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Dear Mr. Kuhnel and Mr. Markovich,

The following are the comments of the undersigned on the proposed Black Diamond Landscape Resiliency and Risk Reduction Project. The information we used to compose our comments comes from information provided on the project web page at: https://www.fs.usda.gov/project/?project=62591. The description of the project is in the Preliminary Purpose and Need and Proposed Action (hereafter "PPNPA") and its appendices.

I. INTRODUCTION

In light of recent fires, like the Cameron Peak fire, and a warming climate, we respect the Forest Service's desire to take actions that reduce the susceptibility of homes and infrastructure to wildfire and to make residual stands more resilient to such fires. But we need to recognize at the outset that any vegetation, forest or non-forest, can burn under the right conditions. Thus fire is always a possibility (and in many forest types, benificial), and people living near areas such as the proposed project area will always face some risk. The treatments proposed might change the behavior of some fires in the near term, but given a warming climate, it won't make the landscape less susceptible to fire. There will always be lightning storms and careless humans providing sources of ignitions, and there will always be vegetation that will burn once ignited. The forest cannot be made fire-proof, and it cannot be completely restored to its pre-European settlement condition.

The best approach for protecting communities is to work from the homes outward. This scientifically proven management would provide much better protection for communities and other infrastructure compared to treating forests some distance away from homes.

Overall, a balance is needed between attempting to provide protection against fire and restoring historic conditions on one hand and retaining important forest resources and values on the other. The values at issue include: ecological integrity, wildlife habitat connectivity and effectiveness, retaining old growth forests, watershed integrity, scenery, carbon storage, and manageable recreation. It is not clear that the project as currently proposed would sufficiently retain these values.

II. CONDITION-BASED MANAGEMENT AND NEPA COMPLIANCE

A. The Forest Service proposes to use condition-based management for the Black Diamond project. This is described as follows:

> Condition based management is an approach which supports responsiveness and flexibility between planning and implementation in natural resource management. It allows for proposed management actions to be aligned—post-decision but prior to implementation—with current conditions on the ground.

PPNPA at 5.

In other words, a decision would be issued for the overall project without delineation of specific areas or units to be treated, and the accompanying NEPA document would not disclose site-specific impacts:

> Proposed actions for the entire Black Diamond Landscape Resiliency and Risk Reduction Project would be analyzed in one environmental analysis document with condition-based management, and one decision document would be issued. The decision document will identify the overall project area, existing conditions and need for management actions, and a range of available management actions to meet or move towards desired conditions. Priority areas for implementing individual management actions authorized by the NEPA decision and within the overall project area will be identified during implementation.

PPNPA at 6.

The PPNPA does not even have an estimate of how much acreage would be treated overall, nor by which of the numerous methods described therein, let alone where these treatment methods would be employed. Nor does it have an estimate of how many miles of temporary roads would be needed to access treatment units and implement proposed actions. This information will be critical in determining and disclosing the potential impacts from implementing the project.

B. *This approach is legally problematic*. Site-specific information related to, for example, where logging would occur or new roads would be built, is essential for an agency and the public to understand and evaluate the reasonably foreseeable impacts of a proposal. *See, e.g., Southeast Alaska Conservation Council*, 443 F. Supp. 3d 995, 1014 (D. Alaska 2020) (explaining where a project analysis "identified a total acreage of potential timber harvest, but not the distribution of the specific acreage authorized by each alternative within these areas", "[t]his omission is meaningful given the duration and scale of the project" and "fails to provide a meaningful comparison of alternatives," and thus violated NEPA).

NEPA's review obligations are more stringent and detailed at the project level, or "implementation stage," given the nature of "individual site-specific projects." *Ecology Ctr., Inc. v. United States Forest Serv*., 192 F.3d 922, 923 n.2 (9th Cir. 1999); *see also Friends of Yosemite Valley v. Norton*, 348 F.3d 789, 800-01 (9th Cir. 2003); *New Mexico ex rel. Richardson v. Bureau of Land Management*, 565 F.3d 683, 718-19 (10th Cir. 2009) (requiring site-specific NEPA analysis when no future NEPA process would occur); *Colo. Envtl. Coal. v. Ofc. of Legacy*

Mgmt., 819 F. Supp. 2d 1193, 1209-10 (D. Colo. 2011) (requiring site-specific NEPA analysis even when future NEPA would occur because "environmental impacts were reasonably foreseeable"). NEPA requires that agencies must undertake and disclose site-specific analysis before making decisions with site-specific impacts. *See, e.g., California v. Block*, 690 F.2d 753, 761 (9th Cir. 1982) (holding that site-specific impacts must be "fully evaluated" when an agency proposes to make an "irreversible and irretrievable commitment" of resources to a project at a particular site).

In other words, whenever an agency proposes to choose among options that have different site-specific environmental consequences—like logging in one area versus another or logging an area lightly versus clearcutting—the agency must provide site-specific analysis of those environmental consequences during the NEPA process before making a final decision. *See, e.g., Western Watersheds Project v. Abbey*, 719 F.3d 1035, 1049 (9th Cir. 2013) (internal citation omitted) (holding that BLM has a "critical duty to 'fully evaluate[ ]' site-specific impacts" even after issuing a programmatic EIS); *City of Tenakee Springs v. Block*, 778 F.2d 1402, 1407 (9th Cir. 1985) (finding that "NEPA requires both a programmatic and a site-specific EIS," and that agencies do not have discretion "to determine the specificity required by NEPA" in a site-specific EIS but must instead adhere to the statute); *Wilderness Soc'y v. U.S. Forest Serv.*, 850 F. Supp. 2d 1144, 1150, 1157 (D. Idaho 2012) (holding that the U.S. Forest Service was required to "take a 'hard look'" at the impact of 94 miles of roads under NEPA "before making them a part of the designated route system in the area" despite the roads having been used unofficially for years); *Klamath-Siskiyou Wildlands Ctr. v. U.S. Forest Serv*., No. 2:05-CV-0299, 2006 WL 1991414, at *9–10 (E.D. Cal. July 14, 2006) (invalidating the use of an EA without site-specific analysis for project locations). Specifically, when an agency prepares a site-specific analysis for a project-level action, it must include "a reasonably thorough discussion of the distinguishing characteristics and unique attributes of each area affected by the proposed action." *Stein v. Barton*, 740 F. Supp. 743, 749 (D. Alaska 1990); see also Klamath-Siskiyou Wildlands Ctr., 2006 WL 1991414, at *9–*10. Moreover, in order to "facilitate public discussion," the project's "proposed activities must be sufficiently correlated with environmental factors" and values—such as the presence of plant and wildlife species, for example—in *each area* that will be affected by the project. *Stein*, 740 F. Supp. at 749; *see also Ayers v. Espy*, 873 F. Supp. 455 (D. Colo. 1994) (holding that where the Forest Service's EA for a timber sale in the Arapaho and Roosevelt National Forests selected an alternative despite "grossly inadequate" soil data, the agency was required to conduct a soils inventory and analysis providing site-specific information sufficient to properly evaluate each proposed alternative and the reasons for each alternative's selection or rejection).

"[G]eneral statements about possible effects and some risk do not constitute a hard look, absent a justification regarding why more definitive information could not be provided." *Or. Natural Res. Council Fund v. Brong*, 492 F.3d 1120, 1134 (9th Cir. 2007) (citation omitted).

Analyzing and disclosing site-specific impacts is critical because where (and when and how) activities occur on a landscape strongly determines the nature of the impact. As the Tenth Circuit Court of Appeals has explained, the actual "location of development greatly influences the likelihood and extent of habitat preservation. Disturbances on the same total surface area may produce wildly different impacts on plants and wildlife depending on the amount of contiguous

habitat between them." *New Mexico ex rel. Richardson*, 565 F.3d at 706. The Court used the example of "building a dirt road along the edge of an ecosystem" and "building a four-lane highway straight down the middle" to explain how those activities may have similar types of impacts, but the extent of those impacts – in particular on habitat disturbance – is different. *Id*. at 707. Indeed, "location, not merely total surface disturbance, affects habitat fragmentation," and therefore location data is critical to the site-specific analysis NEPA requires. *Id*. Merely disclosing the existence of particular geographic or biological features is inadequate – agencies must discuss their importance and substantiate their findings as to the impacts. *Or. Natural Res. Council Fund v. Goodman*, 505 F.3d 884, 892 (9th Cir. 2007).

Courts in the Ninth Circuit have taken a similar approach. For example, in 2019 the U.S. District Court for the District of Alaska issued a preliminary injunction in the case *Southeast Alaska Conservation Council v. U.S. Forest Service,* halting implementation of the Tongass National Forest's Prince of Wales Landscape Level Analysis Project. *Southeast Alaska Conservation Council v. U.S. Forest Serv.*, 413 F. Supp. 3d 973 (D. Ak. 2019). The court did so because the Forest Service's failure to disclose the site-specific impacts of that logging proposal raised "serious questions" about whether that approach violated NEPA.

The district court explained the approach the Forest Service took in the Prince of Wales EIS:

> each alternative considered in the EIS "describe[d] the conditions being targeted for treatments and what conditions cannot be exceeded in an area, or place[d] limits on the intensity of specific activities such as timber harvest." But the EIS provides that "site-specific locations and methods will be determined during implementation based on defined conditions in the alternative selected in the ... ROD ... in conjunction with the ... Implementation Plan ...." The Forest Service has termed this approach "condition-based analysis."

See id. at 976-77 (citations omitted). The Prince of Wales EIS made assumptions "in order to consider the 'maximum effects' of the Project." *Id*. at 977. It also identified larger areas within which smaller areas of logging would later be identified, and approved the construction of 164 miles of road, but "did not identify the specific sites where the harvest or road construction would occur." *Id*.

The Court found the Forest Service's approach contradicted Ninth Circuit precedent including *City of Tenakee Springs v. Block*, 778 F.2d 1402 (9th 1995), concerning logging on the Tongass National Forest. In *City of Tenakee Springs*, the appellate court set aside the Forest Service's decision to authorize pre-roading in the Kadashan Watershed, without specifically evaluating where and when on approximately 750,000 acres it intended to authorize logging. The district court evaluating the Prince of Wales project found the Forest Service's approach was equivalent to the deficient analysis set aside in *City of Tenakee Springs.*

> Plaintiffs argue that the Project EIS is similarly deficient and that by engaging in condition-based analysis, the Forest Service impermissibly limited the specificity of its environmental review. The EIS identified which areas within the roughly 1.8-million-acre project area could potentially be harvested over the Project's 15-year

> period, but expressly left site-specific determinations for the future. For example, the selected alternative allows 23,269 acres of old-growth harvest, but does not specify where this will be located within the 48,140 acres of old growth identified as suitable for harvest in the project area. Similar to the EIS found inadequate in *City of Tenakee Springs*, the EIS here does not include a determination of when and where the 23,269 acres of old-growth harvest will occur. As a result, the EIS also does not provide specific information about the amount and location of actual road construction under each alternative, stating instead that "[t]he total road miles needed will be determined by the specific harvest units offered and the needed transportation network."

Id. at 982 (citations omitted).

The district court concluded that plaintiffs in the case raised "serious questions" about whether the Prince of Wales EIS's condition-based management approach violated NEPA because "the Project EIS does not identify individual harvest units; by only identifying broad areas within which harvest may occur, it does not fully explain to the public how or where actual timber activities will affect localized habitats." *Id*. at 983. After finding the plaintiffs also met the other factors for preliminary injunction, the Court enjoined all logging until a decision on the merits. *Id*. at 986.

In March 2020, the Alaska district court reaffirmed its September 2019 preliminary injunction decision and holding that the Forest Service's condition-based management approach violated NEPA. *Southeast Alaska Conservation Council v. United States Forest Serv*., 443 F. Supp. 3d 995 (D. Ak. 2020). The court explained that "NEPA requires that environmental analysis be specific enough to ensure informed decision-making and meaningful public participation. The Project EIS's omission of the actual location of proposed timber harvest and road construction within the Project Area falls short of that mandate." *Id*. at 1009 (citations omitted).

The district court also concluded that the Forest Service's "worst case analysis" was insufficient, explaining: "This approach, coupled with the lack of site-specific information in the Project EIS, detracts from a decisionmaker's or public participant's ability to conduct a meaningful comparison of the probable environmental impacts among the various alternatives." *Id*. at 1013. Consequently, the court concluded that

> By authorizing an integrated resource management plan but deferring siting decisions to the future with no additional NEPA review, the Project EIS violates NEPA. The Forest Service has not yet taken the requisite hard look at the environmental impact of site-specific timber sales on Prince of Wales over the next 15 years. The Forest Service's plan for condition-based analysis may very well streamline management of the Tongass ... however, it does not comply with the procedural requirements of NEPA, which are binding on the agency. NEPA favors coherent and comprehensive up-front environmental analysis to ensure ... that the agency will not act on incomplete information, only to regret its decision after it is too late to correct.

Id. at 1014-15 (internal citations and quotations omitted). The Forest Service should not interpret the Alaska District's decision to somehow endorse the use of condition-based analyses for environmental assessments. Where the exercise of site-specific discretion is material to a project's environmental consequences, NEPA requires consideration of site-specific proposals and alternatives, regardless of whether the effects are "significant." 42 U.S.C. § 4332(2)(C), (E).

In the end, "vague and conclusory statements, without any supporting data, do not constitute a 'hard look' at the environmental consequences of the action as required by NEPA." *Great Basin Mine Watch v. Hankins*, 456 F.3d 955, 973 (9th Cir. 2006); *see also Ocean Advocates v. Army Corps of Engineers*, 402 F.3d 846, 869 (9th Cir. 2004) (finding that a vague and uncertain analysis is insufficient to meet NEPA's mandate).

As CEQ has previously recognized, site-specific NEPA analysis leads to better outcomes, period. Memorandum from Michael Boots, Acting Director of Council on Env't Quality, to Heads of Fed. Dep'ts and Agencies, "Effective Use of Programmatic NEPA Reviews," at 5 (Dec. 18, 2014) (stating that the NEPA process of using programmatic and site-specific analysis "leads to better outcomes" for the environment, public engagement, and government decisionmaking). This is available at https://obamawhitehouse.archives.gov/sites/default/files/docs/effective_use_of_programmatic_nepa_reviews_final_dec2014_searchable.pdf (Last viewed June 9, 2022.)

As with most projects, including the ones mentioned in the legal cases cited above, the impacts from the Black Diamond project will depend on where activities occur. As is detailed in these comments below, there are special places in the project area, including roadless areas, a research natural area, and the Todd Gulch Fen. There is also habitat for one threatened wildlife species and several other species of concern. Impacts will vary depending on how much of these special places and habitat are treated, as well as and how and when.[1] The Forest Service must disclose these potential impacts and allow public review before approving activities. But as currently proposed, the public would not have any input on site-specific activities prior to approval, as these projects would be developed later, after approval of the overall project. This is neither legal nor acceptable.

C. Use appropriate NEPA Documentation. An environmental impact statement (EIS) should be prepared for the overall Black Diamond project. The impacts from activities in a "near-266,000-acre landscape" (PPNPA at 1)[2] over many years are likely to be significant. These impacts include, but are not limited to, damage to wildlife habitat, soils, watershed, recreation opportunity, and scenery. A key factor in determining whether a project's impacts may reach the level of significance is the degree to which the proposal may impact "[u]nique characteristics of the geographic area such as proximity to … ecologically critical areas." FSH 1909.15, sec 15 (b)(3). With the potential to degrade roadless forests, fens, and habitat for the imperiled lynx, this project may have significant impacts, requiring preparation of an EIS.

[1] Timing could affect cumulative impacts; for instance, if treatment were concentrated in habitat for the species discussed below in a short time period, it could result in significant impacts to those species.
[2] Within this landscape there are 190,177 acres of national forest land. PPNPA at 4.

Instead of approving activities only after the overall project was approved, the Forest Service should prepare a programmatic EIS that covers the overall impacts and cumulative impacts. Once that is approved, the agency should prepare environmental assessments (EAs) for individual projects with full public involvement, decisions, and an objection period for each.

Cumulative impacts from the proposed project and the Cameron Peak fire must be analyzed and disclosed. Past treatments and other fires in and near the project area must also be considered in the cumulative impacts analysis. Of particular importance are impacts to wildlife species needing continuous forest cover, as they may be the most affected by the cumulative removal of forest cover.

D. Consider an alternative with more limited treatment and emphasizing conservation of forest values. Along the lines of what we suggest throughout these comments, we request that the Forest Service consider in detail an alternative that has the following features:

--limiting treatments in those areas above about 7200 feet in elevation to treatments in the home ignition zone, thinning from below in dense ponderosa pine stands, and removal of hazard trees, especially near homes and other infrastructure.

--no treatment in the spruce-fir ecotype other than minor removal of hazard trees near roads, trails, and other infrastructure.

--no clearcuts over 40 acres in size.

--any treatment in roadless areas and the research natural areas should be limited to hand thinning and prescribed fire.

--design treatments to maintain large areas of forested habitat, and effective habitat, where practical.

--obliteration and closure of all roads used for the project and existing non-system roads unless they are needed for infrastructure or are designated for non-motorized recreation.

--conservation of old growth trees during any logging activity to aid in forest recovery.

Such an alternative would meet the project purpose and need because it will improve and/or maintain resilient landscapes (because there is little evidence treatments are needed or effective above the lower montane zone) while focusing treatments to protect communities and structures, and it will do so while better protecting forest and wildlife values.

III. TREATING NEAR HOMES AND OTHER INFRASTRUCTURE IS THE MOST EFFECTIVE MEANS OF REDUCING FIRE SUSCEPTIBILITY

Actions to reduce fuels and the associated risk of fire should be concentrated in the home ignition zone (HIZ), which is the area about 30 meters surrounding a house. A similar treatment zone can also be used to protect other infrastructure. Experiments and modeling have shown that fire outside this zone, no matter how hot, will not directly ignite a structure. See Cohen, 1999, 2008, and Syphard et al, 2014.

The home-outward strategy is detailed in Bevington, 2021. A home-outward strategy is likely to be more effective in protecting buildings than reducing fuels more than 30 meters from the buildings. Homes can ignite from firebrands (burning embers) that break off from fires to ignite new fires up to at least 1.5 miles away. However, if the buildings themselves and the immediately surrounding areas are treated appropriately, there would be little combustible material for any firebrands to burn when a wildfire hits, and the structures have a good chance of surviving any fire. On the other hand, if areas well away from buildings are treated but areas around them are not, the buildings would still be vulnerable to ignition from any wildfire.

Treating areas outside the HIZ is likely to have little effect on the survivability of homes. See Cohen, 1999. The effectiveness of thinning in reducing fire susceptibility under extreme conditions (when most fires of any size burn) is at best questionable. In thinned areas, vegetation, possibly including trees, will usually return after treatment. This vegetation will carry a fire. Such fires, burning through flashy fuels (grasses, shrubs, forbs, small trees) would grow very rapidly under the very hot, dry, and windy conditions that propagate most fires. These fires might also burn any surface fuels that existed after treatment, including activity fuels produced during the treatments, that were left on site. This was a problem in the 2010 Fourmile Canyon fire, where treated areas burned as intensely or even more so than untreated areas. USDA Forest Service, 2002, at 79. In the 2002 Hayman fire, extreme fire conditions "overwhelmed most fuel modifications" except for recent burns. USDA Forest Service, 2003 at 96.

Once they hit untreated areas or via spotting, fires in thinned areas would eventually crown out, leading to high intensity fires. Most fires of any size in the western U S. occur under extreme conditions of heat, very low humidity, and wind. It is not possible to prevent these fires from occurring or to stop them once they are ignited.

There is a low probability that any fire will hit an area recently treated. See Rhodes and Baker, 2008, and Barnett et al, 2016. Also, any treated areas would have to be re-treated regularly to maintain any effectiveness they might have in reducing fire intensity or susceptibility

The action of homes igniting from some condition other than trees aflame doing so is graphicly demonstrated by a photo of homes destroyed by the Camp Fire at Paradise California in 2018. See Exhibit 1. It shows houses burnt down to almost nothing but ash, while most of the conifer trees surrounding these houses did not burn at all. This is just one example; there are many more from recent fires across the western U. S.

We recommend the Forest Service, through its State and Private Forestry division and the Colorado State Forest Service, work with local landowners to encourage them to treat their own properties. That would do far more to protect homes from future wildfires than manipulating vegetation well outside the HIZ would do.

IV. TREATMENT AREAS AND METHODS

Lower elevation ponderosa pine. Stands dominated or formerly dominated by ponderosa pine may have become denser than they were historically due to fire suppression. Fires that historically removed smaller trees have not been allowed to burn in lower elevation areas near human development.

As determined by Sherriff and Veblen, 2006, in the northern Front Range of Colorado, only those ponderosa pine stands below about 2200 meters (7200 feet) elevation were primarily influenced by frequent, low-intensity fires. It is these stands that are most likely to be unnaturally dense because of fire suppression. Thus any fuel reduction and stand restoration efforts in the project area outside the HIZ should be focused below this elevation, where a site-specific analysis shows that an area has substantially departed from historic conditions.

It should be noted that factors other than fire suppression alone may have also led to an increase in tree density. Stands that were high-graded, i. e., where the biggest and best trees were cut, may have become dense with tree regeneration filling in the gaps created by removal of the larger trees. It is also important to recognize the role of livestock grazing in increasing the density of ponderosa pine stands. Grazing removed fine fuel that would have otherwise supported low-intensity fire, which would have in turn maintained open ponderosa pine stands. See Belsky and Blumenthal, 1997[3].

Historically, stands above 7200 feet elevation were generally influenced by a mixed-severity fire regime, which means that relatively dense stands developed at times, allowing higher-intensity fires. Thinning from below, i. e., removing many of the smaller trees, as proposed, would be appropriate in stands below this elevation. But in any case, some small trees should be retained in treated areas, as is further discussed below.

Retain some small trees. For some ecological types within the project area, such as ponderosa pine woodlands and dry mixed conifer, “thinning from below” would be a dominant treatment method. See PPNPA at 35, 37. This method “removes trees from the lower canopy to favor trees in the upper crown classes”. Id. at 25. This could result in all or most of the smaller trees being removed from some sites.

It is important to retain some small trees and some Douglas-fir in case the residual ponderosa pine get attacked by mountain pine beetle or other mortality agents that take out the larger trees.

See additional discussion below in section VII.

[3] These authors believe that livestock grazing may have been as important as fire suppression in changing the density of ponderosa pine stands. In this ecotype, grazing is a form of fire suppression because it removes fine fuels, i. e., grasses, forbs, and small shrubs, that support low-intensity fires.

Spruce-fir. The spruce-fir ecotype is the least likely to have departed from historical conditions because fires, though usually stand-replacing, were very infrequent. Also, there is much less infrastructure to protect here: "[c]ommunities and infrastructure are limited in the zone…". PPNPA at 18. Most spruce-fir stands have two or more ages, and this has not changed with fire suppression, nor has stand density increased. Therefore, there is no need for treatment in spruce-fir. Actions should be limited to removal of hazard trees.

A desired future condition for the subalpine zone is that : "[f]ire is practicably managed…". Id at 46. Fire in the subalpine zone only occurs under extreme conditions when fires quickly get out of control and cannot be "managed". Prescribed fires should not be ignited or be allowed to expand into spruce-fir areas, as the chances of a fire escaping into an uncontrollable wildfire are too great.

Currently, lodgepole pine and spruce-fir are lumped together under subalpine forest. See PPNPA at 45-46. These species should have separate desired future conditions and primary management action alternatives. These species are distinctly different: a) spruce-fir exists at a higher elevation and in wetter areas, thus they have a longer fire rotation; b) spruce-fir develops multi-aged stands while lodgepole usually grows in single, even aged stands; and c) lodgepole stands in the project area have been affected by mountain pine beetle mortality and dwarf mistletoe, while spruce-fir stands in the project area appear to have no comparable effect from disturbance agents. As discussed above, there is no need to treat spruce-fir stands, so the direction on p. 46-47 of the PPNPA should revised slightly and limited to lodgepole pine.

No areas of old growth in either lodgepole pine of spruce-fir should be treated. As the PPNPA observes:

> Treatments in old-growth lodgepole pine or spruce-fir are not needed to maintain old growth structure and would generally degrade old-growth habitat quality.

Appendix B at 13.

Lodgepole pine. Thinning existing lodgepole stands could increase the fire susceptibility, as it could foster the development of one or more understories. Lodgepole stands seldom do this on their own, thus thinning these stands would not be restoring them. Any new trees would form ladder fuels to carry fires into the crowns of the taller trees. Thus a light ground fire that would not lead to a crown fire in untreated stands could do so in treated stands.

If lodgepole stands are just lightly thinned, there would be too much shade for young shade-intolerant trees to regenerate, but the crowns of the residual trees might still be too close together to stop a running crown fire from developing if there was an ignition nearby.

Generally, lodgepole pine should not be treated outside of the HIZ, except for removal of hazard trees.

Aspen. Aspen generally does not need to be treated. It does not carry fire well, as it has a live bark. Thus it does not contribute to fuel loading across the landscape leading to uncharacteristic fires. With recent fires and future fires in a warming climate, chances are the coverage of aspen in the project area will increase, as mortality of conifers will allow aspen to sprout in areas that have or recently had aspen.

The PPNPA (p. 19) notes the presence of "multi-aged stands of pure aspen". These should not be treated in any way, as aspen will retain itself in these areas.

Upper montane zone. Above 8500 feet or so, "[m]any stands are still reasonably within historical fire return intervals". PPNPA at 17. Since the vegetation in this zone was shaped by a "greater proportions of mixed and high severity fires with moderate to long fire return intervals", "[a] substantial portion of the upper montane lodgepole pine is self-perpetuating". Ibid. Therefore, treatment in this zone should be minimal, if any, outside the HIZ.

Clearcutting. The PPNPA (p. 26) states that clearcuts would be 5-40 acres, but could exceed 40 acres. We strongly recommend that no clearcuts be more than 40 acres. This creates openings that are too large, causing fragmentation of habitat for wildlife species needing forest cover.

The Forest Plan limits created openings to 40 acres. See Plan at 22, Standard 63. Under the Planning Rule, clearcuts larger than 40 acres can be allowed only "on an individual timber sale basis after 60 days public notice and review by the regional forester". 36 CFR 219.11(d)(4)(ii). If openings larger than 40 acres are contemplated, the agency must follow this process.

Mastication and chipping. These treatment methods place a large amount of processed material on the ground. This material will decay very slowly and will inhibit, if not prevent, the growth of new vegetation, including tree regeneration. The decay of wood will cause an acid pulse into the soil, making it difficult for anything other than conifer trees to get established and grow. Thus if these methods are used, there must be strict limits on how much of the ground in any unit can be covered and to what depth. We recommend a depth of no more than two inches over no more than five percent of any treatment unit.

Meadow restoration. The PPNPA (p. 50) notes the importance of meadows, now being encroached by conifers, for wildlife and for fire breaks. A study of openings in ponderosa pine-Douglas-fir forests on part of the Pike-San Isabel National Forest found that it was mostly small (<50 meters long) meadows that had disappeared with fire suppression, and that abundance of larger openings (more than 50 m across) had remained stable. Openings were found primarily on gentle south to southeast-facing slopes at lower elevations. See Dickinson 2014. The goal in the Black Diamond Project area should be to restore small meadows where appropriate and feasible.

Whole-tree yarding. According to PPNPA Appendix A at 12, whole-tree yarding (WTY) may be used. This would mean less material would be left on treatment sites to protect soils. This may make it difficult to achieve the 55 to 75 percent effective ground cover required by a preliminary design feature to protect soils. See PPNPA Appendix B at 5. In units where WTY is used, operators may need to be required to redistribute fine slash and a few larger pieces across treatment units to maintain sufficient ground cover for protecting soils and to meet the Forest Plan's requirement for retention of coarse woody debris. See Forest Plan at 19, standard 56. This would also facilitate achieving another design feature requiring retention of coarse and fine woody debris. PPNPA Appendix B at 5.

WTY would also lead to even larger piles at landings, since branches, tops, and cull logs that would otherwise be left at treatment sites would instead be transported to landings. This would make disposal of this material more difficult. If the piles are burned, the fires would burn longer and increase the risk of damaging soils.

We recommend only limited use, if any, of WTY. Its use might be appropriate in the HIZ, where the desire is to have a very low amount of surface fuel after treatment.

V. PROTECT ROADLESS AREAS

Four Colorado Roadless areas (CRAs) are within the project area, with 31,241 acres "suitable for proposed management actions". Of this acreage, 7017 acres in upper tier roadless areas could be treated. PPNPA at Table 9, p. 52.

In upper tier roadless areas, cutting, sale, and removal of trees are prohibited, except where such activities are "incidental to the implementation of a management activity not otherwise prohibited by this subpart" (36 CFR 294.42(b)(1)) or "needed and appropriate for personal or administrative use" (id. at (b)(2). Neither of these exceptions apply.

For non-upper tier CRAs, cutting sale, and removal can only occur if the activity is consistent with the forest plan and would maintain or improve one or more of the roadless characteristics. 294.42(c). Furthermore, activities to protect municipal water supply

> will focus on cutting and removing generally small diameter trees to create fuel conditions that modify fire behavior while retaining large trees to the maximum extent practical as appropriate to the forest type.

294.42(c)(1)(iii) and 2(i). Under this limitation, thinning to reduce fuels in stands dominated by ponderosa pine would be allowed, but cutting in lodgepole pine and spruce-fir would not be allowed.

Similar to cutting, sale, and removal of trees, the CRR has limitations on road construction in CRAs. Note that even in non-upper tier CRAs, there is no authorization for constructing a road more than one-half mile into the "community protection zone". See 294.43(c).[4]

The individual CRAs in the Black Diamond Project area have outstanding roadless qualities, as detailed in the Profiles of Arapaho-Roosevelt National Forest Roadless Areas (2008).[5] Below, we highlight a few of these features. (Cited page numbers are from Profiles.)

Cherokee Park. This area "offers good opportunities for solitude and primitive recreation", and has habitat for numerous wildlife species, including: lynx, wolverine, goshawk, marten, boreal owl, and boreal toad. Id. at 10-11.

Green Ridge East. Elevation in this roadless area ranges from 9000 to 11,000 feet. Id. at 26. Lands in this elevation are much less departed from natural conditions, if at all, compared to lower elevation areas, as is discussed above. There is no need to treat in this area.

This CRA contains lynx denning and foraging habitat, and at the time of the Forest Plan was prepared, lynx activity was occurring in adjacent areas. Id. at 26. The area has habitat for numerus additional species, including: marten, boreal owl, goshawk, three-toed woodpecker, and boreal toad. This includes "critical habitat for boreal toads and reproduction (sic)". Ibid. There is winter and summer range for deer, elk, and bighorn sheep. Id at 27. Most of the area is rated moderate or high for erosion hazard.

Green Ridge West. This area lies between 9000 and 11,000 feet and is dominated by lodgepole pine and spruce-fir, two ecological types that do not need much if any treatment, as discussed above. Habitat for numerous sensitive and other wildlife species exists, including: lynx, marten, boreal owl, goshawk, three-toed woodpecker, pygmy shrew, bighorn sheep, peregrine falcon, bald eagle, wolverine, and the olive-sided flycatcher. There is year-round range for bighorn sheep and summer and winter range for deer and elk. Id. at 28-29.

A sizable portion of this area has sensitive to erosive soils, and thus has a moderate or higher erosion hazard rating. Id. at 29. Approximately 230 acres of the Boston Peak Fen Research Natural Area is within the CRA. Id. at 30.

North Lone Pine. This area has excellent habitat for many species because much of it is not easily accessible to humans. Id. at 56. The area includes habitat for: goshawk, boreal owl,

[4] See also 294.41, under which a community protection zone can be more than a half mile from the boundary of an at-risk community only if the area has: 1) sustained steep slopes, 2) has geographic features that aid in creating a fire break, and 3) is in fire regime condition class 3. Only the lower-elevation areas could possibly (but not automatically) be in class 3, i. e., significantly departed from historic conditions. See discussion above.

[5] See US Forest Service, Rocky Mountain Region, Profiles of Arapaho-Roosevelt National Forest Roadless Areas (July 23, 2008), available at https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5056406.pdf (last viewed Sep. 22, 2022).

bighorn sheep, and flammulated owl. Ibid. There is critical habitat for the threatened Prebles meadow jumping mouse and critical winter range for deer and elk. Ibid.

About 4000 acres of the Lone Pine Research Natural Area lies within this CRA. Ibid. (See more detailed discussion below.) The CRA is moderate or high for erosion hazard.

Any subsequently prepared NEPA document must disclose how these areas would be accessed. The PPNPA (p. 53) states that no temporary roads would be constructed for proposed activities, but roads would likely be needed for access to possible treatment units in "roadless" areas, i. e., area with few or no roads, or at least few that are usable.

Under the proposed project, the following activities could occur in upper tier roadless areas:

--fireline construction
--thinning of small diameter trees
--piling of surface fuels
--broadcast, pile, and jackpot burning
--"rearrangement" of surface fuels
--incidental cutting of snags

PPNPA at 52-53. Similar activities would occur in non-upper tier roadless areas. Id. at 53.

Surface fuel rearrangement may require cutting swaths 50-100 feet wide. Id. at 54. Cutting could be even more extensive where natural fire control features are lacking:

> Where natural features don't exist to contain a prescribed fire, the preparation treatments may require more intensive and/or extensive fuel mitigation. This may include treating a wider area to the maximum extent allowed and require hand piling and burning of fuels to manage fire behavior during a broadcast prescribed fire.

Ibid.

Any cutting or road construction could degrade roadless characteristics. The following characteristics would be especially vulnerable: undisturbed land (and maybe water); habitat for "species dependent on large, undisturbed areas of land"; "[n]atural-appearing landscapes with high scenic quality", and reference landscapes. See 36 CFR 294.41 (defining roadless area characteristics in Colorado Roadless Rule). Broadcast burning might be consistent with these characteristics, but road construction and major logging, with slash piles and landings, would not be.

Treatment in roadless areas should be minimal, mainly limited to: reducing uncharacteristically high fuel loadings in areas near homes; maintaining old growth in the lower montane zone, especially ponderosa pine; and re-establishing fire in the ecological types where it was once frequent and where it can be safely implemented without major logging. Treatment should generally be limited to hand thinning and burning. Any fire control lines must be constructed by

hand and be rehabilitated after use. No roads can be constructed in CRAs. There must be no machine piling of slash.

The analysis must show how treatments in roadless areas will minimize impacts to and/or improve roadless area characteristics, and otherwise comply with the Colorado Roadless Rule.

VI. PROTECT OTHER DESIGNATED AREAS

Designated wild river segments. Within the project area, 3105 acres are assigned to management area 1.5, Designated and Eligible Wild Rivers. PPNPA at Table 2, p. 13. This reflects the designation of segments of the Cache La Poudre River as a wild river. In land with this MA, "[t]he variety and arrangement of plant communities and structural stages depend on natural disturbances…". Plan at 343.

Under the Wild and Scenic Rivers Act, wild river areas

> are free of impoundments, and generally inaccessible except by trail, with shorelines or watersheds still largely primitive and shorelines largely undeveloped. These represent vestiges of primitive America.

16 U. S. C. 1273.

Areas in the 1.5 MA must not be treated except by fire. No roads, skid trails, or control lines can be constructed.

Research natural areas. Most of the Lone Pine Research Natural Area is in the project area. It is in the North Lone Pine Colorado Roadless Area, which is upper tier.[6] This RNA includes "a large trailless area of low-elevation ponderosa pine and Douglas-fir forests in gently rolling terrain". Forest Plan at 348. It also includes some sensitive plant species and "uncommon riparian plant associations". PPNPA at 54.

Because the composition and structure of the ponderosa pine type may be departed from historical conditions, some treatment here may be appropriate. But before any treatment is approved for the RNA, a site-specific assessment should be done to determine the degree of departure of stand structure and species composition from natural conditions. This should be used to design treatments that would restore natural stand ecological conditions with the minimum manipulation needed while minimizing damage to the integrity of the rare plant species and associations.

Note that road and trail construction are prohibited in RNAs except to correct damage from existing trails. Forest Plan at 346. Also, a standard states:

[6] According to PPNPA Table 2, p. 13, 4201 acres of land in the project area is assigned to MA 2.2, Research Natural Areas. The whole RNA is 4558 acres. Forest Plan at 348.

> Prohibit motorized and mechanized use, except when they provide necessary access for scientific, administrative, or educational purposes.

Ibid.

The Green Ridge West Area contains part of the Boston Peak Fen Research Natural Area, as is mentioned above in section V. This RNA has a

> unique wetland ecosystem supporting outstanding examples of rare plant populations and unusual fen and willow carr plant communities. The wetland is also noteworthy for its deep deposits of peat and lake sediments.

Forest Plan at 348. This RNA must be completely avoided, with no treatments, roads, skid trails, or fire control lines near or immediately adjacent to the wetland.

VII. PROTECT AND FOSTER OLD GROWTH

The larger trees were the first ones taken by early European-descendant settlers, as they provided the most wood or the biggest logs for building houses and other structures. Retaining existing old forest stands and fostering the succession of mature stands into old growth status should thus be a major focus of the proposed project.

Older tree stands provide habitat for various wildlife species such as lynx (see more below), marten, goshawk, and others. Such trees, particularly ponderosa pine, are the most resistant to ignition during wildlife. Older trees also provide the highest level of storage of carbon. A recent study in the Pacific northwest found that large trees store a disproportional amount of carbon. See Mildrexler et al, 2020. There is no reason to believe that the situation in the northern Front Range of Colorado is substantially different. Retaining large trees must thus be an important component of any strategy for mitigating climate change.

The President's Executive Order 14,072 states:

> It is the policy of my Administration … [to] conserve America's mature and old-growth forests on Federal lands ….
>
> My Administration will manage forests on Federal lands, which include many mature and old-growth forests, to promote their continued health and resilience; retain and enhance carbon storage; conserve biodiversity; mitigate the risk of wildfires; enhance climate resilience; enable subsistence and cultural uses; provide outdoor recreational opportunities; and promote sustainable local economic development.

E.O. 14,072 (April 22, 2022) at Secs. 1, 2. The executive order further defines actions whose goals are "[t]o further conserve mature and old-growth forests." Id., Sec, 2. Any subsequently

prepared NEPA document must address how the project fulfills these presidential mandates to conserve old growth and mature forests.

The Forest Plan has several plan components designed to protect and retain old-growth forest. See Plan at 31-32, components 116-122. One is of particular importance for the proposed project:

> Within existing ponderosa pine and Douglas-fir old-growth stands that are known or discovered, either exclude vegetation treatments or reduce fire hazards using prescribed fire or mechanical means if sites are at risk from fire (e.g. removal of encroaching Douglas-fir regeneration in ponderosa pine old growth sites).

GL 121, Plan at 32.

In MA 3.5, which covers almost half of the project area[7], a standard requires the Forest Service to "[e]xclude vegetation treatment of inventoried spruce-fir or lodgepole pine old growth." Plan Standard 1 at 359. An exception to this prohibition is allowed "if the lodgepole old growth is considered non-functional at time of implementation". PPNPA Appendix B at 13. How could old growth be "non-functional"? Either it is old growth or it isn't. And if it is, it needs to be retained and protected.

Other plan components require the Forest Service to, among other issues, "[r]etain all existing Douglas-fir and ponderosa pine old growth", "[m]aintain or increase habitat effectiveness within identified old growth areas", maintain or develop a network of existing and future connected old-growth stands with adequate and well-dispersed habitat, and encourage development of ponderosa pine and Douglas-fir old growth. Plan components 116-122, Plan at 31-32. The NEPA document for the project must include an analysis of how old growth would be conserved, and if possible in ponderosa pine stands, developed or enhanced.

With any commercial timber sales, it would be especially difficult to ensure retention of the larger trees. Obviously, timber contractors would prefer the largest trees, as more wood products can be made from them compared to smaller trees. To get the desired treatment done, the temptation would be for the Forest Service to allow some big trees to be cut, as occurred with a long-term commercial contract that included the Taylor Mountain area. It would also be tempting for the timber contractor to take larger trees, whether it is allowed to or not. For these reasons, commercial timber sale contracts should not be used in the Black Diamond Project area.

It must be recognized that trees must first be young before they can become old. Thus it is important to retain some smaller trees, as is discussed above in section IV. These trees will form the new forest if the older trees die from any cause, including bark beetles. Trees less than about six inches in diameter will not likely breed bark beetles. In ponderosa pine-dominated stands that have become denser than they were historically with younger trees, some Douglas-fir should be retained to have more diversified stands in case bark beetles attack and kill the older ponderosa pine. Some younger ponderosa pine should also be retained to perpetuate that tree type if the larger pines die from a future bark beetle attack.

[7] See PPNPA Table 2 at 13.

VIII. PROTECT AND RETAIN WILDLIFE HABITAT

One of the potentially serious impacts from the project is fragmentation of wildlife habitat. With large areas opened up via thinning (with wide crown spacing) and clearcuts 40 acres or larger, habitat for various species, including but not limited to big game and late-successional species, could be fragmented, i. e., cut into pieces too small to use.

Note the following forest plan goals addressing this subject:

> (GO) Establish or maintain landscape linkages, where needed and feasible, which provide connections among large, contiguous blocks of late-successional forest.
>
> (GO) Maintain, and restore where necessary, habitats of sufficient area and appropriate spatial pattern, to minimize the adverse effects of human-caused fragmentation.
>
> (GL) Protect landscape linkage areas (patterned matrix, corridors, stepping stones, etc.) which facilitate multidirectional movement of species between important habitats such as late-successional forests, high-elevation tundra, meadows and forests, lower-elevation forests, shrublands and prairies.

Plan Goals 38 and 39, and Guideline 40, respectively, p. 17.

With a large amount of land proposed for treatment (though the PPNPA declines to identify how much) in a 197,000-acre project area, a comprehensive analysis of habitat and the likely impacts on it from the project must be prepared in the NEPA document for the project.

A wide variety of wildlife likely inhabits, or at least could use, the project area. The Forest Plan provides the following direction:

> When competing uses arise, favor habitat specialists that are characteristic of restricted niches present in rare or declining habitats, over species which are habitat generalists, characteristic of common or expanding habitats.

Plan Goal 53, pp. 18-19.

It is important that this direction be followed. The proposed treatments, if not limited, would tend to degrade or destroy niche habitat, especially for species needing continuous forest cover, and create or perpetuate generalist habitat.

Project design should include identifying potential climate refugia for species that are likely to fare the worst in a warming climate. This would include, but not be limited to, lynx and marten. Potential refugia should be identified before any ground-disturbing activity is approved. The potential refugia must be managed to retain the features that provide existing and possible future

habitat for various species. In most cases, thus will mean little or no treatment, as the refugia are likely to be at higher elevations of the project area, where existing conditions do not vary much from historical conditions. This is especially the case for species needing continuous forest canopy cover, as any treatment would reduce or eliminate this habitat.

Maintain effective habitat. To be usable by some wildlife species, habitat needs to have minimal human use, especially via motor vehicles. Roads open to public motorized use are especially detrimental to habitat effectiveness. On closed roads, barriers are often ineffective in preventing use.

The Forest Plan has four guidelines requiring maintenance of habitat effectiveness. See Plan at 30-31, GLs 106-109. The proposed project's PODs would open forests and have road access, diminishing habitat effectiveness, making compliance with these guidelines difficult or impossible. At the time the Forest Plan was completed, three of the Geographic Areas that partially or fully overlap the proposed project area, Cherokee Park (54 percent), Elkhorn (54 percent), and Redfeather (52 percent) were close to the 50 percent minimum habitat effectiveness required by GL 109. No geographic areas above 50 percent effectiveness can be reduced to less than 50 percent.

Conditions on the ground with regard to habitat effectiveness have probably changed for the worse since the 1997 Plan was approved, i. e, there are probably more roads and trails, including those created by users, than existed a quarter-century ago. Also, use of mountain bikes has increased considerably. Recent research confirms a strong wildlife avoidance response from mountain bikes. See Naidoo and Burton, 2000. New roads and open areas are likely to be used by mountain bikers, among other vehicles.

Therefore, the Forest Service needs to re-assess the habitat effectiveness for the geographic areas that would be affected by the proposed project. Any user-created or other non-system roads and motorized/mechanized trails as well as existing roads and trails must be included in the calculations of habitat effectiveness.

Maintain habitat connectivity. A commendable desired future condition for the subalpine zone is to maintain landscape connectivity. PPNPA at 46. Forest Plan direction on connectivity is weak:

> Retain some connectivity of existing forested corridors within identified map areas, and between old-growth sites that are not planned for harvest, or manage for future forested corridors where connectivity is potential (sic) but absent.

Forest Plan Guideline 119, p. 32.

In a large project like Black Diamond, it would be easy to sever habitat connectivity or prevent it from being reestablished by removing trees across the landscape. As part of any NEPA review for this project, the Forest Service must analyze connectivity of habitat for various species, including, but not limited to: lynx, goshawk, elk, and deer. Existing connections between patches of habitat, especially ones 500 acres or larger, should be identified and retained.

Establish and retain climate refugia. Some wildlife and plant species will be stressed and may need areas of habitat that will serve as a buffer against impacts of a warming climate. The desired future condition cited above for habitat connectivity also includes maintaining climate refugia, another commendable feature. See also id. at 48.

As part of the overall analysis of the project, species potentially in need of refugia and areas of refuge for them should be identified. The project must then be designed to retain these areas. No treatment that reduces the ability of such areas to serve as refugia should be allowed. The establishment of refugia can also serve as guidance for future management actions in the project area, subject to the consideration of the best available science and site-specific information.

Snags. It is extremely important to retain snags, i. e., dead trees, and also trees with dead tops. Snags are used by numerous cavity-nesting species, a few of which are discussed in more detail below, and are essential for many species. The Forest Plan minimums of 1-2 snags per acre (Standard 56, Table 1.8, p. 19) are grossly inadequate. We recommend retaining most larger (say 12 inches DBH, 10 inches DBH in lodgepole pine) snags in clumps of live and dead trees. The preliminary design feature requiring retention of an average of five of the largest snags per acre over each unit (PPNPA Appendix B at 11) is probably sufficient.

Lynx (*Lynx Canadensis*). The project area likely includes some suitable lynx habitat for lynx, a species listed as threatened under the Endangered Species Act. We believe treatments in at least spruce-fir stands are unnecessary, inappropriate, and potentially quite detrimental to lynx. Spruce fir and some lodgepole pine stands with the following characteristics usually have lynx habitat: accumulations of down dead logs for denning habitat, and younger trees and/or low branches on middle-age subalpine fir trees forming the dense horizontal cover needed by snowshoe hare, lynx' favorite prey. Any kind of treatment, especially logging, is likely to degrade or eliminate this habitat. Felling and skidding will uproot or break small trees that form dense horizontal cover.

As discussed above, burning in spruce-fir is virtually impossible to implement safely, and thus must not be approved.

According to IBLT, 2013, cutting understory trees may reduce or eliminate dense horizontal cover, and thereby degrade or destroy lynx habitat or make it unsuitable.

Boreal owl (*Aeogolius funereus*) and marten (*Martes americana*) are two additional species that could be affected if there is more than very minor treatment in the spruce-fir ecosystem. Both species need mostly closed-canopy spruce-fir forest. The down dead component is critically important for marten. The potential impacts on these species must be disclosed, though if no treatment will be done in spruce-fir as we recommend, there would likely be no impact.

Goshawk (*Accipter gentilis*). This raptor "nests in older-aged stands that have a high density of large trees, high tree canopy cover, and high basal area". Reynolds et al, 1992, at 15. The post-fledging family area (PFA) habitat for this species needs patches of dense, large trees, snags, and some small trees for hiding cover near the ground. Id. at 16. Finally, goshawk foraging habitat needs a variety of features, including large trees, snags, and downed logs. Ibid. Goshawks do not directly use snags, but several likely prey species use them.

Almost any of the treatments proposed for the Black Diamond Project area could degrade or destroy goshawk habitat. In fact, as discussed above, some proposed treatments would fragment habitat, especially for species like goshawk that need sizable areas with tree canopy cover. Thus any NEPA document prepared for the project must first require, and include the results of, surveys for goshawk and other late-successional species. Any active or inactive raptor nesting area should be avoided. A Forest Plan standard requires protection of "known raptor nest areas". Plan at 30, Standard 101.

Reynolds et al, 1992 recommend identifying and protecting 180 acres for nesting, to accommodate three suitable nest sites and three replacement sites per home range. Id. at 22. For the PFA, they recommend 420 acres, not including the acres for the nest sites, with 60 percent in the older structural stages. Id. at 23. The foraging area can have a greater variety of forest structure and openings, but 60 percent of these areas should be in the older age classes. Id. at 26-27.

Aberts squirrel (also called tassel-eared squirrel, *Sciurus aberti*). This species is a ponderosa pine obligate, as it depends on this tree species for "most of [its] life requirements". Keith, 2003 at 4. It requires the clumpy structure found in natural ponderosa pine stands. While these squirrels consume ponderosa pine seed and can reduce tree growth,

> they contribute to the well-being of the pine by dispersing spores of hypogeous fungi that facilitate water and nutrient uptake by the trees and thereby enhance seedling survival, forest regeneration, and growth.

Ibid. Keith also stated that "logging degrades the quality of Aberts squirrel habitat and reduces squirrel abundance". Id. at 15; citations omitted.

Patton, 1977, recommended clumps have a minimum at 6 trees and preferably 10-13 trees, with crowns touching. He also recommended that there be no more than 50 feet between clumps. Keith found that "clusters of larger pines provide greatest benefits to squirrels". Id. at 18. See also Patton, 1975, at 11.

The Forest Service must carefully design treatments to retain Aberts squirrel habitat, both occupied and potential habitat. We do not believe that conserving this habitat would seriously conflict with project goals. Removing many (but not all) smaller trees and retaining clumps of large trees would help restore the natural structure of lower elevation Front Range ponderosa pine stands: open stands of large trees with a clumpy structure. This would reduce ladder fuels

and possibly reduce the associated chance of large crown fires in the ponderosa pine type across the landscape while still retaining Aberts squirrel habitat.

Flammulated owl (*Otus flammeolus*). This insectivorous, cavity-nesting, neo-tropical migrant mostly nests in ponderosa pine and Douglas-fir stands. Hayward and Verner, 1994, at 10 et seq. This species prefers older forests, with some open areas for foraging insects. Id. at 23-24. Snags are absolutely essential for breeding, as the flammulated owl is a secondary cavity nester. Id. at 26.

As with Aberts squirrel, any manipulation of vegetation will have to be carefully designed to avoid destroying owl habitat. By maintain snags in clumps of older ponderosa pine and Douglas-fir trees with openings between the clumps, habitat will be retained for flammulated owl while reducing the potential for a large, high-intensity fire.

Big game. Implementation of the project as currently proposed could remove too much hiding and/or thermal cover for deer and elk. Any subsequently prepared NEPA document must analyze big game cover needs over the entire project area before approval of the project or any activities under it.

A preliminary design feature states that elk severe winter range and winter concentration areas should be avoided from December 1 to March 30. PPNPA Appendix B at 14. We request that the Forest Service extend that avoidance period until at least April 15, as parts of the project area that have big game habitat in the snow-free season may still be covered with snow at the end of March, and spring green-up does not start until late April or May except at the lowest elevations within the project area.

Forest Plan standard 106 requires exclusion of human activity in key elk calving areas and deer and elk winter range during the respective seasons. Plan at 30.

MA 3.5, which covers a sizable portion of the project area, has the following theme:

> Management emphasis is on providing adequate amounts of quality forage, cover, escape terrain, solitude, breeding habitat, and protection for a wide variety of wildlife species and associated plant communities.

Plan at 358. This MA also has a standard that requires the Forest Service to "[d]iscourage or prohibit human activities and travel… to allow effective habitat use" at least during elk calving, deer fawning, and bighorn sheep birthing seasons. Another standard here requires limiting or prohibiting human activities "to allow effective habitat use by other wildlife species, especially during the seasons of birthing and rearing of young." Plan at 359. Any NEPA document for the project must disclose how the Forest Service intends to ensure compliance with these standards.

IX. OTHER FOREST PLAN DIRECTION

A. Management Areas (MAs). The proposed project would occur in areas assigned to several management areas under the Forest Plan. Each has some guidance applicable to the proposed project. While no MA would prohibit all of the proposed treatments, all management areas (MAs) have some limitations on such treatment which must be considered in the design and implementation of activities. Any NEPA document prepared for this project must disclose how the agency will ensure compliance with these plan provisions.

MA 1.3, Backcountry Recreation. A desired condition states:

> New human-caused changes to vegetation that may occur are limited in scale and are not visually evident. For short time periods in small areas, some vegetation manipulation may occur that is noticeable; however, it resembles natural patterns.

Plan at 337. Also, new road construction is not allowed. Id. at 338. The intent here is to limit human impacts. This MA is mostly assigned to higher elevation areas within the project area where little vegetative manipulation is needed. See PN Appendix E, Map 2.

MA 2.2, Research Natural Areas. See section VI above.

MA 3.3 Backcountry Recreation – Motorized. A desired condition for this area is:

> New human-caused changes to vegetation that may occur are limited in scale and are not visually dominant. For short time periods, some vegetation manipulation may occur which may be noticed; however, it resembles natural patterns.

Plan at 356.

MA 3.5, Forest and Fauna Habitats.

> Retain all existing lodgepole pine and spruce-fir old growth, except for natural losses that are not human caused, and provide like amounts in the future. Provide for rapid development of future lodgepole pine and spruce-fir old-growth conditions. Protect areas and communities that are providing important habitat components such as wintering areas, birthing areas (especially for calving, fawning, lambing and kidding), rearing areas, and migration routes. Manage and protect healthy forested and nonforested riparian areas to retain their value as quality habitats for terrestrial and aquatic wildlife.

Plan at 358. A standard prohibits treatment of inventoried lodgepole pine and spruce-fir old growth. Two other standards requires that habitat effectiveness be maintained or increased, except for legally required access, and that human use be discouraged or prohibited if necessary to maintain effectiveness during calving, fawning, and wintering seasons. Id. at 359.

MA 4.3, Dispersed Recreation. The theme of this MA is:

> Dispersed recreation areas are managed to provide recreational opportunities in natural or nearly natural-appearing landscapes.

Plan at 366. A guideline affects the timing of operations:

> Restrict vegetation management operations during periods of high recreational use (weekends, holidays, high-use seasons, etc.) as needed, to maintain the desired recreational setting or to reduce interference with the recreational activities.

Id. at 367. This same guideline appears in MA 8.22, Developed Recreation Complexes. Plan at 383.

MA 5.5, Dispersed Recreation – Forest Products. Part of the desired condition is:

> Only limited areas of bare soil, scared trees, compacted soil, erosion, litter, or other associated disturbances are evident.

A guideline states:

> Restrict vegetation management operations during period of high recreational use (weekends, holidays, high-use seasons, etc.) as needed, to maintain the desired recreational setting or to reduce interference with the recreational activities.

Plan at 376-377.

B. Geographic areas (GAs). The project area covers at least parts of eight GAs. See PPNPA at 13. Any NEPA document prepared for this project must disclose how the agency will ensure compliance with direction concerning these areas.

In the Deadman Geographic Area (GA), goals/desired conditions includes the following:

> Seek opportunities to improve conditions in the Upper Sand Creek Watershed, which was rated Class III (non-functional) in the watershed conditions assessment.

Plan at 209. This watershed, with a Class III rating, is also in the Sheep Creek GA. Id. at 253.

In the Laramie River Valley GA, the goals/desired conditions include:

> Pursue opportunities to improve instream conditions in the Laramie composite watershed, which was rated Class III in the watershed-condition assessment.

Plan at 223.

In the Lone Pine GA, goals/desired conditions include:

> Maintain the area's undeveloped character by prohibiting additional roads, except for trailhead access, and by closing roads currently accessed through private property.

Plan at 231.

In the Redfeather GA, North Lone Pine Creek was rated Class III (non-functional) at the time the Forest Plan was prepared. Id. at 242.

Actions must be designed to meet GA direction, especially protecting and restoring non-functional watersheds. See more discussion below.

X. PROTECT WATERSHEDS

Reducing density of tree stands may help reduce the impacts from wildfire. However, treatment can have some of the same adverse impacts as fire: an increase in soil erosion and sediment transport to waterbodies, destabilization of slopes, and increased difficulty in reestablishing vegetation. Soils compacted by the use of heavy equipment in logging can function similar to soils subjected to high-intensity fire: they will repel water, i. e., become hydrophobic. However, soils burned often lose their hydrophobicity within one year (see USDA Forest Service, 2005, at 39), whereas soils compacted by heavy equipment use may take decades to recover (Rhodes, 2007).

Road construction and use are also quite detrimental to watershed integrity, as they channel water and sediment into water bodies. Much of the project area is well-roaded. See PPNPA Appendix C, Map 5. The additional mileage of temporary roads needed to access the proposed treatment units would exacerbate watershed impacts from roads. Units should, to the maximum extent practical, be designed to minimize the need for additional roads. Roads should not be built across steep or unstable slopes, i. e., those with mass wasting proclivity or moderate or greater erosion hazard.

Any roads that are used should be obliterated after work in the respective unit(s) is complete. Obliteration means, at minimum, blocking all entrances to the road, removing culverts, and restoring native vegetation for the portion of the road within sight distance. Also, any non-system roads in the project area, whether used for the project or not, should be closed and obliterated.

The Forest Service's Watershed Conservation Practices Handbook requires the following:

> In each watershed containing a 3-rd (sic) order and larger stream, limit connected disturbed areas so the total stream network is not expanded by more than 10%. Progress toward zero connected disturbed area as much as practicable. Where it is impossible or impracticable to disconnect a particular connected disturbed area, minimize the areal extent of the individual connected disturbed area as much as practicable. In watersheds that contain stream reaches in diminished stream health class, allow only those actions that will maintain or reduce watershed-scale Connected Disturbed Area.

FSH 2509.25, Management Measure 11.1, design criterion 1a. The project must be designed and implemented to limit connected disturbed area, and any project NEPA document must disclose how the project will comply with the Handbook's direction.

Streams in Class III (non-functional) condition must be improved, or at minimum, stabilized and not allowed to deteriorate. See section IX above. Even streams not in treatment areas or not even in the project area could be affected by proposed actions in the project area, so the health of the Class III watersheds must be considered as treatment units are delineated and designed.

XI. PROTECT SOILS

The passage of heavy equipment used in logging and skidding will compact or displace soils. The agency must follow the Region 2 Soil Management Handbook (R2 Supplement No. 2509.18-92-1), which requires that outside of the permanent transportation system,

> No more than 15 percent of an activity area will be left in a detrimentally compacted, displaced, puddled, severely burned, and/or eroded condition…

Id. at 2.2 (3). This Handbook further requires that

> Where excessive soil impacts already exist from prior activity, the emphasis shall be on preventing any additional detrimental impact, and on reclamation where feasible.

Id. at 2.03 (2).

At a minimum, areas with recent (last 15 years or so) activity where soils may have been compacted or otherwise destructively affected, and where treatment may occur under the proposed project, soils should be tested, and any activity be designed to ensure that detrimental compaction and other soil problems will not occur or be exacerbated with any new treatment.

XII. CLIMATE CHANGE

The best way to help mitigate the impacts of climate change is to conserve the largest trees, as they store the most carbon. Removing some smaller trees in dense stands may help prolong the life of the larger trees. On the other hand, removing mature trees will reduce carbon storage until trees in the new forest grow and reach the same size as the ones cut. This can take a century or longer. Thus larger trees should generally not be cut except for safety reasons.

It must be recognized that fires are not huge sources of carbon. Smaller diameter trees and branches are consumed in fires, but the boles of larger trees are not. They remain on site and slowly decay into new soil, releasing carbon over a long time period.

As discussed above in section VIII, it will be very important to identify species that will be most likely to suffer from impacts caused by climate change and to identify possible refugia for them.

Further, any NEPA document must disclose quantitatively and qualitatively the project's impacts on climate emissions and carbon storage. This includes, but is not limited to, the GHG emissions required to implement the project via the use of fossil-fueled-powered equipment and vehicles.

XIII. FIGHT INVASIVE SPECIES AND PROTECT RARE PLANTS

The PPNPA (p. 51) well describes the adverse impacts caused by invasive species. Under the project, ground-disturbing activities, such as road construction, skidding, burning, and logging, would occur on a sizable area over the lifetime of the project. This creates ideal conditions for the introduction and spread of invasive plant species.

Since prevention is always better than cure, areas where any ground disturbance may occur should first be surveyed. Any weed populations found should be eradicated to the greatest extent possible so that they are not given the opportunity to proliferate once ground-disturbing activities begin. Chemical treatment may be necessary to accomplish this, but other methods should be used if possible.

After completion of work in each unit or group of them, follow-up surveys should be conducted for three full growing seasons, with eradication of any weeds discovered.

Surveys for invasive plants can also be used to identify rare plants, i. e., those that are threatened, endangered, sensitive, species of local concern, or whose continued viability is otherwise of concern. Any populations found should be protected with a buffer that is sufficient to allow each population to expand. No ground disturbing activities should be allowed within the buffer areas. This includes fire unless it would help a rare plant population expand without harming the existing population.

XIV. MANAGE RECREATION

Unmanaged recreation is a major problem on national forest lands across our nation, especially in places near major population centers, like much of the Arapaho-Roosevelt National Forest, including at least some of the project area.[8] Motor vehicle operators and mountain bicyclists pioneer new routes at will, causing impacts to wildlife and habitat, soils, and nonmotorized/non-mechanized recreational opportunities and experiences.

Given the large area of thinning and other treatment that would reduce tree cover, barriers to motor vehicles would be removed over much of the proposed project area, making more area potentially available for recreational abuse. It is hard to imagine that the Forest Service, even with help of volunteers, could erect and maintain enough barriers to significantly control this

[8] For example, both motorized and non-motorized recreation use are high in the Deadman GA. Forest Plan at 211.

increased unmanaged motorized and mechanized recreation that would likely occur as a result of the project. Law enforcement would not be able to patrol areas adequately to prevent this abuse.

Addressing this issue for winter is very important, as snowmobiles would have fewer barriers to off-route travel. This and increased use by wheeled vehicles in areas with less snow cover could disturb big game animals on their winter ranges.

The project must include design features to address unmanaged recreation.

XV. PROTECT SCENERY

Scenery is an important value in the project area, as people visit the area in part for its natural appearing landscapes. The Forest Plan requires that the scenic integrity objectives shall be met:

> Prohibit management activities that are inconsistent with the scenic integrity objective unless a decision is made to change from the scenic integrity objective. A decision to change from the scenic integrity objective will be documented in a project level NEPA decision document.

Plan standard 154, as amended by Forest Plan Amendment 9.

Most of the project area has a scenic integrity objective (SIO) of moderate, with some areas in high or low SIO. See map with Forest Plan Amendment 9. See also Forest Plan FEIS, Table 3.136, p. 402, which lists the prominent visual quality objectives (VQOs) for each management area. The VQOs for the MAs in the project area are retention, partial retention, and modification, which correspond to SIOs high, moderate, and low, respectively. See Amendment 9.

In areas with a high SIO, "the valued landscape character 'appears' intact". In moderate SIO areas,

> the valued landscape character 'appears slightly altered.' Noticeable deviations must remain visually subordinate to the landscape character being viewed.

Amendment 9, p. 2.

All treatments must be designed and implemented to meet the assigned SIO for each part of the project area, and any project NEPA document must disclose how the Forest Service will meet these objectives. Creation of large openings through clearcutting would not meet the high or moderate SIOs.

XVI. MISCELLANEOUS ISSUES

The term "ponderosa pine woodlands" is used twice, once as a stand-alone descriptor (p. 34), and again with interior Douglas-fir (p. 39). The two ecological types described appear to differ

considerably. "Woodlands" is usually used to denote a less dense or less extensive forest. The NEPA document should clarify what is a woodland versus what is a forest and use the proper terms to describe the ecology of the project area.

CONCLUSION

Any treatment in the Black Diamond area should emphasize the following: a) treating in the home ignition zone to reduce fire susceptibility of homes; b) restoring natural stand composition and structure in some areas dominated or formerly dominated by ponderosa pine below about 7200 feet in elevation; and c) restoring fire on the landscape where it can be done safely in ecological types where it was once fairly frequent.

Spruce-fir stands should not be treated. Lodgepole pine stands, and mixed conifer stands above 7200 feet elevation that are outside the HIZ should have minimal treatment. Wildlife habitat, especially for species needing forest cover, must be maintained. Habitat for threatened and sensitive species must be protected. Old growth must be retained, and future old growth encouraged and fostered by any management actions where possible. Soils and watershed must be maintained in good condition. Unneeded roads, including any constructed for the project, must be obliterated. Impacts in roadless areas must be minimized.

An EIS must be prepared to sufficiently consider all the potential impacts of the proposed project, including cumulative impacts from past fires and treatments. Areas where actions are proposed and the impacts from implementing these actions must be disclosed prior to approval of site-specific actions.

Please add each of the undersigned to your mailing/emailing list for the project.

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REFERENCES

Belsky, Joy A., and Dana M. Blumenthal, 1997. Effects of Livestock Grazing on Stand Dynamics in Upland Soils of the Interior West. Conservation Biology 11(2), April, 1997.

Barnett, Kevin, Sean A. Parks, Carol Miller, and Helen T. Naughton, 2016. Beyond Fuel Treatment Effectiveness: Characterizing Interactions between Fire and Treatments in the US. Forests 7, 237; doi:10.3390/f7100237, http://www.mdpi.com/journal/forests.

Bevington, Douglas, 2021. Working from the Home Outward: Lessons from California for Federal Wildfire Policy. Environment Now.

Cohen, Jack D., 2008. The Wildland Urban Interface Fire Problem A Consequence Of The Fire Exclusion Paradigm. Forest History Today, Fall 2008.

Cohen, Jack D., 1999. Reducing the Wildland Fire Threat to Homes: Where and How Much? In: Proceedings of the Symposium on Fire Economics, Planning, and Policy: Bottom Lines. April 5-9, 1999, San Diego, CA. USDA Forest Service General Technical Report PSW-GTR-173.

Dickenson, Yvette, 2014. Landscape Restoration Of A Forest With A Historically Mixed-Severity Fire Regime: What Was The Historical Landscape Pattern Of Forest And Openings? Forest Ecology and Management 331 (264-271), November, 2014.

Hayward, Gregory D. and Jon Verner, 1994. Flammulated, Boreal, and Great Grey Owls in the United States: A Technical Conservation Assessment. USDA Forest Service, General Technical Report RM-253.

ILBT, 2013. Interagency Lynx Biology Team. Canada lynx conservation assessment and strategy. 3rd edition. USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management, and USDI National Park Service. Forest Service Publication R1-13-19, Missoula, MT. 128 pp.

Keith, J. O. (2003, August 25). Abert's Squirrel (*Sciurus aberti*): A Technical Conservation Assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available at: http://www.fs.fed.us/r2/projects/scp/assessments/ abertsquirrel.pdf

Mildrexler, David J., Logan T. Berner, Beverly E. Law, Richard A. Birdsey, and William R. Moomaw, 2020. Large Trees Dominate Carbon Storage In Forests East of the Cascade Crest in the United States Pacific Northwest. Frontiers in Forests and Global Change, Volume 3, November, 2020. https://doi.org/10.3389/ffgc.2020.594274

Naidoo, Robin, and A. Cole Burton, 2020. Relative Effects Of Recreational Activities On A Temperate Terrestrial Wildlife Assemblage. Conservation Science and Practice. 2020;2:e271. wileyonlinelibrary.com/journal/csp2, https://doi.org/10.1111/csp2.27

Reynolds, Richard T, Russell T. Graham, M. Hildegard Reiser, Richard L. Bassett, Patricia L. Kennedy, Douglas A. Boyce, Jr., Greg Goodwin, Randall Smith, and E. Leon Fisher, 1992. Management Recommendations for the Northern Goshawk in the Southwestern United States. USDA Forest Service General Technical Report RM-217.

Rhodes, Jonathan J., 2007. The Watershed Impacts Of Forest Treatments To Reduce Fuels And Modify Fire Behavior. Pacific Rivers Council, February, 2007.

Rhodes, Jonathan J., and William L. Baker, 2008. Fire Probability, Fuel Treatment Effectiveness and Ecological Tradeoffs in Western U.S. Public Forests. Open Forest Science Journal, Volume 1.

Sherriff, Rosemary L., and Thomas T. Veblen, 2006. Ecological Effects Of Changes In Fire Regimes In Pinus Ponderosa Ecosystems In The Colorado Front Range. Journal of Vegetation Science 17: 705-718, 2006.

Syphard, Alexandra D., Theresa J. Brennan, and Jon E. Keeley, 2014. The Role Of Defensible Space For Residential Structure Protection During Wildfires. International Journal of Wildland Fire, http://dx.doi.org/10.1071/WF13158

USDA Forest Service, 2003. Hayman Fire Case Study. Russell T. Graham, Technical Editor. RMRS-GTR-114, September, 2003 (revised).

USDA Forest Service, 2005. Wildland Fire in Ecosystems - Effects of Fire on Soil and Water. Rocky Mountain Research Station, General Technical Report RMRS-GTR-42- volume 4, September, 2005.

USDA Forest Service, 2012. Fourmile Canyon Fire Findings. Russell Graham, Mark Finney, Chuck McHugh, Jack Cohen, Dave Calkin, Rick Stratton, Larry Bradshaw, and Ned Nikolov. RMRS-GTR-289, August, 2012.

EXHIBIT 1
PHOTO FROM THE CAMP FIRE AREA, PARADISE, CA