

May 26, 2020

U.S. Forest Service, North Kaibab Ranger District Attn: David Vincelette, NEPA Planner 430 South Main Street PO Box 248 Fredonia, AZ 86022

Submitted electronically to: comments-southwestern-kaibab-north-kaibab@usda.gov

### **RE: Burnt Corral Vegetation Management Project**

Dear District Ranger Walker and NEPA Planner Vincelette,

Please accept these comments from the Center for Biological Diversity (The Center), specific to the Draft Environmental Assessment (Draft EA) for the Burnt Corral Vegetation Management Project (Burnt Corral Project) on the North Kaibab Ranger District of the Kaibab National Forest, Arizona. In addition to this letter, we have mailed a thumb drive containing referenced exhibits to the address above. The package was postmarked May 26, 2020.<sup>1</sup> The Center is a national non-profit conservation organization dedicated to protecting wildlife and the habitats they need to survive. We believe that the welfare of human beings is deeply linked to nature to the existence in our world of a vast diversity of wild animals and plants. Because diversity has intrinsic value, and because its loss impoverishes society, we work to secure a future for all species, great and small, hovering on the brink of extinction. We do so through science, law and creative media, with a focus on protecting the lands, waters and climate that species need to survive. This letter represents the interests of the organization and our 1.7 million members and supporters. We've long held an interest in the Kaibab Plateau's old growth forests and wildlife populations, and we envision a scenario where these landscapes are restored and maintained using wildfire and prescribed fire as the primary management tools, with minimal mechanical intervention outside of the wildland-urban interface. These comments support and expand our record of science-based advocacy. I look forward to any and all future opportunities to comment and engage in this project. Please address all correspondence to the contact information below.

Sincerely,

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Joe Trudeau, Southwest Conservation Advocate Center for Biological Diversity PO Box 1013, Prescott, AZ 86302 jtrudeau@biologicaldiversity.org (928) 800-2472

<sup>&</sup>lt;sup>1</sup> See Exhibit M, public notice establishing a comment deadline of May 26, 2020.

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### I. INTRODUCTION

Conditions that underlay the need for ecological restoration in the project area result from logging, fire suppression, livestock grazing,<sup>2</sup> human encroachment into fire-adapted ecosystems,<sup>3</sup> and effects of climate change on fire behavior.<sup>4</sup> A proactive landscape-scale restoration approach must deal with fundamental ecological problems, and eliminate fundamental ecological stressors. One of the most damaging stressors to the forests of the Kaibab Plateau has been, and continues to be, commercial logging that removes old and large trees. Recognizing this, the Kaibab Forest Health Focus states that "Ponderosa pine forest restoration in northern Arizona should be designed to retain and restore old-growth trees..."<sup>5</sup> and that "...many stakeholders agree that there are, in general, too few large mature trees across most of Arizona's ponderosa pine forests, and that it is almost always appropriate to thin smaller diameter trees."<sup>6</sup>

We are deeply concerned that aside from a few well-intentioned design features, Burnt Corral is mostly just another status quo, old school timber sale that will continue the North Kaibab Ranger Districts ongoing liquidation of the Kaibab Plateau's once vast old growth ponderosa pine forests. Consider these facts which indicate the Forest Service is primarily interested in continuing the legacy of old growth logging:

• The Draft EA increases "matrix treatment" logging in ponderosa pine forest by nearly onethird; rising from 9,530 acres in the 2014 collaborative proposed action to 12,365 acres in the Draft EA. Comparing tables in the two documents makes it clear that the Forest Service's intent is to continue logging old growth: 2,665 of the acres that moved into the group selection logging category came from the Fire Only category in the proposed action, and 420 acres that were mapped as old growth in the proposed action were changed to the matrix/patch cut logging stratum. Considering how much of the project has experienced beneficial fire, and that concern for old growth has only increased, the Draft EA is moving in an entirely wrong direction.

• The Burnt Corral Draft EA rolls back safeguards for northern goshawks from the already permissive treatments approved for the Jacob-Ryan project. The Burnt Corral Draft EA lifts the diameter limit in goshawk nest areas from thin from below to 12" in Jacob-Ryan, to thin from below to 14" in Burnt Corral. In addition, Jacob-Ryan calls for maintaining 50-70% canopy cover in trees over 18" in goshawk nest areas, but this guidance is stripped from Burnt Corral. Also, in Jacob-Ryan, nest areas were established at the stand level, but in Burnt Corral they are shrunk down to tiny 30-acre circles<sup>7</sup>.

<sup>&</sup>lt;sup>2</sup> Covington, W.W., and M.M. Moore. 1994. Southwestern ponderosa forest structure: Changes since Euro-American settlement. *Journal of Forestry* 92: 39-47.

<sup>&</sup>lt;sup>3</sup> Radeloff, V.C., R.B Hammer, S.I. Stewart, J.S. Fried, S.S. Holcomb, and J.F. McKeefry. 2005. The wildland-urban interface in the United States. *Ecological Applications* 15: 799-805.

<sup>&</sup>lt;sup>4</sup> Flannigan, M.D., B.J. Stocks, and B.M. Wotton. 2000. Climate change and forest fires. *The Science of the Total Environment* 262: 221-29.

<sup>&</sup>lt;sup>5</sup> Sisk, T.D., J.M Rundall, E. Nielsen, B.G. Dickson, S. E. Sesnie. 2009. The Kaibab Forest Health Focus: Collaborative Prioritization of Landscapes and Restoration Treatments on the Kaibab National Forest. The Forest Ecosystem Restoration Analysis Project, Lab of Landscape Ecology, School of Earth Sciences and Environmental Sustainability, Northern Arizona University. Hereafter, "KFHF".

<sup>&</sup>lt;sup>6</sup> KFHF p. 47

<sup>&</sup>lt;sup>7</sup> The Forest Service's changes from the Jacob-Ryan project are nowhere explained. The agency's failure to explain these differences, or justify them scientifically, is arbitrary and capricious.

#### CENTER for BIOLOGICAL DIVERSITY

• The Burnt Corral project expands even-aged seed tree cutting into an area of the Kaibab Plateau which has not been impacted by these intensive treatments, in what appears to be an attempt to maximize removals of large and old trees where they still occur at densities within the natural range of variability. Seed Tree cutting occurred over much of the Kaibab Plateau into the 1990's under the programmatic old growth logging system called Integrated Stand Management. This system of patch cuts and clear cuts spread outward from Jacob Lake, but only barely made it to the northeastern corner of the Burnt Corral project area. The Forest Service was forced to abandon seed-tree cutting because the even-aged management approach was shown to harm wildlife, in particular the northern goshawk. Now, the system is back, but the Forest Service claims it is part of a landscape scale uneven-aged management system. However, the Burnt Corral Draft EA proposes to install about 900 acres of seed-tree cuts across one-third of the project area. The portion of the project area targeted for these intense logging prescriptions contain high proportions of old growth, such as stands 0030790001, 0030790002, 0030790101 and 0030790102, for example (we describe these stands elsewhere in this letter, and see photos of these stands submitted on the thumb drive).

• The Burnt Corral EA fabricates a bark beetle threat in order to justify cutting more large trees anywhere across the project area. The Design Features portion of the Draft EA (Appendix A, p. 72) states that "Areas where desired conditions might require removal of trees larger than 18inch diameter at breast height include ... Areas where bark beetles are active, especially the western pine beetle and the mountain pine beetle." This exception category was never discussed or approved by the Center or other stakeholders in the earlier collaborative effort, so this represents a substantial departure from stakeholder expectations. This large-tree cutting exception category in essence rejects historical accounts on the Kaibab Plateau which documented extensive natural beetle occurrence.<sup>8</sup> Also, this approach does not match current conditions on the project area, where bark beetles are not active at a concerning level.<sup>9</sup> The Draft EA even admits this in stating that "Current populations of this bark beetle are endemic; conditions exist for an increase in activity and potential mortality."<sup>10</sup> The photo shown in the Draft EA (page 9) is a poor example of why the Forest Service should be granted a wide-ranging allowance to cut large trees because of bark beetles. This photo displays a naturally occurring native pest creating wildlife habitat in the form of large woody debris and snags, both of which are below desired conditions in the project area and across the Kaibab Plateau.<sup>11</sup>

<sup>&</sup>lt;sup>8</sup> Please refer to the Grand Canyon Trust report titled "An Environmental History of the Kane and Two Mile Ranches in Arizona" (J. Trudeau, 2006), which describes the observations of early foresters, including Land & Stewart (1910), Craighead (1924), Miller (1924), Blackman (1931), and Craighead (1925). The Forest Service must respond to these studies as ecologically irreplaceable early accounts of bark beetle disturbance ecology directly relevant to the Burnt Corral project area. The Forest Service is in possession of this report and the cited literature. In addition to the Grand Canyon Trust submitting it, the Center submitted this report as an attachment to comments submitted on the Kaibab Plateau Ecological Restoration Project, which are again submitted as Exhibit F to this letter. In addition we again submit several of these documents as "Exhibit D - early Bark Beetle papers." <sup>9</sup> In our weeklong field survey of May, 2020, only a few beetle-killed trees were observed. The Draft EA is vague in identifying what constitutes bark beetles being "active" and leaves bark beetle focused treatments to future discretion, which is a violation of NEPAs requirements to take a hard look at site-specific impacts and document baseline conditions.

<sup>&</sup>lt;sup>10</sup> Burnt Corral Draft EA, p. 8.

<sup>&</sup>lt;sup>11</sup> See Esch & Waltz (2009), Kaibab National Forest Monitoring Report (Exhibit C), stating that "Across districts and ERUs, snag observations are very low" (p. 13). Also, our field data from seven sampled stands in May, 2020 found that snags >18" dbh range from none to 0.8 to 2.8 trees/acre across six stands, which does not meet Forest

• The Burnt Corral project undermines the Forest Service's purported commitment to collaboration. As we have pointed out in letters and emails to the Kaibab National Forest, the so-called collaborative has not convened for more than five years. This is in spite of several requests to do so.<sup>12</sup> The Center was never fully supportive of the collaborative when it was active because it was clear to us that the Forest Service would do the bare minimum to satisfy the concerns of stakeholders, in particular regarding old growth preservation. In this letter we present more information to support our view on this, including the aforementioned moving of old growth treatment acres into the more intensive matrix logging strata, and as we will describe more later, the Forest Service's unwillingness to utilize more recent and advanced data to identify old growth structure. This trend towards maximizing old and large tree logging is not in line with stakeholder perspectives described in this passage from the Kaibab Forest Health Focus:

"This collaborative group recognizes the need to develop strong partnerships with industry to achieve comprehensive ecological restoration, and the contributions from industry participants made it abundantly clear that future economic investment and production will focus on small-diameter trees and biomass. There was no interest expressed by industry participants for harvesting large trees; infrastructure for handling large material is largely gone, and recapitalization will focus on small trees for two reasons: 1) it is where the social agreement lies; 2) the bulk of the available material across the forest is in smaller diameter trees."<sup>13</sup>

For these reasons and more which we describe in this letter, we are opposed to the Burnt Corral Vegetation Management Project. Ultimately, the project should be abandoned entirely, and the acres folded into a revised and collaboratively developed Kaibab Plateau Ecological Restoration Project (KPERP). The KPERP would be a Plateau-wide, scientifically justified, and broadly supported ecosystem based fire restoration project that could still provide a sustainable supply of small diameter wood to industry as it creates and maintains fuel breaks and defensible space surrounding Plateau facilities.

Plan desired conditions. One stand which is designated as old growth had 2.8 snags/acre, meeting desired conditions.

<sup>&</sup>lt;sup>12</sup> See letter from Joe Trudeau to Randall Walker, May 4, 2018 (Exhibit A), and response letter from Randall Walker to Joe Trudeau, July 5, 2018 (Exhibit B).

<sup>&</sup>lt;sup>13</sup> KFHF p. 48

### II. THE BURNT CORRAL PROJECT SHOULD BE ABANDONED AND THE PROJECT AREA FOLDED INTO AN OPTIMIZATION MODELLING PLANNING APPROACH FOR THE KAIBAB PLATEAU ECOLOGICAL RESTORATION **PROJECT.**

In the Center's November 2019 comments on the KPERP Draft EA,<sup>14</sup> we stated the following:

"This project (the KPERP) should be the only type of management action used on the Plateau, as a non-commercial approach is a good basis for retaining all old and large trees. Unfortunately, the Forest Service has indicated that future commercial projects are to be proposed elsewhere across the Kaibab Plateau.<sup>15</sup> We will continue to oppose commercial projects on the Kaibab Plateau which include removal of large volumes of sawtimber, Burnt Corral included, especially as the Forest Service has thus far refused to modify desired conditions to better reflect the best available science for determining the natural range of variability for the forests of the Kaibab Plateau. In our scoping comments<sup>16</sup> we suggested that Burnt Corral be included in this project for a number of reasons, one of them being limited industry capacity in the region. The Forest Service has admitted that industry is not sufficient to support commercial timber harvest,<sup>17</sup> so we again urge the Kaibab National Forest to end commercial logging on the Plateau. Leaving the Burnt Corral analysis area as a "doughnut hole" in the KPERP defies basic landscape analysis and planning principles, and commits the Kaibab National Forest to a failed model of industrial forestry in a remote and wild region valued for so much more than timber production."

That followed our November, 2018 comments during scoping for the KPERP in which we frankly stated that "The Burnt Corral proposed action and analysis should be abandoned and folded into KPERP and the plateau-wide strategic treatments analysis and modelling." We stand by this position that the Burnt Corral project is ecologically and socially unacceptable, and should be abandoned and folded into a revised KPERP analysis, and driven by a scientifically informed optimization process, which we described at length in our comments for the KPERP.

The Kaibab Forest Plan provides guidance to support our position. The Plan states the following:

<sup>&</sup>lt;sup>14</sup> Exhibit E: Letter of Joe Trudeau, Center for Biological Diversity to Randall Walker, Kaibab National Forest (Nov. 12, 2019). <sup>15</sup> Statement of District Ranger Randall Walker at the KPERP Stakeholders Workshop, Flagstaff Arizona

<sup>(11/27/2018).</sup> <sup>16</sup> Exhibit F: Letter of Joe Trudeau, Center for Biological Diversity to Randall Walker, Kaibab National Forest (Nov. 5, 2018). <sup>17</sup> "The proposed action does not include timber harvest. Timber harvest is one method for working toward desired

conditions; but the lack of infrastructure for handling and processing timber products limits treatments at the landscape scale needed to address the vulnerable existing conditions, and the controversy over timber harvests could delay implementing the much-needed additional prescribed fire on the plateau. The established timber industry in northern Arizona and southern Utah does not have the processing capability (i.e., workers, equipment, and facilities) to address the treatment needs on a large enough scale required to move towards desired conditions. Timber harvest is not a viable option for many places on the North Kaibab Ranger District due to low timber values and other resource concerns." KPERP EA at 3.

"Mechanical treatments are costly, so the capacity to implement such treatments across the landscape is limited. Strategic placement and design of mechanical treatments increases their effectiveness in protecting values at risk. ... Examples of such areas are steep rugged terrain where the high cost and hazards preclude mechanical treatment, or in remote areas of the Kaibab NF where the distance to high values does not justify the expenditure of limited funds and work capacity. Fire can be successfully used in these areas to treat NFS lands at the landscape scale and at a minimal cost."<sup>18</sup>

A data-driven treatment optimization approach following the process we described in our comments on the KPERP,<sup>19</sup> is the right approach for the entire Kaibab Plateau, including the Burnt Corral project area. This approach was recommended for the western ponderosa pine belt by the Kaibab Forest Health Focus:

"Areas predicted to show passive crown fire or surface fire were identified for fire-only treatments. The group recommended that treatments in the remaining areas of predicted active crown fire in ponderosa pine forest be located according to an optimization approach (such as that developed by Mark Finney (Finney, M.A., 2007) and colleagues at the Fire Science Laboratory, Missoula, MT) such that multiple small treatments be located in a manner that would convey the greatest benefit across the larger landscape. Treatment optimization has the potential to reduce crown fire spread rates and permit more extensive use of prescribed fire and Wildland Fire Use fire, both within and outside areas that have been previously mechanically thinned). Planning for treatment optimization at landscape scales will require additional analysis and spatial modeling. The group suggested that the use of optimization modeling, here and on the other districts, should be executed with caution and with high levels of transparency, employing sensitivity analysis and exploring predicted effects, prior to project-level planning."<sup>20</sup>

In our scoping comments on Burnt Corral, we reiterated that "*Collaboration also established that* "*road buffers*" and "treatment optimization" are important in fire management."<sup>21</sup> The Burnt Corral Draft EA, however, does not abide by this recommendation, and instead assigns logging treatments to almost every acre identified in the KFHF for treatment optimization.<sup>22</sup> The Forest Service is in possession of the advanced data (LiDAR) and analytical tools needed to produce an informed, Plateau-wide treatment optimization model. As we describe elsewhere in this letter, the Forest Service should analyze a stand-alone treatment optimization alternative following what we have described in our Strategic Treatments for Fire Use Alternative. Failure to use the best available scientific information and respond to this request is a violation of NEPA.

<sup>&</sup>lt;sup>18</sup> Kaibab Forest Plan, p. 75.

<sup>&</sup>lt;sup>19</sup> See Exhibits E and F. As we described and cited in our past comments to the Kaibab National Forest, the optimization approach is consistent with the best available science and national fire management policy. <sup>20</sup> KFHF, p. 22.

<sup>&</sup>lt;sup>21</sup> Exhibit G: Letter from Jay Lininger and Sandy Bahr to North Kaibab Ranger District (April 15, 2015).

<sup>&</sup>lt;sup>22</sup> The "North Kaibab Treatment Guidance" map from page 21 of the KFHF was georeferenced into ArcMap. Burnt Corral treatment strata were overlaid onto the map. The result was that less than 10% of the area identified for optimization modelling was left outside of "new patch cuts" and "TFB to 80BA" treatments.

### III. THE BURNT CORRAL PROJECT WILL SIGNIFICANTLY AFFECT THE ENVIRONMENT AND REQUIRES AN ENVIRONMENTAL IMPACT STATEMENT.

The Burnt Corral Project requires an EIS and meaningful stakeholder collaboration. We argue that this should be completed in a revised KPERP which includes the Burnt Corral Project area. NEPA is designed to foster informed and transparent decision-making.<sup>23,24</sup> It requires federal agencies to "[e]*ncourage and facilitate public involvement in decisions which affect the quality of the human environment*,"<sup>25</sup> and to use high quality information because "[a]*ccurate scientific analysis…and public scrutiny are essential to implementing NEPA*."<sup>26</sup> To these ends, courts have held that environmental review documents must be written in plain, clear language and "supported by evidence that the agency has made the necessary environmental analyses."<sup>27</sup>

NEPA outlines several requirements, including a purpose and need statement to provide the guideposts for the analysis of the proposed action, alternatives, and environmental effects.<sup>28</sup> NEPA also requires federal agencies to "*study, develop, and describe appropriate alternatives to recommend courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.*"<sup>29</sup> This includes preparation of an environmental impact statement (EIS) for all "*major Federal actions significantly affecting the quality of the human environment.*"<sup>30</sup>

To accomplish NEPA's purposes, all agencies of the federal government must prepare a "detailed statement" that discusses the environmental impacts of, and reasonable alternatives to, all "major Federal actions significantly affecting the quality of the human environment."<sup>31</sup> This statement is commonly known as an environmental impact statement ("EIS").<sup>32</sup> "NEPA requires that a federal agency consider every significant aspect of the environmental impact of a proposed action and inform the public that it has indeed considered environmental concerns in its decision making process."<sup>33</sup> "Significantly as used in NEPA requires considerations of both context and intensity."<sup>34</sup>

The factors that should be considered in evaluating intensity<sup>35</sup>, and the Centers appeal for consideration of such factors (*italics*), are:

1. Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

<sup>&</sup>lt;sup>23</sup> 40 C.F.R. § 1500.1.

<sup>&</sup>lt;sup>24</sup> See also: *Robertson v. Methow Valley Citizens Council*, 490 U.S. 322, 349 (1989).

<sup>&</sup>lt;sup>25</sup> 40 C.F.R. § 1500.2(d).

<sup>&</sup>lt;sup>26</sup> 40 C.F.R. § 1500.1(b).

<sup>&</sup>lt;sup>27</sup> See, e.g., *Earth Island Inst. v. U.S. Forest Service*, 442 F.3d 1147, 1160 (9th Cir. 2006).

<sup>&</sup>lt;sup>28</sup> 40 C.F.R. § 1502.13.

<sup>&</sup>lt;sup>29</sup> 42 U.S.C. § 4332(2)(E).

<sup>&</sup>lt;sup>30</sup> 42 U.S.C. § 4332(2)(C).

<sup>&</sup>lt;sup>31</sup> 42 U.S.C. § 4332(2)(C).

<sup>&</sup>lt;sup>32</sup> See 40 C.F.R. Part 1502.

<sup>&</sup>lt;sup>33</sup> Pit River Tribe v. U.S. Forest Serv., 469 F.3d 768, 781 (9th Cir. 2006).

<sup>&</sup>lt;sup>34</sup> 40 C.F.R. § 1508.27(b).

<sup>&</sup>lt;sup>35</sup> 40 C.F.R. § 1508.27.

The project will have both beneficial and adverse effects. Fire-only treatments, and allowing wildfire to burn will be beneficial. Recent examples of beneficial wildfires in the project area include the Mill Fire and the Burnt Corral Fire. Nearby, many successful, beneficial wildfires have burned, including the Castle Fire and the Pine Hollow Fire. The project will have numerous adverse impacts, including loss of old growth, spread of cheatgrass, erosion associated with opening ML-1 roads which have revegetated, disruption of northern goshawk nest sites, and indirect effects such as encouraging dense ladder fuels to grow into patch cuts and areas where canopy closure is reduced.

2. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

At minimum, the proximity to Grand Canyon National Park, Marble Canyon ACEC, Kanab Creek, Paria Canyon-Vermillion Cliffs and Saddle Mountain Wilderness Areas, Vermillion Cliffs National Monument, Grand Canyon-Parashant National Monument, Grand Staircase-Escalante National Monument, Kaibab Squirrel National Natural Landmark, the historic Grand Canyon Game Preserve, Pipe Springs National Monument, The Kaibab-Paiute and Navajo Indian Reservations, Glen Canyon National Recreation Area, the historic Kane and Two-Mile Ranches, the concentration of northern goshawk territories, the abundance of relict old growth forest, and cultural significance for Native American, Mormon, Hispanic, and Anglo communities sets this project area apart from much of this Nation in its ecological, cultural, and historical significance. In addition, the project area contains an unusually high concentration of northern goshawk nests and old growth forest, and has been proposed as a National Monument.

### 3. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

The geographic and temporal scope of this project, encompassing a publicly owned ecosystem of tremendous diversity and history, and the ongoing logging of old growth forest under the guise of restoration, supports our position that substantial controversy is likely to exist surrounding any landscape-scale vegetation management project on the North Kaibab Ranger District. The Burnt Corral Project includes aspects which were rejected by stakeholders in earlier phases of project development, and fails to address concerns for identification and protection of old growth forests. These deficiencies constitute significant controversies. Some of the project's stated purposes include:

- Return ponderosa pine forest to a fire adapted ecosystem;
- Manage fire in first entry and follow-up prescribed fire treatments;
- Restore forest structure and process by restoring the ponderosa pine forest type to increase resilience to disturbance, improve forest health, and improve habitat;

• Reduce the risk of hazardous, stand-replacing crown fire events in the entire project area;

• Maintain and promote a ponderosa pine/frequent fire forest vegetation community that is a mosaic of forest conditions composed of structural stages ranging from young to old trees; and

• Improve forest habitat for wildlife species.<sup>36</sup>

We are unaware of any science that supports the need to cut old growth and large trees to accomplish these objectives. In addition, other project purposes are not supported by the best available science describing the natural range of variability for the Kaibab Plateau. Some of these controversial project purposes include:

• Thin at the mid-scale (100 to 1,000-acre segments) to a desired basal area of 60 to 80 square feet per acre; $^{37}$ 

• Reduce tree density and stand density index to the lower range of site occupancy, about 35 - 40 percent of max stand density index in ponderosa pine;<sup>38</sup>

• Promote uneven-aged forest where lacking, maintain current uneven-aged forest, and create openings in even-aged older stands by creating new patch cuts from one-half to four acres distributed randomly across the landscape;<sup>39</sup>

Other project purposes related to old and large tree logging are controversial, and those controversies are reflected in the record of the Kaibab Forest Health Focus and the Burnt Corral Collaborative Proposed Action. In addition, in our scoping comments we provided a discussion of scientific studies supporting the conclusion that sold and large trees are not the driver of extreme fire behavior.<sup>40</sup> The Kaibab Plateau is replete with forest stands that are choked with ladder fuels that established following previous thinning operations similar to those in the proposed action. Because of the establishment of small diameter ladder fuels in regeneration openings and patch cuts, the Burnt Corral Project is likely to increase the risk of hazardous,

<sup>&</sup>lt;sup>36</sup> Burnt Corral Draft EA, p. 10-11.

<sup>&</sup>lt;sup>37</sup> As we describe elsewhere in this letter, the best available science describing the natural range of variability for the Kaibab Plateau confirms that tree densities prior to Euro-American settlement were often much higher than 60-80 square feet per acre in basal area.

<sup>&</sup>lt;sup>38</sup> The best available science describing the natural range of variability for the Kaibab Plateau does not relate presettlement forest structural characteristics to the silvicultural metric of stand density index (SDI). Therefore, thinning to a desired SDI cannot be associated with the parent purpose of restoring forest structure and process.

<sup>&</sup>lt;sup>39</sup> Forest restoration science does not support the cutting of old trees or forests to meet objectives. Therefore, creating patch cuts (effectively clear cuts) cannot be associated with the parent purpose of restoring forest structure and process.

<sup>&</sup>lt;sup>40</sup> In scoping, we stated that "*The existence of large tree structure enhances ecosystem fire resilience, particularly* where fire effects to vegetation and soil are relatively severe (Arno 2000, Omi and Martinson 2002, Pollett and Omi 2002). Indeed, conservation of large trees is fundamentally important to restoration of fire-adapted forests (Brown et al. 2004, DellaSala et al. 2004). Removal of large trees by mechanical means increases surface fuel load and promotes growth of "flashy" live fuels with little resistance to fire (Reinhardt et al. 2008). Large trees are the most difficult of all elements of forest structure to replace once lost, and their removal undermines fire resilience (Agee and Skinner 2005, Brown et al. 2004, DellaSala et al. 2004, Naficy et al. 2010)." We have bundled these citations and submit then as "Exhibit I - Fire and Large Tree papers." We contend that the proposed action, including patch cuts, creation of canopy openness below the natural range of variability, thinning to a basal area range below that described in the best available science, and removal of old and large trees will not reduce the risk of hazardous, stand-replacing crown fire events as claimed in the Draft EA.

stand-replacing crown fire events, counter to the stated project purposes. The Draft EA does not discuss the effect of past and ongoing logging treatments on the heightened risk of hazardous, stand-replacing crown fire events, yet assumes that continuing these practices will alleviate the risk.

4. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

Significant cumulative loss of old growth forest is reasonably predictable in combination with continued implementation of previously approved vegetation management projects, including but not limited to the Jacob-Ryan project and others described elsewhere in this letter, which are removing old growth forests. Ongoing fire management activities in National Forest and the adjacent Grand Canyon National Park, and the landscape-scale KPERP fire and vegetation management project, as proposed, also threaten viability of old growth forests.

Wherever old trees and old growth occurs, it must be protected, regardless of size. Many trees under the 14", 16", or 18" thresholds in goshawk, old growth, and matrix strata, respectively, are in fact over 150 or 200 years old, or older. The risk of crown fire on the project is not clumps of old growth; it's the dense regeneration that has resulted from previous logging combined with fire suppression. Any groups or clumps of old growth must be left intact, without thinning through the group. Strict adherence to old tree retention criteria (yellow, plated bark, round or flattened top, high crown base height, etc) is a fundamental stakeholder requirement, for isolated trees or trees in groups, regardless of size. The EA must provide criteria for where to locate new patch cuts so they are not located on patches of old trees and old growth structure.

The proposed action cites the Western Governors' National Forest and Rangeland Management Initiative Special Report as a guiding document. This document repeatedly identifies collaboration as a keystone part of successful restoration projects, specifically that "Solutions born from bipartisan cooperation among diverse interests always yield the most durable returns." We hope that you will consider the long-term investment of project stakeholders in this landscape as suitable justification for meaningful collaborative project design and implementation. If funding is the reason the Forest Service prepared an EA instead of an EIS, we suggest seeking partnership with the National Forest Foundation, as this project is of national environmental and cultural significance due to the unique nature and global ecological significance of the Kaibab Plateau and greater Grand Canyon ecosystem.

### IV. THE EA FAILS TO CONSIDER A RANGE OF REASONABLE ALTERNATIVES.

### A. EAs Must Analyze a Range of Reasonable Alternatives.

CEQ regulations which apply to all NEPA documents, and not just EISs, require that agencies "to the fullest extent possible ... [i]mplement procedures ... to emphasize real environmental issues and alternatives" and to "use the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment."<sup>41</sup>

The Ninth Circuit has explicitly held for decades that the alternatives requirement applies equally to EAs and EISes. "Any proposed federal action involving ... the proper use of resources triggers NEPA's consideration of alternatives requirement, whether or not an EIS is also required."<sup>42</sup> Other courts agree.

Federal courts require agencies consider alternatives to recommended actions whenever those actions "involve[] unresolved conflicts concerning alternative uses of available resources."<sup>43</sup> "NEPA's requirement that alternatives be studied, developed, and described both guides the substance of the environmental decisionmaking and provides evidence that the mandated decisionmaking process has actually taken place."<sup>44</sup>

In taking the "hard look" at impacts that NEPA requires, an EA must "*study, develop, and describe*" reasonable alternatives to the proposed action.<sup>45</sup> CEQ regulations explicitly mandate that an EA "[s]*hall include brief discussions* … *of alternatives*."<sup>46</sup>

The purpose of the multiple alternative analysis requirement is to insist that no major federal project be undertaken without intense consideration of other more ecologically sound courses of

<sup>&</sup>lt;sup>41</sup> 40 C.F.R. § 1500.2(b), (e).

<sup>&</sup>lt;sup>42</sup> Bob Marshall Alliance v. Hodel, 852 F.2d 1223, 1229 (9th Cir. 1988), cert denied, 489 U.S. 1066 (1988). See also W. Watersheds Project v. Abbey, 719 F.3d 1035, 1050 (9th Cir. 2013) (in preparing EA, "an agency must still give full and meaningful consideration to all reasonable alternatives" (emphasis added) (internal quotation and citation omitted)); *Te-Moak Tribe v. Interior*, 608 F.3d 592, 601-602 (9th Cir. 2010) ("Agencies are required to consider alternatives in both EISs and EAs and must give full and meaningful consideration to all reasonable alternatives."); *Native Ecosystems Council v. U.S. Forest Service*, 428 F.3d 1233, 1245 (9th Cir. 2005) ("alternatives provision" of 42 U.S.C. § 4332(2)(E) applies whether an agency is preparing an EIS or an EA and requires the agency to give full and meaningful consideration to all reasonable alternatives); *Gifford Pinchot Task Force v. Perez*, 2014 U.S. Dist. Lexis 90631, No. 03:13-cv-00810-HZ (D. Or. July 3, 2014) (finding agency failed to consider range of reasonable alternatives in an EA); *Envtl. Prot. Info. Ctr. v. Blackwell*, 389 F. Supp. 2d 1174, 1199 (N.D. Cal. 2004) (stating that "an EA must consider a reasonable range of alternatives"); *Or. Natural Desert Ass'n v. Singleton*, 47 F. Supp. 2d 1182, (D. Or. 1998) ("*The requirement of considering a reasonable range of alternatives applies to an EA as well as an EIS*" (citing 40 C.F.R. § 1508.9(b)).

 $<sup>^{43}</sup>$  42 U.S.C. § 4332(2)(E). See also 40 C.F.R. § 1501.2(c) (agencies must "study, develop, and describe appropriate alternatives to the recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources as provided by section 102(2)(E) of the Act.").

<sup>&</sup>lt;sup>44</sup> Bob Marshall Alliance, 852 F.2d at 1228 (citation omitted).

<sup>&</sup>lt;sup>45</sup> 42 U.S.C. § 4332(2)(C) & (E).

<sup>&</sup>lt;sup>46</sup> 40 C.F.R. § 1508.9(b).

action, including shelving the entire project, or of accomplishing the same result by entirely different means.<sup>47</sup>

Reasonable alternatives must be analyzed for an EA even where a FONSI is issued because "nonsignificant impact does not equal no impact. Thus, if an even less harmful alternative is feasible, it ought to be considered."<sup>48</sup> When an agency considers reasonable alternatives, it "ensures that it has considered all possible approaches to, and potential environmental impacts of, a particular project; as a result, NEPA ensures that the most intelligent, optimally beneficial decision will ultimately be made."<sup>49</sup>

In determining whether an alternative is "reasonable," and thus requires detailed analysis, courts look to two guideposts: "*First, when considering agency actions taken pursuant to a statute, an alternative is reasonable only if it falls within the agency's statutory mandate. Second, reasonableness is judged with reference to an agency's objectives for a particular project.*"<sup>50</sup> Any alternative that is unreasonably excluded will invalidate the NEPA analysis. "*The existence of a viable but unexamined alternative renders an EA inadequate.*"<sup>51</sup>

The agency's obligation to consider reasonable alternatives applies to citizen-proposed alternatives.<sup>52</sup> "In respect to alternatives, an agency must on its own initiative study all alternatives that appear reasonable and appropriate for study at the time, and must also look into other significant alternatives that are called to its attention by other agencies, or by the public during the comment period afforded for that purpose."<sup>53</sup>

Courts hold that an alternative may not be disregarded merely because it does not offer a complete solution to the problem.<sup>54</sup> Even if additional alternatives would not fully achieve the project's purpose and need, NEPA "does not permit the agency to eliminate from discussion or consideration a whole range of alternatives, merely because they would achieve only some of the purposes of a multipurpose project."<sup>55</sup> If a different action alternative "would only partly meet

<sup>&</sup>lt;sup>47</sup> Environmental Defense Fund v. Corps of Engineers, 492 F.2d 1123, 1135 (5th Cir. 1974); Methow Valley Citizens Council v. Regional Forester, 833 F.2d 810 (9th Cir. 1987), rev'd on other grounds, 490 U.S. 332 (1989) (agency must consider alternative sites for a project).

<sup>&</sup>lt;sup>48</sup> Ayers v. Espy, 873 F. Supp. 455, 473 (D. Colo. 1994) (internal citation omitted).

<sup>&</sup>lt;sup>49</sup> Wilderness Soc'y v. Wisely, 524 F. Supp. 2d 1285, 1309 (D. Colo. 2007) (quotations & citation omitted).

<sup>&</sup>lt;sup>50</sup> Diné Citizens Against Ruining Our Env't, 747 F. Supp. 2d at 1255 (quoting New Mexico ex rel. Richardson, 565 F.3d at 709). See also Idaho Conservation League v. Mumma, 956 F.2d 1508, 1520 (9th Cir. 1992) ("nature and scope of proposed action" determines the range of reasonable alternatives agency must consider)

<sup>scope of proposed action" determines the range of reasonable alternatives agency must consider).
<sup>51</sup> Western Watersheds v. Abbey, 719 F.3d. at 1050; see also Diné Citizens Against Ruining Our Env't, 747 F. Supp. 2d at 1256 ("The existence of a viable but unexamined alternative renders an alternatives analysis, and the EA which relies upon it, inadequate.").
<sup>52</sup> See Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin., 538 F.3d 1172, 1217-19 (9th Cir. 2008)</sup> 

<sup>&</sup>lt;sup>52</sup> See Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin., 538 F.3d 1172, 1217-19 (9th Cir. 2008) (finding EA deficient, in part, for failing to evaluate a specific proposal submitted by petitioner); Colo. Envtl. Coal. v. Dombeck, 185 F.3d 1162, 1171 (10th Cir. 1999) (agency's "[h]ard look" analysis should utilize "public comment and the best available scientific information") (emphasis added).

<sup>&</sup>lt;sup>53</sup> Dubois v. U.S. Dept. of Agric., 102 F.3d 1273, 1291 (1st Cir. 1996) (quoting Seacoast Anti-Pollution League v. Nuclear Regulatory Comm'n, 598 F.2d 1221, 1230 (1st Cir. 1979)).

<sup>&</sup>lt;sup>54</sup> Natural Resources Defense Council, Inc. v. Morton, 458 F.2d 827, 836 (D.C. Cir. 1972).

<sup>&</sup>lt;sup>55</sup> Town of Matthews v. U.S. Dep't. of Transp., 527 F. Supp. 1055 (W.D. N.C. 1981). See also Citizens Against Toxic Sprays v. Bergland, 428 F. Supp. 908, 933 (D. Or. 1977) ("An alternative may not be disregarded merely because it does not offer a complete solution to the problem.")

the goals of the project, this may allow the decision maker to conclude that meeting part of the goal with less environmental impact may be worth the tradeoff with a preferred alternative that has greater environmental impact.<sup>56</sup>

Further, courts reviewing EAs have consistently found them lacking where there existed feasible mid-range or reduced-impact alternatives failing between the extremes of granting in full or denying in full the proposed action, but the agency opted not to analyze them in detail.<sup>57</sup>

The courts also require that an agency adequately and explicitly explain in the EA any decision to eliminate an alternative from further study.<sup>58</sup>

Courts recognize two circumstances in which an agency may decline to consider an alternative: where it has in "good faith" found the alternative to be "too remote, speculative, or impractical or ineffective,"<sup>59</sup> or where the alternative is not "significantly distinguishable from the alternatives already considered."<sup>60</sup>

### B. The Burnt Corral EA Fails to Analyze a Range of Reasonable Alternatives.

The Burnt Corral EA evaluates in detail only the proposed action and the no action alternative. It fails to consider a reasonable alternative proposed by the Center and Sierra Club in comments on scoping, and fails to provide any reasonable basis for doing so, in violation of NEPA. We further urge the Forest Service in any subsequently prepared NEPA document to consider other reasonable alternatives including: (1) the Goshawk Protection alternative as proposed in the Center's 2015 scoping comments; and (2) the Strategic Treatments for Fire Use (STFU) alternative.

1. The Forest Service's purpose and need for Burnt Corral.

Reasonable alternatives must meet, at least in part, the project's purpose and need. Here, the Forest Service defines the project's purpose as to:

<sup>57</sup> See, e.g., W. Watersheds Project v. Abbey, 719 F.3d at 1050, 1612 (finding EA arbitrary and capricious where it failed to consider "reduced-grazing" alternatives); Pac. Coast Fed'n of Fishermen's Ass'ns v. Dep't of Interior, 655 F. App'x 595, 599 (9th Cir. 2016) (holding that agency's "decision [in EA] not to give full and meaningful consideration to the alternative of a reduction in maximum interim contract water quantities was an abuse of discretion, and the agency did not adequately explain why it eliminated this alternative from detailed study"); Wild Fish Conservancy v. Nat'l Park Serv., 8 F. Supp. 3d 1289, 1300 (W.D. Wash. 2014) (finding agency's EA deficient because the "conclusion that there is not a meaningful difference, or viable alternative, between 0% and 90% [of fish survival] [was] suspect"), aff'd, 687 F. App'x 554 (9th Cir. 2017); Native Fish Soc'y v. Nat'l Marine Fisheries Serv., 992 F. Supp. 2d 1095, 1110, (D. Or. 2014) (holding that agency "erred in failing to consider a reasonable range of alternatives" in EA, and finding that "[g]iven the obvious difference between the release of approximately 1,000,000 smolts and zero smolts, it is not clear why it would not be meaningful to analyze a number somewhere in the middle.").

<sup>&</sup>lt;sup>56</sup> North Buckhead Civic Ass'n v. Skinner, 903 F.2d 1533, 1542 (11th Cir. 1990).

<sup>&</sup>lt;sup>58</sup> See Wilderness Soc'y, 524 F. Supp. 2d at 1309 (holding EA for agency decision to offer oil and gas leases violated NEPA because it failed to discuss the reasons for eliminating a "no surface occupancy" alternative); *Ayers*, 873 F. Supp. at 468, 473.

<sup>&</sup>lt;sup>59</sup> New Mexico ex rel. Richardson v. BLM, 565 F.3d 683, 708 (10th Cir. 2009) (quoting Colo. Envtl. Coal. v. Dombeck, 185 F.3d 1162, 1174 (10th Cir. 1999)).

<sup>&</sup>lt;sup>60</sup> Id. at 708-09 (citing Westlands Water Dist. v. U.S. Dep't of the Interior, 376 F.3d 853, 868 (9th Cir. 2004)).

"improve ecosystem resilience and function at the landscape scale to sustain healthy forests and watersheds for future generations; and maintain and promote a ponderosa pine/frequent fire forest vegetation community that has a mosaic of forest conditions composed of structural stages ranging from young to old trees."<sup>61</sup>

The Forest Service further explains that "there is a need to:"

- *Return ponderosa pine forest to a fire adapted ecosystem (high frequency low intensity surface fires);*
- Manage fire in first entry and follow-up prescribed fire treatments (maintenance burns for secondary treatment);
- Retain large and old ponderosa pine trees while reducing heavy fuel loads and overly dense stands of smaller trees present in many portions of the project area;
- Restore forest structure and process (including natural disturbances such as lowseverity fire, watershed function, and nutrient cycling) by restoring the ponderosa pine forest type to increase resilience to disturbance, improve forest health, and improve habitat ....
- Maintain and promote a ponderosa pine/frequent fire forest vegetation community that is a mosaic of forest conditions composed of structural stages ranging from young to old trees....
- *Improve forest habitat for wildlife species*....<sup>62</sup>
  - 2. The Forest Service's failure to analyze the Center's 2015 alternative, or provide a rational basis for doing so, violates NEPA.

In our April, 2015 comments on the scoping proposal, the Center and the Sierra Club proposed, and requested that the Forest Service analyze in detail, an alternative that differed from the proposed action by its emphasis of protecting large (>18") and old (>130 years) trees without exception, a focus on cutting small diameter trees, retaining higher basal area in old growth and goshawk nest areas, and retaining canopy cover based on the Forest Service's own goshawk habitat management guidelines.

The Center's scoping comments explained that this proposed alternative

(1) meets the purpose and need [established in the Kaibab NF's scoping notice] by actively managing forest vegetation to accomplish ecological restoration framed by reference conditions discussed above; (2) minimizes potentially significant cumulative management effects by retaining large, fire-resistant trees, which are not common at any spatial scale; and (3) mitigates adverse direct and

<sup>&</sup>lt;sup>61</sup> Burnt Corral Draft EA at 10.

<sup>&</sup>lt;sup>62</sup> Burnt Corral Draft EA at 10-11.

indirect effects to sensitive wildlife species that require closed canopy forest and/or old growth habitat for essential life behaviors. It intends to manage forest vegetation, reduce landscape-scale fire hazard, conserve sensitive wildlife habitat and old growth forest, and restore a natural fire regime to accomplish the purpose and need.<sup>63</sup>

The Center also explained how its proposal complied with the Kaibab NF's Forest Plan, and how it "*is unique from the proposed action in its approach to mechanical treatments of forest vegetation*," in part because it would reject the Forest Service's proposal to undertake logging that would result in the removal of large and old trees.<sup>64</sup>

Because the Center's proposal meets the purpose and need, is not too impractical or ineffective, and is distinguishable from the proposed alternative, it is a reasonable alternative that the Forest Service should have considered in detail.

Instead the Forest Service dismissed the alternative in six sentences, none of which explain clearly the reasons for the dismissal:

One commenter suggested an alternative to the Proposed Action that was not based on metrics from the current forest plan. The interdisciplinary team reviewed the suggested alternative, and one aspect of the proposed alternative the interdisciplinary team agreed with is that large tree retention is a key point to be analyzed in the NEPA analysis (as required under the forest plan). The interdisciplinary team also discussed additional information needs such as data gaps, proposed modifications, and a general description of the process and timeline. The alternative considered, and eliminated, may have improved or maintained wildlife habitat in the short-term, but would not be effective for the long-term for vegetation improvements to improve forest health and vigor). The Proposed Action is a landscape scale project greater than 10,000 acres, and within the project area there may be some areas that receive higher treatment regarding thinning of vegetation structure in order to achieve or move towards the mid-scale or landscape scale desired condition, in accordance with the new forest plan. The outcome was a decision from the district Ranger to evaluate two alternatives: the Proposed Action and the No Action Alternative for baseline conditions.<sup>65</sup>

This explanation is arbitrary and capricious and cannot be used as a basis for dismissing the Center's proposed alternative for a number of reasons. First, it is not clear whether the Draft EA is referring to the Center's proposal, because Draft EA fails to provide any detail about the nature of the proposal the agency is rejecting. Second, the Draft EA fails to explain why protecting all large and old trees "would not be effective for the long-term for vegetation improvements to improve forest health and vigor," or would not comply with the Kaibab Forest

<sup>&</sup>lt;sup>63</sup> Exhibit G, p. 13.

<sup>&</sup>lt;sup>64</sup> *Id.* at 13-14. See id. at 13 (distinguishing Center's proposal from the proposed action because the former would "retain existing tree groups dominated by large, fire-resistant trees," whereas the proposed action would allow logging of such trees over thousands of acres, such as is being done on the Jacob-Ryan project.

<sup>&</sup>lt;sup>65</sup> Burnt Corral Draft EA at 14.

Plan. Third, as discussed above, the Forest Service must consider alternatives that partially meet the purpose and need set by the agency, and the Center alternative does so. Fourth, even if the proposal would somehow not comply with the Forest Plan, agency regulations anticipate that the Forest Service can amend a Forest Plan to conform to a site-specific project decision.<sup>66</sup>

3. The Forest Service should analyze the Strategic Treatments for Fire Use alternative.

The Center's scoping comments on the Kaibab Plateau Ecological Restoration Project, submitted on November 5, 2018, described at length the Strategic Treatments for Fire Use Alternative (STFU) and specifically requested that the Forest Service analyze such an alternative for not only the Kaibab Plateau Ecological Restoration Project, but also the Burnt Corral project area, for reasons which we have explained. As we have expressed earlier in this letter, we request that the Burnt Corral project is abandoned, and the project area is included in a Plateau-wide optimization modelling and fire-based restoration planning process under the KPERP NEPA analysis. The Strategic Treatments for Fire Use Alternative is the mechanism we propose for completing this revised process.

At the core of the Strategic Treatments for Fire Use Alternative is our position that the current direction in planning, analysis and implementation of Southwestern forest restoration is overly reliant on meeting structural and compositional targets, representing what is in effect a nonviable silvicultural solution to a complex ecological problem. The quest to create the ideal vegetative state across every operable acre has marginalized the overriding importance of firedriven ecological processes. The Center rejects a framework which assumes that complex ecosystems can be wrangled into fixed proportions of tree ages and sizes that must be repeatedly tinkered with at 30-year rotations to maintain "desired conditions." In areas where strategically located mechanical intervention is implemented, fire alone can and should be the primary future maintenance tool.<sup>67</sup> Measuring the health of the forest on the basis of density-metrics represents a worn-out allegiance to a past industrial paradigm. This regulated-forest model defines successful restoration as growing large, defect-free trees as quickly as possible and ignores the complexity of process-centered ecosystem function. Restoring a forest is not an exercise in manipulating every quantifiable metric into a neat category, or alleviating any form of stress that might lead to unexpected mortality. Renowned fire ecologist Dr. Pete Fulé stated that "The firerelated adaptations of pine forests are associated with fire's role as a selective force going far *back in evolutionary time*,"<sup>68</sup> suggesting that restoration of fire adapted dry forests is inseparable from the influence of recurrent fire as a primary selective force. Applying a new form of growth and density regulation, as articulated in GTR-310<sup>69</sup>, cannot by itself accomplish restoration at

<sup>67</sup> North, M., B.M. Collins, and S. Stephens. 2012. Using Fire to Increase the Scale, Benefits, and Future Maintenance of Fuels Treatments. *Journal of Forestry* 110(7): 392-401; and Reinhardt, E.D., R.E. Keane, D.E. Calkin, and J.D. Cohen. 2008. Objectives and considerations for wildland fuel treatment in forested ecosystems of the interior western United States. *Forest Ecology and Management* 256:1997-2006.

<sup>&</sup>lt;sup>66</sup> See, e.g., 36 C.F.R. § 218.22(c) (assuming that forest plan amendments may be "included as part of a proposed project or activity"); Forest Service NEPA Handbook 1909.15, Ch. 11.22 ("Remember to include any forest plan amendments that might be part of a decision.").

<sup>&</sup>lt;sup>68</sup> p. 528 in Fulé 2008. Does it make sense to restore wildland fire in changing climate? *Restoration Ecology* 16(4): 526-531.

<sup>&</sup>lt;sup>69</sup> Reynolds *et al.* 2013. Restoring composition and structure in Southwestern frequent-fire forests: A science-based framework for improving ecosystem resiliency. RMRS-GTR-310.

meaningful landscape scales; only the additive effects of frequent fire can fully restore these ecosystems. We believe that because the KPERP is a "non-commercial" project that our vision for strategically designed and implemented small-scale treatments fits well into the Forest Service's proposed action for that project. Unfortunately, the Forest Service has neglected to take this fantastic opportunity to grant our request and fold Burnt Corral into KPERP and analyze an alternative that maximizes return on limited resources.

As described in our KPERP scoping letter, the STFU would utilize a modified version of the methodology developed by early Forest Service scientists (Finney and Ager, for example) and used by the Hurteau lab with results published by Krofcheck and colleagues.<sup>70,71</sup> Their research has developed "prioritization strategies for implementing fuel treatments … with the goal to maximize treatment efficacy using optimal placement and prescription options under typical and extreme fire weather conditions."<sup>72</sup>

Their optimization model, under which the land manager would mechanically treat only the operable areas with the highest probability of mixed- and high-severity fire, was shown in multiple fire simulations to be as effective as thinning all operable acres at reducing wildfire burn severity and facilitating landscape scale low-severity fire restoration. This approach could inform landscape-scale restoration planning nationwide, as "*Testing of strategic placement of treatments by resource managers will add data in the years ahead and provide information that can be shared and applied in other locations*."<sup>73</sup>

Krofcheck and colleagues have recently completed similar optimization simulations for the Santa Fe Fireshed,<sup>74</sup> which should provide additional direction for utilizing such an approach in Southwestern ponderosa pine and mixed conifer forests. A significant added benefit of the optimization strategies developed by the Hurteau lab is the increased carbon that is retained on the landscape through minimizing logging and maximizing the use of fire to achieve restoration objectives. In a briefing paper summarizing this recent research, Krofcheck and colleagues wrote that

"Prioritizing the allocation of thinning treatments to areas with the greatest chance of burning under high-severity wildfire and treating the rest of the landscape with prescribed burning, can substantially reduce the area requiring thinning. Optimally locating thinning treatments can result in greater carbon storage across the landscape, with less risk of stand-replacing wildfire. The benefits of treatment optimization persist even as fire weather becomes more

<sup>&</sup>lt;sup>70</sup> Krofcheck, D.J., M.D. Hurteau, R.M. Scheller, and E.L. Loudermilk. 2017. Prioritizing forest fuels treatments based on the probability of high-severity fire restores adaptive capacity in Sierran forests. Global Change Biology DOI: 10.1111/gcb.13913.

<sup>&</sup>lt;sup>71</sup> Krofcheck, D.J., M.D. Hurteau, R.M. Scheller, and E.L. Loudermilk. 2017. Restoring surface fire stabilizes forest carbon under extreme fire weather in the Sierra Nevada. *Ecosphere* 8(1): 1-18.

<sup>&</sup>lt;sup>72</sup> <u>http://www.hurteaulab.org/</u>

<sup>&</sup>lt;sup>73</sup> p. 15 in Peterson, D. L. and M.C. Johnson. 2007. Science-based strategic planning for hazardous fuel treatment. *Fire Management Today* 67(3):13-18.

<sup>&</sup>lt;sup>74</sup> Krofcheck, D.J., C.C. Remy, A.L. Keyser, and M.D. Hurteau. 2019. Optimizing forest management stabilizes carbon under projected climate and wildfire. *Journal of Geophysical Research: Biogeosciences* 10.1029/2019JG005206.

severe with changing climate. Restoring high-frequency fire regimes is critical for reducing the risk of high-severity wildfire and stabilizing carbon."

Furthermore, they wrote that they

"...found that mechanically treating areas with the highest risk of high-severity wildfire and using prescribed fire to treat the unthinned areas (optimized scenario), [they] could reduce the area mechanically treated when all operable areas were thinned (prioritized scenario) by 54%. This outcome required a 27% increase in the area treated with prescribed burning. Both scenarios reduced high-severity wildfire when compared to the no-management scenario, as well as a significant reduction in wildfire carbon emissions. However, the optimized scenario did so at a considerable carbon savings in the short term, yielding a significant reduction in high-severity fire and stabilized the remaining carbon. However, in both the management scenarios, maintaining carbon stability under changing climate and increasingly severe fire weather was contingent on the regular application of prescribed fire at return intervals that are consistent with historic fire regimes."<sup>75</sup>

Optimizing spatial prioritization of non-commercial mechanical treatments reflects an evolution of fire management, placing emphasis on restoring fire as a natural process, rather than simply disrupting fire spread and protecting areas from burning.<sup>76</sup> The result of a strategic approach is to move away from managing for short-term outcomes and towards achievement of long-term restoration goals and objectives, consistent with calls from the scientific community to increase the use of prescribed and managed wildfires for resource benefit.<sup>77</sup> In a review of optimization strategies, Collins and colleagues stated that "*The basic idea is that an informed deployment of treatment areas, a deployment that covers only part of the landscape, can modify fire behavior for the entire landscape.*"<sup>78</sup>

In sum, the STFU alternative, compared to the proposed action, would: better achieve ecological and restoration outcomes; result in less disturbance from mechanical treatment; require fewer Forest Service resources; and better protect our shared climate.

<sup>&</sup>lt;sup>75</sup> Briefing paper on Krofcheck et al 2019.

<sup>&</sup>lt;sup>76</sup> Ager, A.A., N.M. Vaillant, and A. McMahan. 2013. Restoration of fire in managed forests: a model to prioritize landscapes and analyze tradeoffs. *Ecosphere* 4(2): 1-19.

 <sup>&</sup>lt;sup>77</sup> Stephens, S.L., B.M. Collins, E. Biber, and P.Z. Fulé. 2016. U.S. federal fire and forest policy: emphasizing resilience in dry forests. *Ecosphere* 7(11): 1-19.
 <sup>78</sup> p. 25 in Collins *et al.* 2010. Challenges and approaches in planning fuel treatments across fire-excluded forested

<sup>&</sup>lt;sup>78</sup> p. 25 in Collins *et al.* 2010. Challenges and approaches in planning fuel treatments across fire-excluded forested landscapes. *Journal of Forestry* Jan/Feb 2010: 24-31.

### CENTER for BIOLOGICAL DIVERSITY

### 4. The STFU Alternative meets the KPERP Project's Purpose and Need.

The Forest Service's stated purpose of the Burnt Corral project "improve ecosystem resilience and function at the landscape scale to sustain healthy forests and watersheds for future generations; and maintain and promote a ponderosa pine/frequent fire forest vegetation community that has a mosaic of forest conditions composed of structural stages ranging from young to old trees."<sup>79</sup>

By using strategically located thinning in locations furthest departed from reference conditions, and using landscape scale fire across the remaining area, the STFU alternative would meet the project's purpose and need for all of the identified needs listed below. This is further valuable given the Forest Service's acknowledgement that industry capacity is insufficient to meet the demands of widespread timber harvest. In the left column, we have copied directly from the Burnt Corral Draft EA (pages 10-11), and in the right column we address how the STFU would meet that stated project need.

Burnt Corral Project Need	How STFU Meets the Project Need
Return ponderosa pine forest to a fire	Consistent with the best available science and Forest Service
adapted ecosystem (high frequency – low	experience, by strategically locating thinning and using prescribed and
intensity surface fires)	wild fire where risk of high severity fire is low, the STFU would
	effectively allow the safe reintroduction of low intensity fire to the
	Kaibab Plateau, including the Burnt Corral project area.
Manage fire in first entry and follow-up	The STFU would be a fire-centric alternative which would empower
prescribed fire treatments (maintenance	Forest Service fire managers to use the entry timing, frequency, and
burns for secondary treatment)	intensity of their choosing.
Retain large and old ponderosa pine trees	The STFU would focus thinning treatments on a subset of the
while reducing heavy fuel loads and	landscape for which models predict the highest severity fire. As such,
overly dense stands of smaller trees	heavy fuel loads and overly dense stands of smaller trees would likely
present in many portions of the project	be identified for thinning and follow-up pile burning before allowing
area	wildland fire to play its natural role. In contrast to the proposed Burnt
	Corral project, old and large trees would be retained by prohibiting
	their removal in all cases except direct human safety concerns.
Restore forest structure and process	The STFU would use strategically located thinning combined with
(including natural disturbances such as	landscape scale fire to restore natural processes and functions to the
low-severity fire, watershed function, and	Kaibab Plateau, which would support a forest structure that is
nutrient cycling) by restoring the	sustainable and tracks climate changes. The effects of the STFU would
ponderosa pine forest type to increase	include reduced ladder fuels, crown base heights, and SDI; stimulated
resilience to disturbance, improve forest	oak and aspen regeneration; creation and maintenance of uneven aged
health, and improve habitat.	forest structure; and creation of openings.
Maintain and promote a ponderosa	By targeting thinning on the areas furthest departed from natural range
pine/frequent fire forest vegetation	of variability and at highest risk of severe wildfire effects, the STFU
community that is a mosaic of forest	would restore age and size class diversity to those stands dominated by
conditions composed of structural stages	dense, young trees. Then, wild or prescribed fire would naturally
ranging from young to old trees.	maintain age class diversity as it has for millennia, resulting in reduced
	basal area; mosaic burn effects creating groups, clumps, canopy gaps,
	and openings; increased production of forage; and enhanced tree vigor.
Improve forest habitat for wildlife species	Native species such as goshawk and spotted owl evolved with frequent
	fire and occasional mixed severity fire, so the use of the tools in the
	STFU would improve habitat for these species.

<sup>&</sup>lt;sup>79</sup> Burnt Corral Draft EA at 10.

The Burnt Corral Draft EA claims that the project will locate mechanical treatments strategically when it states that it will "*Strategically place treatments and vary the sizes of thinned areas on the landscape, taking advantage of topography and roads, particularly East-West roads, to achieve fire management objectives.*"<sup>80</sup> That is the only suggestion that any strategy would be employed. The reality is that the Forest Service has targeted numerous stands which could safely burn under current conditions for logging because there are large and old trees there that the Forest Service can't help but cut. In fact many of these stands have been burning recently in one of many recent wildfires or prescribed fires.

In the KPERP EA, the Forest Service admits that "[m]*echanical treatments are costly, so the capacity to implement such treatments across the landscape is limited. Strategic placement and design of mechanical treatments increases their effectiveness in protecting values at risk<sup>\*\*</sup><sup>81</sup> and that "[s]<i>trategic placement and design more efficiently protects values at risk, given the limited resources and capacity to implement activities across the landscape.*<sup>\*\*</sup><sup>82</sup>

Why would the Forest Service argue for strategic treatment design in one project (KPERP), but not another (Burnt Corral)? Failure to use strategic treatment design at Burnt Corral while using it for the KPERP area which surrounds it would be arbitrary and capricious.

Because the STFU alternative meets the project's purpose and need, it is a reasonable alternative that the agency must consider in detail.

3. The STFU Alternative Is Not Remote, Speculative, Impractical or Ineffective.

The STFU alternative is not remote, speculative, impractical or ineffective. In fact, based on scientific studies, the STFU alternative would meet the purpose and need for the project with less cost, and fewer adverse environmental impacts, than the proposed alternative.

As we described in scoping for the KPERP project, and again here, treatment optimization is a long-studied management tool which the Forest Service has made available for use in NEPA projects. One common fundamental similarity between all optimization models is that they seek to reduce fire-severity or minimize wildfire risk, balancing tradeoffs between the size of treatment units, the placement of treatments, and the proportion of the landscape treated.<sup>83,84,85</sup> Collins and colleagues<sup>86</sup> also reviewed fuel treatment strategies, including much of Finney and Ager's work, and arrived at some basic parameters for optimizing fuel reduction treatments at the landscape scale that provide some guidance for those evaluating tradeoffs and can be used as guidelines in the Strategic Treatments for Fire Use Alternative:

<sup>85</sup> Krofcheck, D.J., M.D. Hurteau, R.M. Scheller, and E.L. Loudermilk. 2017a. Prioritizing forest fuels treatments based on the probability of high-severity fire restores adaptive capacity in Sierran forests. *Global Change Biology DOI:* 10.1111/gcb.13913.

<sup>&</sup>lt;sup>80</sup> Burnt Corral Draft EA, p. 16.

<sup>&</sup>lt;sup>81</sup> Kaibab Forest Plan at 75.

<sup>&</sup>lt;sup>82</sup> KPERP EA at 31.

<sup>&</sup>lt;sup>83</sup> Collins *et al.* 2010.

<sup>&</sup>lt;sup>84</sup> Chung 2015. Optimizing fuel treatments to reduce wildland fire risk. *Current Forestry Reports* 1: 44-51.

<sup>&</sup>lt;sup>86</sup> Collins *et al.* 2010

• Treating 10% of the landscape provides notable reductions in modeled fire size, flame length, and spread rate across the landscape relative to untreated scenarios, but treating 20% provides the most consistent reductions in modeled fire size and behavior across multiple landscapes and scenarios.

• Increasing the proportion of area treated generally resulted in further reduction in fire size and behavior, however, the rate of reduction diminishes more rapidly beyond 20% of the landscape treated.

• Random placement of treatments requires substantially greater proportions of the landscape treated compared with optimized or regular treatment placement.

• The improvements offered by optimized treatments are reduced when 40-50% of the landscape is unavailable for treatment due to land management constraints.

• Treatment rates beyond 2% of the landscape per year yield little added benefit.

Forest Service and academic scientists have been providing mangers with analytical and planning tools for years to encourage informed deployment of mechanical thinning. Projects like the KPERP and Burnt Corral are exactly where these tools should be utilized. Because the STFU alternative is not remote, speculative, impractical or ineffective, it is a reasonable alternative that the agency must consider in detail.

4. The STFU Alternative Is Significantly Distinguishable from the Action and No Action Alternatives.

The Forest Service may not fail to analyze the STFU alternative on the grounds that it cannot be distinguished from the proposed action. The STFU alternative in fact would result in numerous differences in on-the-ground treatments.

The primary manner by which the STFU is distinguishable from the proposed action is that the STFU would identify thinning treatment areas based on an informed, landscape level optimization analysis, consistent with the best available science, rather than leave decisions for treatment locations up for spur-of-the-moment judgements within a conditions-based management approach. This approach was asked for during the KFHF, but the Forest Service has instead decided to target old growth for commercial harvest.

The Burnt Corral EA does not identify where treatments would be placed. Instead, any stand that the Forest Service has decided contains resources they wish to exploit, and that is on a slope less than 40% steep, is identified for possible treatments. There is no way that every stand identified in the Draft EA for logging will be logged.

In this manner, the STFU is markedly different, as it would identify specific locations where mechanical thinning would yield the most effective results. The STFU would evaluate the landscape, including existing holding features, and identify the subset of the landscape that, if thinned, would allow use of prescribed or managed wildfire across a broader area. Thus, the STFU has the added advantage of resulting in disclosure of site-specific impacts of the project, as NEPA mandates.

5. The Forest Service's Failure to Analyze the STFU Is Arbitrary and Capricious.

Because the STFU alternative meets the project purpose and need, would effectively move the forest in the desired direction, and differs from the proposed alternative in critical ways, it is a reasonable alternate that the Forest Service must consider in any subsequently prepared NEPA document for area contained by the proposed Burnt Corral Project. Failure to consider this reasonable, middle ground alternative would violate the "heart" of the NEPA process.

The agency's failure to acknowledge or respond to the Center's proposal would be an independent NEPA violation, particularly in light of federal court decisions requiring agencies to either analyze reasonable alternatives or explain why the agency was declining to do so.<sup>87</sup> Thus, the Forest Service must either analyze the STFU alternative in detail, or providing a well-reasoned explanation for declining to consider the alternative.

And, as noted above, federal courts do not permit agencies to ignore alternatives on the grounds that they were submitted by the public, nor because the agency undertook an EA and not an EIS. For all these reasons, the Forest Service must consider the STFU alternative in any subsequently prepared NEPA document.

<sup>&</sup>lt;sup>87</sup> See 36 C.F.R. § 220.4(c)(2) (for each Forest Service proposal, Forest Service officials shall "[c]onsider[] environmental documents, public and agency comments (if any) on those documents, and agency responses to those comments.").

### V. THE EA FAILS TO UTILIZE THE BEST AVAILABLE SCIENCE.

As a general matter, CEQ regulations mandate that information in NEPA documents "must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA."<sup>88</sup> Federal law ensures that all agencies shall "initiate and utilize ecological information in the planning and development of resource-oriented projects."<sup>89</sup>

Public involvement is critical to sound decision-making. "One of the twin aims of NEPA is active public involvement and access to information."<sup>90</sup> Federal agencies must "assess and consider [public] comments both individually and collectively, and shall respond ... stating its response in the final [NEPA document]" by (1) "modify[ing] alternatives"; (2) "develop[ing] and evaluat[ing] alternatives not previously given serious consideration"; (3) "supplement[ing], improv[ing], or modify[ing] its analyses"; (4) "making factual corrections"; or (5) "[e]xplain[ing] why comments do not warrant further agency response, citing the sources, authorities, or reasons which support the agency's position and, if appropriate, indicate those circumstances which would trigger agency reappraisal or further response."<sup>91</sup> "Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA."<sup>92</sup> Thus, agencies are to make "diligent efforts" to involve the public in NEPA procedures.<sup>93</sup>

Courts have concluded that to ensure that the agency has taken the required "hard look," the agency must utilize "*public comment and the best available scientific information*."<sup>94</sup> The Ninth Circuit has ruled that government land management agencies violated NEPA when they "*neither responded to* [or] *considered comments* "*objectively and in good faith*" nor made responsive changes to the proposed regulations."<sup>95</sup> The Ninth Circuit similarly ruled that government land management agencies violated NEPA when they dismissed issues raised in comments, and "*did not provide the 'full and fair discussion' of the issue required by NEPA, and also did not properly respond to [public] comments*."<sup>96</sup>

In this section we review important issues identified by stakeholders or addressed in the Draft EA, and provide additional information for the Forest Service to consider.

### A. Old growth patches and old growth protection and large tree retention

We are incredibly shocked that the Burnt Corral Draft EA would allow so much old growth cutting. The Draft EA states that:

<sup>&</sup>lt;sup>88</sup> 40 C.F.R. § 1500.1(b).

<sup>&</sup>lt;sup>89</sup> 42 U.S.C. § 4332(H)

<sup>&</sup>lt;sup>90</sup> Price Road Neighborhood Ass'n v. U.S. Dept. of Transportation, 113 F.3d 1505, 1511 (9th Cir. 1997).

<sup>&</sup>lt;sup>91</sup> 40 C.F.R. § 1503.4(a).

<sup>&</sup>lt;sup>92</sup> 40 C.F.R. § 1500.1(b).

<sup>&</sup>lt;sup>93</sup> 40 C.F.R. § 1506.6.

<sup>&</sup>lt;sup>94</sup> *Biodiversity Cons. Alliance v. Jiron*, 762 F.3d 1036, 1086 (10th Cir. 2014) (internal citation omitted); *see also Lee v. United States Air Force*, 354 F.3d 1229, 1244 (10th Cir. 2004) ("agencies must use the 'best available scientific information' when assessing environmental impacts").

<sup>&</sup>lt;sup>95</sup> W. Watersheds Project v. Kraayenbrink, 632 F.3d 472, 492-933 (9th Cir. 2011).

<sup>&</sup>lt;sup>96</sup> Nat. Desert Ass'n v. BLM, 625 F.3d 1092, 121-22 (9th Cir. 2010).

"In addition to the identified old growth patches, old growth, as defined in the forest plan vegetation management guidelines would be retained ... [except in] Large contiguous areas that have not been impacted by timber harvest, where fire exclusion has created forest structure conditions that are distinctly outside of the natural range of variability for the Kaibab Plateau, and where current predicted fire behavior suggests high risk of unnaturally severe wildfire and/or other degradation or desired characteristics."<sup>97</sup>

The Draft EA then attempts to make it sound like the Forest Service might only rarely cut the odd ("pre-European settlement") trees, and then if they do they will leave it on the ground. But, then another exception is stated, that if there are more old growth trees on the ground than would occur under the desired range in the forest plan, then they would be removed. So, these exceptions create a scenario where the Forest Service would justify themselves in locating patch cuts on an area of old trees, and be forced to have them hauled off to the sawmill because the Forest Plan wouldn't allow that many logs on the ground. There are two major problems with this logic: (1) the Forest Service is improperly interpreting the natural range of variability for old growth forests on the Kaibab Plateau (addressed later in this section), and (2) fire behavior models are built on a foundation of outdated data, and can't be trusted to predict fire behavior in stands where old growth occurs or stands that are dominated by old growth (addressed in the next section in this letter).

Our data, collected from a sample of stands over a week in May, 2020, tells a compelling story. Section XI in this letter describes some of our findings. Of great significance are our findings for the general age of stands, average age of trees, and the age of small trees. We sampled six stands assigned "new patch cuts" treatments, and what we found was shocking and disturbing. Section XI illuminates these findings in great detail, but in sum, we found that stands targeted of the most intense treatment are dominated by old trees. There is no way that the Forest Service could meet their stated objective of balancing age classes, installing patch cuts, and thinning the matrix to 80BA without cutting a tremendous amount of old growth trees.<sup>98</sup> A further concern is that the Draft EA does not define or disclose where in these stands the 10% patch cuts would be located, leaving the public to guess about what the effects of the treatments would be on these stands containing irreplaceable old growth structural elements. Failure to disclose these site-specific impacts is an independent NEPA violation.

This project should not cut a single old tree. The Forest Service has admitted the legacy of old growth cutting in the 4FRI Rim Country Draft EIS, stating that ""[t]*he loss of old growth and old trees would require decades to centuries to recover.*"<sup>99</sup> The retention of all old trees in the Burnt Corral project area is imperative. There has never been a scientifically valid article published that endorses logging old growth in an effort to mitigate fire risk in remote forests like the Kaibab Plateau. To the contrary, the bulk of restoration ecology literature has emphatically stressed the need to retain and protect all pre-settlement trees.

<sup>&</sup>lt;sup>97</sup> Burnt Corral Draft EA, p. 71.

<sup>&</sup>lt;sup>98</sup> We refer the Forest Service to our photographs, submitted by mail, for these stands. Also, in the next section of this letter, we will describe in narrative form some of our observations.

<sup>&</sup>lt;sup>99</sup> Rim Country DEIS, Vol. 1, at 228.

### B. Northern Goshawk

Logging through Goshawk nest sites (what happened to PFAs?). Are mapped goshawk nest areas sufficient to conserve the species? When was the project area last monitored?

In preparing the Kaibab Forest Health Focus, the collaborative advised following Kaibab National Forest Plan standards and guidelines for northern goshawk. The KFHF stated that:

"In the current KNF Land Management Plan, there exists explicit guidance for managing habitat for the northern goshawk (Accipiter gentilis). This is the only species without a conservation agreement or recovery plan that the KNF is currently required to manage under explicit guidance for habitat characteristics. This requirement is reflected in treatment guidance provided through the Focus for some polygons identified for —northern goshawk management recommendations .... Regardless of species' status, the Focus group recognizes that wildlife considerations must be an explicit part of efforts to move from the recommendations conveyed in this document to project planning and/or Forest Plan revisions."<sup>100</sup>

As we pointed out in our scoping letter, "*The Center and Sierra Club assumed during collaboration in 2009 that the standards and guidelines for northern goshawk habitat that existed at the time would continue to be implemented by the Forest Service, but that assumption is no longer accurate.*" Now, we have a situation where PFA's are rendered meaningless, there is no requirement to maintain canopy cover in large tree classes, and the Forest Service will log right through nearly 100 goshawk nest sites.

Amazingly, Crocker-Bedford's 1990 article in the Wildlife Society Bulletin is still the best study yet on the effects of logging on goshawks. He was a US Forest Service biologist who studied the northern goshawk and concluded that logging on the Kaibab Plateau dramatically reduced goshawk reproductive success. In this paper, he writes that: "Nest buffers, either large or small, did not maintain goshawk reproduction. The recorded occupancy rates were 75-80% lower where timber harvest occurred around buffers, and nestling production was 94% lower."

He went on to say that:

"goshawks in logged locales probably suffered from a reduction in quality of habitat for hunting and from lower prey density. Goshawks are adapted to hunting in dense forest, and Kenward (1982) found that goshawks preferred hunting and were more successful in woodlands than in openings with scattered trees. Furthermore, harvests on the North Kaibab tended to result in the establishment of tree saplings and brushy species such as Gambel oak and New Mexico locust, and dense understories may impair goshawk detection and pursuit of prey."

<sup>&</sup>lt;sup>100</sup> KFHF, p.43.

In addition, Richard Reynolds recent article in Wildlife Monographs<sup>101</sup> supports our call to prohibit old and large tree cutting. In his paper, he writes that:

"Furthermore, management focused on harvesting large trees resulted in forests dominated by young- to mid-age trees and a narrowing of vertical canopy profiles. Narrowed [tree canopy] profiles and the establishment of young trees under residual [old tree] canopies has reduced the sub-canopy foraging flight space for goshawks. We posit that these changes have led to fewer and less productive prey habitats, lowered prey abundance, and reduced goshawk reproduction."

These two examples provide compelling reason, and strong scientific support, to retain all old and large trees, and to buffer nest sites from impactful logging operations. Please respond to our concerns for the adverse effects of thinning through goshawk nest areas. We have submitted, via email, Crocker-Bedfords paper, Reynolds (2017), and several other notable papers which the Forest Service must address or risk violating NEPA. In particular, please respond to the following studies which, in spite of NEPA's command that agencies use the best available science, the EA fails to mention or cite:

• Greenwald et al (2005)<sup>102</sup>: Who found that goshawks strongly favor dense forests with high canopy cover, and did not select stands with the greatest prey abundance. They also found that selection for natural openings, edges, and stand diversity was inconclusive. These finding contradict the recommendations of GTR-310 and the Forest Plan, and by extension the treatment design for Burnt Corral. Please explain how matrix thinning to 80BA, a 14" diameter cap in nest areas, and patch cuts are compatible with successful goshawk nesting and reproduction.

Beier et al (2008)<sup>103</sup>: Who found that northern goshawk breeding success decreased as site similarity to the Forest Service's goshawk guidelines increased. The goshawk guidelines formed the template for GTR-310 and the desired conditions in the Forest Plan. By extension, they have thus informed treatment design for Burnt Corral. Please explain how reducing canopy cover, eliminating old and large trees in and outside of nesting areas, and increasing stand openness and proportion of small/young trees will conserve northern goshawk in the project area. Also, please explain how not monitoring or retaining canopy cover will conserve northern goshawk in the project area.

Dickson et al (2014)<sup>104</sup>: Who found that across 895 nest sites northern goshawks preferred to nest in areas with high canopy-bulk density, intermediate canopy-base heights, and low variation in tree density. They theorized that higher canopy bulk densities likely occurred in areas characterized by an abundance of larger trees interspersed with dense groups of younger trees,

<sup>&</sup>lt;sup>101</sup> Reynolds et al, 2017, "Long-Term Demography of the Northern Goshawk in a Variable Environment."

<sup>&</sup>lt;sup>102</sup> Greenwald, D.N., D.C. Crocker-Bedford, L. Broberg, K.F.Suckling and T. Tibbitts. 2005. A Review of Northern Goshawk Habitat Selection in the Home Range and Implications for Forest Management in the Western United States. *Wildlife Society Bulletin* 33(1): 120-129.

<sup>&</sup>lt;sup>103</sup> Beier, P., E.C. Rogan, M.F. Ingraldi, and S.S. Rosenstock. 2008. Does forest structure affect reproduction of northern goshawks in ponderosa pine forests? *Journal of Applied Ecology* 45: 342–350.

<sup>&</sup>lt;sup>104</sup> Dickson, B.G., T.D. Sisk, S.E. Sesnie, R.T. Reynolds, S.S. Rosenstock, C.D. Vojta, M.F. Ingraldi and .M. Rundall. 2014. Integrating single-species management and landscape conservation using regional habitat occurrence models: the northern goshawk in the Southwest, USA. *Landscape Ecology* 29: 803–815.

and that goshawks preferred areas with fairly homogeneous structure. Please explain how proposed treatments in and around nest areas maintain these characteristics.

### E. Reference Conditions

Desired conditions for forests must be tailored to Kaibab Plateau reference sites. The Center has considerable concerns with the desired conditions established in the Kaibab Forest Plan, which represent the recommendations in General Technical Report 310 (Reynolds et al 2013; GTR-310) which we have addressed in previous correspondence with the Kaibab National Forest, including our scoping comments on both the KPERP and the Burnt Corral projects. GTR-310 is the Forest Service's own self-published desired conditions for dry conifer forest in the Southwest and its relevance to the Kaibab Plateau should be questioned.

In our scoping comments, we argued that the Forest Plan and GTR-310 too narrowly define desired conditions and do not account for the unique forests of the Kaibab Plateau. We stated, among other things, that:

"Ecologists stress definition of locally specific reference conditions to justify restoration goals and outcomes due to scale dependence of ecological pattern (Noss 1985, Swetnam et al. 1999, White and Walker 1997). Desired conditions for dry conifer forest in the Kaibab Forest Plan (USDA 2014a) are not specific to the Kaibab Plateau or the project area. They fail to address amply documented uncertainty and qualified disagreement among experts about forest ecology and management in the Southwestern Region (USDI 2014b). In particular, the desired conditions and stated purpose for action in this project do not: (1) account for historical variability in forest structure, composition or pattern, (2) establish a scientifically credible reference condition for restoration, or (3) prioritize management actions that will facilitate ecological restoration of fire-adapted forest. Close inspection of place-specific information reveals that Reynolds and others (2013) selectively interpreted it to make a poorly supported case for sustained mechanical intervention (i.e., logging) as a surrogate for restoration of natural fire regimes. It is appropriate to test the applicability of Forest Plan desired conditions to the project area with available information giving special attention to the ecological uniqueness of the Kaibab Plateau and documented benefits of fire use to accomplish restoration objectives (Fulé and Laughlin 2007, USDI 2009)."

In response to the Burnt Corral EA, we reiterate those comments here, and will say more.

As an initial matter, the Burnt Corral analysis fails to consult scientific sources of information which describe the natural range of variability for the forests of the Kaibab Plateau. The Vegetation Specialist Report states that:

"Depending on site and regeneration needs in ponderosa pine, the Plan recommends a range of basal area from 20 to 80 sq. ft. /ac. Group selection patch cuts (regeneration treatments) with seed tree retention would be in the 20 sq. ft. range with an open, park-like condition simulating historic stands (Reynolds et al, 2013)."<sup>105</sup>

Indeed, the Kaibab Forest Plan states that in ponderosa pine forests "*Basal area within forested areas generally ranges from 20 to 80 square feet per acre*"<sup>106</sup> and in mixed conifer forests "*Basal area within forested areas generally ranges from 30 to 100 square feet per acre*."<sup>107</sup> These ranges – and thus the Forest Service's prescriptions for Burnt Corral's treatments – specifically for ponderosa pine and dry mixed conifer forest, are not supported by the best available science for application on the Kaibab Plateau. Looking at the two metrics of density and basal area, the best available science is clear that the range reported in GTR-310 and the Forest Plan are far below what occurred on the landscape naturally, and thus that reliance on GTR-310's metrics for Burnt Corral will lead to treatments that will result in a-historical conditions at the low end of or below the natural range of variation.

Neither the Vegetation Report nor the Draft EA cite any of the place-specific reference site research that has been conducted on the Kaibab Plateau. We have summarized reference conditions reported in Fulé et al's seminal 2002 paper<sup>108</sup> in the table on the next page which refutes the basal area and trees/acre ranges reported in GTR-310 and the Forest Plan, and thus refutes the ranges promoted to Burnt Corral Draft EA. In addition to this information, we are particularly concerned that the Forest Service has not consulted important historical accounts of the Kaibab Plateaus old growth forests, as described in Grand Canyon Trusts report titled "An Environmental History of the Kane and Two-Mile Ranches." We request that that report is consulted, and that the Forest Service respond specifically to the issue of the unique conditions of the Kaibab Plateau's forests as described in those early accounts.

Also, recent research on the Long Valley Experimental Forest published by Forest Service scientist Jose Iniguez<sup>109</sup> is relevant to Burnt Corral because both sites are sedimentary soils. If Long Valley's pre-settlement trees per acre value (~75TPA) was included in GTR-310, it would have been more dense than any other ponderosa pine reference site cited in Arizona, with the exception of the four Grand Canyon sites studied by Fulé and others (2002). Iniguez's work reported that Long Valley has 50% higher tree density, 25% fewer single trees per hectare, 10% more groups of trees per hectare, 67% more trees within groups per hectare, maximum group sizes 500% larger, and 50% larger mean tree group size than at the Fort Valley Experimental Forest. Clearly, basing treatment prescriptions on GTR-310, which is heavily reliant on studies published out of Fort Valley, does not account for very different forest structure that is displayed at the Long Valley site which we assert is a required local site for informing desired conditions. This new information supports the need to increase tree density and basal area ranges for any management in the Burnt Corral project area.

<sup>&</sup>lt;sup>105</sup> Burnt Corral Vegetation Resources Specialist Report, Prepared by Garry Domis, Silviculturist, Kaibab National Forest Service, 2016: page 14.

<sup>&</sup>lt;sup>106</sup> Kaibab Forest Plan at 17.

<sup>&</sup>lt;sup>107</sup> Kaibab Forest Plan at 22.

<sup>&</sup>lt;sup>108</sup> Fulé, P.Z., W.W. Covington, M.M. Moore, T.A. Heinlein, and A.E.M. Waltz. 2002. Natural variability in forests of the Grand Canyon, USA. *Journal of Biogeography* 29:31-47.

<sup>&</sup>lt;sup>109</sup> Iniguez, J.M., J.F. Fowler, W.K. Moser, C.H. Sieg, L.S. Bagget, and P. Shin. 2019. <u>Tree and opening spatial</u> patterns vary by tree density in two old-growth remnant ponderosa pine forests in Northern Arizona, USA. *Forest Ecology and Management* 450: 117502.

Data reported in Fulé et al 2002, "Natural variability in forests of the Grand Canyon, USA" Reconstructed 1880's forest structure at Grand Canyon area study sites. Reported values for Density (trees/acre) shown in Table 6 (Fulé et al 2002, p. 39)				
General Area	Study site	Mean Density	Minimum Density	Maximum Density
South Rim	Kaibab Forest	58.7	8.1	226
South Rim	Grandview Point	56.7	4.1	247
North Rim	Powell Plateau	63.6	<b>8.2</b> (low)	<b>261.6</b> (high)
North Rim	Fire Point	61.8	16.2	125.6
North Rim	Rainbow Plateau	64.7	8.1	227.6
North Rim	Swamp Ridge	99.5	36.5	151.3
North Rim Mean	4 North Rim sites	72.4	17.3 (mean low)	<b>191.5</b> (mean high)

Data reported in Fulé et al 2002, "Natural variability in forests of the Grand Canyon, USA" Reconstructed 1880's forest structure at Grand Canyon area study sites. Reported values for Basal Area (square feet/acre) shown in Table 6 (Fulé et al 2002, p. 39)

General Area	Study site	Mean Basal Area	Minimum Basal Area	Maximum Basal Area
South Rim	Kaibab Forest	54.9	14.4	132.4
South Rim	Grandview Point	39.6	1.3	99.3
North Rim	Powell Plateau	78	20.5	<b>336.7</b> (high)
North Rim	Fire Point	89.3	28.3	131.6
North Rim	Rainbow Plateau	74	<b>19.1</b> (low)	281
North Rim	Swamp Ridge	124.1	65.8	235.2
North Rim Mean	4 North Rim sites	91.35	<b>33.4</b> (mean low)	246.1 (mean high)

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Based on the numbers reported by Fulé et al (2002), and transposed into the table above after converting from metric to standard units, the density values for the Kaibab Plateau, based on the four North Rim study sites, should be 8.2 to 261.6 trees/acre. Alternatively, the mean of ranges should be 17.3 to 191.5 trees/acre.

We have also provided the basal area values reported in Fulé et al (2002) which also are incongruent with GTR-310 and the Forest Plan. Based on the numbers reported by Fulé et al (2002), and transposed into the table above after converting from metric to standard units, the basal area values for the Kaibab Plateau, based on the four North Rim study sites, should be 19.1 to 336.7 ft<sup>2</sup>/acre. Alternatively, the mean of ranges should be 33.4 to 246.1 ft<sup>2</sup>/acre.

These ranges are *substantially higher* than the density values reported in GTR-310 and the Kaibab Forest Plan. By not designing Burnt Corral treatments to reflect the ranges reported in Fulé et al (2002) and other locally-specific sources, the Forest Service risks making an arbitrary and capricious decision that does not utilize the best available science.

Compare these ranges to what we collected at six Burnt Corral stands in our May, 2020 field work. The stands we visited were, much to our surprise, composed of largely old growth trees and retained uneven aged old growth structure, generally within the ranges presented in Fulé et al (2002). Aggressive treatments assigned to those stands, including patch cuts and thinning the matrix down to 60 to 80BA, will reduce the stand structure below or at the low end of what is was reported for relevant sites like Powell Plateau, Fire Point, and the Rainbow Plateau. It is imperative to remember that the values derived by Fulé and colleagues were across entire study areas, and did not deduce acreage or adjust basal area to account for patch cuts, interspace, regeneration openings, or any of the other schemes then Forest Service employs to justify heavier logging.

As we said in scoping, desired conditions for dry conifer forests suggested by Reynolds and others (2013) are clearly not specific to the Kaibab Plateau, and should be critically reviewed prior to assuming their usefulness. Covington and Moore<sup>110</sup> reported that presettlement forests of the Kaibab Plateau were the densest of any forests studied in the Southwest up to that point in time, so the desired conditions for Burnt Corral and all future projects should be modified to account for these site-specific characteristics.

We have again provided a copy of the Environmental History of the Kane and Two-Mile Ranches, which reviewed the best available science and historical accounts of the Kaibab Plateaus forests (see attachment to Exhibit F). That document, which supports our call for site-specific desired conditions, should be consulted as it is one of the most thorough evaluations of reference site reports and factors in determining the natural range of variability for the Kaibab Plateau.

<sup>&</sup>lt;sup>110</sup> Covington, W. W., Moore, M.M., 1994. Post settlement changes in natural fire regimes and forest structure: ecological restoration of old-growth ponderosa pine forests. J. Sustain. For. 2, 153-181.

We are concerned that the Forest Service does not fully understand the best available science. For example, the Vegetation Specialist Report for the KPERP cites Stoddard  $(2011)^{111}$  by claiming that in mixed conifer forests "research has indicated that tree density of southwestern warm/dry mixed-conifer forests ranged from about 21 to 99 trees per acre while basal area varied from 34 to 124 ft<sup>2</sup> per acre, prior to Euro-American settlement of the region."<sup>112</sup>

Interestingly, Stoddard's report does not actually support this claim. Stoddard's Table 1 describes the range of density values reported for mixed conifer varied from 43 to 235 ft<sup>2</sup>/acre and 36 to 151 trees/acre. For ponderosa pine, Stoddard's Table 1 describes the range of density values reported varied from 0 to 337 ft<sup>2</sup>/acre and 4 to 247 trees/acre. For both the mixed conifer and ponderosa pine types, Stoddard's report indicates that the densest forests in the Southwest were those of the Kaibab Plateau, and backs up our arguments for expanding treatment ranges up from the current objective of 20-80BA.

We suggest the Forest Service again review the data reported in Stoddard (2011) and see that the columns labelled as "range" of values are reflected properly in our comments, and not in the Draft EA. Failure to use the best available science and high-quality information would violate NEPA.

In GTR-310, Reynolds and others (p. 12) admit uncertainty in their recommendation of desired conditions for dry conifer forest resulting from a paucity of supporting information and geographic imbalance of accessible data, stating this:

"There is a clear need for additional reference condition data sets, including sites from a wider spectrum across environmental gradients (e.g., soils, moisture, elevations, slopes, aspects) occupied by frequent-fire forests in the Southwest, especially in dry mixed-conifer. While the quantity of reference data sets is increasing, existing data represent a largely unbalanced sampling across gradients (e.g., most data sets are from basaltic soils and on dry to typic plant associations), and there have been few studies quantitatively."

As such, any subsequent NEPA document prepared for Forest Service management of the Burnt Corral project area should include a forest plan amendment to adjust the desired conditions ranges in line with the best available science which we have presented here and in scoping comments. The Draft EA does not indicate that those information sources were evaluated. By failing to adjust the desired conditions to what is reported in Fulé et al (2002) and other sources described in the Environmental History of the Kane and Two-Mile Ranches report and our scoping comments on both Burnt Corral and KPERP, the Forest Service risks making an arbitrary and capricious decision that does not reflect the best available science as NEPA requires.

<sup>&</sup>lt;sup>111</sup> Stoddard, M.T. 2011. Compilation of historical forest structural characteristics across the southern Colorado Plateau. Flagstaff, AZ: Ecological Restoration Institute, Northern Arizona University.

<sup>&</sup>lt;sup>112</sup> KPERP Vegetation Report, Prepared by Ted Frank, Silviculturist, USDA Forest Service Enterprise Program, September 2019: page 13.

### VI. THE EA UTILIZES STALE DATA AND FAILS TO OBTAIN AND ANALYZE THE BASELINE CONDITIONS.

NEPA requires agencies to utilize high quality data and the best available information. Courts have set aside NEPA analysis that relied on "stale" data. The Ninth Circuit Court of Appeals has repeatedly held that agencies violated NEPA where they relied on outdated information, particularly where that data was important to the agency's decision and where newer data likely contradicted the agency's prior data.

The USFS is required to "describe the environment of the areas to be affected or created by the alternatives under consideration."<sup>113</sup> In order to comply with NEPA, the Forest Service must obtain and analyze the required current baseline/background data/information – and subject it to full public review under NEPA – for all potentially affected resources including water quality and quantity, air quality, recreational resources, plants and wildlife, and other resources. The Forest Service has violated NEPA by failing to use up to date and accurate data, despite those data existing and being furnished to the Forest Service for this project.

The establishment of the baseline conditions of the affected environment is a fundamental requirement of the NEPA process, because an inadequate environmental baseline precludes an accurate assessment of project impacts.<sup>114</sup> For example, by not providing accurate mapping of old growth stands and patches, the Forest Service cannot predict the effects of patch cuts, thinning from below, and other mechanical thinning actions on the important issues of old and large tree retention and old growth protection.

The Forest Service cannot meet its NEPA obligations by foregoing collection of current baseline ecological data, and, instead, anticipate that the impacts of the proposed action will be insignificant based off of stale data or qualitative observations gained through reconnaissance excursions.<sup>115</sup> Indeed, the Ninth Circuit Court has noted that the starting point of any NEPA analysis is the collection and description of baseline data, because, "without establishing ... baseline conditions ... there is simply no way to determine what effect [an action] will have on the environment, and consequently, no way to comply with NEPA."<sup>116</sup>

A recent federal court decision reiterated the NEPA requirement for a detailed baseline environmental analysis in an EA. In this case, regarding baseline groundwater quality conditions, the court found that an EA violated NEPA by failing to obtain and analyze baseline water quality data. The Ninth Circuit "acknowledge[d] the importance of obtaining baseline condition information before assessing the environmental impacts of a proposed project. ... Without the baseline data, the agency cannot carefully consider information about significant environmental impacts and thus, the agency fails to consider an important aspect of the problem, resulting in an arbitrary and capricious decision." This case is similar to the issue of old growth at Burnt

<sup>&</sup>lt;sup>113</sup> 40 C.F.R. §1502.15.

<sup>&</sup>lt;sup>114</sup> Oregon Nat. Desert Ass'n v. Jewell 823 F.3d 1258 (9<sup>th</sup> Cir. 2016) (without accurate baseline information the agency cannot accurately assess project impacts); N. Plains Resource Council v. Surface Transp. Board, 668 F.3d 1067 (9th Cir. 2011) (reversing decision due to inadequate baseline information).

<sup>&</sup>lt;sup>115</sup> Half Moon Bay Fishermans' Mktg. Ass'n v. Carlucci, 857 F.2d 505, 510 (9th Cir. 1988).

<sup>&</sup>lt;sup>116</sup> Id. at 510.

Corral, as without accurate maps of where old growth patches and stands exist, the Forest Service cannot measure the impacts of the proposed logging activities.

This renders a unique problem for relying on the Old Tree Implementation Plan as the sole mechanism to assure protection of old growth once project implementation begins. The aforementioned court ruling goes on to say that "... [a]*dditionally, even if the mitigation measures* [in the case of Burnt Corral these are the Old and Large Tree Implementation Plans] *may guarantee that the data will be collected in the future, the data is not available during the* [NEPA analysis] *process and is not available to the public for comment. ... Thus, the process does not serve its larger information role and the public is deprived of the opportunity to play a role in the decision-making process.... Baseline information before approval is required so that the agency can understand the adverse environment effects ab initio.*"<sup>117</sup>

A. Data used in project effects analysis is stale.

During the development of the collaborative proposed action, the Forest Service admitted that Kaibab National Forest Stand Exams field data are "outdated information." The data used in the NEPA analysis is out of date and cannot be trusted to predict fire behavior, location of old growth, or other metrics and values identified as issues for analysis. The 2016 Vegetation Resources Specialist Report states that: "*The data collected for the project was as recent as 2010, yet some of the stand data is 15 years or older*."<sup>118</sup> This means all of the data is at least 10 years old and that some of the data dates to 2001 or earlier. In fact, the data is much older than that. The Center acquired the stand exam data used for the effects analysis through a FOIA request. These data consisted of FSVeg simulation runs. While reviewing the data, we noticed that it was quite old. Through conversations with the Forest Service, we confirmed that the stand exam data used in the FSVeg effects analysis was indeed the only stand exam data used in the analysis, and we also confirmed the antiquity of the data. We have summarized these data below.

Year of data collection	Age of data	Acres covered by data	Percent of project area
1985	35 years	826 acres	2.86%
1989	31 years	96 acres	0.33%
1990	30 years	919 acres	3.18%
1992	28 years old	12 acres	0.04%
1993	27 years old	424 acres	1.47%
1994	26 years old	104 acres	0.36%
1995	25 years old	2821 acres	9.76%
1996	24 years old	35 acres	0.12%
1998	22 years old	427 acres	1.48%
1999	21 years old	11 acres	0.04%
2000	20 years old	139 acres	0.48%
2010	10 years old	2792 acres	9.66%

<sup>&</sup>lt;sup>117</sup> Gifford Pinchot, 2014 WL3019165 at p. 28-29, quoting *N. Plains Resource Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1083-85 (9th Cir.2011).

<sup>&</sup>lt;sup>118</sup> G. Doomis, Burnt Corral Vegetation Management Project EA, Vegetation Resources Specialist's Report (2016) at 9 (emphasis added).

### CENTER for BIOLOGICAL DIVERSITY

This chart makes it clear that the data used for the FSVeg analysis is very old and incomplete. What we found was that stand exam data exists for only 8,606 acres, or just 30% of the 28,090 acre project area. Only 10% of the entire project area has data that is more recent than 20 years old, and 60% of the data is more than 25 years old. Amazingly, nearly 10% of the data is 35 years old.

B. The Burnt Corral Draft EA relies heavily on the stale data.

The Forest Service is relying heavily on the stale stand exam data to inform fire behavior modelling, simulations of forest growth, and to determine the effects of logging prescriptions, including on the amount of old and large trees that would be removed. These stale data are effectively the only data used to inform a quantitative analysis of environmental effects of the proposed action. Despite stakeholder requests to develop better systems for identifying old growth, the Forest Service has not provided those data or tools.

When we inquired with the Forest Service about this concern of stale data, their response (in an email sent from David Vincelette to Joe Trudeau on 5/20/2020) was that numerous other data sources were used in the analysis. The Forest Service response stated that remote sensing data and LiDAR data was used to develop a preliminary estimate of stands containing "old growth." The remote sensing data were utilized during the development of the collaborative proposed action, and as we have shown elsewhere in this letter, those tools failed to identify many old growth stands (see photo submissions for examples of old growth stands targeted for patch cuts). The LiDAR data referenced in the Forest Service response was acquired by the Forest Service, but it was never used to shape the proposed action or the effects analysis. This is irrefutable because stand treatments assignments did not change from before to after the acquisition of the LiDAR data. We visited stands in the field that the LiDAR identified as probable old growth (and also mapped at 803 stands), and indeed they were dominated by old and large trees, diverse structure, and had little impact of past logging. These stands are assigned the highest intensity treatments under the current proposed action, despite being at very low risk of crown fire. It is clear that the LiDAR data was not used in any meaningful way, other than perhaps to identify areas with a valuable timber resource.

The Forest Service response explained that "Silviculturist (Andrew Orlemann) spent several months during the summer of 2015 conducting stand reconnaissance....Notes, photographs, and, sometimes video of 54 stands throughout the commercial treatment area (about 6,380 acres or  $\sim 37\%$ ), were gathered, allowing for the confirmation of conditions and proposed actions at the site level." These reconnaissance missions appear to have been solely to collect qualitative information, as we are not aware of any additional stand exam data being produced, and, as with the remote sensing, stand treatments assignments did not change from before to after the reconnaissance. Surprisingly, these recon missions did not result in the Forest Service identifying any additional old growth stands to be assigned the lightest treatment, which we did easily in just a few days. The Forest Service response also listed the various data layers harnessed by the 2014 collaborative efforts. These data were used for identifying preliminary treatment strata, but were not used in the effects analysis. In fact, the collaborative was forthright in admitting that the data being used was incomplete, out of date, and not adequate to meet the needs of informed planning. In spite of this, the Forest Service did not collect new or updated information.

C. The stale data is not only old, but is now inaccurate.

The stand exam data is not only old but inaccurate. In order to make a preliminary determination of whether the stale data was accurate or not, we sampled several stands that had stand exam data collected on them years ago. We followed the same forest measurement protocols used in the Forest Service's Stand Exam protocols, but reduced the range of measurements collected. We sampled 38 plots in seven stands, collecting data on tree diameter at beast height (to the nearest 1/10<sup>th</sup> inch), tree species, and ages of certain trees. The data were analyzed in Excel to arrive at metrics of basal area /acre, and trees/acre. The raw data in Excel have been mailed on a thumb drive to the Fredonia office. The final section of this letter provides some analysis of these data too. Some of the data we collected was dramatically different than the stand exam data used in the analysis. Here, we will review the data we collected and compare that to what was used in the analysis.

# 1. Inventory of Stands 0030790001, 0030790002, 0030790101 and 0030790102 - assigned treatments of new patch cuts (group selection) on 10% of area and thin matrix to 80BA

The stand exam data was collected for these stands in 1995, along with the entire eastern flank of the project. Because these stands were so similar in terrain and structural conditions, we aggregated the analysis, so our results reflect the conditions of all four stands together. Our data was collected at the stand level, so it could be compared stand-by-stand to the 1995 stand exam data simulations too.

	FSVeg 2018 Simulation			
Stand	Trees/Acre PIPO	Basal Area PIPO	Basal Area All	Basal Area Trees
			Trees	>18" dbh
0030790001	204.62	137.97	183.40	106.44
0030790002	88.91	103.01	104.82	89.90
0030790101	210.11	124.76	126.15	61.23
0030790102	268.89	70.45	70.45	42.17
Average 4 stands	193.1325	109.0475	121.205	74.935
CBD 2020 data	129.1	106.1	106.1	64.3

What we see are some significant differences in two main metrics. For one, the total trees/acre for ponderosa pine (PIPO) is substantially lower than FSVeg predicted, based off of the data collected in 1995. Also, the basal area for all tree species is lower than predicted. We believe that the reason for this is because the stands were logged and pre-commercially thinned in 1996, and then burned at a later date. The pre-commercial thinning reduced trees per acre substantially, bust mostly in the small age classes. Photo '5-20-20, 5.30.03PM' shows the results of this in a pole stand thinned in 1996. Basal area of all trees was reduced substantially because the prescribed fire killed many small oak and aspen seedlings and saplings. The reduction in basal area for trees >18" dbh reflects the light logging of large trees, as shown in photo '5-20-20, 1.18.52PM' and '5-20-20, 12.51.09PM'. However, our photos and our data, support our position that these stands are still dominated by enough old and large trees and old growth structure, that they should be designated as old growth and no longer commercially managed. The total basal area for all size classes was not reduced much over predicted values because of increased growth rates of trees following the 1996 release. What these data tell overall, is that the stand today is more open and dominated by larger trees than what FSVeg predicted. This has direct effects on

the way that FSVeg data would have predicted fire behavior. We are concerned that the 1996 logging and subsequent prescribed fire was not reflected in the data used for the analysis. Serious questions arise: how extensive was the 1996 logging? Was this the "Lookout Timber Sale?" Why was this change to conditions not updated, or why was outdated data used in the first place? Because we just so happened to sample a series of stands that are so different than the predicted structure, we must call into question the full set of data.

### 2. Inventory of Stands 0030460012 and 0030460014 - assigned treatments of new patch cuts (group selection) on 10% of area and thin matrix to 80BA

Stand 0030460012	Trees/Acre PIPO	Basal Area PIPO	Basal Area All	Basal Area Trees
			Trees	>18" dbh
FSVeg 2018	361.52	164.68	169.78	113.01
Simulation				
CBD 2020 data	107.2	100	100	56.3
Stand 0030460014	Trees/Acre PIPO	Basal Area PIPO	Basal Area All	Basal Area Trees
			Trees	>18" dbh
FSVeg 2018	226.33	175.98	175.98	91.69
Simulation				
CBD 2020 data	214	138	139.5	102.5

Stand data for both stands is presented below.

These two stands are next to each other, but a starkly different pattern emerges, with current conditions (based off our data) in stand 0012 being very different than what FSVeg predicted, but current conditions in 0014 being somewhat more similar. Data for these stands was collected in 1985, making it the oldest and least reliable in the entire dataset. These stands were burned in the 2008 Mill Fire, which altered forest structure variable across the burn area. There also may have been some thinning since 1985, too. As with the previously described stands being logged, thinned, and burned since data was collected, these stands too are in a different condition that FSVeg could ever predict. Stand 0012 is significantly different than what FSVeg predicted, meaning fire modelling, cutting effects on old growth, and other aspects of planning and analysis are affected.

As we identified above, the stand exam data used for the effects analysis, fire modeling, and stand growth simulations is very old. The Forest Service is aware of the limitations of FSVeg simulations as data becomes outdated. In the Jacob-Ryan project Final EA, the Forest Service wrote that "Modeling with the Forest Vegetation Simulator (FVS) provides quantitative information, especially for current stand conditions, yet it is limited in its predictions the longer the time span. As an example, periodic drought occurs on the NKRD, but it cannot be accounted for in the FVS modeling. Given that the frequency of fire within the ponderosa pine type on the NKRD is every 3 to 5 years, it is not realistic to project 20 or 40 years into the future without any qualification that disturbance is very likely to occur in the form of fire, insects, disease, wind, or other natural catastrophe."

This admission makes it very clear that the vast majority of the data used in the FSVEG analysis is very limited in its predictions. Furthermore, these limitations are compounded by the disturbances events which have occurred across most of the project areas since the time of data collection, such as logging, prescribed fire, and wildfire. The Draft EA lists the Burnt Saddle, Pine Hollow, and Lookout timber sales and the Westlake PCT as actions that have occurred on the project landscape. Have these projects occurred after data was collected for those treated stands? If so, how were the FSVeg data updated to reflect the changed conditions? Similarly, how ere FSVeg data updated to reflect conditions following fires (both natural and prescribed)?

Our photographs mailed in on the thumb drive provide numerous examples of how forest structure has changed since stand exam data was collected. For example, see the folder titled 'Burnt Corral Fire' which contains photos of several stands that burned in the Burnt Corral Fire of 2015. Some of these stands had stand exams completed in 2010, but now conditions are dramatically different in places, with raised crown base height, consumed ground fuels, consumed regeneration, killed overstory trees (especially white fir), a more open canopy, and other changes. Anywhere that fires have burned since the data was collected will be different than what the FSVeg simulation predicts. This impacts the accuracy and reliability of fire modelling, which is the basis for the Forest Service proposing many of the aggressive treatments in the project. Our photos also document many areas of open old growth forest that's should not be logged by any means at all. These areas include stand 0030400010, 0030460021, and the stands described above. While we didn't have time to sample these stands, we are confident that they meet the requirements for what would constitute an old growth stand. In fact, they were more impressive than stand 0030410004, which is designated as old growth.

D. The Forest Service has little other data to support its prescriptions or analysis.

Based on our observations and data, the current landscape treatment strata, as shown in Figure 7 in the Draft EA, dramatically underrepresents the amount of old growth on the landscape. For example, during earlier phases of the collaborative development of the proposed action, "803 stands" were identified as likely locations of old growth. The Predictive models of basal area and tree height developed by LCI and described in the 2014 "Collaborative Proposed Action" correlated with 803 stands and "provided most reliable data for estimating acres of old growth" (p. 35-36). In spite if this, the Draft EA does not identify the location of 803 stands, and in fact assigns "new patch cut" treatments to many of these stands (including stand 0030400010 which is without a doubt a legitimate old growth stand). The Forest Service must explain why 803 stands (which are evident in the Forest Service's own GIS data which we downloaded from the Region 3 geospatial portal) were removed from management for old growth conditions. These stands are the logical starting place for maintaining old growth conditions. In addition, many patches or groves of old growth occur throughout the project area, and may be at risk of loss of structural attributes through application of basal area and patch cut targets. This is evident in the Jacob Ryan project which has led to the cutting of a tremendous amount of old growth, especially in new patch cuts. The Forest Service does not have data to support the proposed intensive cutting in stands that should be managed as old growth. When provided the LiDAR by The Nature Conservancy, the Forest Service chose not to use it. Finally, as we have stated several times, stale data that does not reflect a landscape that has been burned and thinned repeatedly cannot be trusted to inform fire modelling. If the purpose of the project is to reduce the risk of crown fire, then accurate, up to date data must be used from the onset of the analysis. It appears that the Forest Service has chosen not to do that.

### VII. THE DRAFT EA USES A CONDITION BASED MANAGEMENT APPROACH AND FAILS TO TAKE A HARD LOOK AT SITE-SPECIFIC IMPACTS

NEPA is "our basic national charter for protection of the environment."<sup>119</sup> Analyzing and disclosing site-specific impacts is critical because where, when, and how activities occur on a landscape strongly determine 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."<sup>120</sup> Indeed, "location, not merely total surface disturbance, affects habitat fragmentation,"<sup>121</sup> and therefore location data is critical to the site-specific analysis NEPA requires. 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.<sup>122</sup>

Earlier this year, the District Court for the District of Alaska issued a decision in *Southeast Alaska Conservation Council v. U.S. Forest Service* underscoring the Forest Service's legal duty to disclose the when, where, and how of logging projects before approving project-level actions. The court found unlawful the agency's analysis of the Prince of Wales timber sale because it failed to disclose site-specific locations for roads and treatments. The district Court explains the approach the Forest Service took in the Prince of Wales EIS, describing that the document "analyzed" four alternatives, but that:

"...the alternatives do not provide the specific locations or configurations of harvest or roadbuilding within the LSTA [Logging System Transportation Analysis]. Instead, the Project EIS provides that "site-specific locations and methods" for activities such as timber harvest "will be determined during implementation" over the 15-year lifespan of the Project. It explains that siting decisions and the parameters of actual timber sales will be determined pursuant to an Implementation Plan.... However, the EIS makes clear that these subsequent, site-specific decisions will not be subject to additional NEPA review. The Forest Service terms this approach "condition-based analysis"."<sup>123</sup>

The district court found the Forest Service's approach contradicted Ninth Circuit precedent, *City* of *Tenakee Springs v. Block*, 778 F.2d 1402 (9th 1995), concerning logging on the Tongass National Forest. The district court evaluating the Prince of Wales project found that the Forest Service's condition-based analysis was equivalent to the deficient analysis set aside in *City of Tenakee Springs*, holding that:

"the Circuit's reasoning [in Tenakee Springs] is still binding precedent: NEPA requires that environmental analysis be specific enough to ensure informed

<sup>&</sup>lt;sup>119</sup> 40 C.F.R. § 1500.1.

<sup>&</sup>lt;sup>120</sup> New Mexico ex rel. Richardson, 565 F.3d 683, 706 (10th Cir. 2009).

<sup>&</sup>lt;sup>121</sup> Id.

<sup>&</sup>lt;sup>122</sup> Or. Natural Res. Council Fund v. Goodman, 505 F.3d 884, 892 (9th Cir. 2007).

<sup>&</sup>lt;sup>123</sup> See Southeast Alaska Conservation Council v. U.S. Forest Serv., 2020 U.S. Dist. LEXIS 43499, Case No. 1:19cv-00006-SLG (D. Alaska Mar. 11, 2020) at \*8 (citations omitted). <u>Exhibit 1.</u>

decisionmaking 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."<sup>124</sup>

The Alaska court distinguishes its decision from *WildEarth Guardians v. Conner* where the Tenth Circuit upheld an Environmental Assessment (EA) for the Tennessee Creek Vegetation Management Project designed to address a beetle infestation in two national forests.<sup>125</sup> But the issue in that case was limited specifically to the Forest Service's analysis of impacts to lynx, and it was determined that the project was adhering to a scientifically-supported lynx conservation strategy that was included in the relevant forest plan. Further, the court found that in the Tennessee Creek EA, the Forest Service had assumed that all of the project's impacts would be concentrated in important lynx habitat and even based on that "worst case scenario" concluded that there would be no significant impacts.

Here, the Burnt Corral EA repeats the key errors of the Forest Service in the *Southeast Alaska* case – by declining to disclose the nature and location of certain logging and road construction – while it involves none of the factors that allowed the agency to avoid site-specific analysis in the *WildEarth Guardians* case. As a result, the Burnt Corral EA violates NEPA.

For example, the Design Features portion of the Draft EA (Appendix A, p. 72) states that "*Areas where desired conditions might require removal of trees larger than 18-inch diameter at breast height include … Areas where bark beetles are active, especially the western pine beetle and the mountain pine beetle.*" The Draft EA never describes where bark beetles are active, and it does not identify what constitutes bark beetles being "active," – and thus where trees larger than 18 inches may be cut. Bark beetles can occur anywhere in ponderosa pine forest, so in essence this exception to large tree retention would allow large tree cutting anywhere in the project area, rendering the large tree retention language meaningless, and the impacts to old growth significant. The EA thus appears to leave bark beetle-focused thinning treatments to the agency's future discretion as to location and timing. This is exactly the type of vague proposed action, and lack of analysis, that the Alaska court (and the Ninth Circuit) have previously ruled violates NEPA.

Similarly, the EA states that it may thin forests "where needed" in goshawk nest area (Draft EA at 19) and "as necessary" in old growth patches (Draft EA at 20). Again, as in the *Southeast Alaska* case, the Forest Service analysis is too vague and lacks the necessary detail to assist the public or the decisionmaker in understanding the proposal or its site-specific impacts. Without disclosing where and how old growth and goshawk nest stands will be logged, the Forest Service cannot disclose to the public or the decisionmaker: (1) what forest will remain when the treatments are complete; and thus (2) the impacts of the proposed action. The Forest Service's proposed action simply provides discretion for the log potentially thousands of acres of trees in goshawk nest areas and old growth stands. Unless the Forest Service disclose the project's potential impact.

<sup>&</sup>lt;sup>124</sup> *Id.* at \*19 (emphasis added)

<sup>&</sup>lt;sup>125</sup> WildEarth Guardians v. Conner, 920 F.3d 1245, 1250-51 (10th Cir. 2019).

The Forest Service analysis of roads similarly fails to contain the necessary site-specific impact to pass muster under NEPA. The EA states:

"Within the Project boundary, about 24,600 acres are within <sup>1</sup>/<sub>4</sub> mile of roads (162 miles +/-) that are designated for motorized use by the public as shown on the Motor Vehicle Use Map (MVUM).... To access the 1,851 acres [further than <sup>1</sup>/<sub>4</sub> mile from open roads], approximately 40 miles of existing roads in storage (Maintenance Level 1) could be utilized or be opened for the duration and purposes of the project. These additional 40 miles of roads are only one third of the roads in storage within the project. When you combine the 40 miles of Maintenance Level 1 closed roads with the MVUM open roads (ML2, ML3), it would provide direct access to approximately 26,477.4 acres in the project area.... The remaining 1,610 acres may need additional temporary roads in order to implement thinning activities within those particular areas."

The Forest Service cannot approve "additional temporary roads" without disclosing the location, nature, duration of use, specs, etc., all of which will bear on the impacts of such roads. Given that road use and construction can be some of the most destructive impacts on the land, and given that "the majority of these non-accessible acreages exist in the western portion of the project area where there are steep slopes and sensitive soils area,"<sup>127</sup> the Forest Service must disclose these impacts or it cannot approve the construction of the "additional temporary roads."

Temporary roads can have significant impacts. The Final EIS on the national Roadless Area Conservation Rule noted that "[t]*he use of temporary roads may have the same long lasting and significant ecological effects as permanent roads, such as the introduction of nonnative vegetation and degradation of stream channels.*"<sup>128</sup> Temporary "[s]*kid roads and trails, log landings, and similar disturbances within the* [timber] *sale area are the main cause of soil erosion and can contribute up to 90% of the sediment generated by timber sale activity (Patric 1976; Swift 1988).*"<sup>129</sup> The Roadless Rule Final EIS acknowledges that temporary road construction can cause increased risk of surface erosion and landslides, but that this varies widely and depends on local site characteristics.<sup>130</sup> Because "local site characteristics" are not disclosed in the EA because that document fails to disclose the location of proposed temporary roads, the EA violates NEPA.

Further, the Burnt Corral EA, in each of the instances discussed above, fails to disclose a "worst case analysis," as was the case in the *WildEarth Guardians* case. Thus, the Forest Service has failed to take the hard look that NEPA and federal courts require at each of the critical factors: large tree removal in bark beetle infested areas; logging in goshawk nest areas and old growth; and the construction of additional temporary roads.

<sup>&</sup>lt;sup>126</sup> Burnt Corral Draft EA, p. 64 (emphasis added).

<sup>&</sup>lt;sup>127</sup> Burnt Corral Draft EA, p. 64

<sup>&</sup>lt;sup>128</sup> Roadless Area Conservation Rule Final EIS (Nov. 2000) (Ex. 1) at 2-18.

<sup>&</sup>lt;sup>129</sup> Roadless Area Conservation Rule Final EIS (Nov. 2000) at 3-45, excerpts emailed on 5/26/2020.

<sup>&</sup>lt;sup>130</sup> *Id*.

# VIII. THE DRAFT EA FAILED TO ANALYZE DIRECT, INDIRECT, AND CUMULATIVE IMPACTS.

This project does not stand alone as many past and foreseeable actions, including unplanned fire events, prescribed fire, past and ongoing logging, future logging, livestock grazing, recreation, and wildlife habitat management have and will continue to affect the project area. The analysis should consider these factors in the discussion of the affected environment and effects of the proposed action. Under NEPA, the Forest Service must consider all direct, indirect, and cumulative environmental impacts of the proposed action.<sup>131</sup> This includes the incremental logging of old growth trees, groups, clumps, patches, and stands across the North Kaibab Ranger District. Direct effects are caused by the action and occur at the same time and place as the proposed project.<sup>132</sup> An example of this is the cutting of old growth trees to reduce stand density to 80BA, or the removal of entire old growth groups where patch cuts would be located. Both of these examples would be allowed under the proposed action.

Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.<sup>133</sup> An example of this is the disturbance of an old growth stands by mechanical equipment, which results in the spread of cheatgrass. Or, an indirect effect could be the increased risk of high-severity fire that results from the establishment of small diameter ladder fuels as trees regenerate into openings cut into otherwise mature stands.

Both types of impacts include "*effects on natural resources and on the components, structures, and functioning of affected ecosystems,*" as well as "*aesthetic, historic, cultural, economic, social or health* [effects]."<sup>134</sup> In a cumulative impact analysis, "*an agency must take a 'hard look' at all actions that may combine with the action under consideration to affect the environment.*"<sup>135</sup>

In ignoring other similar projects where old growth was, is, or may be logged (such as the Jacob-Ryan Project, the Fracas Project, the Burnt Saddle timber sale, the Pine Hollow timber sale, the Lookout timber sale, the Westlake PCT, or the activities associated with the Kaibab Plateau Ecological Restoration Project), the Forest Service failed to fully review all cumulative environmental impacts of the proposed action. Cumulative effects are defined as:

"[T]he impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."<sup>136</sup>

As established in the Code of Federal Regulations definition of cumulative impacts, the NEPA obligation to extends to all "past," "present," and "reasonably foreseeable" future projects.

<sup>&</sup>lt;sup>131</sup> 40 CFR §§ 1502.16, 1508.8, 1508.25(c).

<sup>&</sup>lt;sup>132</sup> 40 CFR § 1508.8(a).

<sup>&</sup>lt;sup>133</sup> 40 CFR § 1508.8(b).

<sup>&</sup>lt;sup>134</sup> Id.

<sup>&</sup>lt;sup>135</sup> Great Basin Resource Watch v. BLM, 844 F.3d 1095, 1104 (9th Cir. 2016)(emphasis in original)(quoting Te-Moak Tribe).

<sup>&</sup>lt;sup>136</sup> 40 CFR §1508.7.

Because future commercial logging of old growth is expected, and because old growth logging is ongoing on the Jacob-Ryan Project, the Forest Service must analyze the cumulative impacts of old growth logging on an area far greater than is covered in the current Draft EA.

The NEPA requirement to analyze cumulative impacts prevents agencies from undertaking a piecemeal review of environmental impacts.<sup>137</sup> In a leading mining case dealing with two nearby mining projects, the Ninth Circuit held that, even though the two mines were not "connected actions" under NEPA, the NEPA review document for each mine had to fully review the cumulative effects/impacts of the two mines together on the regional environment.<sup>138</sup>

In Burnt Corral, we have a similar situation where numerous timber sales are taking place concurrently or continuously across a vast swath of the Kaibab Plateau. In almost all of these (perhaps not the pre-commercial thinning activities), the Forest Service is logging old growth trees, groups, patches, and stands. One needs only tour the Jacob-Ryan project and count the rings on some recent tree stump to see this.

In the case of the logging that occurred under the Integrated Stand Management program, the Forest Service drastically reduced the extent and density of high-canopied old growth forest, and replaced it with dense undergrowth which now fuels uncharacteristic wildfire behavior. This is an example of indirect effects interacting with cumulative effects. A cumulative effects analysis "must be more than perfunctory; it must provide a useful analysis of the cumulative impacts of past, present, and future projects... To this end, ... it must consider the interaction of multiple activities and cannot focus exclusively on the environmental impacts of an individual project..."<sup>139</sup>

The NEPA analysis must analyze the cumulative and indirect impacts of all of these timber sales and vegetation management projects, or violate NEPA. In a case where an EA was rejected because it failed to include detailed analysis of impacts from nearby proposed mining operations, the Court ruled that

"An agency must take a "hard look" at all cumulative impacts. ... An EA's analysis of cumulative impacts must give a sufficiently detailed catalogue of past, present, and future projects, and provide adequate analysis about how these projects, and differences between the projects, are thought to have impacted the environment. ... Without such information, neither the courts nor the public ... can be assured that the [agency] provided the hard look that it is required to provide."<sup>140</sup>

<sup>&</sup>lt;sup>137</sup> Earth Island Institute v. U.S. Forest Service, 351 F.3d 1291, 1306-07 (9th Cir. 2003).

<sup>&</sup>lt;sup>138</sup> Great Basin Mine Watch v. Hankins, 456 F.3d 955, 968-74 (9th Cir. 2006).

<sup>&</sup>lt;sup>139</sup> Oregon Natural Resources Council Fund v. Brong, 492 F.3d 1120, 1133 (9th Cir. 2007).

<sup>&</sup>lt;sup>140</sup> Te-Moak Tribe of Western Shoshone v. U.S. Dept. of Interior, 608 F.3d 592, 603 (9th Cir. 2010).

## IX. THE DRAFT EA FAILS TO ENSURE THAT "DESIGN FEATURES" ARE SUFFICIENT TO MINIMIZE, MITIGATE, AND AVOID SIGNIFICANT IMPACTS.

Under NEPA, the Forest Service must have an adequate mitigation plan to minimize or eliminate all potential project impacts. NEPA requires the agency to: (1) "include appropriate mitigation measures not already included in the proposed action or alternatives,"<sup>141</sup> and (2) "include discussions of: ...Means to mitigate adverse environmental impacts (if not already covered under 1502.14(f))."<sup>142</sup> NEPA regulations define "mitigation" as a way to avoid, minimize, rectify, or compensate for the impact of a potentially harmful action.<sup>143</sup> Courts have ruled that "[O]mission of a reasonably complete discussion of possible mitigation measures would undermine the 'action-forcing' function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects."<sup>144</sup>

NEPA requires that the agency discuss mitigation measures, with "sufficient detail to ensure that environmental consequences have been fairly evaluated."<sup>145</sup> Merely listing "Design Features" does not ensure that significant impacts will be avoided. As an acute example, as we discuss elsewhere in this letter, the arbitrary diameter caps imposed in various treatment strata will not in and of themselves serve to prevent old growth trees, clumps, groups, or patches from being logged, especially when they are posed as somewhat optional: "Across the project area, large trees, those greater than 18-inch diameter at breast height, would be retained except where ecological restoration and biodiversity objectives cannot otherwise be met."<sup>146</sup>

As we found in our data collection, many old trees are smaller diameter than these thresholds. The Draft EA never provides the scientific of data-derived basis for these diameter limits. The data we present in this letter challenges the Draft EA's assumption that the Old and Large Tree Implementation Plans will be effective at protecting old growth, which is perhaps the most important issue identified by stakeholders. In rejecting an EIS for its failure to conduct adequate review of mitigation and mitigation effectiveness, the Ninth Circuit ruled that "An essential component of a reasonably complete mitigation discussion is an assessment of whether the proposed mitigation measures can be effective. ... A mitigation discussion without at least some evaluation of effectiveness is useless in making that determination.<sup>147</sup> Similarly, the District of Colorado, the Court found that "lack of detail as the nature of the mitigation measures" precluded "meaningful judicial review."

Simply listing, or briefly mentioning, mitigation measures violates NEPA. Because the EA concludes without adequate analysis that there will be no significant impacts it also fails to discuss how likely proposed or required mitigation measures are to reduce impacts in violation of NEPA.

<sup>&</sup>lt;sup>141</sup> 40 CFR § 1502.14(f).

<sup>142 40</sup> CFR § 1502.16(h).

<sup>&</sup>lt;sup>143</sup> 40 C.F.R. §§ 1508.20(a)-(e).

<sup>&</sup>lt;sup>144</sup> Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 353 (1989).

<sup>&</sup>lt;sup>145</sup> Id. at 352.

<sup>&</sup>lt;sup>146</sup> Draft EA at 71, emphasis added.

<sup>&</sup>lt;sup>147</sup> South Fork Band Council v. Dept. of Interior, 588 F.3d 718, 727 (9th Cir. 2009) (rejecting EIS for failure to conduct adequate review of mitigation and mitigation effectiveness in mine EIS).

<sup>&</sup>lt;sup>148</sup> Dine Citizens v. Klein, 747 F.Supp.2d 1234, 1258-59 (D. Colo. 2010).

### X. THE DRAFT EA FAILS TO PROVIDE AN ADAPTIVE MANAGEMENT STRATEGY, BUT LEAVES SOME TREATMENT DECISIONS OPEN TO ADAPTIVE MANAGEMENT DEPENDING ON FUTURE CONDITIONS.

The Burnt Corral Project should include a detailed and data-driven adaptive management plan, consistent with the intentions outlined in the Kaibab Forest Health Focus:

"The Kaibab National Forest has committed to continuing this process in an appropriate form as proposed projects and other management actions move forward. Collaborative review of proposals and assessment of planned actions will be followed by implementation and a cycle of monitoring, assessment, and adaptive management."<sup>149</sup>

This statement clearly indicates that the Kaibab National Forest was, at that time, committed to making adaptive management a part of projects implemented under the direction of the Kaibab Forest Health Focus, which includes Burnt Corral. The Burnt Corral Draft EA includes some language from the Forest Plan regarding adaptive management, but never commits to a plan. This is inconsistent with stakeholder intentions coming out of the Kaibab Forest Health Focus, and ignores the best available science that supports the need for adaptive management strategies. Sesnie & Bailey (2003)<sup>150</sup> presented "an adaptive management approach that uses a history of management and historical information to develop new land management options" specifically for the Kaibab Plateau. They explained this as follows:

"Fire suppression, livestock grazing, and management practices favoring regeneration have all contributed to the overabundance of trees and, at times, the fragmentation of old-growth stands. Additionally, most of the prime old-growth stands (phase 3) are now those closest to the highways and have been left unharvested primarily for aesthetic purposes. ... To maintain desired old-growth functions, such as wildlife habitat, and as a structural component of the overall landscape, managers may wish to promote phase 3 conditions in other parts of the landscape. Many phase 2 stands could become phase 3 if the number of small-diameter trees and fire risks for selected areas were reduced."<sup>151</sup>

These authors suggest a landscape-scale adaptive management approach following this logic: (1) recognizing that past management actions have fragmented and reduced old growth, and (2) adapting future actions in order to maintain existing and recruit additional old growth. The Burnt Corral EA sets a dramatically different course, as it would log through thousands of acres of old growth which were misidentified and assigned treatments in the New Patch Cut, TFB and Matrix strata.

The Kaibab Forest Plan indicates that monitoring and adaptive management are integral parts of implementing successful projects:

<sup>&</sup>lt;sup>149</sup> KFHF, p. 50

<sup>&</sup>lt;sup>150</sup> Submitted as an attachment to our scoping comments, and again in Exhibit G. Failure to respond to the submission of this paper and our related comments in scoping is a violation of NEPA.

<sup>&</sup>lt;sup>151</sup> Sesnie & Bailey (2003), pp. 46-47.

"Plan- and project-level monitoring and evaluation are the tools for gathering information on progress toward desired conditions, the effectiveness of plan implementation, and the appropriateness of plan direction. This information is subsequently used to determine management needs and adjust management strategies, which, in part, determine the form of future projects and activities. As such, monitoring and evaluation are key elements of plan implementation, as they guide future management occurring under the plan. The monitoring plan... in conjunction with project-level monitoring, will provide the framework for enabling adaptive management on the Kaibab NF."<sup>152</sup>

This description supports the statement provided above from the KFHF. We are unsure of how the Forest Service will evaluate whether the proposed treatments move the landscape towards desired conditions if they are not using a monitoring and adaptive management strategy which does not exist. "*Monitoring is the feedback that enables adaptive management*,"<sup>153</sup> but the Burnt Corral Draft EA does not explain if and how monitoring of logging treatment effects will take place.

The Burnt Corral Draft EA incudes several vaguely described project elements that appear to be a non-existent adaptive management plan. For example, the Design Features portion of the Draft EA (Appendix A, p. 72) states that "*Areas where desired conditions might require removal of trees larger than 18-inch diameter at breast height include … Areas where bark beetles are active, especially the western pine beetle and the mountain pine beetle.*" The Draft EA never describes where bark beetles are active, and it does not identify what constitutes bark beetles being "active." The Draft EA seems to leave thinning treatments in response to bark beetle up to future discretion, which in effect is an adaptation to new conditions, as a result of new circumstances, which is in effect adaptive management.<sup>154</sup>

Thus, the Forest Service may allege that it may permit the logging of large trees in response to a beetle outbreak as an exercise in adaptive management. This the Forest Service cannot do under the Forest Service's own regulations and federal caselaw. To be effective and legal, adaptive management must: (1) clearly identify measurable thresholds that, if exceeded as determined by monitoring, will require a change in management; (2) clearly identify what that changed management will entail; and (3) disclose in *this NEPA document* the impacts caused by that change in management. Because the EA fails on all three counts, the Forest Service cannot justify logging of large trees in response to a beetle outbreak as an adaptive management strategy as currently proposed.

<sup>&</sup>lt;sup>152</sup> Kaibab Forest Plan, p. 10.

<sup>&</sup>lt;sup>153</sup> Kaibab Forest Plan, p. 123.

<sup>&</sup>lt;sup>154</sup> In addition, the Forest Service has a duty to take a hard look at the impacts of its proposed actions, including proposals to log large trees due to the threat of bark beetles. To the extent that the EA authorizes logging of large trees, it must disclose the impacts, given how significant these trees are, and the likelihood that these trees are old trees. The Forest Service has failed to take the hard look because it doesn't disclose key information, including where bark beetles are active – and thus where trees larger than 18 inches may be cut. To the extent that the Forest Service believes it is here approving a site-specific decision to cut down trees in response to a *future* beetle outbreak, it has failed to take a hard look at such a proposal. Such a proposal would appear to constitute either adaptive management or condition-based management.

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We do not argue that the Forest Service can never adopt an adaptive management approach for this project. An adaptive management approach may be feasible and helpful in terms of permitting the agency to fine tune its management in the face of changing conditions. However, the agency's proposed approach fails to meet the conditions required to establish a lawful and effective plan.

### A. The Law and Policy of Adaptive Management.

### 1. Academic recommendations concerning adaptive management.

Academics conclude that effective adaptive management should involve treating management interventions as experiments, the outcomes of which are monitored and fed back into management planning. As outlined by land management experts, an adaptive management approach to forest management should include the following:

- Creation of management strategies (specific action alternatives in this case);
- Implementation of those strategies/actions;
- Monitoring of the effects (under the monitoring framework developed as part of the planning process); and
- Predetermined triggers for changes in management based on the results of monitoring.<sup>155</sup>

Forest Service experts in adaptive management have said that "[a]*daptive management requires* explicit designs that specify problem-framing and problem-solving processes, documentation and monitoring protocols, roles, relationships, and responsibilities, and assessment and evaluation processes."<sup>156</sup>

The fourth component, regarding triggers, is described by adaptive management experts in the following statement:

"The term trigger, as used here, is a type of pre-negotiated commitment made by an agency within an adaptive management or mitigation framework specifying what actions will be taken if monitoring information shows x or y. In other words, predetermined decisions, or more general courses of action, are built into an adaptive framework from the beginning of the process."<sup>157</sup>

The literature cited here calls for details and specifics, not ambiguity.

<sup>&</sup>lt;sup>155</sup> Exhibit H: Schultz, C. and M. Nie. 2012. Decision-making triggers, adaptive management, and natural resources law and planning. *Natural Resources Journal* 52:443-521.

<sup>&</sup>lt;sup>156</sup> Stankey, G.H., R.N. Clark, and B.T. Bormann. 2005. Adaptive management of natural resources: theory, concepts, and management institutions. Gen. Tech. Rep. PNW-GTR-654. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 73 p., at page 58. Available at <a href="https://www.fs.fed.us/pnw/pubs/pnw\_gtr654.pdf">https://www.fs.fed.us/pnw/pubs/pnw\_gtr654.pdf</a> (last viewed July 15, 2019).

<sup>&</sup>lt;sup>157</sup> Schultz and Nie, Decision-making triggers, adaptive management, and natural resources law and planning at 455.

### Regulations concerning adaptive management.

This academic framing is reinforced by the Forest Service's NEPA regulations, adopted in 2008, which define adaptive management as

"[a] system of management practices based on clearly identified intended outcomes and monitoring to determine if management actions are meeting those outcomes; and, if not, to facilitate management changes that will best ensure that those outcomes are met or re-evaluated. Adaptive management stems from the recognition that knowledge about natural resource systems is sometimes uncertain."<sup>158</sup>

These regulations further state that:

"An adaptive management proposal or alternative must clearly identify the adjustment(s) that may be made when monitoring during project implementation indicates that the action is not having its intended effect, or is causing unintended and undesirable effects. The EIS must disclose not only the effect of the proposed action or alternative but also the effect of the adjustment. Such proposal or alternative must also **describe the monitoring that would take place** to inform the responsible official during implementation whether the action is having its intended effect."<sup>159</sup>

The preamble to the Forest Service's regulation that adopted the adaptive management definition states that the agency must identify the proposed changes, and their impacts, in the NEPA document. "When proposing an action the responsible official may identify possible adjustments that may be appropriate during project implementation. Those possible adjustments must be described and their effects analyzed in the EIS."<sup>160</sup>

The Kaibab Forest Plan provides a good summary of these regulations, defining adaptive management as

"a system of management practices based on clearly identified intended outcomes and monitoring to determine if management actions are meeting those outcomes. If needed, it facilitates management changes that will best ensure that those outcomes are met or re-evaluated. Adaptive management stems from the recognition that knowledge about natural resource systems is sometimes uncertain (36 CFR 220.3), particularly for dynamic issues such as climate change, invasive species, and disturbances that are not easily predicted."<sup>161</sup>

Federal caselaw concerning adaptive management. 3.

<sup>&</sup>lt;sup>158</sup> 36 C.F.R. § 220.3 (emphasis added).
<sup>159</sup> 36 C.F.R. § 220.5(e)(2) (emphasis added).
<sup>160</sup> 73 Fed. Reg. 43,084, 43,090 (July 24, 2008).

<sup>&</sup>lt;sup>161</sup> Kaibab Forest Plan, p. 8.

Federal courts have found agencies violated NEPA or the Endangered Species Act (ESA) where the agency relied on an "adaptive management" plan that was vague, set no specific triggers for future action, failed to describe that future action, or failed to ensure that resources will be protected as the adaptive management plan asserts.

In *Natural Resources Defense Council v. U.S. Army Corps of Engineers*, 457 F. Supp. 2d 198 (S.D.N.Y. 2006), the court found that the Army Corps' attempt to supplement an inadequately-explained finding of no significant impact concerning a dredging project was arbitrary and capricious where the agency relied on ill-defined "adaptive management" protocols to conclude that impacts would be mitigated below the level of significance.

"The EA makes several promises that it will alter its monitoring plan should it prove necessary. For example, the EA relies on a general promise that it will "as appropriate, reevaluate, the need for altering its dredging methods" ... through the use of its coordination plan and monitoring program. The EA also explains that the Corps will follow "adaptive management practices as it moves through construction of its contracts," thus allowing it to change future contracts should the data indicate it is necessary. These promises, however, provide no assurance as to the efficacy of the mitigation measures. The Corps did not provide a proposal for monitoring how effective "adaptive management" would be."<sup>162</sup>

*Mountaineers v. United States Forest Service*, 445 F. Supp. 2d 1235 (W.D. Wash. 2006) set aside a Forest Service decision to open motor vehicle trails where the agency proposed to monitor impacts to wildlife and potentially change the trails later based on an adaptive management plan. The court stated that these adaptive management strategies "*amount* ... to a 'build-first, study later' approach to resource management. This backward-looking decision making is not what NEPA contemplates."<sup>163</sup> Other cases similarly conclude that NEPA forbids the use of ill-defined adaptive management plans to assume away likely impacts of agency action.<sup>164</sup>

Courts also hold unlawful agency projects that may impact species protected by the Endangered Species Act where the biological opinion is based on the assumption that a vague and ill-defined monitoring and adaptive management plan will mitigate impacts to the species at issue. These cases provide a useful analogy to adaptive management in the NEPA context. *Natural Resources Defense Council v. Kempthorne*, 506 F. Supp. 2d 322 (E.D. Ca. 2007) is key precedent. There, plaintiffs challenged a proposed plan to manage water diversions in a manner that could adversely impact the delta smelt, a species listed as threatened under the Endangered Species Act. The Fish and Wildlife Service prepared a biological opinion (BiOp) on the proposal which concluded that the project would neither jeopardize the smelt nor adversely modify the smelt's critical habitat. *"Although the BiOp recognize*[d] *that existing protective measures may be* 

<sup>&</sup>lt;sup>162</sup> NRDC v. United States Army Corps of Eng'rs, 457 F. Supp. 2d at 234 (citations omitted).

<sup>&</sup>lt;sup>163</sup> Mountaineers v. United States Forest Serv., 445 F. Supp. 2d at 1250.

<sup>&</sup>lt;sup>164</sup> See, e.g., High Sierra Hikers Association v. Weingardt, 521 F. Supp. 2d 1065, 1090-91 (N.D. Ca. 2007)

<sup>(</sup>overturning a Forest Service decision to liberalize the rules limiting campfires in high country parts of a wilderness area on the grounds that the agency could not rely on adaptive management to overcome an inadequate response to the problems raised in the record).

inadequate, the FWS concluded that certain proposed protective measures, including ... a proposed 'adaptive management' protocol would provide adequate protection."<sup>165</sup>

Plaintiffs alleged, among other things, that the BiOp "*relie*[d] *upon uncertain (and allegedly inadequate) adaptive management processes to monitor and mitigate the* [project's] *potential impacts.*"<sup>166</sup> They asserted that the adaptive management plan, which required a working group meet and consider adaptive measures in light of monitoring, failed to meet the ESA's mandate that mitigation be

"reasonably specific, certain to occur, and capable of implementation"" because: (1) the [working group] has complete discretion over whether to meet and whether to recommend mitigation measures; (2) even if the [working group] meets and recommends mitigation measures, the [agency management team] group is free to reject any recommendations; (3) there are no standards to measure the effectiveness of actions taken; (4) reconsultation is not required should mitigation measures prove ineffective; and (5) ultimately, no action is ever required."<sup>167</sup>

The Kempthorne court cited prior caselaw holding that "a mitigation strategy [in the ESA context] must have some form of measurable goals, action measures, and a certain implementation schedule; i.e., that mitigation measures must incorporate some definite and certain requirements that ensure needed mitigation measures will be implemented."<sup>168</sup> The court found that adaptive management plan "does not provide the required reasonable certainty to assure appropriate and necessary mitigation measures will be implemented."<sup>169</sup> The court concluded that

"Adaptive management is within the agency's discretion to choose and employ, however, the absence of any definite, certain, or enforceable criteria or standards make its use arbitrary and capricious under the totality of the circumstances."<sup>170</sup>

4. The Kaibab Forest Health Focus.

The KFHF provides a discussion of adaptive management and monitoring that succinctly captures the key elements described above:

"Adaptive management is a nearly universal goal in land and resource management and should be at the core of efforts to implement recommendations from the Focus....The essential first step to adaptive management is the articulation of clear goals and objectives, a step that we believe has been advanced through the Focus. As the recommendations from this collaborative process advance and inform project-level planning and the Forest Plan revision

<sup>&</sup>lt;sup>165</sup> NRDC v. Kempthorne, 506 F. Supp. 2d at 333-34 (emphasis in original).

<sup>&</sup>lt;sup>166</sup> NRDC v. Kempthorne, 506 F. Supp. 2d at 329.

<sup>&</sup>lt;sup>167</sup> NRDC v. Kempthorne, 506 F. Supp. 2d at 352. See also id. at 350 (explaining the "certain to occur" standard and citing Ctr. for Biological Diversity v. Rumsfeld, 198 F. Supp. 2d 1139, 1152 (D. Ariz. 2002)).

<sup>&</sup>lt;sup>168</sup> *NRDC v. Kempthorne*, 506 F. Supp. 2d at 355, citing *Rumsfeld*, 198 F. Supp. 2d at1153.

<sup>&</sup>lt;sup>169</sup> NRDC v. Kempthorne, 506 F. Supp. 2d at 356.

<sup>&</sup>lt;sup>170</sup> *NRDC v. Kempthorne*, 506 F. Supp. 2d at 387.

process, these goals will be more fully articulated. Design of an appropriate monitoring plan is the next key need, and should address a modest number of effective indicator variables that can be measured repeatedly, accurately, and economically through multi-party monitoring. Identification of these variables is a challenging task, as they may or may not be the same as variables currently mandated by law or current policy. Monitoring serves several purposes, among them: 1) it verifies the degree to which implementation tracks planned work projects; 2) it provides an unambiguous means for stakeholders to track progress and the effects of collaboratively designed restoration efforts; 3) it provides quantitative feedback regarding the effects of implementation on key variable that, together, reflect the success of management action in achieving the stated goals and objectives. This last point captures the chief value of adaptive management; a properly designed monitoring program will provide the data needed to inform needed adjustments and guide the revision of decisions and actions, such that the management plan for restoration is improved over time, and the opportunity for learning is maximized. While a robust adaptive management plan requires initial investment, and carrying out the monitoring effort requires continuity of purpose and rigor in the field and in analysis, when properly executed it is a sound investment, because it will result in the early detection of needed changes and improve management efficiencies.."<sup>171</sup>

The Burnt Corral Draft EA fails to include any monitoring or adaptive management direction to meet the stated intent of stakeholders expressed in the Kaibab Forest Health Focus. The Draft EA claims that "Successful implementation of the project, including monitoring the outcomes with respect to large tree retention, would provide reassurance, while pursuing an adaptive approach that would inform and improve future projects in the ponderosa pine forests of the Kaibab Plateau."<sup>172</sup> However, no monitoring plan is provided, and in spite of the claim that monitoring would "inform and improve future projects in the ponderosa pine forests of the Kaibab Plateau" no adaptive management plan is provided.

### B. The EA's Bark Beetle Proposal Does Not Comply with Law or Policy for Adaptive Management.

To return to our example of bark beetles, the proposal to log large trees for bark beetles in the EA cannot be justified as an exercise in adaptive management because it does not contain key elements required to comply with NEPA, nor does it meet the goals for such a plan set out by academics. Instead, the plan appears to permit the Forest Service to change course on the fly, without establishing identifiable triggers for change, without defining what changed management would entail, and without disclosing the impacts of those changes. Adaptive management is not, however, a tool to delay decisions or to support ambiguous prescriptions. While adaptive management may be an appropriate tool to assist in management of the Burnt Corral area, the Forest Service must, as part of the NEPA process, develop a more detailed plan, identify specific triggers for changed management, identify specific management changes in case those triggers are met, and analyze and disclose the impacts of those changes.

<sup>&</sup>lt;sup>171</sup> KFHF, p. 44-45.

<sup>&</sup>lt;sup>172</sup> Burnt Corral Draft EA, p. 71.

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### XI. DATA COLLECTED IN THE BURNT CORRAL PROJECT

#### 16" diameter caps in "Old Growth" stands will not ensure old trees are protected from cutting

On May 19 and 20, 2020, we collected age data for 98 overstory trees and two cut stumps on 38 plots in the central and northern portion of the Burnt Corral project area. On May 20-23 we visited a number of other stands in the project area. Plot data, photos, and GPS points with notes have been submitted on a thumb drive via postal mail. We encourage the Forest service to explore these data and photos. Age data was collected from trees that were randomly sampled following three guidelines:

a) To determine of 16" diameter cap would protect trees over 150 years old, the first two trees under 16" dbh encountered from north on each plot were aged in stand 0030410004.

b) To determine the average age of trees at the stand level, the first tree encountered from north in each plot was aged in stands 0030460012, 0030460014, 0030790001, 0030790002, 0030790101 and 0030790102.

c) To determine the year that a timber sale and timber stand improvement thinning was conducted, random trees in close proximity to stumps larger than the live tree were aged in stands 0030790002, 0030790101 and 0030790102. We counted the rings on two of these stumps as well, both of which were 16" diameter stumps and aged  $\sim$ 250 years old when cut.

These data are useful in describing the age of stands, average age of trees across stands, and to evaluate if diameter limits in the various treatment strata are sufficient to protect old trees, which is a concern shared by a wide range of stakeholders. As shown below, our data show a string correlation with the 16" threshold. Above 16" dbh, only two trees were under 150 years old. As shown on the next page, a cluster of trees less than 16" trees were older than 150 years. In addition, some trees smaller than 14" dbh were older than 150 years. These trees are circled in the red box below. These data show that resource project design features are not sufficient to ensure that trees older than 150 years are protected from cutting in either the 14", 16" or 18" strata.



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Based on our data for Stand 0030410004, a 16" diameter cap in stands assigned Old Growth treatments will not ensure that all old trees (those over 150 years old) are protected. In Stand 0030410004, we aged the first two trees on the plot under 16" encountered on a plot spin starting from north. In total, across 12 plots in this stand, we aged 17 trees under 16" dbh. Cores were extracted at 30cm from the ground to determine the age. Years between germination and 30cm were estimated based off of ring width of the first five years on the core. In the case of missed piths, years were estimated based off of the rings visible on the core.

Stand 0030410004 aged trees <16" dbh						
	STAND	PLOT	TREE #	SPECIES	dbh	AGE
	30410004	256	2	PIPO	14.1	95
	30410004	247	6	PIPO	14.4	97
	30410004	247	2	PIPO	14.4	107
Trees	30410004	254	3	PIPO	9.4	130
younger	30410004	256	8	PIPO	12.9	135
vears	30410004	250	6	PIPO	15.2	143
years	30410004	254	11	PIPO	7.3	144
	30410004	250	4	PIPO	15.5	145
	30410004	251	8	PIPO	15.3	150
	30410004	248	5	PIPO	15	155
	30410004	248	8	PIPO	12.9	157
Trees	30410004	251	3	PIPO	13.1	157
older	30410004	246	5	PIPO	14.8	160
than 150	30410004	249	2	PIPO	11.8	165
years	30410004	246	6	PIPO	14.6	165
	30410004	257	7	PIPO	13.7	174
	30410004	253	7	PIPO	13.4	195



As shown here, 8 of 17 aged trees under 16" were older than 150 years, some as old as 195 years. The Forest Service must explain how the 14", 16" and 18" diameter caps will protect old growth trees if they are often more than 150 years old when under those thresholds. Because of the age of trees in the project area, the Draft EA does not accurately disclose the effects on old growth of the thin from below or patch cut treatments.

### Inventory of Stand 0030410004 - assigned an "Old Growth" Treatment

Stand 0030410004 was sampled on May 19, 2020. This stand was randomly selected for sampling and was observed to be generally representative of stands assigned the "Old Growth" treatment stratum. Twelve plots on a 200 meter grid were sampled. Overstory live and dead trees larger than 5" dbh were sampled using a 10-factor prism. Understory regeneration was sampled in a 1/100<sup>th</sup> acre fixed radius plot. On both overstory and understory plots, tree data was collected proceeding clockwise from north. For overstory trees, data collected included species, dbh and the age of the first two trees encountered smaller than 16" dbh. The purpose of this sample design was to:

- Determine if the 16" diameter cap protects old trees (> 150 years) from cutting.
- Determine if old or large (>16" dbh) trees would be cut to reach the target basal area of 80  $ft^2/acre$ .

Stand level results for Stand 0030410004	
Number of plots sampled	12
Number of live overstory trees sampled (>5" dbh)	142
Number of dead overstory trees sampled	6
Number of understory trees sampled (<5" dbh)	24
Number of understory trees sampled between 1" and 5" dbh	1
Stand basal area for live trees >5" dbh	118.3 ft <sup>2</sup> /acre
Stand basal area for live trees >18" dbh	92.5 ft <sup>2</sup> /acre
Stand basal area for live trees between 1" and 5" dbh	$0.8 \text{ ft}^2/\text{acre}$
Stand level trees/acre for live trees >5" dbh	64 trees/acre
Stand level trees/acre for live trees between 12" and 16" dbh	17.2 trees/acre
Stand level trees/acre for live trees >16" dbh	31.7 trees/acre
Stand level trees/acre for dead trees >5" dbh	5.2 trees/acre
Stand level trees/acre for dead trees >16" dbh	2.8 trees/acre
Stand level trees/acre for live trees between 1" and 5" dbh	8.3 trees/acre
Average tree diameter for live trees $>5$ " dbh	22.1" dbh

Based off of these data, we conclude that in this stand:

• The 16" diameter cap does not protect old trees (> 150 years) from cutting. As we show on the next page, based off of data for this stand there is 47% chance that a tree below 16" diameter is older than 150 years old. One sampled tree of just 7.3" dbh was nearly 150 years old. A sampled tree of 13.4" dbh was 195 years old. These results stress the importance of strict adherence to old tree protection guidelines based on tree morphological characteristics, as well as a the need to implement a design feature that would retain all trees, regardless of size, in old growth groups or clumps.

• There is no way to reach the target basal are of 80  $ft^2$ /acre without cutting a significant portion of the large and old trees in this stand. In order to meet the basal area target of 80  $ft^2$ /acre, the Forest Service would need to cut every tree below 20.5" dbh, which account for approximately 44% of all overstory trees. As our data show, there are very few trees below 5" dbh in this stand, so stand level basal area reductions cannot be achieved solely by cutting small or young trees.

• The findings from this stand call into question the effectiveness of a 16" diameter cap in any stand assigned treatments to thin up to 16" dbh. Our findings described on the previous pages further support this assertion.

### <u>Inventory of Stands 0030460012 and 0030460014 - assigned treatments of new patch cuts (group selection) on 10% of area and thin matrix to 80BA</u>

Stands 0030460012 and 0030460014 were sampled on May 19, 2020. These stands were selected for sampling because they were among the stands with previously collected stand exam data (1985) that was used in the Burnt Corral FSVeg analysis. Twelve plots on a 200 meter grid were sampled. Overstory live and dead trees larger than 5" dbh were sampled using a 10-factor prism. Understory regeneration was sampled in a 1/100<sup>th</sup> acre fixed radius plot. On both overstory and understory plots, tree data was collected proceeding clockwise from north. For overstory trees, data collected included species, dbh and the age of the first tree from north. The purpose of this sample design was to:

- Determine if an 18" diameter threshold protects old trees (> 150 years) from cutting.
- Determine if old or large (>16" dbh) trees would be cut to reach the target basal area of 80  $ft^2/acre$ .
- Determine if data collected for these stands in 1985 is outdated. (Addressed in a separate section of this letter)

Stand level results for Stands:	0030460012	0030460014	<b>Both Stands</b>
Number of plots sampled	8	4	12
Number of live overstory trees sampled (>5" dbh)	79	55	134
Number of dead overstory trees sampled	0	1	1
Number of understory trees sampled (<5" dbh)	1	10	11
Number of understory trees sampled between 1" and 5" dbh	1	4	5
· · · ·			
Stand basal area for live trees >5" dbh	98.8 ft <sup>2</sup> /acre	137.5 ft <sup>2</sup> /acre	111.7 ft <sup>2</sup> /acre
Stand basal area for live trees >18" dbh	56.3 ft <sup>2</sup> /acre	102.5 ft <sup>2</sup> /acre	70.8 ft <sup>2</sup> /acre
Stand basal area for live trees >16" dbh		$120 \text{ ft}^2/\text{acre}$	84.2 ft <sup>2</sup> /acre
Stand basal area for live trees between 5" and 18" dbh	$42.5 \text{ ft}^2/\text{acre}$	35 ft <sup>2</sup> /acre	40.8 ft <sup>2</sup> /acre
Stand basal area for live trees between 1" and 5" dbh	$1.2 \text{ ft}^2/\text{acre}$	$2 \text{ ft}^2/\text{acre}$	
Stand level trees/acre for live trees >5" dbh	94.7 trees/acre	64 trees/acre	84.5
			trees/acre
Stand level trees/acre for live trees between 5" and 12" dbh	57.1 trees/acre	0 trees/acre	38
Stand level trees/acre for live trees between 12" and 18" dbh	19.5 trees/acre	26.3	21.8
		trees/acre	
Stand level trees/acre for live trees >18.1" dbh	18.1 trees/acre	37.7	24.7
		trees/acre	
Stand level trees/acre for dead trees >5" dbh	0 trees/acre	0.8 trees/acre	
Stand level trees/acre for live trees between 1" and 5" dbh	12.5 trees/acre	250 trees/acre	
Average tree diameter for live trees >5" dbh	19.2" dbh	21" dbh	20" dbh
Average tree age (first tree in each plot aged = random sample)	154	171	161

Based off of this data when looking at both stands (because the sites are so similar) the Forest Service would have to cut nearly every tree under 18" dbh to achieve their desired basal area of 80  $ft^{2/}$ acre, and that does not account for the proposed 10% of the area in patch cuts. These stands are dominated by large, old trees, reflected in the average diameters and the average age of the first tree on each plot. In order to meet stated targets, the Forest Service would cut many trees more than 150 years old. For example, to thin stand 0014 down to 80  $ft^2/acre$ , the Forest Service would need to cut almost every tree below 20" dbh. Again, this does not even account for the 10% patch cuts. Our data shows that the average 20" tree in this stand is well over 150 years old. As such, the proposed action is not attainable without violating the old and large tree retention plans, and being in opposition of the strongly stated concerns for old growth and old tree retention shared by a wide range of stakeholders.

### Inventory of Stands 0030790001, 0030790002, 0030790101 and 0030790102 - assigned treatments of new patch cuts (group selection) on 10% of area and thin matrix to 80BA

Stands 0030790001, 0030790002, 0030790101 and 0030790102 were sampled on May 20, 2020. These stands were selected for sampling because they were among the stands with previously collected stand exam data (1995) that was used in the Burnt Corral FSVeg analysis. Fourteen plots on a 200 meter grid were sampled spanning all four stands. Overstory live and dead trees larger than 5" dbh were sampled using a 10-factor prism. Understory regeneration was sampled in a 1/100<sup>th</sup> acre fixed radius plot. On both overstory and understory plots, tree data was collected proceeding clockwise from north. For overstory trees, data collected included species, dbh and the age of the first tree from north. In addition, tree ages were collected from trees opportunistically to verify the year of release following a commercial timber sale and subsequent timber stand improvement thinning. Based off of these data, we believe the stands were logged in 1996. The purpose of this sample design was to:

- Determine if an 18" diameter threshold protects old trees (> 150 years) from cutting.
- Determine if old or large (>16" dbh) trees would be cut to reach the target basal area of 80  $ft^2/acre$ .
- Determine if data collected for these stands in 1995 is outdated. (Addressed in a separate section of this letter)

Stand level results for Stands:	4 Stands Aggregated
Number of plots sampled	14
Number of live overstory trees sampled (>5" dbh)	145
Number of dead overstory trees sampled	3
Number of understory trees sampled (<5" dbh)	14
Number of understory trees sampled between 1" and 5" dbh	7
Stand basal area for live trees >5" dbh	103.6 ft <sup>2</sup> /acre
Stand basal area for live trees >18" dbh	$64.3 \text{ ft}^2/\text{acre}$
Stand basal area for live trees >16" dbh	$70 \text{ ft}^2/\text{acre}$
Stand basal area for live trees between 5" and 18" dbh	39.3 ft <sup>2</sup> /acre
Stand basal area for live trees between 1" and 5" dbh	$2.5 \text{ ft}^2/\text{acre}$
Stand level trees/acre for live trees >5" dbh	79.1 trees/acre
Stand level trees/acre for live trees between 5" and 12" dbh	36.8 trees/acre
Stand level trees/acre for live trees between 12" and 18" dbh	20.4 trees/acre
Stand level trees/acre for live trees >18" dbh	21.9 trees/acre
Stand level trees/acre for dead trees >5" dbh	0.75 trees/acre
Stand level trees/acre for live trees between 1" and 5" dbh	50 trees/acre
Average tree diameter for live trees >5" dbh	19.8" dbh
Average tree age (first tree in each plot aged = random sample)	200 years old

We found that the stand was logged in 1996, the year following the collection of stand exam data. Therefore, the data used in the Draft EA is no longer useful for analysis, although it appears that Draft EA in fact relies on the outdated, pre-logging data. These data show that the four sampled stands have a diverse size-class structure that is a testament to the previous logging which created openings that filled with regeneration. The 1996 logging focused primarily on large, old trees, which released mid-sized trees which established after the onset of fire suppression and allowed a new age class to establish in the expanded openings. These stands are examples of areas which should be deferred to burn-only treatments, as they are within the natural range of variability for the Kaibab Plateau, are very close to the target metrics described in the Draft EA, are not at risk of crown fire, and any large tree cutting would reduce large and old trees below levels accepted by the public and concerned stakeholders. Two past rounds of logging have removed a substantial volume of pre-settlement trees, and cutting any more is simply unacceptable.

### CENTER for BIOLOGICAL DIVERSITY

### These files and folders were sent by mail on a thumb drive on 5/26/2020:

🛃 Emailed	5/26/2020 9:14 PM	File folder	
🛃 Exhibit K - TNC LIDAR Report	5/26/2020 2:17 PM	File folder	
Hay2020FieldPhotos	5/26/2020 2:14 PM	File folder	
Exhibit A - Burnt Corral CBD 05.04.2018	5/4/2018 8:51 AM	Adobe Acr	315 KB
Exhibit B - 20180705-NKRD_Response_Lttr_to_CBD's_May_4_2018_Lttr	5/26/2020 8:32 AM	Adobe Acr	792 KB
邊 Exhibit C - Esch & Waltz 2019 - Kaibab Monitoring Report [ERI]	5/26/2020 8:49 AM	Adobe Acr	2,194 KB
邊 Exhibit D - early Bark Beetle papers	5/26/2020 9:36 AM	Adobe Acr	1,179 KB
Exhibit E - Comments_CBD_KPERP_EA_Trudeau_11.11.2019	11/12/2019 2:09 PM	Adobe Acr	2,758 KB
Exhibit F - CBD_KPERP _Scoping_Trudeau_11.05.2018	11/5/2018 4:06 PM	Adobe Acr	9,737 KB
Exhibit G - CBD+SC BURNT CORRAL SCOPING COMMENTS 04.15.15	5/26/2020 10:34 AM	Adobe Acr	6,782 KB
Exhibit H - Schultz & Nie 2012 - Adaptive Management	5/26/2020 11:31 AM	Adobe Acr	112,201 KB
🔒 Exhibit I - Fire and Large Tree papers	5/26/2020 12:40 PM	Adobe Acr	3,804 KB
Exhibit J - BurntCorralMay2020_CBD_Data	5/26/2020 1:22 PM	Microsoft	55 KB
😹 Exhibit L - BCANALYSIS	3/31/2020 1:47 PM	Compress	55 KB
Exhibit M - Garrett et al., 1993Changing forest ecosystems of the southwest	5/12/2020 11:14 AM	Adobe Acr	1,081 KB
Exhibit N - 20200424-LegalNotice_for_BC_PrelimEA_2nd_30-day_Period	5/26/2020 2:32 PM	Adobe Acr	220 KB
🕎 Exhibits Cover Letter May 26, 2020	5/26/2020 2:51 PM	Microsoft	521 KB

### These files and folders were sent by email on 5/26/2020:

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🔬 Beier & Ingraldi 2012 - No evidence USFS goshawk plan improves breeding	5/26/2020 6:25 PM	Adobe Acrobat D	652 KB
Beier_et_al-2008-NgoshawkStructure (2)	5/26/2020 6:25 PM	Adobe Acrobat D	142 KB
A Crocker-Bedford 1990 - Goshawk repreduction and forest management [WSB]	11/4/2019 12:48 PM	Adobe Acrobat D	1,207 KB
욝 Dickson et al 2015 - Goshawk habitat modelling in the southwest [Landsca	5/26/2020 6:25 PM	Adobe Acrobat D	736 KB
Ex. 1 - USFS, Roadless Area Conservation Rule FEIS (2000) (excerpts)	5/26/2020 3:33 PM	Adobe Acrobat D	221 KB
🔊 Fule & Laughlin, 2007 - North rim fire effects study	6/4/2017 11:46 AM	Adobe Acrobat D	548 KB
Fule et al, 2002 - Comparing ecol. resto. alternatives at GCNP [FEM]	5/16/2018 1:28 PM	Adobe Acrobat D	254 KB
A Fule et al, 2002 - Natural variability in forests of the Grand Canyon	6/3/2017 5:58 PM	Adobe Acrobat D	873 KB
😹 Fule et al., 1997 - PIPO Reference conditions [Ecol. Apps]	3/20/2018 8:28 PM	Adobe Acrobat D	185 KB
A Fule et al., 2000 - Fire Point, Rainbow Point, Powell Plateau fire studies [RMRS-P-15]	7/25/2017 4:02 PM	Adobe Acrobat D	493 KB
A Fule et al., 2003 - Mixed-severity fire regime in high elevation forest at Grand Canyon	6/3/2017 6:39 PM	Adobe Acrobat D	2,054 KB
B Fule et al., 2003Assessing fire regimes on the NR with fire scar data	7/14/2007 8:04 AM	Adobe Acrobat D	818 KB
🔬 Fule et al., 2004 - Changes in NR canopy fuels	7/14/2007 8:04 AM	Adobe Acrobat D	707 KB
B Fule et al., 2004 - Effects of intense prescribed fire at GCNP [Restoration Ecology]	3/31/2018 1:13 PM	Adobe Acrobat D	510 KB
B Greenwald et al 2005 - Review of northern goshawk habitat selection west	5/26/2020 6:25 PM	Adobe Acrobat D	1,736 KB
Iniguez et al 2019_tree spatial patterns openings old growth Arizona ponderosa pine FEM	1/17/2020 9:28 AM	Adobe Acrobat D	1,211 KB
& Krofcheck_et_al-2019-Journal_of_Geophysical_Research_Biogeosciences	11/6/2019 10:51 AM	Adobe Acrobat D	7,190 KB
🔊 LaSorte et al 2004 - Red tail and goshawk habitat associations Kaibab PL	5/26/2020 6:25 PM	Adobe Acrobat D	2,564 KB
B Reynolds et al. 2017 - Long-Term Demography of the Northern Goshawk in a Variable Environment	5/26/2020 6:25 PM	Adobe Acrobat D	3,192 KB

### Please add these documents to the project record.

### Thank you!