, geared toward resetting post-fire conditions to a trajectory that will achieve the desired future conditions." Scoping for August Fire Restoration, Phase 1 at 3. They have no independent utility because the primarily goal of both projects is the same: restoring the area from the impacts of the August Complex fire. *Cf. Blue Mountains Biodiversity Project v. Blackwood,* 161 F.3d 1208 (9th Cir. 1998) (fire salvage sales from same fire must be analyzed together because "[t]hey were developed as part of a comprehensive forest recovery strategy."). In other words, the two phases are precisely "interdependent parts of a larger action and depend on the large action for their justification." 40 C.F.R. § 1501.9(e)(1)(iii). Therefore, the Forest Service should have considered the two projects under a single EIS.

The EA Fails to Adequately Discuss the Cumulative Impacts of the Project

EAs are required to consider the cumulative impacts of a project in combination with other related projects that will contribute to the proposed project's "reasonably foreseeable" environmental impacts. 40 C.F.R. §1508.1(g); *see Klamath-Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt.*, 387 F.3d 989, 1001 (9th Cir. 2004). Consideration of cumulative impacts must discuss the actual "impacts that will be caused . . . including how the combination of those various impacts is expected to affect the environment." *Id.* at 1001. The conclusions made must be supported by "quantified or detailed information" and that information must be made available to the public. *Id.* at 996.

The EA fails to adequately consider the cumulative impacts of the proposed project in combination with at least two other projects, the Wildfire Risk Reduction, Reliability, and Asset Protection (WRAP) project, and the second phase of the August Fire Restoration Project and the multiple water quality impacts from the Upper South Fork Grazing Allotment, as well as the larger context of the changing climate in the region. Both projects, in addition to current grazing, are reasonably foreseeable and will contribute to the adverse impacts of the proposed project.

The Recent Revisions to CEQ's NEPA Regulations Do Not Eliminate the Forest Service's Obligation to Analyze Cumulative Impacts

The recently revised NEPA regulations still require that the Forest Service consider the cumulative impacts of proposed projects. The 2020 revisions to the 1978 CEQ regulations eliminated the distinction between cumulative effects and other effects. However, this revision was not meant to get rid of the requirement to consider cumulative effects, but only to "focus agency time and resources on considering whether the proposed action causes an effect rather than on categorizing the type of effect." 85 Fed Reg. at 43343. The regulations still require that all "reasonably foreseeable" environmental effects be analyzed in an EA. 40 C.F.R. § 1501.5(c)(2). 40 C.F.R. §1508.1(g).

Further, regardless of what the revised regulations require, the Forest Service should still analyze cumulative effects for two reasons. First, the revised NEPA regulations are both under review by President Biden, *see* Executive Order 13990: Protection Public Health and the Environment and Restoring Science to Tackle the Climate Crisis[63]; *see* Fact Sheet: List of Agency Actions for Review[64], and are the subject of several legal challenges, *see e.g., Wild Virginia v. Council on Envtl. Quality,* No. 3:20-cv-00045 (W.D. Va.); *Alaska Community Action on Toxics v. Council on Envtl. Quality*, No. 3:20-cv-05199 (N.D. Cal.). And second, if the Forest Service does not look at cumulative impacts, it has not taken a "hard look" at the environmental effects of the project. *See Klamath-Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt.,* 387 F.3d 989, 1001 (9th Cir. 2004) (holding EAs "do not reflect a hard look" where they fail to consider cumulative impacts). The "hard look" requirement is imposed by NEPA's statutory language, independent of the CEQ regulations. *See Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989).

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[63] *Available at* https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/.

[64] *Available at* https://www.whitehouse.gov/briefing-room/statements-releases/2021/01/20/fact-sheet-list-of-agency-actions-for-review/.

The EA fails to meaningfully consider cumulative effects from the WRAP project

Under the WRAP project, which is currently at the end of its scoping phase, the Trinity Public Utilities District (Trinity PUD) and the Western Area Power Administration (WAPA) are planning to expand utility right of ways and remove all trees and other vegetation from over 230 miles of transmission and distribution lines. WAPA, WRAP PROJECT SCOPING REPORT 2 (2021).[65] Much of the land that will be cleared is located on Forest Service Land that is within or adjacent to areas that are affected by the proposed project, including the Forest Glen unit, where the two projects directly overlap. *Compare* WAPA, WRAP PROJECT MAP,[66] *with* EA app. A. The vegetation will be removed by a mix of mechanical, manual, and herbicidal methods and marketable timber in the project's area may be sold. WAPA, WRAP PROJECT SCOPING REPORT 2–3 (2021).

Even though the WRAP project and the proposed project overlap, the EA includes no discussion of the cumulative effects associated with the WRAP project. This is in clear contradiction of Ninth Circuit precedent, which has repeatedly emphasized the importance of providing an in-depth assessment of the cumulative impacts of nearby projects, especially where the projects both involve logging in a national forest. *See e.g., Klamath-Siskiyou,* 387 F.3d; *Kern v. U.S. Bureau of Land Mgmt.*, 284 F.3d 1062 (9th Cir. 2002); *Blue Mountains Biodiversity Project,* 161 F.3d.

The failure to even mention the WRAP project makes evident that the Forest Service did not review all of the reasonably foreseeable environmental impacts of the proposed project and undermines the EA's conclusions. For example, many of the conclusions in the EA related to the proposed project's impact on wildlife are directly related to the amount of habitat that the project will destroy. But without analyzing the effects of additional habitat loss from the WRAP project, the conclusions reached in the EA are missing the full picture of the threatened harm. And cumulative effects are by no means limited to wildlife. The additional clearing planned under the WRAP project has implications for nearly every conclusion made in the EA, including with regards to impacts to soil, hydrology, scenery, and climate.

The EA fails to meaningfully consider cumulative effects of emergency logging that already occurred, the proposed action, and

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[65] *Available at* https://www.wapa.gov/regions/SN/environment/Documents/WRAP_ScopingReport_3-17-2021.pdf.

[66] *Available at* https://www.wapa.gov/regions/SN/environment/Documents/WRAP_ProjectMap.pdf.

the already planned second phase of the August Complex post-fire logging and salvage work, which all impact the same area.

Even if the Forest Service believes that the two phases of the August Complex Fire Restoration Project are not connected enough to justify review under a single EA, it must still consider the cumulative impacts of the two projects, along with activities that occurred in the area during the fire and on an emergency basis after the fire. *See Earth Island Inst. v. U.S. Forest Serv.*, 351 F.3d 1291, 1306 (9th Cir. 2003) (**"**Even if a single, comprehensive EIS is not required, the agency must still adequately analyze the cumulative effects of the projects within each individual EIS."). There is no mention of any emergency activities at all and the EA's cursory analysis of impacts related to the second phase of this proposed project falls far short of NEPA's requirement that agencies take a hard look at cumulative impacts. With respect to the second phase, the agency's excuse for its lack of analysis, that the plans for the second phase are not concrete enough to be analyzed, is contrary to Ninth Circuit precedent.

The one-paragraph analysis of cumulative impacts in the EA and the similarly lacking discussion of cumulative impacts in the various specialist reports, do not come close to providing adequate analysis. The Ninth Circuit has made clear that cumulative impacts must be analyzed in detail. For example, in the context of a timber sale the court held that "a calculation of the total number of acres to be harvested in the watershed" is not sufficient. *Klamath-Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt.*, 387 F.3d 989, 995 (9th Cir. 2004). The agency must consider the actual "impacts that will be caused by each successive timber sale, including how the combination of those various impacts is expected to affect the environment." *Id.* at 1001. The conclusory statements included in the EA, which discuss zero "*actual* environmental effects" of the project do not meet this stringent standard. *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1216 (9th Cir. 2008) (emphasis in original).

The Forest Service claimed that because of uncertainties in the scope of the second phase of the project "cumulative effects associated with [it] cannot be meaningfully analyzed at this time," EA at 41, but this excuse directly contradicts Ninth Circuit precedent on the matter. A project "need not be finalized" before its cumulative impacts must be analyzed. *N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1079 (9th Cir. 2011). An agency must "engage in reasonable forecasting." *Id.* at 1079 (quoting *Selkirk Conservation Alliance v. Forsgren*, 336 F.3d 944, 962 (9th Cir.2003)). Otherwise, an agency could "shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as crystal ball inquiry." *Id.*

There is more than enough information about activities that occurred in the fire footprint during the fire and on an emergency basis, as well as the planned second phase of the project for the Forest Service to further analyze the cumulative impacts of all of these activities together. For example, the Forest Service has the information about the acres that have already been treated. It can also likely provide a rough estimate of the amount of land that will be affected by the second phase of the project and the types of activities that will occur in order to incorporate this information into a cumulative impacts analysis. But the EA is devoid of this analysis, and is therefore inadequate.

CLIMATE AND BIODIVERSITY CRISIS

The preliminary EA fails to address the project's impacts on climate change and greenhouse gases (GHGs), including GHGs and direct and indirect short- and long-term impacts on the environment; additionally, it ignores the science demonstrating the importance of charcoal, carbon release during post-fire logging, and the connection between post-fire logging and increased release of GHGs.

As noted in our scoping comments, at page 47, the Biden Administration issued an "Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis" which stated: "the policy of [the] Administration [is] to listen to the science; to improve public health and protect our environment [...] to reduce greenhouse gas emissions; [and] to bolster resilience to the impacts of climate change." Overall, the EA fails to address key points of the Biden Administration's EO.

The Forest Service must quantify direct and indirect impacts as well as short and long-term impacts of the project. The EA fails to quantify direct or indirect impacts, short- and long-term impacts and fails to explain why the GHG emissions for the project are too difficult to quantify. Instead, the Forest Service states that the project's "direct and indirect impacts to national and global greenhouse gas (GHG) emissions and climate change as a whole are negligible" and that "the proposed action's contribution to cumulative effects on global greenhouse gasses and climate change would also be negligible." These statements are conclusory and are unsupported by evidence.

Post-Fire Logging Releases GHGs

We asked that the Forest Service contend with the science stating that post-fire logging is harmful and releases GHGs. The EA does not address this science at all, and instead states that, the project is the first step towards "increasing the safety and effectiveness of future fire suppression efforts."

From our scoping comment, page 48:

> Research on the impacts of post-fire logging on GHG emissions highlights the negative impacts of this practice. Boone et al. (2019) directly compared the total aboveground biomass (TAGB) of salvage logged sites and sites that were not salvaged log 15 years and 29 years after the Apple fire and Warner Creek fires. They found that "land use (salvage logging and plantations) resulted in significantly lower TAGB than the burned late successional natural forests" that were not salvage logged.

A study of GHG emissions in Oregon found that the "wood products sector generated about one and a half times more emissions than [...] transportation or energy sector emissions [...]. Wood product emissions are the result of fuel burned by logging equipment, the hauling of timber, milling, wood burned during forestry activities, and the ongoing decomposition of trees after they are cut. Forest fire emissions were less than a quarter of all forest sector emissions in each of the five-year increments studied between 2001 and 2015."[67] There is ample evidence that logging causes GHG emissions.

Post-Fire Logging Increases the Release of Carbon

The Forest Service also failed to acknowledge the array of scientific literature that has found that carbon emissions are increased by post-fire logging. Again, from our scoping comment, p. 64:

> [Post-fire logging] expedites the release of carbon into the atmosphere and directly exacerbates climate change. First, the amount of carbon harvested necessary to change fire behavior is often far larger than that saved by changing fire behavior. Second, there is a very low likelihood that a forest will burn again before carbons stocks naturally regenerate. This eliminates any GHG benefit that logging could have theoretically conferred. [...] [t]his is not merely a minor amount of carbon released during logging. Campbell, Harmon, & Mitchell (2011) found that 'protection of one unit of C[arbon] from wildfire combustion comes at the cost of removing three units of C[arbon] in fuel treatments.'

Carbon stored in snags and soil represents a large storage pool that should be protected from post-fire logging.[68]

Carbon Storage in Snags

Snags are a critical source of storage of C, as they are less prone to loss compared to C storage in soil, which is more vulnerable to erosion.[69] Salvage

[67] https://www.hcn.org/issues/50.11/climate-change-timber-is-oregons-biggest-carbon-polluter
[68] https://www.sciencedirect.com/science/article/pii/S0378112712004513
[69] https://agupubs.onlinelibrary.wiley.com/doi/epdf/10.1002/2017JG003832

logging causes a loss of C stored in the area being logged.[70] Additionally, snags and decaying wood generally keep soils productive, "enhancing carbon sequestration capacity over time."[71] Critically, forests keep most of their stored carbon even after severe wildfires, as long as snags were not targeted by [post-fire] logging.[72]

Carbon Storage in Soil

This EA calls for roughly 3,500 acres of ground-based logging and roadside activity. C storage in soil "offers numerous benefits related to nutrient retention, below-ground biological activity, and water holding capacity."[73] A 2018 study found that there is long-term sink capacity in carbon stored in soil and sediment.[74] There is valuable carbon stored in post-fire soils that will be irreparably harmed by commercial logging.

Post-Fire Logging Damages Charcoal and Critical C Storage

Next, we asked the Forest Service to consider the importance of charcoal for carbon storage, its contribution to soil health and forest regeneration in its EA. It failed to do so. In our scoping comment, page 50, we stated:

> Charcoal represents a super-passive form of carbon (C) that is generated during fire events and is one of the few legacies of fire recorded in the soil profile; however, the importance of this material as a form of C storage has received only limited scientific attention. Charcoal produced during wildfire events represents an important form of long-term C storage in forest ecosystems. Forest management practices, such as salvage logging or thinning without prescribed fire, may reduce soil charcoal content, and, thus, long-term C storage in mineral soils.

Post-fire logging impacts soil charcoal levels. By removing burned trees, it "removes a lot of char that would otherwise fall to the ground and become incorporated into soil over time. [...] This is one of the ways that charcoal can get incorporated into soil." [75] Charcoal improves nutrient cycling, soil's water holding capacity, and improves tree growth.[76] The removal of burned trees negatively impacts the charcoal levels in soil. This must be weighed as a real consequence of the proposed project.

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[70] https://www.nrs.fs.fed.us/pubs/jrnl/2012/nrs_2012_bradford_001.pdf
[71] https://www.earthisland.org/journal/index.php/articles/entry/logging-carbon-emissions-us-forests/
[72] https://oregonwild.org/forests/climate-change/forest-carbon-101
[73] http://greenyourhead.typepad.com/files/biochar_for_forest_restoration_wba.pdf
[74] https://agupubs.onlinelibrary.wiley.com/doi/epdf/10.1029/2018JG004490
[75] https://greenyourhead.typepad.com/files/biochar_for_forest_restoration_wba.pdf
[76] https://greenyourhead.typepad.com/files/biochar_for_forest_restoration_wba.pdf

The Truth About Wood Products

The EA mistakenly states that "[a]ctive forest management, especially in recently burned areas, can increase carbon sequestration by re-establishing forests, reducing the risk of forest loss to fire, drought, insects, and disease, and by transferring carbon from forest biomass to wood product carbon pools." In fact, post-fire logging hinders the re-establishment of forests, increases the risk of forest loss, and results in a loss of C storage. When we use active forest management, which itself is ecologically unnecessary, we run the risk of "creating new problems before we solve the old ones."[77]

The large amount of emissions caused by cutting, logging, hauling and milling is a factor. Much of the carbon-storing biomass from trees is contained within the tops and branches, which are often burned or left to deteriorate. Then, a significant portion of the tree is lost during milling. Then the carbon emissions of hauling lumber to outlets and then manufacturing is another addition in the total emissions. Then include the actual lifespan of the product that is made from the wood that often ends up in a landfill. The myth —concerning wood products storing carbon in the long-term— that is perpetuated by the agency and timber industry needs to stop and take into account the reality of the and carbon lost and emissions cast into the atmosphere to make wood products.

Transferring C from forest biomass to wood product carbon pools is inefficient and leads to an overall loss of C storage. C is lost when forests are harvested compared to old growth forests, "even when storage in wood products and landfill are included."[78] Additionally, C stocks are younger and have less longevity in logged forests compared to old growth forests."[79]

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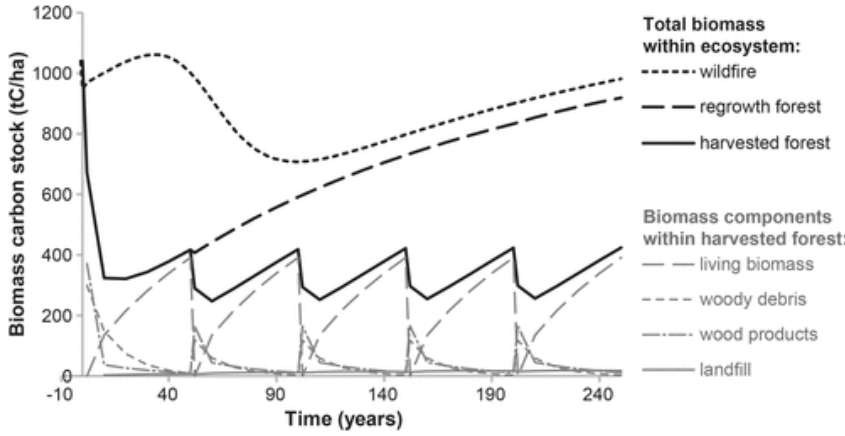
[77] Beschta et al. Wildfire and Salvage Logging. Recommendations for Ecologically Sound Post-Fire Salvage Management and Other Post-Fire Treatments On Federal Lands in the West 1995.

[78] https://esajournals.onlinelibrary.wiley.com/doi/10.1890/ES14-00051.1
[79] https://esajournals.onlinelibrary.wiley.com/doi/10.1890/ES14-00051.1



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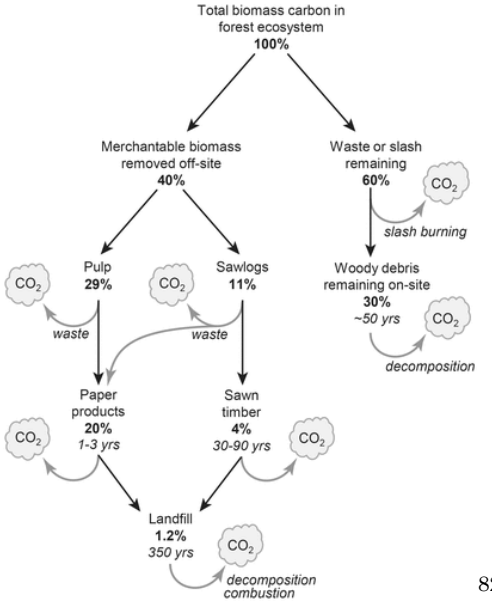
"Changes in total biomass carbon stock of the ecosystem over time under three scenarios (shown as black lines) from an initial stock of a native forest: (1) wildfire that occurred at time 0 years and then the forest regenerated and dead biomass decomposed over time, (2) regrowth forest after logging once and regeneration, and (3) harvested forest under a regime of repeated logging rotations consisting of clearcutting and slash burning on a 50 year cycle. The carbon stock within the harvested forest is separated into biomass components (shown as grey lines): (1) living biomass, (2) dead and downed woody debris, (3) wood products, and (4) landfill. These biomass components constitute part of the harvested forest system but are not all located at the same site; living biomass and dead and downed woody debris occur at the forest site, but wood products and landfill occur in different locations."[81]



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"Transfer of biomass carbon during harvesting and processing of wood products. Numbers in bold represent the proportion of the total biomass carbon in the forest that remains in each component. Numbers in italics are the average lifetime of the carbon pool (see data sources in Appendix E: Table E1)."[83]

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[80] https://esajournals.onlinelibrary.wiley.com/doi/10.1890/ES14-00051.1
[81] https://esajournals.onlinelibrary.wiley.com/doi/10.1890/ES14-00051.1
[82] https://esajournals.onlinelibrary.wiley.com/doi/10.1890/ES14-00051.1
[83] https://esajournals.onlinelibrary.wiley.com/doi/10.1890/ES14-00051.1

Harvesting trees for wood products results in net emissions and is not an energy-neutral process.[84] Post-fire logging as a way to mitigate climate change and shift C storage to wood products is erroneous and misguided, except in special circumstances.[85] This plan does not address a special circumstance, and using the transfer of C storage from biomass to wood products is erroneous.

The EA Fails to Take a Hard Looks at Climate Impacts

The Forest Service failed to take the requisite hard look at the impacts of the proposed action with regards to climate change, including the cumulative impacts of its emissions from similar actions. In discussing the climate impacts of the project, the Forest Service made only "general statements about possible effects." *Te-Moak Tribe*, 608 F.3d at 603. And the evidence it relied on for its claims about the emissions of the proposed project lacks scientific integrity.

The Forest Service avoids a real analysis of the climate impacts of the project by claiming that the project's "direct and indirect impacts to national and global greenhouse (GHG) gas emissions and climate change as a whole are negligible." EA at 39. But the Ninth Circuit has made clear that merely concluding that a given quantity of emissions is a small part of global GHG emissions is not a sufficient analysis under NEPA. *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1217 (9th Cir. 2008). "[T]he fact that climate change is largely a global phenomenon that includes actions that are outside of the agency's control does not release the agency from the duty of assessing the effects of *its* actions on global warming." *Id.* (internal quotation marks and citation omitted) (emphasis in original).

There are two cases where courts have held that the Forest Service met their obligation to analyze climate impacts associated with logging projects with relatively minimal analysis. Both cases have reached that conclusion on the argument that NEPA only requires that "[i]mpacts shall be discussed in proportion to their significance." *Hapner v. Tidwell*, 621 F.3d 1239, 1245 (9th Cir. 2010); *Earth Island Inst. v. Gibson*, 834 F. Supp. 2d 979, 990 (E.D. Cal. 2011), *aff'd sub nom. Earth Island Inst. v. U.S. Forest Serv.*, 697 F.3d 1010 (9th Cir. 2012). However, in both cases, the impacts at issue were significantly less than those threatened by the proposed project, especially when the impacts of the proposed project are considered in combination with the second phase of restoration and the WRAP project. *See Hapner,* 621 F.3d at 1242, 1245 (project only planning to take actions, which primarily involved

[84] https://carbon2018.globalchange.gov/chapter/9/
[85] https://www.nature.com/articles/s41598-020-77527-8#Sec9

thinning and not clearcutting trees, on 1,010 acres); *Earth Island Inst.*, 834 F. Supp. 2d (project proposing postfire recovery on 1,149 acres). Additionally, the Forest Service still did at least some meaningful analysis in both cases, while the short analysis of the proposed project relied only on faulty assumptions. *See Hapner,* 621 F.3d at 1245 (Forest Service "addressed comments regarding climate change"); *Earth Island Inst.*, 834 F. Supp. 2d at 990 (Forest Service calculated amount of emissions). Therefore, because the proposed project involves much more forested land than the other two cases and the Forest Service failed to supply any meaningful analysis of the impacts, these cases do not impact the conclusion that the EA fails to take a hard look at climate impacts.

The Forest Service is obligated to quantify the amount of greenhouse gas emissions from this project in combination with related projects, such as the second phase of the August Complex Fire Restoration Project and the Wildfire Risk Reduction, Reliability, and Asset Protection project. And the Forest Service must "evaluate the 'incremental impact' that these emissions will have on climate change or on the environment more generally in light of other past, present, and reasonably foreseeable action." *Id.* at 1216. This analysis must include the "*actual* environmental effects resulting from those emissions." *Id.* at 1216 (emphasis in original).

The only discussion of climate change in the EA and the silviculturist specialist report is conclusory and not supported by adequate science. For example, in calculating the carbon storage of the two alternatives and the proposed project, the analysis simply concludes that the only stored carbon will come from harvested timber that is converted to "some form of long-term wood product," completely ignoring the long-term carbon storage of postfire forests. Silviculture Effects Analysis at 15. And the Forest Service assumes, based on one study that makes no such conclusion, that patches of forest that are not artificially planted will have *zero* regrowth if they are more than 700 feet—a number that is seemingly pulled out of thin air—from a living seed source. *Id.* at 7.

The EA did not calculate cumulative GHG emissions from this proposed project and other related projects or describe the actual effects of those emissions. And the only analysis of climate impacts that was included was poorly supported, if at all. Thus, the EA fails to take a 'hard look' at the proposed project's climate impacts.

TRIBAL CONSULTATION

The EA states that, "Consultation was initiated with the Redding Rancheria, the Wintu of Hayfork, the Lassic Band of the Wylacki-Wintoon Family Group, and the Nor-Rel-Muk Wintu Nation. Consultation is currently

ongoing and any resources important to the tribes that are identified will be considered and included in the final decision and project implementation." We hope the agency holds true to this statement. We remind the agency that consultation with affected Tribes must be regular, meaningful and robust.

LACK OF INFORMATION AND TRANSPARENCY

As stated, there was much information lacking in the EA and specialist reports. The maps included in the preliminary EA were not adequate for planning or reviewing ecosystem restoration efforts. Maps were missing watercourses, numerous stream crossings, springs, landslides, gullies, streamside buffers, unstable areas et. An understanding of the change in conditions post-fire, the current conditions, the proposed treatments and a detailed road system map, with riparian reserves widths included- are needed to more fully assess the proposed project in this dynamic landscape. We are concerned that the Shasta-Trinity National Forest purposely withheld even the most basic information from public view.

EMERGENCY SITUATION DETERMINATION

The major high use roads, campgrounds and other infrastructure in the project area could be considered an emergency. Logging, "temporary" road and landing construction and larger unit post fire areas is not an emergency.

We urge the agency rather than seek a full ESD to instead consider a shortened objection period so as to provide the public with adequate information on the proposed action, given that there is so much missing from the EA.

CONCLUSION

While the agency argues that the project is relatively "small scale", 4000+ acres of concenrated groundbased logging and invasive weed spreading on the South Fork Trinity River — a fire-affected, already impared, Key watershed, wildlife corridor, stronghold for the Strix, last lifeblood for salmon and home to goshawks, black bears, fishers and endemic plants and flowers — is significant.

Wildfires are our future. We need a prioritzed fire strategy that is managible, maintainable and compatible with clean water, carbon storage and species conservation. The EA does not live up to legal standards. The proposed project is far from restoration. The South Fork Trinity River watersheds, wildlife, water quality and the public deserve better.

For reasons described, we strongly recommend a Reduced Alt 2. Please note that without a readable map of the road system, riparian reserves and contour lines it is near impossible to provide the detailed recommendations that this project warrants. In lieu of that, Alt 2 would, at the very least, not include closed ML1 roads, 1S26, 28N26, 28N76, 29N30c, 29N75, 29N76 (at least the portion between intersections with 29N48 and 29N75) and the road that accesses roadside units 17-19.

We appreciate your time, attention and consideration.

Sincerely,

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